

VIRVE

NEWS

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Security authorities' communications challenges

The communications of security authorities are facing several challenges. The rapid development of telecommunications and information systems is also creating pressures for the updating of security communications services. Often, users are already used to having the latest and most advanced technology and tailored special solutions in their own day-to-day communications.

When talk turns to critical communications, the quality requirements for service level are especially high. Tailored solutions are expensive and resource-intensive to develop and maintain. Personal needs and technical superiority are not always decisive in the selection of technology and supplier; the choices made must also be viable on global markets.

Striking a balance between reliability, investment, operating costs and customer

needs in the selection of new technology challenges us at State Security Networks to reflect on our current and future solutions. Can we operate with adequate cost-efficiency while maintaining exceptionally high service quality and customer-orientation?

The VIRVE development programme aims at improving efficiency and network quality while modernising services. The authorities' ongoing security network project is another source of notable opportunities and challenges. The testing of faster wireless data transmission over the TETRA network environment has also begun.

In the middle of all these changes, reliably securing and producing the services required by customers and ensuring continuity are paramount.

Kimmo Manni
CEO, State Security Networks Ltd.



Definition of critical information expanded

When the TETRA technology used in VIRVE was being standardised, only a handful of visionaries were able to foresee the importance of short messages in security communications; efforts were focused on the development of the voice communications platform. Today, no one could even imagine giving up alert, info, status and positioning messages, as they have become an essential part of information required for management.

However, new services and increased communication needs are raising packet network capacity in Finland, which is why commercial radio network services have already been introduced. At the same time, countries such as China have chosen narrowband TETRA technology to serve the security needs of considerably larger populations. With Sweden completing the construction of a network of around 1,800 base stations in December and Ger-

many having set up only a third of its network, the TETRA technology is expected to remain vital and under development for years to come.

In future, the increasing amount of data exploited by mobile units and command centres will reshape the definition of critical information and pose new requirements for data communications capacity. Therefore, the choices made by pioneering countries such as Finland in new wireless technologies must at least match the success of the TETRA technology during the existence of the VIRVE network.

There are a lot of questions that remain unanswered regarding development. To find answers to these questions, we need to look into the development trends of commercial networks, their suitability for use by authorities, the availability of frequencies and the development trends of the TETRA technology.

Yrjö Pylvänäinen
Director, State Security Networks Ltd.



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COVER

A smouldering fire caused by roof construction work led to several fire engines of the rescue department being alerted to the scene on Etelä-Esplanadi in Helsinki on 19 November 2010.

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Editor: Satu Huhtela, Director, tel. +358 207 400 500
Texts: Mediakonttori
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◀ Yrjö Benson is in charge of implementing the government IT strategy in Finland.

GOVERNMENT IT STRATEGY BEARING FRUIT

– the interest of citizens and entrepreneurs paramount

Currently in preparation at the Ministry of Finance, the new act on data administration will tackle the problem of non-interopability: municipalities and the State use hundreds of items of software and systems that do not communicate with each other.

The main focus of the new act will be on system interoperability, utilisation of common data repositories and a common enterprise architecture.

Four years ago the Government made a decision-in-principle on the development of State IT operations. This decision laid the foundation for an IT strategy (2006–2011), with State IT Director **Yrjö Benson** in charge of implementation.

“Many changes have already taken place. Examples include the SAdE project, the creation of group governance on IT within public administration, and the legislation reform. Some of the spearhead projects of the IT strategy are already in production, and the strategy is undergoing a review round,” says Benson of the current situation.

The Ministry of Finance will have great responsibility for the steering of the IT systems of municipalities and the State. Software used by municipalities must also be based on open interfaces and storage systems. This is being promoted in an ICT project headed by the Finnish Innovation Fund SITRA’s Municipal Programme.

“Twenty years ago the State decentralised profit responsibility to State agencies. At the same time municipal self-government was strengthened. The benefits of that trend have now been reaped, and the course is now set towards administration in the manner of a commercial business group,” Benson says. “My primary task is to introduce this concept within the State organisation.”

COMMON VISION AND ARCHITECTURE

There is a wide consensus in Finland, even in top government, that considerable savings and efficiency improvements are possible regarding the ICT expenditure of the State and municipalities. In the near future this vision will translate into concrete results.

“There are three key IT players within public administration: GISSC (Government IT Shared Services Centre) produces sector-independent services, such as basic data communications, workstation services and communications solutions,” Benson says.

“A municipal ICT services centre is also being established with SITRA as godfather. The third actor, the public administration IT services centre, would produce services for the entire public administration. The producers would be controlled by both the State and municipalities,” Benson says.

The Citizen’s Account will be introduced as a general solution intended for bidirectional dealings.

The State IT reform has five key themes. Officials’ workstation and communications solutions will become concrete in the near future. The ICT services package is key to the profitability of State administration. Another key issue is common administration systems and databases, with a third theme involving the increase in and harmonisation of electronic services for citizens and businesses. The fourth theme relates to the enterprise architecture of State IT administration, and the fifth to information security and preparedness.

Benson takes particular pride in the recently completed enterprise architecture method, which will be the tool for steering operations and information systems at all levels of State administration as well as in municipalities. Enterprise architecture describes how an organisation’s services, processes, organisational units, individuals and ICT solutions function as a whole.

The guiding principle is the reduction of overlap and failed projects within State IT administration.

Benson points out that all efforts should ultimately translate into visible results for the citizen or entrepreneur. This may take an indirect form, such as savings in taxes, or have a more direct impact, such as new or improved electronic services for citizens.

OPERATIONAL DEVELOPMENT THE KEY

“My task is to create the will for IT reform within State administration,” says Benson, who transferred to the State from the posi-

tion of Nokia’s Director of IT Operations Development.

“Working for the State is efficient; officials have high morals and an admirable capacity for seizing tasks. Officials don’t come second to private sector employees in terms of diligence,” he goes on to say.

According to Benson, tendering processes are hindering development within public administration. In fact, it is now possible to resort to a negotiation procedure in IT projects, which improves the flexibility of the procurement process.

“The greatest benefits of ICT investments come from operational development,” Benson says.

System improvements and technological changes account for ten per cent of the savings achieved, operational changes for ninety per cent.

“There are organisations within State administration that have handled IT extremely well. However, solutions penetrating the entire State administration, such as a private network connecting all State administration offices together, are as yet a thing of the future. ●

ACT ON DATA ADMINISTRATION

Assignment in 2009. Submitted to Parliament in 2010. Entry into force in 2011.

STATE IT DEVELOPMENT PROGRAMMES

eServices

Forming part of the programme for promoting eServices and eDemocracy (SAdE), the development of the e-services platform and the Citizen’s Account are spearhead projects in the State administration IT strategy. The projects aim at improving customer-centricity, cost-efficiency and productivity and at supporting the creation of new, high-quality services.

Interoperability

The objective of the interoperability development programme is to create an enterprise architecture for steering operations and information systems at all levels of State administration. A further aim is to design and implement an operating model for the maintenance of the architecture and for the utilisation of the architecture descriptions in the steering of development projects and the design and implementation of systems.

Common information systems

Common information systems are shared and sector-independent information systems or services intended for the entire State administration in areas where agencies use the same systems or systems acquired for similar needs.

Harmonised basic information technology

The objective of shared State IT services is to increase flexibility in administration structures through the harmonisation of data processing technology and its administration. Shared IT solutions enable flexible organisational changes and ensure sufficiently extensive and profound expertise in technology.

Information security

The Ministry of Finance is responsible for the steering and development of State information security. The Ministry of Finance has appointed the Government Information Security Management Board (VAHTI) as the body responsible for cooperation, steering and development in the field of government information security.

Solutions for security authorities' WIRELESS DATA TRANSFER

Wireless data transfer is increasing rapidly among security authorities. In addition to voice communications, VIRVE covers the technical and service solutions for narrowband data transfer (SMS/SDS). Solutions for secure broadband and even wideband connections are now being investigated.

The topic spurred animated discussion, when **Janne Laitala**, CEO of Ericsson Finland, and Senior Consultants **Mikael Lindberg** from Pöyry Telecom Oy, and **Matti Peltola** from Mapelcon Oy sat down for a roundtable at the head office of State Security Networks in Espoo. They all agreed that the authorities need more wireless data transfer capacity. In its present form VIRVE will not necessarily suffice in future.

ALTERNATIVE SOLUTIONS

The introduction of TEDS broadband on the TETRA network was seen as one alternative solution. The exploitation of 3G and wideband 4G technology – either in current commercial networks, closed authority networks or both – also came up.

“We would first chart the needs of wireless data transfer users, the criticalness of the services as well as the current, actual needs and any foreseeable needs. Another alternative would be to offer 3G or 4G services to authorities in addition to VIRVE, with State Security Networks acting as a sort of coordinator,” envisions Lindberg.

Peltola stresses that the fundamental question in wireless data transfer for security authorities is the technical reliability of the data transfer network and its ability to relay traffic in case of emergency. He feels that a TEDS network would be the quickest and most cost-efficient way to enhance the data transfer capacity of security authorities. New base stations would not be required; instead, the existing TETRA network would undergo soft-

ware updates. This solution would suffice for about five years, after which the authorities would need a dedicated wideband network.

Laitala is a proponent of commercial mobile networks, which are immediately available, and proposes that they be tested. He is in favour of mainstream technology based on 3G and LTE (Long Term Evolution), which would keep unit prices as low as possible. “The terminals already support GSM and 3G networks,” Laitala says.

He says that pilot projects in the field of LTE technology should be commenced as soon as possible.

“Services and applications are easier to develop on an LTE platform than on a radio network; what works on IP,

also works on an LTE platform. Finnish commercial networks are already introducing LTE,” Laitala says.

“Another alternative would be for the authorities to set up their own closed network utilising 3G technology, with the opportunity to use 4G. A closed network could cover certain critical points and rescue and police stations, which would also allow mobility utilising commercial networks,” Laitala says.

There are three mobile operators in Finland with near nationwide coverage and a large degree of overlapping coverage.

“Security authorities could perhaps roam the networks of all three operators using a single SIM card. The commercial operators have promised that the whole of



Janne Laitala is in favour of mainstream technology based on 3G and LTE.



The round table of specialists: Janne Laitala of Ericsson Finland, Mikael Lindberg of Pöyry Telecom, Matti Peltola of Mapelcon and at the right Yrjö Pylvänäinen of State Security Networks Ltd.

Finland will be covered by a 3G network by the end of 2012,” Laitala says.

SECURITY

Peltola brings the discussion back to whether commercial networks are sufficiently reliable and secure for the purposes of authorities. “The securing of commercial networks to the level required by security authorities would be far too costly,” he believes.

On the other hand, the participants also noted that it may be impossible to find available frequencies that could be dedicated to the 3G or 4G networks of authorities, whereas Finland and other non-NATO countries in Europe have reserved a sufficient range of frequencies also to cover the needs of TEDS.

Lindberg wonders whether mobile networks fully dedicated to authorities could still be set up in connection with commercial networks or under commercial frequency licences.

RESTRICTIONS

According to Laitala the greatest restriction for obtaining high-speed data connections for authorities is differences of opinion regarding needs and timetable.

“In financial terms, data transfer could be financed from current budgets. The biggest challenge is to get the user groups, comprising representatives of several different authorities, to decide what their needs are. After that, implementation would be fast,” Laitala says.

According to Peltola the main restriction is the State budget and the frequencies available, if the authorities wish to build their own broadband. The increasing demand for critical data transfer cannot be solved through the use of commercial networks.

“The users’ needs must be the starting point at all times; services should be provided on the basis of whether they are critical or not. On the other hand, there cannot be too big a difference between the data transfer capacities of TETRA and commercial networks. The 3G network is extensive and wireless modems are being sold all over Finland, with speeds up to 10 megabytes being promised. The difference is huge if compared to TEDS speeds on TETRA,” Lindberg says.

COORDINATOR

Whatever the solution, the data transfer services of security authorities will need a coordinator.

“Centralised services are better from the users’ point of view. State Security Networks could be the right actor to take care of customer management and communication, etc. It could package the services of commercial networks on its own network and provide information on which services are possible in each network. Security issues are paramount, as well as competence in tendering,” Lindberg says.

Laitala agrees that the authorities should acquire the services in a coordinated manner to save on costs.

“On the other hand, considering the requirement for interoperability between different authorities and the different types of critical information that the different authorities have, it would be better if all this would be handled by a single entity. That would ensure that everything about the services is working as it should.”



The users’ needs must be the starting point at all times.

” It is not sensible to have various actors downloading the same data several times over.

POLICE CALL FOR MORE SPEED

“Data transfer is an enormous challenge. I am amazed at how well VIRVE works for data transfer,” says Chief Inspector **Antti Jeronen** from the Ministry of the Interior.

The Police are testing the use of TEDS on the test network of State Security Networks Ltd, which would enable faster data transfer in the VIRVE network than is possible today. Jeronen feels that commercial alternatives are also needed.

“We need to have various data transfer alternatives, so that non-critical data can be transferred without burdening VIRVE,” Jeronen says.

“One of the commercial alternatives is the @450 network, which has a geographical coverage that is clearly better than those of 3G and 4G networks. Since data transfer networks are vulnerable, the authorities will nevertheless need secure data transfer capability, such as TEDS,” Jeronen points out.

Prioritisation is essential: different types of data could be transferred on different networks. VIRVE will continue to be used by the Police primarily for voice communications.

“The data connections used by the Police will remain encrypted. Personal details will not be transferred over commercial networks,” Jeronen says.

The Police currently use several data applications, and the aim is to merge them.

Jeronen wonders whether direct channel functions could be used in emergency situations, and a local area network set up for transferring data between authorities.

“It is not sensible to have various actors downloading the same data several times over. The rescue department could retrieve a map image using VIRVE or another network and then send it to police patrols using a temporary local area network,” says Jeronen, pointing out that despite the extensive coverage of the onboard VIRVE radios, handheld VIRVE radios do not work everywhere.

“Instead of focusing on network coverage, should we further investigate the use of direct channel functions for extraordinary situations? Vehicles could be fitted

with repeaters with a range of a few kilometres; this would allow information to be relayed without base stations. The technology already exists, but this is an aspect of VIRVE usage that is yet to be implemented,” Jeronen says. “Data transfer is the most challenging aspect of such situations.”

He suspects that we will soon reach a situation in which telecommunications connections will be shut down even in

areas where people still live. TEDS would promote equal access to help, regardless of municipal boundaries. Access to help cannot depend on whether a commercial network is operational in the area or not.

“State Security Networks will continue to play an important role. The authorities need dedicated operator support that is reliable and secure and not under foreign ownership. ●



“We need to have various data transfer alternatives, so that non-critical data can be transferred without burdening VIRVE,” Antti Jeronen says.



From the users' point of view VIRVE must be operational at all times, and field operations cannot be jeopardised.

TEXT TIINA JÄPPINEN PHOTO ANTERO AALTONEN

Looking into VIRVE call groups

The reform of the Emergency Response Centres will also introduce changes in VIRVE operating models. The expansion of the ERC areas will necessitate the reshaping of call groups and the assessment of their use. The changes will affect both operating models and the technology employed.

ONE OF THE OBJECTIVES of the ERC reform is to enable the Emergency Response Centres to better support each other at times of congestion by handling part of each others' emergency calls and assignments. This will require increased harmonisation of operating models throughout the country.

At the beginning of the year the Ministry of the Interior appointed a working group to investigate how the communications between ERCs and the authorities could be developed along with VIRVE call group practices. VIRVE administrators also sit in on the group. The working group is chaired by Chief Inspector **Matti Sivula** from the Police Technical Centre.

“The adaptation of VIRVE to the ERC reform will necessitate the planning of uniform operating models. That will be followed by the drafting of guidelines and their technical implementation as well as training and rehearsing,” says Service Manager **Harri Virtanen** from State Security Networks. He is part of the Emer-

gency Response Centres working group.

The ERC reform will not affect the basic field of operations of authorities, nor will it require hardware replacements. Once the new operating models are adopted, the majority of hardware will need to be reconfigured with new parameters, however.

That will be a good time to chart the needs for reform in organisational communications. It might also be profitable to implement version updates for equipment at the same time.

SAFE CHANGES

The transfer over to the new operating model will take place “on the fly”.

“From the users' point of view VIRVE must be operational at all times, and field operations cannot be jeopardised. In order to ensure safety in implementation, we will use carefully selected IT solutions and operating principles, guidelines based on these, as well as related training,” Virtanen says.

Not everything will be replaced completely; a sufficient degree of tried and true operating models will be preserved.

The transition phase will be easier thanks to State Security Networks having been the administrator user for ERCs from 2008 and involved in joint development projects.

“We have implemented solutions that support the upcoming changes, such as redundant VIRVE connections,” Virtanen says.

“Nevertheless, the changes will be of such a scale that their controlled implementation will require comprehensive preparation from all VIRVE users and those supporting its use,” Virtanen stresses.

The first change will take place as early as next year in the ERC area of Northern Finland and Lapland. The reform will affect the ERC area of Eastern and South East Finland in 2012, with the Tampere region to follow in 2013, Central Finland in 2014, and South West Finland and Helsinki region in 2015. ●

USE OF VIRVE DIVERSIFIED

When emergency care, outpatient clinics, emergency social services or veterinary care need VIRVE support, the regional administrators come to the rescue.

The regional VIRVE administrators are responsible for planning call groups, updates and the configuration of terminal parameters in accordance with Ministry of Social Affairs and Health guidelines. They also provide training and support in connection with major events and when new applications are connected to the VIRVE network.

Previously the VIRVE administrators for social affairs and health operated within State Security Networks Ltd. At the turn of the year 2010 four special responsibility districts took charge of the operations in accordance with the upcoming Health Care Act, and set up manager positions for the tasks.

The operating areas of the regional administrators for social affairs and health are the so-called special responsibility areas of university hospitals (ERVA), generally comprising several hospital districts.

VIRVE super user **Sirpa Pinomäki** is one of the regional VIRVE administrators for social affairs and health. The hospital districts of Southwest Finland and Satakunta form the operating area of the first employee of the emergency care centre established at the Turku University Hospital.

"In addition to day-to-day VIRVE issues, I'm being kept busy by the organisation of VIRVE communications for the entire social affairs and health sector in the region. The sector is also constantly



“There is no manual for the work of a regional administrator, so peer support has been extremely important.”

introducing new health care applications using VIRVE connections for data transfer,” Pinomäki says.

“Emergency care falls entirely under the VIRVE administrator service for social affairs and health. The new, larger ERC areas will cause major changes in VIRVE operations.

VIRVE ISSUES FOR EMERGENCY CARE CENTRES

In future the regional VIRVE administration will be handled at the emergency care centres of university hospital districts, which are being established in preparation for the new Health Care Act within the next few years.

“The emergency care centres will be in charge of organising emergency care services in their area, and VIRVE is always linked to such operations. The emergency care centres will assess the emergency care capabilities of their area and draft service-level definitions,” Pinomäki says.

She feels that the organisation of VIRVE administration within the hospital district will serve to keep everyone better informed of new projects relating to VIRVE.

“You need large ears and the ability to react proactively,” Pinomäki says with a laugh and goes on to say: “Not all users know how to approach the regional administrator on VIRVE issues.”

By law, each municipality must belong to a hospital district. The VIRVE adminis-

trators of the hospital districts also serve the outpatient clinics of municipal health centres and emergency social services, as well as handle the VIRVE issues of environmental health care and veterinary services.

SUPPORT FOR MAJOR EVENTS

The persons in charge of regional VIRVE administration also provide support during various major events. VIRVE preparations begin six weeks before the event.

“In Southeast Finland VIRVE cooperation partners include emergency care, the police, rescue services and often the Maritime Rescue Centre and the Border Guard. It is also more and more common for a private security company to be involved,” Pinomäki recounts.

During disaster exercises Pinomäki's tasks include monitoring communications traffic. “During the storm exercise called Mauri my aim was to record the medical call group, so that users can receive better feedback on communications.”

LEARNING THROUGH PRACTICE

“There is no manual for the work of a regional administrator, so peer support has been extremely important. Each day is different,” says **Kai Savonniemi** from Tampere University Hospital, who is the most recent regional VIRVE administrator in the social affairs and health sector. In addition to the Tampere region, the

VIRVE manager is in charge of VIRVE issues of four other hospital districts.

“I had, of course, been using VIRVE before within emergency care in various organisations,” Savonniemi says, but he admits that there are a lot of new things to learn as an administrator, as well as entirely new matters, such as the VIRVE issues of the Regional State Administrative Agencies, veterinary services and social services.

The regional administrators meet regularly to divide tasks. They also serve on the steering group of the Ministry of Social Affairs and Health.

TAUGHT BY SCOUT CAMP

Savonniemi received his baptism of fire last summer at Kilke, the international scout camp that attracted 10,000 scouts and an equal number of visitors. Around 50 VIRVE devices were in use at the camp, with a number of them being used by medical services.

“There are a lot of preparations you need to make before beginning actual VIRVE operations. The basics need to be in order. The camp's organisation was enormous, with an inpatient ward, two ambulances and medical staff from ear specialists and anaesthesiologists to surgeons,” Savonniemi recounts.

VIRVE was used to secure the connections of emergency units and the camp organisation to the rescue services and the ERC. ●



PHOTO FINLANDS SCOUTER/OLLI SALO



PHOTOS ANTERO ALLTONEN

RESCUE SERVICES' DATA TRANSFER NEEDS

Rescue services' wireless data transfer needs within the next 5–10 years are investigated in a project set to run through 2010.

WITH THE EMERGENCY Services College in charge of the project, the other parties include State Security Networks Ltd and the Rescue Departments of the City of Helsinki and Länsi-Uusimaa. The project's corporate partners are EADS and Logica. State Security Networks Ltd provides the data transfer equipment used by rescue services in their operations within the project.

"There is a revolution taking place in all administrative branches of safety authorities as regards the development and adoption of information systems. Our project will be carried out in close cooperation with cross-administrative projects. Our aim is to highlight the needs arising from the rescue services' starting points and their future impacts on wireless data transfer," says Senior Researcher **Kari Junttila** from the Emergency Services College, who heads the project.

The first charting related to data transfer was conducted in 2002.

"The field of rescue service operations has changed dramatically in ten years, as has technology. On the other hand, we have gained a great deal of experience in the use of the authority network. Yet the actual rescue operations have not changed that much; fire departments still use the same principles and operative models to solve problems in the field," Junttila says.

Rescue services have developed and introduced various operative information systems. Junttila thinks that it is now time to gather information on the potential uses of wireless data transfer.

"The objective of the project is to establish the actual data transfer needs from the perspective of rescue authorities and the services needed in operations, while examining the technical capabilities of the VIRVE network now and going forward. We are also interested in the other data transfer methods available, what their use would require of rescue services, and what their usability is like," Junttila summarises.

The project is set against a backdrop of several projects of security authorities, whose impact on rescue services' data transfer solutions needs to be outlined.

"These will all add to the data transfer opportunities of rescue services in terms of what is possible in operative situations," says Junttila confidently.

The field of rescue services currently has 22 independent rescue departments that have no consensus on the methods of wireless data transfer.

The differences in data transfer needs depend on the size of the rescue department, the geographical dimensions of its operating area, and the number of assignments. Junttila points out that group calls continue to be the most important channel for communication. On the other hand, the interoperability of the information systems of different rescue departments would be sensible from the perspective of achieving a common operational picture.

"Information technology needs to support operations, providing efficiency, simplicity or improvement. It must never steal attention from the actual rescue work," he emphasises. ●



PHOTO LEHTIKUVA

Centralised handling of rail traffic disturbances

THE RAIL TRAFFIC CENTRE of the Finnish Transport Agency (FTA) controls and monitors railway traffic in Finland's railway network, where disturbances are a daily affair. The majority of them are solved jointly by the Rail Traffic Centre, regional traffic control and VR transport management. Major disturbances also require the participation of other partners and decision-makers.

Causes of disturbance include accidents, collisions involving rolling stock, derailments and tip-overs as well as rail damages and safety and electrical faults. Disturbance may also result from several trains being delayed, for example due to cold weather.

In southern Finland and on the main tracks traffic control has been nearly fully automated and is managed using com-

puters and automation. "If normal control measures fail, we have the ability to control traffic in different areas at other locations," says control room manager, Traffic Manager **Ari Lehtimäki** from the Rail Traffic Centre of the FTA.

According to Lehtimäki the use of regular GSM phones has made it difficult to obtain information from the field, as GSM phones can only be called by one person at a time. The improved availability of the operational picture is precisely the reason why use of VIRVE is being expanded on the railways.

Lehtimäki also considers it important that the control room can use VIRVE to contact rescue department staff, for example in case of accidents at railway level crossings, and receive up-to-date information on clearing work.

Radio frequencies for authorities in demand

THE DATA TRANSFER NEEDS of authorities are constantly increasing in Europe, but the current radio frequencies will not suffice for their radio networks.

"There will be a need for downloading information from databases, relaying images from the scene and developing new applications requiring high-speed data transfer," says **Tapio Penkkala**, Deputy Head of the Frequency Unit of the Finnish Communications Regulatory Authority.

Even though a wideband solution would increase the data transfer speed of VIRVE, it would not be enough. Broadband is required for transferring large amounts of data.

"All frequencies are already under extremely heavy use, and no one wants to give up their own frequency. From the technical perspective the ideal situation would be one where the radio frequencies for authorities' broadband networks were close to the current frequencies used in authorities' networks, that is, in the range of 400 megahertz," Penkkala says.

This would allow the utilisation of current base stations. On the other hand, the same frequencies are used by other countries, resulting in the possibility of roaming. Using the same technology would also mean bigger markets and more competition.

"The needs of the authorities have now been established, but a final solution is yet to be found. The work is still in progress in the FM-38 project team that I am heading," Penkkala says.

Penkkala wonders whether frequencies could be shared, provided that certain technical conditions are met:

"Could it be possible to make geographical or temporal solutions that would enable the co-existence of authorities' needs and other uses?"

He also mentions cognitive radio, which automatically scans the radio waves for activity and selects a vacant frequency. It has also been suggested that in a crisis situation the authorities could take control of commercial frequencies.



TEXT RIITTAMAIJA STÄHLE PHOTOS LEHTIKUVA, SEPPO HAAVISTO

The Finnish Meteorological Institute

A LOOP IN THE AUTHORITY NETWORK

The Finnish summer of 2010 was one to remember: heat records were broken and the country was shaken by storms. Storms Asta and Veera cut down trees like grass and thunderstorms caused exceptional fluctuation in sea levels.

Disaster was brewing, but major accidents were avoided. The Finnish Meteorological Institute (FMI) was one of the links in the chain of smooth cooperation between the authorities.

“The task of the FMI is to forecast weather, involving in particular the earliest possible detection of storms. We also relay information on unlikely alternatives. We try to study weather conditions for anything that may affect safety or the operation of rescue authorities, so that they can proportion their personnel resources correctly,” says meteorologist **Tapio Tourula** from the Finnish Meteorological Institute.

Where necessary, the FMI also issues weather warnings to the general public. In August last year dangerous thunderstorms led the FMI to issue several public notifications within the space of one weekend. Such notifications are generally rare; they are transmitted when the situation is assessed as posing a threat to human life. Emergency announcements, on the other hand, are transmitted when there is an imminent threat to human life.

FORECASTS AND WARNINGS

Finland is known as a model country in cooperation among authorities, and the cooperation has been extremely smooth for the FMI as well.

“For example, last summer we were able to be prepared and warn the authorities of upcoming storms,” Tourula says. In recent years the FMI has invested particularly in the forecasting of dangerous weather phenomena, and with successful results.

Tourula says that constant on-call activities are a requirement for operations that are efficient and able to respond to various threats. Reporting to authorities takes place through the updating of emergency notifications. For example, last summer the notifications were updated up to 5–10 times in connection with a single storm.

Emergency situations might also require expertise in forecasting advection, dispersion and drift patterns as well as the decisions made by the on-call meteorologist.

“The ability of the FMI to anticipate weather conditions and other variable conditions allows the authorities to improve their efficiency. It is essential that information flows between the different parties. The dedication and attitude of the various authorities are excellent. The cooperation is seamless and the division of tasks is clear. Safety-related weather services are an important loop in the network of authorities. In common exercises the scenario often involves weather phenomena and related disasters.

“Weather is a significant cause of actions by authorities.”

The FMI also uses VIRVE as a reliable communications channel. In addition to Helsinki, VIRVE is used at FMI offices in Tampere, Kuopio and Rovaniemi.

“Communications equipment needs to be absolutely reliable. Regular networks may become congested in emergencies and stormy weather may break down connections. When push comes to shove, the importance of communications equipment is especially great,” Tourula points out. ●

Service Providers at VIRVE day 2011



Ajeco Oy
Arinatie 10
FI-00370 HELSINKI, FINLAND
+358 9 477 0470
sales@ajeco.fi
www.ajeco.fi

The Ajeco DSiP-software is a secure multichannel communication and traffic engineering solution utilizing TETRA and virtually any kind of data connections in parallel, strongly encrypted, secured and priority controlled. The combined data channels appear like a single ultra-reliable communications channel between network peers.



Bandercom Oy Ltd
Hakakatu 2
FI-15520 LAHTI, FINLAND
+358 3 733 0700
info@bander.com
www.bandercom.fi

Bandercom specializes in Radio Network Dimensioning & Site Planning, such as specific coverage issues; In-Building, tunnel and harsh environment. We deliver the whole package to the Client's requirements. From consulting, planning, implementation and services launching to full Roll-Out of specific network elements.



Cassidian Finland Oy
Hiomotie 32
FI-00381 HELSINKI, FINLAND
+358 10 408 0000
finland@cassidian.com
www.cassidian.com

Cassidian, an EADS Company, is a worldwide leader in full-circle security solutions. Full-circle security comes true when professionals use our solutions to the benefit of people. Network operator services ensure high availability and operational efficiency. 112/911 call taking, command & control centre solutions, and emergency notification systems complete the full-circle security.



Codea Oy
Katajatie 3
FI-06400 PORVOO, FINLAND
+358 44 209 8060
codea@codea.fi
www.codea.fi

Codea Oy is specialised providing TETRA software solutions and products. We are delivering GIS applications and software solutions for public safety sector to support field force management.



Creanord Oy
Pasilanraito 9b
FI-00240 HELSINKI, FINLAND
+358 10 309 3400
info@creanord.com
www.creanord.com

Creanord enables lightning fast Mobile Backhaul with Ethernet Performance Monitoring and Reporting for leading Carriers and Service Providers worldwide. Creanord's Managed Ethernet Access solution comprises innovative Ethernet Access hardware and carrier-grade EchoVault™ Service and Service Level Agreement (SLA) delivery software.



Elektro-Arola Oy
Leppäkuja 2
FI-14200 TURENKI, FINLAND
+358 3 630 830
ea@elektro-arola.fi
www.elektro-arola.fi

Alerting and communication solutions for public safety users. Specialized in TETRA, conventional VHF/UHF, DMR, VOIP, GSM/GPRS/3G and GPS technologies. Applications for status, navigation, AVL, alerting, command & control, reporting, gateways and dispatcher use.



Fitelnet Oy
Joukontie 42 A
FI-01400 VANTAA, FINLAND
+358 9 239 3400
myynti@fitelnet.fi
www.fitelnet.fi

Fitelnet provides products and services for TETRA users and networks.

- TETRA mobile base station solutions
- EMP/HPM -protection solutions
- Indoor coverage planning
- Power supply back-up solutions



FREQUENTIS AG
Innovationsstraße 1
A-1100 VIENNA, AUSTRIA
+43 1 811 500
marketing@frequentis.com
www.frequentis.com

Frequentis develops and markets communication and information solutions for safety-critical applications. It offers its Control Center Solutions, products and services world-wide to customers in Public Safety (normally connected to TETRA-networks as e.g. VIRVE), civil and military air traffic management, GSM-R solutions for Public Transport and Tracing and Tracking solutions for the maritime markets.



Oy INSALKO Ab
Niityläntie 5
FI-00620 HELSINKI, FINLAND
+358 9 685 0920
insalko@insalko.fi
www.insalko.fi

Insalko supplies SEPURA TETRA terminals, datamodems, remote control systems and modem cards with audio. DAMM and 3T TETRA systems. MICROBUS vehicle PC systems, cameras and LINX tablet Pc.

Service Providers at VIRVE day 2011

TOUGHBOOK

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info@menturagroup.com
www.menturagroup.com

Mentura Group provides software applications for professional mobile radio user organisations and operators. Our solutions include subscriber management and usage data management systems, network reporting and network monitoring, AVL systems, data messaging, field reporting and situation awareness systems.



Orbis Oy
Taivaltie 5
FI-01610 VANTAA, FINLAND
+358 20 478 830
info@orbis.eu
www.orbis.eu

Orbis provides intelligent quality control, testing and measuring systems as well as advanced instrument and component solutions for needs of production industry as well as communication network builders, operators and officials.



Portalify Oy
Melkonkatu 16 A
FI-00210 HELSINKI, FINLAND
+358 9 622 796 68
sales@portalify.com
www.portalify.com

Portalify is a software company that empowers mission critical mobile workers. Our solutions include AVL systems, task messaging, image messaging and alerting, field reporting and mobile database queries.



Pöyry Telecom Oy
Jaakonkatu 3
FI-01620 VANTAA, FINLAND
+358 10 332 6696
seppo.seitsonen@poyry.com
www.poyry.com

Pöyry Telecom is an international telecom consulting company, which offers services, such as feasibility studies, project planning, procurement support, radio network planning and optimisation, and development of corporate telecommunications.

STOP NOISE

Oy Stop Noise Finland Ltd
Arwidssonintie 15-17
FI-41340 LAUKAA, FINLAND
+358 14 215 900
jaana.jarvinen@stopnoise.fi
mikko.salonen@stopnoise.fi
www.stopnoise.fi

Oy Stop Noise Finland Ltd., is specialized in manufacturing reliable communication accessories for TETRA terminals. The company's expertise is improving communication with varied accessories enhanced with electronic capabilities. The main customers are the police, fire and rescue services, army, border guards and industry.



TETRAsim
Hiilikatu 3
FI-00180 HELSINKI, FINLAND
+358 50 514 9705
elina.avela@tetrasim.com
www.tetrasim.com

TETRAsim is the leading company providing simulator and online computer-based training systems for TETRA. TETRAsim classroom simulator helps the trainers to train both radio and C&C users and simulates whole functionality of TETRA. TETRAsim simulators are also perfect for disaster management and training of scenarios.



Virve Products and Services Ltd
Pyhäranta 4
FI-33230 TAMPERE, FINLAND
+358 207 400 640
huoltokeskus@virve.com
www.virve.com

VIRVE products and Services Ltd. sales and repairs TETRA-terminals, which are used in authority networks worldwide. We are the leading sales and service center of EADS radio terminals in Finland. We also sell accessories, for example carrying equipment, headsets and multi-slot chargers.