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## The Swedish warning and alarm system Mr Hans Berged & Mr Enrico Lundin

The Tjernobyl-disaster in 1986 acted as an alarm-clock for the Swedish people. Suddenly the unthinkable became a reality. When a part of the Swedish soil was contaminated by Cesium, the Swedes realized that they were not spared from disasters and big accidents. The awareness of risks in the society increased from one day to another and the disaster started a process during which both the authorities and the public were activated to improve their preparedness. Risk communication became an important matter in the society.

In general terms the overall aim of the risk communication is to increase the knowledge and awareness of risks and how to act to avoid an accident and how to act if an accident or a disaster occurs. The warning system is an important part of the Swedish risk communication.

There are three major systems for warning and information in Sweden: broadcast, outdoor warning and indoor warning by Radio Data System. The basic system is broadcast over the FM broadcasting network. We are using two different levels of priority for messages:

- **Warning message** is sent immediately in all radio and television networks
- **Information message** where there are no demands for immediate broadcast

It's strictly regulated which individuals and authorities are authorised to send these messages. One of these is the rescue commander at a rescue operation.

The general outdoor warning system is installed in about 250 municipalities. In general it is concentrated to towns and other places with more than 1000 inhabitants. The system consist o of totally 4800 sirens. When there is a threat against the Swedish population people can be alerted by means of the outdoor alarm, named **Important message**" which is composed of three tone fragments, each of a duration of 7 seconds and with two pauses, each of 14 seconds. This signal can be used both in time of peace and in wartime. The signal means

- Go indoors
- Close doors and windows and turn off ventilation
- Listen to the radio

The signal is immediately followed by a **"Warning message"** on radio and television.

People who are living within the warning zones are trained to listen to this signal four times a year at special tests. Simultaneously with the signal test a radio message is sent to explain the signification of the signal and to tell the people that it is a test.

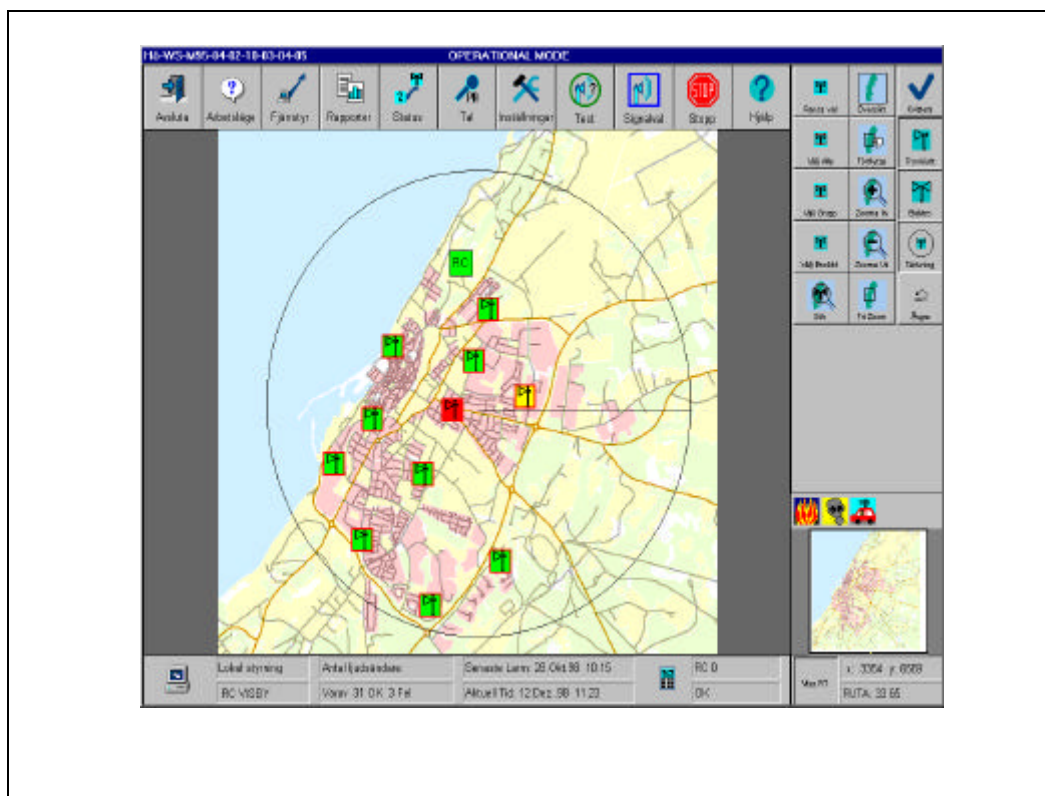
**All clear** is a continuous signal over 30 seconds that means that there is no longer any danger and people can return to normal activity.

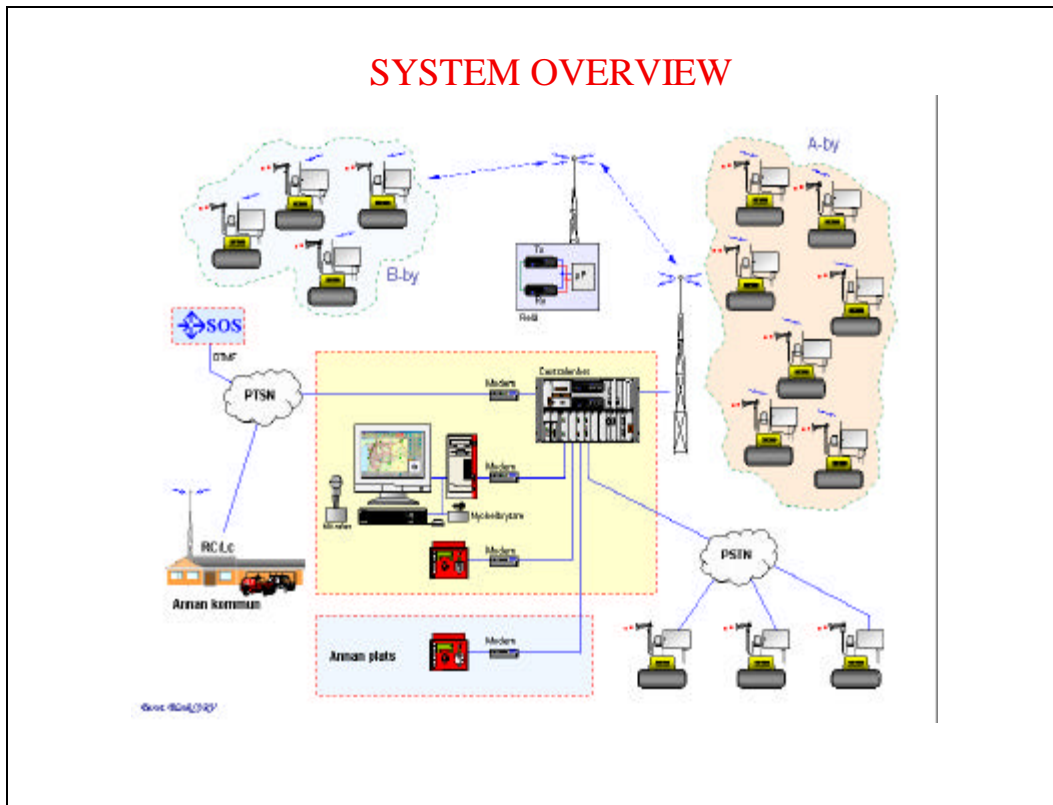


In wartime we can use two other signals:

- **Air raid alarm** which is used in case of immediate air attack, radioactive or gas attack. The signal means “ Take cover in your nearest shelter”.
- **Emergency alarm** which is a signal for general mobilisation.

Around our four nuclear power plants we have built a special indoor warning system. Within the inner planning zones each family has got a special RDS receiver . If the special RDS code has been sent the receiver is activated and emitting a high level sound alarm signal. After that the receiver is broadcasting information about the accident and what to do. This special RDS warning in combined with the ordinary outdoor warning system.





## Why a new system ?

### The old system

- is out of date
- has wire connections
- is hard to maintain



## Advantage with the new system

- Radio link
- PC with map-presentation
- Single or group selection of sirens
- Maintenance and service
- Security



(Supplementary) Warning and Alert System  
(for people hard of hearing and deaf people) :  
**WAS & AWAS**  
Seminar : Kuopio, Finland, 27 Sep - 01 Oct 2000

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Ministry of the Interior  
and Kingdom Relations  
Crisis Management and Fire Services

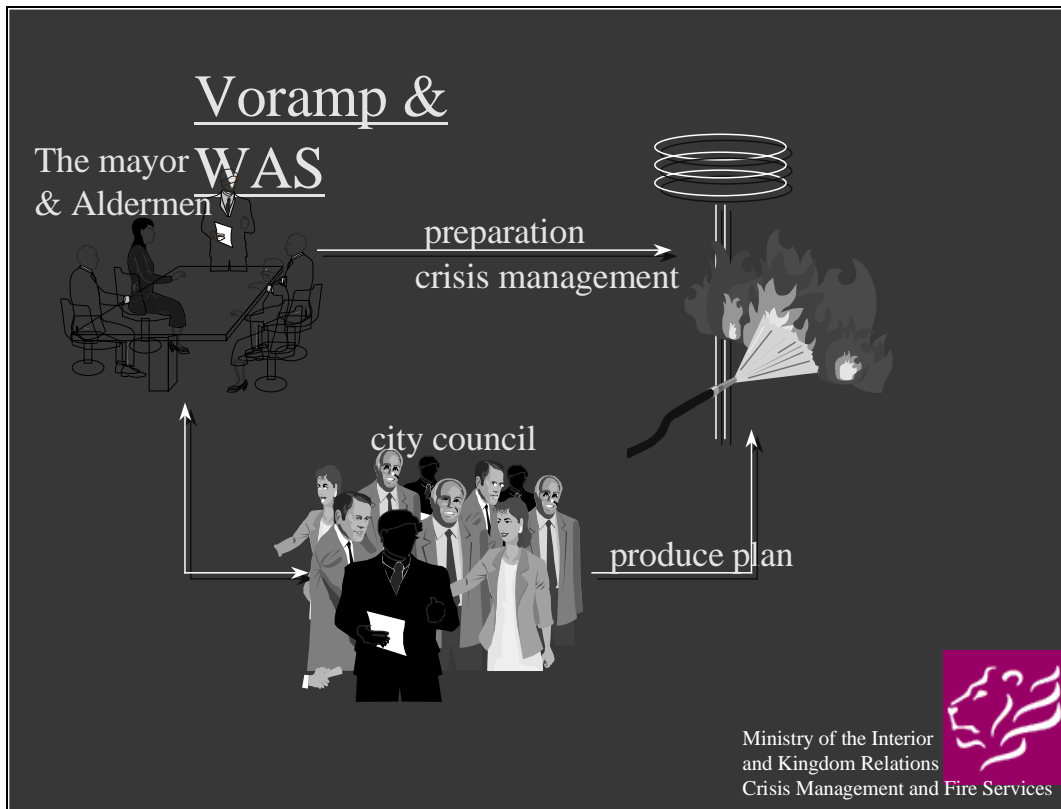


On the slide you can read our names.

I am Paul Geerlings from the Ministry of the Interior and Kingdom Relations of the Netherlands and at my right(left?) side my colleague Joop Boor.

We will give you a short presentation about the Warning & Alert system and the way we operate the system in Holland.

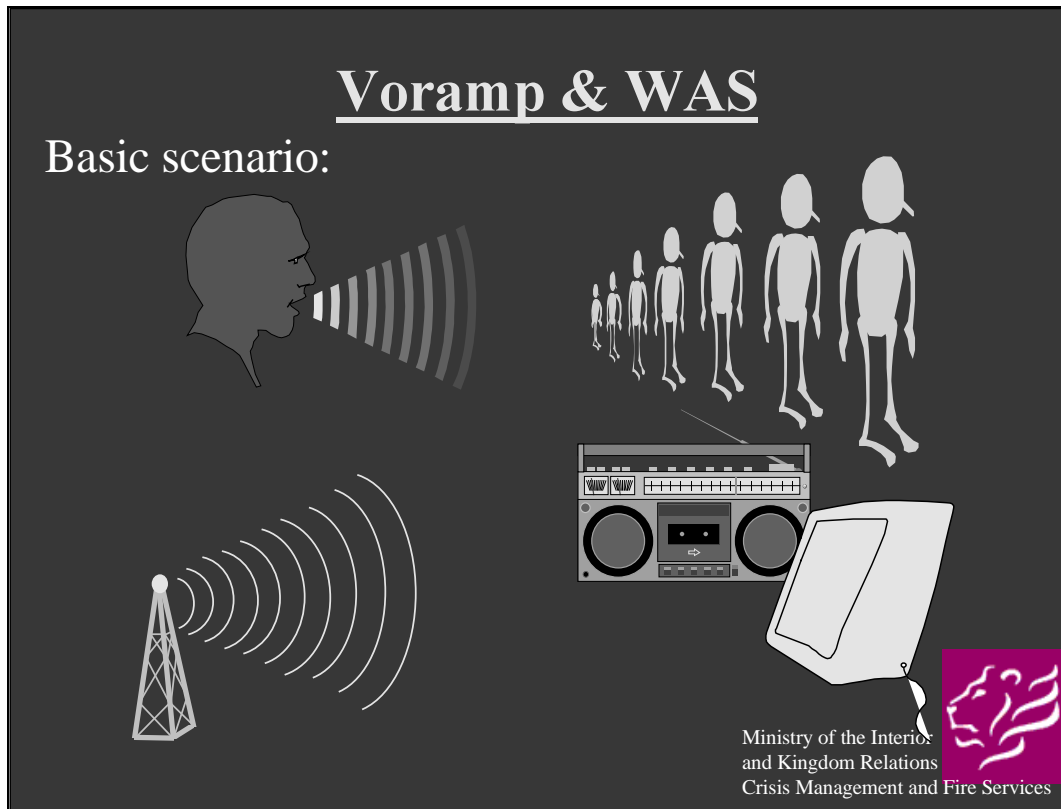
I will do the Warning & Alert System as such, my colleague will tell you whatever you want to know about the supplementary system we plan to implement probably next year.



The mayor and aldermen of a city are responsible for the preparation related to crisis or disaster management.

The city council is responsible for producing plans to manage a crisis. This is very complicated of course, while the circumstances differ from place to place and can be quite different depending on the weather for instance.

Anyway, every city or village should have plans to manage a crisis.



By the way, at the presentation of the former slide, I didn't explain to you the title of the slide: VORAMP & WAS. This is the abbreviation we use at the Ministry of Interior in Holland which means:

Voramp - Information about crisis management/disaster relieve

WAS - Warning & Alert System

The scenario related to warning and alerting the population is based on the script that we use voice, radio and television to inform the people what is going on..

The sound of the sirens means: "Go inside, close your doors and windows, switch on your TV and/or radio and wait for further information."

The use of sirens is the first step to warn the people for threatening disasters.  
The most important thing is : get the people from the streets.



## *But if you are deaf.....*

To realise a supply to make sure that deaf people and people hard of hearing will be alarmed at the same moment the sirens are activated

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BUT IF YOU ARE DEAF, you can should whatever you want, you can ask people to go inside their houses, you can tell them to switch on TV-sets or radio's, they can't hear you. They don't hear the sound of the sirens, they don't hear your voice.

Well, so we decided to invent or realise a system direct connected to the existing Warning & Alert System, so the sirens, to make sure that deaf people and people hard of hearing will be alarmed in case of threatening disaster AT THE SAME TIME as the normal hearing people.





## *But if you are deaf.....*

- normal hearing people and deaf people should be alarmed at the same time
- operation of the system must be a part of the principles and organisation of crisis management
- you have to make sure that you reach the targetgroup
- the system must be a part of and should not interfere with the daily way of life of deaf people

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## The present Warning and Alert system (WAS) :

- is reliable
- has a national coverage
- is selective

### *Operational since Jan 1998*

By means of :

- electronic sirens
- wireless activation
- regional command & control centre

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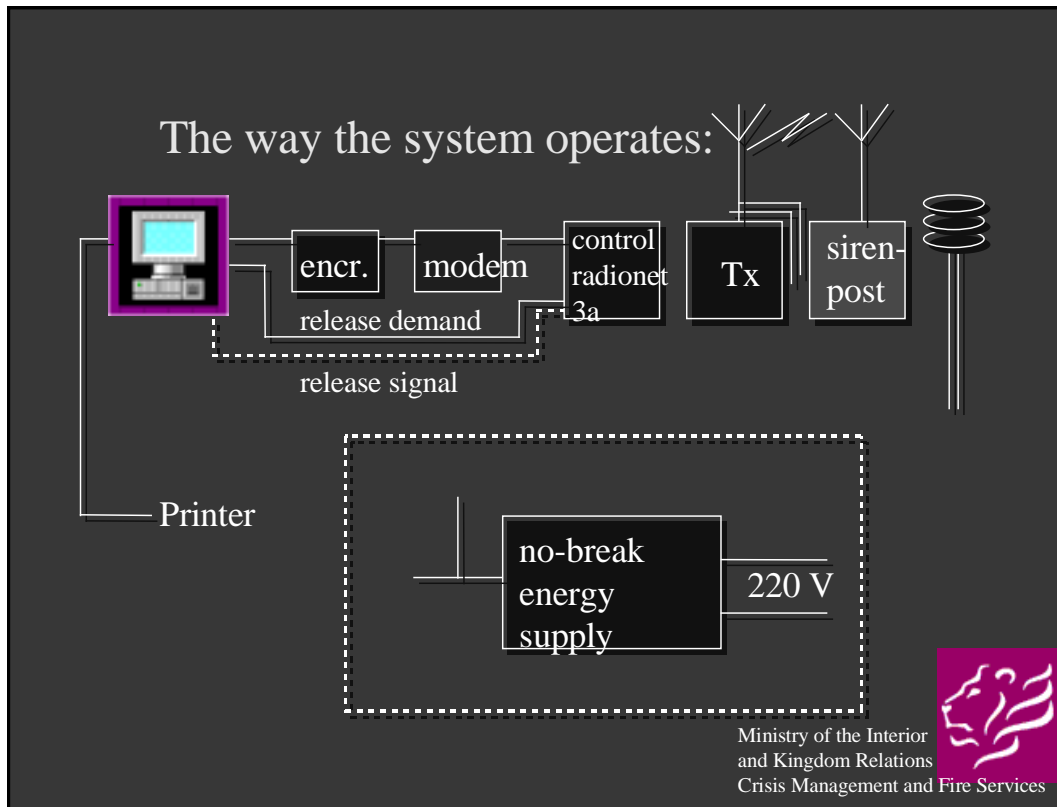


Reliable : experience

Coverage : we cover a little bit over 90% of the national territory

Selective : We are able to make a selection. One siren at the time or more  
always in the same region of course

Regional command & control : a C&C centre in accordance with the geography of the fire service organisation

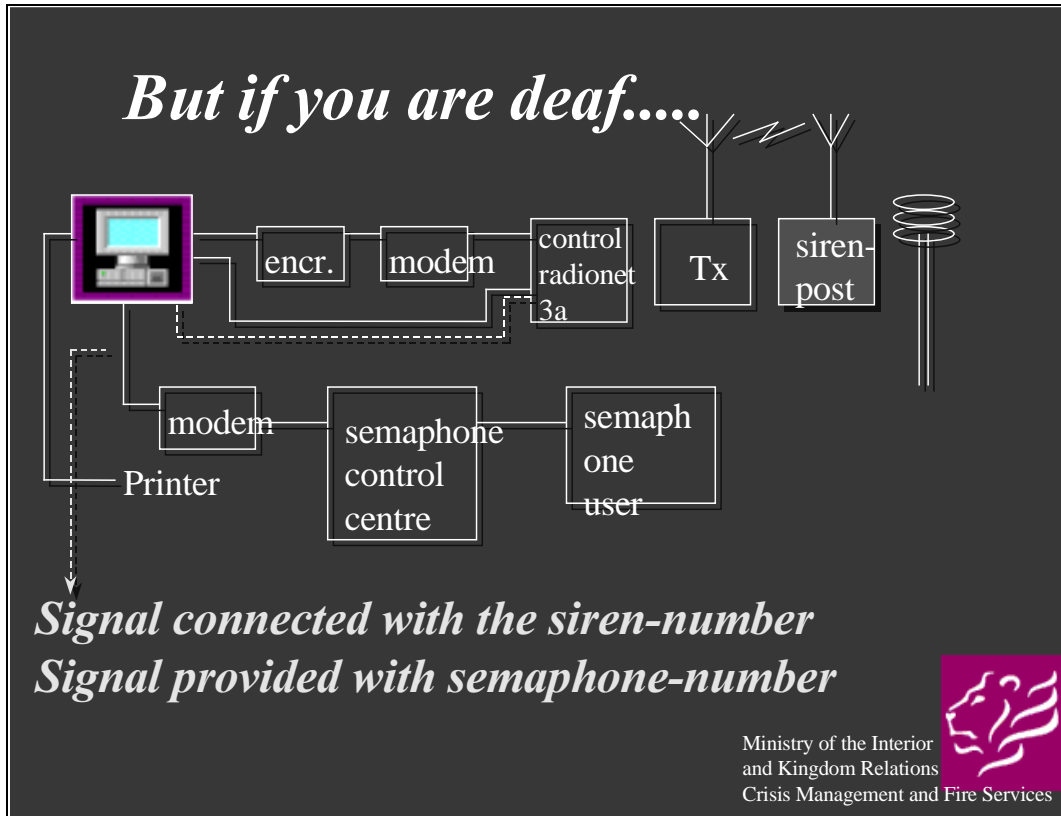


We push the button on the terminal in the regional C&C centre after we selected which and how many sirens have to sound,

The activation signal goes through an encryption module, subsequently through a modem to the control centre of the radionet we use for a crisis or disaster. Then the signal goes wireless to the chosen siren post (s) and the siren will sound.

The cycle of the alarm sound:  
from low frequency sound to high frequency sound during one minute to be repeated.

Energy supply : independent with a no-break appliance.



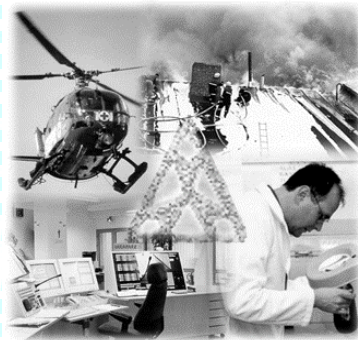


## Digital authority radio network in Finland, TETRA-standard

Mr Peteveikko Lyly, Finland

# The Finnish Authority Network VIRVE

- Preparations for VIRVE
  - 1987 first meeting
  - during the 90's there was many studies with the user organisations about VIRVE
  - 1995 the government decided to construct a new radio network VIRVE
  - I May 1996 The Ministry of Interior sent the bid to the industry





## Virve

### How was TETRA selected?

The specification of the authorities was sent to six companies

The specification included requirements like TETRA but TETRA was not required

Only TETRA was offered by Nokia and Motorola

Now TETRA has EU support



### VIRVE specification of the bid May 96

Group call  
High Security  
Fast call set up < 0.5 secs  
User hierarchy  
Organisation structure  
Guaranteed access  
Semi-duplex  
Dispatcher controlled  
fixed costs (Freq lic)

### The existing systems commercially available

Individual call  
Low security  
Slow set up >10 secs  
Even rights  
None  
Access, if recourses available  
Duplex  
User controlled  
costs according the usage





## Virve users

Who has right to use VIRVE

Security authorities like

Rescue including ambulance service

Police

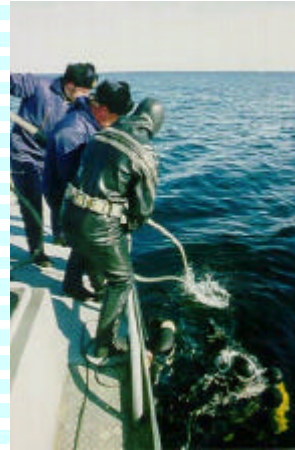
Ministry of Social and Health

Frontier Guard

Customs

Defence Forces

and many other smaller users



NOKIA

### Virve

VIRVE board

authorities

Virve network service

Virve Unit

sonera





## Virve users has responsibility

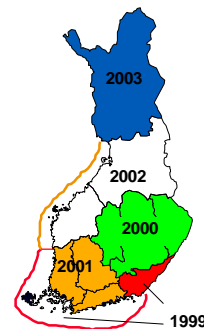
of

- finance of radio terminals
- data-application development
- improve the knowledge of the user about the right way of TETRA network usage - i.e. Training



## Virve

- Virve Network will be installed in 5 years
- 1998 100 TBS
- 1999 250 TBS
- 2000 300 TBS
- 2001 300 TBS
- 2002 250 TBS



VIRVE areas ready  
for users





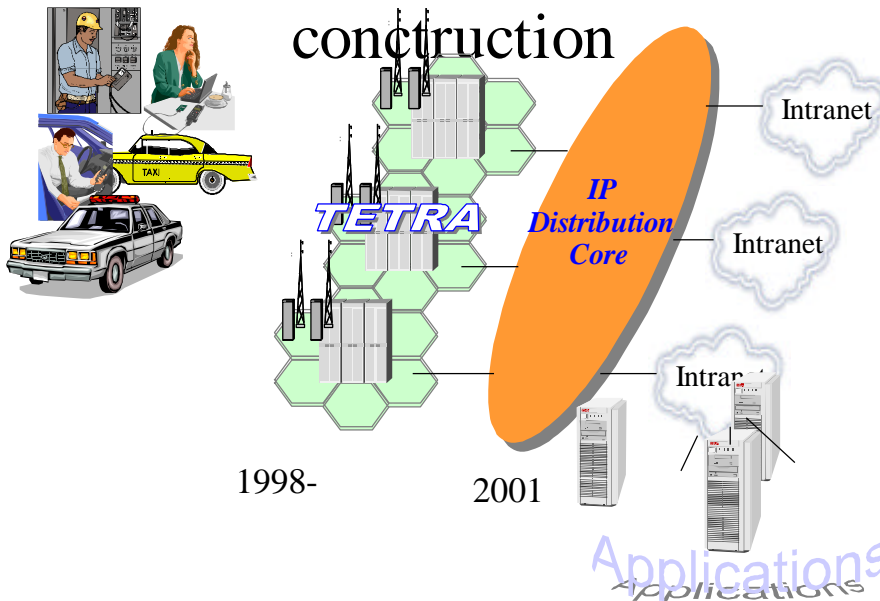


## Situation right now

- Simoco and Nokia radio terminals are accepted to official VIRVE radio terminals. Motorola ones are being approved
- DMO frequencies are shared between organisations
- Phase 1 and phase 2 are ready for usage, Phase 3 under construction
- Several plans of terminal parameters is being created
- The number of terminals will increase from 1200 to estimably 3000.



## VIRVE IP access is under construction

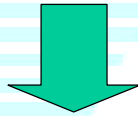




## Data offers a lot of new things

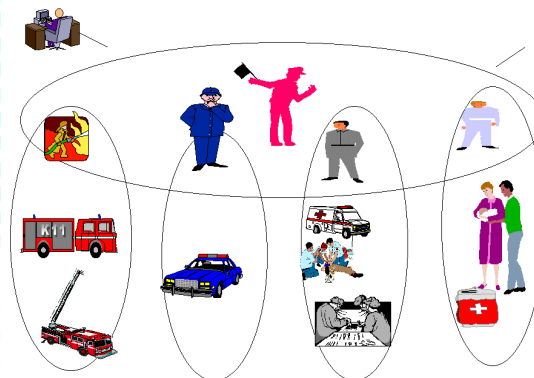
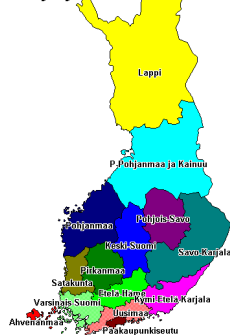


The photographs of oil  
are sent effectively to  
from the plane to the  
boat with VIRVE



## Alarm centres will change

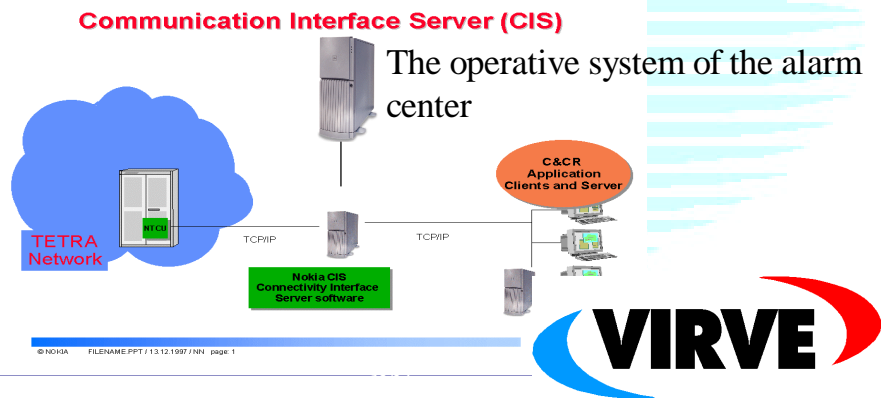
HÄLYTYSALUEET  
Työryhmän ehdotus 1998



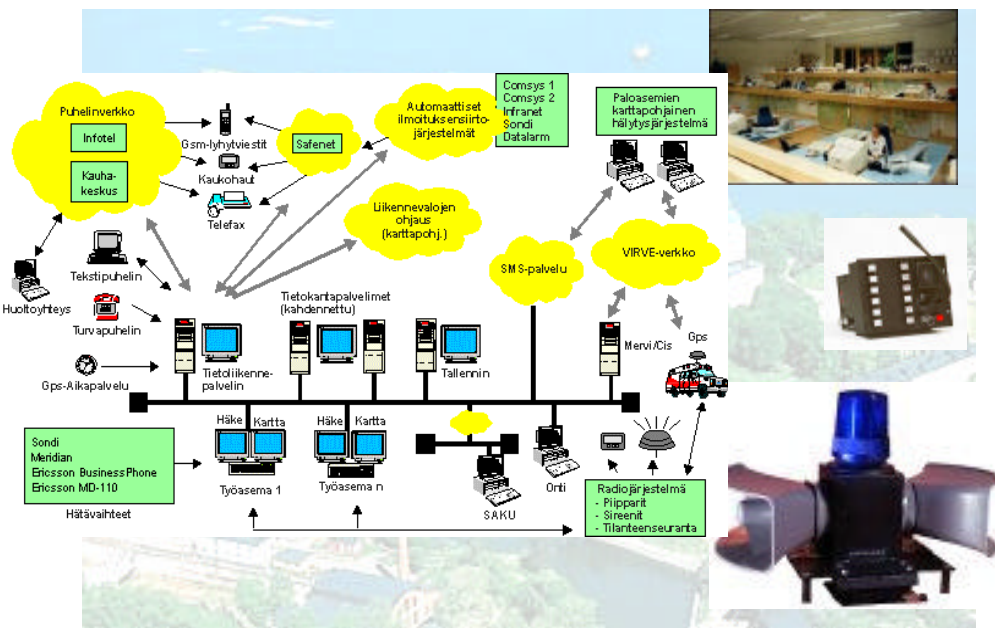


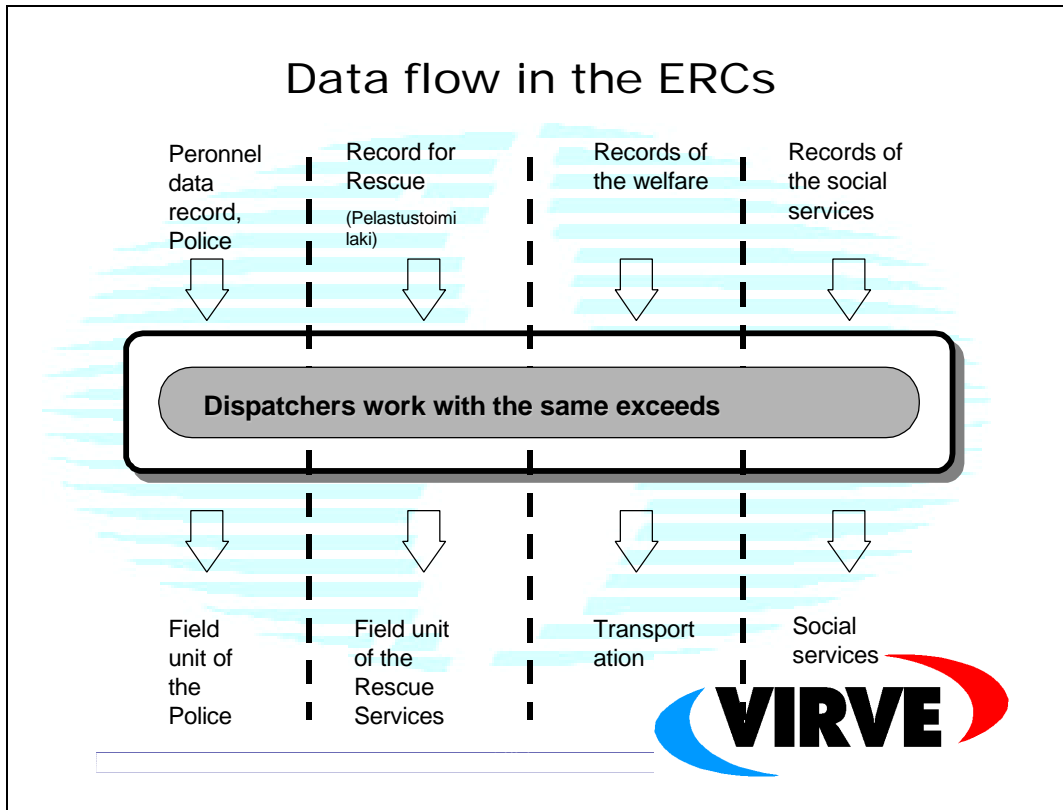
# Emergency Rescue Center project will interconnect Virve and operative data-applications

An Emergency Center project has been established. VIRVE is a ready platform to which security authorities will connect themselves.




## SDS in VIRVE








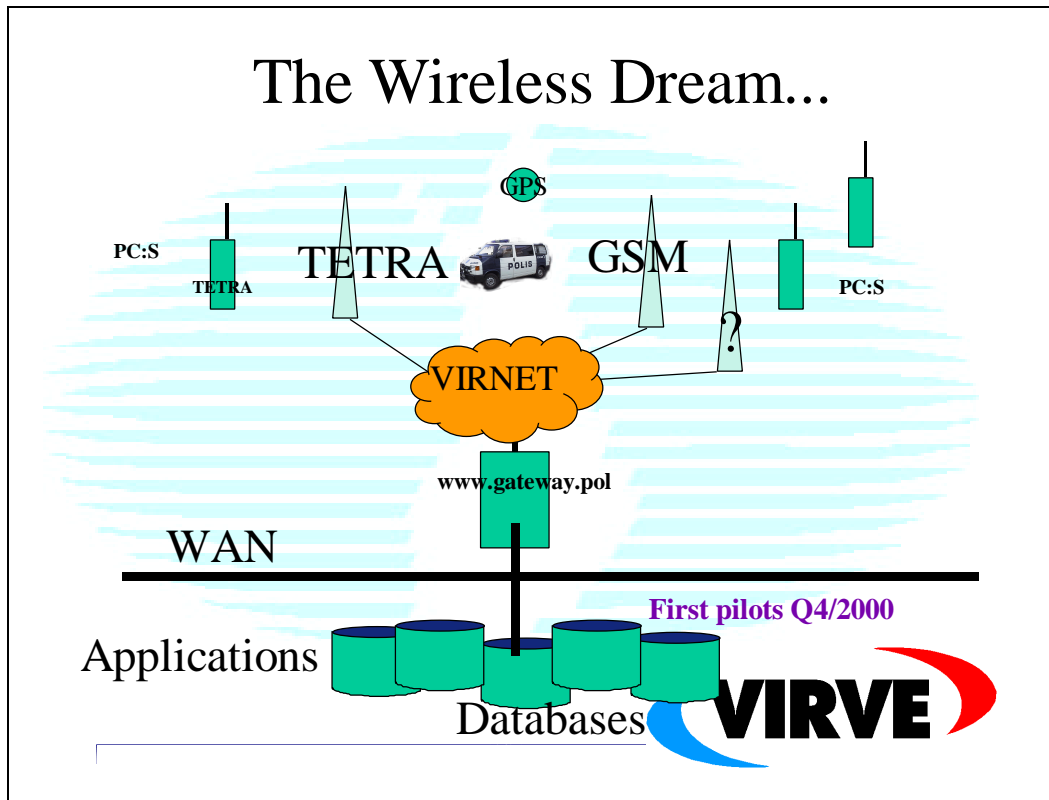
In future the operative system will instruct the driver about the route and tell estimated arrival based on traffic telematics



### File transfer

The operative system of the alarm center can transmit images to vehicles





### Field personnel can operate with data and speech

#### Data Base Inquiry



1>Criminal  
2 Vehicle  
3 License

OK Cancel

0>None  
2 ID card  
3 Passport

OK Cancel

#### Criminal Data

First:  
**Hans Jörn**

OK Cancel

Last:  
**Nielsen**

OK Cancel

3 hits

Show first?

OK Cancel

- Easy Check of Police Data Bases
- View is tailored for portable display



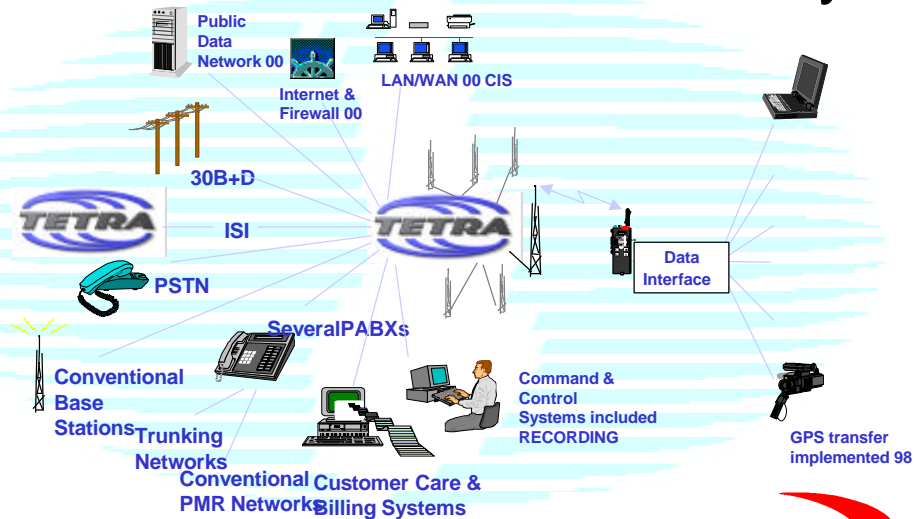
**VIRVE**

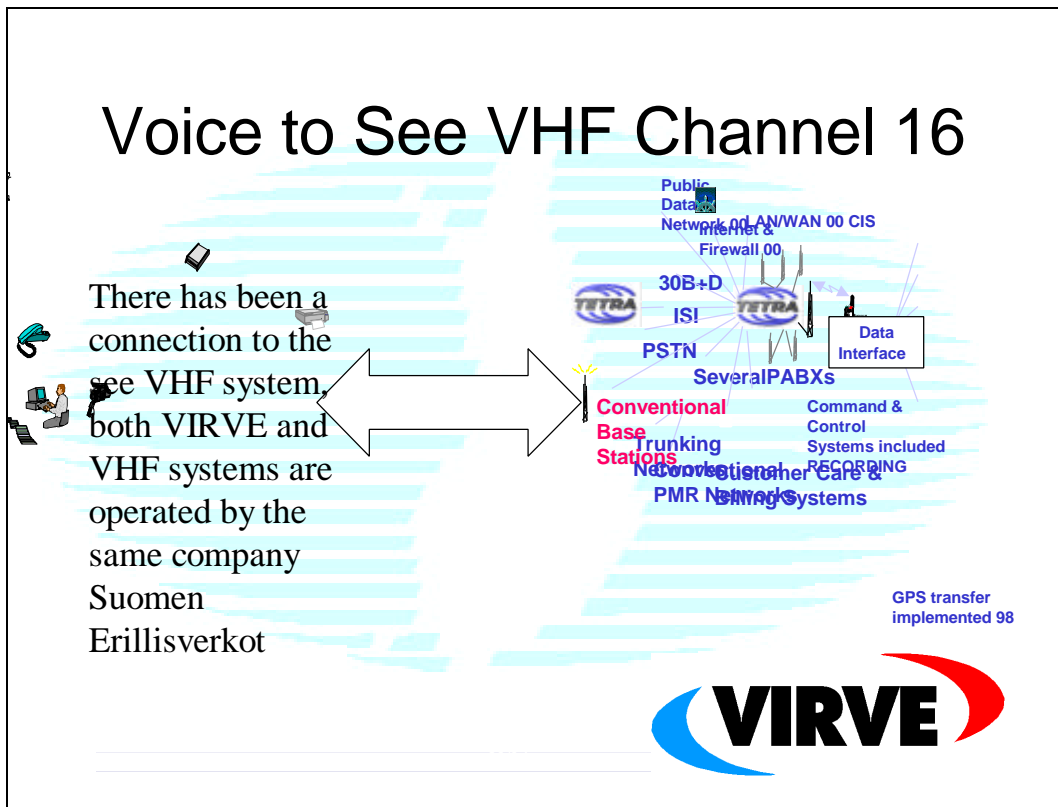
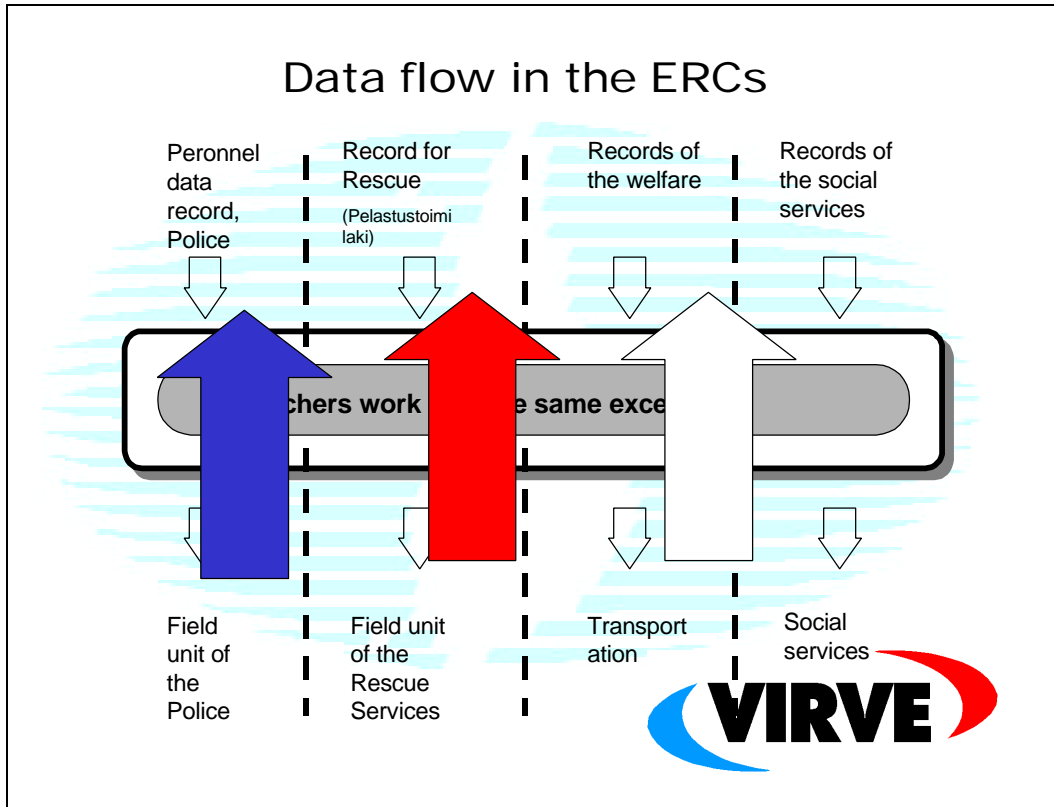


## Vehicle environment has better possibilities

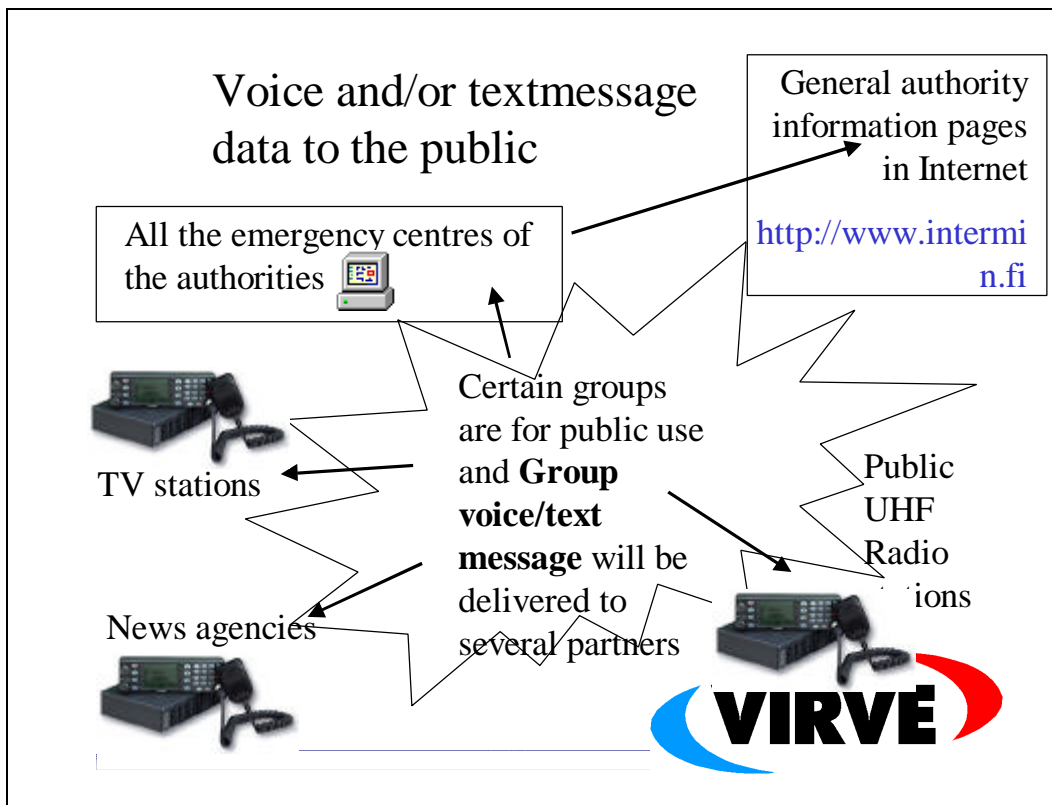
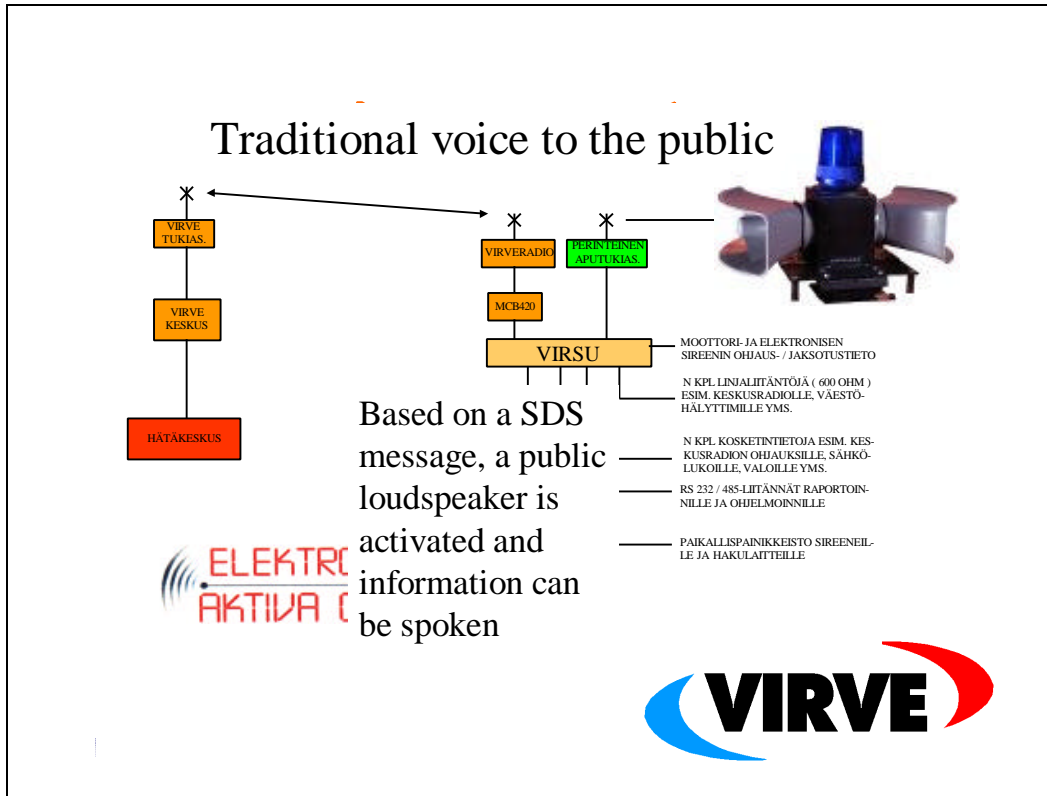


## Virve has a lot of connectivity





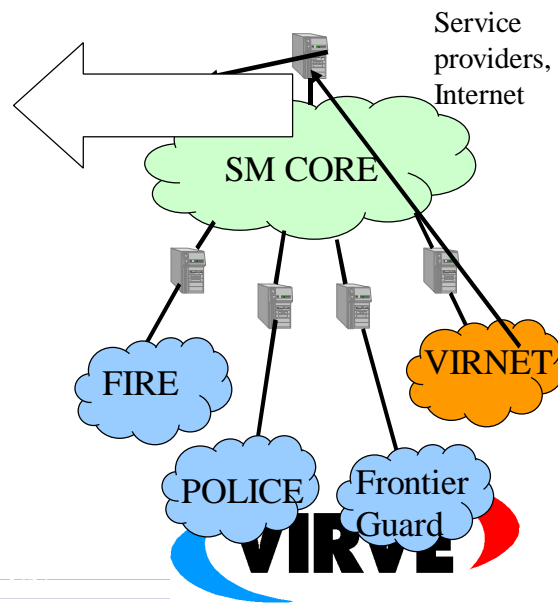






## Authorities can update public data from the field

All kind of information from the field to the public telephone nets and to the public INTERNET



## Sensor data from the field

### REAL TIME MONITORING AND INFORMATION DISTRIBUTION KEEPS YOU UP-TO-DATE

Xerivi's real-time monitoring allows security personnel to direct rescue operations in situations where time is a critical factor. For example, in the event of a gas leak, the system will start the back calculation process to define the charge point. Where conventional systems are content with recording the direction of the prevailing wind, Xerivi provides an accurate online graphic model of the direction of dispersion of the gas and the area involved. Modelling takes account of wind directions and speeds at various altitudes and the contours and roughness of the terrain, including buildings and trees. Similarly, the



Service providers, Internet



