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This Application Catalogue gives an brief overview of the partners and applications of the Rohde&Schwarz ACCESSNET®-T Application Partner Program A-TAPP.

**A-CAPI Communications Solutions**

Communications networks form the underlying transport and application layer for user applications, allowing the different customer groups to continuously increase their efficiency, productivity, reliability, speed and precision.

These networks go far beyond pure voice applications and therefore constitute the specific intelligence for communications networks.

Networks with database systems for personal data, for timetables and flight schedules, for remote querying of sensors, for controlling systems and subsystems or for deployment-dependent management of teams are just some examples of application solutions.

However, a not too insignificant challenge is often also posed by the integration of existing systems in order to protect investment and support soft migration.

Many of these applications are typical of certain user groups, but frequently have to be adapted specifically in detail.

Rohde&Schwarz not only offers an intelligent, highly flexible application platform for its TETRA networks in A-CAPI, but also a suitably tailored partner program called A-TAPP.

Based on different models of cooperation, it allows customers to work together with familiar partners or to call on qualified or certified partners of Rohde&Schwarz.

Thus, we also provide support especially for partnership-like cooperations between companies in order to make use of application know-how on one hand and on the other to reliably and quickly master the complexities involved.

The ACCESSNET®-T Common Application Programming Interface A CAPI:
- Allows simple, comprehensive access to ACCESSNET®-T data and services
- Can be used independently of the application’s operating system
- Is based on standard interfaces and protocols.
- Can be executed spatially via the usual transmission paths, e.g. ISDN
- Supports simultaneous multiple applications
- Offers comprehensive mechanisms for monitoring the connection between the application and TETRA system and for protecting against unauthorized access
- Supports internal system and TETRA-specific features in order to be able to create applications cleanly and therefore cost-effectively
- Ensures secure separation between the TETRA system and application with unique allocation of responsibilities for functionality, stability and maintenance

ACCESSNET®-T is a communications solution that can also be relied upon into the future.

Figure 1.1 gives an overview of possible A-CAPI solutions and A-TAPP certification levels.
Figure 1.1 A-CAPI Overview
ASC telecom AG

Address
ASC telecom AG
Seibelstr.2-4
63768 Hösbach / Germany

Web Address
http://www.asctelecom.com

Contact Information
Email: hq@asctelecom.com
Tel: +49 (0) 6021 5001 0
Fax: +49 (0) 6021 5001 310

About the Company
The ASC telecom AG offers integrated communications recording solutions for telephone, Internet, fax and radio, leading world-wide, as well as quality monitoring solutions for the systematic evaluation and analysis of communication between call centre agent and customer. With it are connected 40 years experience in research and development, production, selling and service.

There are more than 20,000 ASC installations in call centres as well as in organizations of public safety, like the police, fire-brigade, air traffic control, border control, red cross, etc. in over 60 countries in use.

ASC develops, produces and drives most modern communications recording solutions for multimedia recordings, evaluations and analyses of entire electronic communication. With browser based products all interactions by telephone, fax, Voice over Internet (VoIP), e-mail, and web chat are comprehensively documented.

Voice Recording Tool

Marathon Evolution EvoIP

MARATHON EVOLUTION® is the universal recording system for telephone, screen, VoIP and radio. It meets the highest requirements: if it is in the hectic stock trading, in strongly frequented contact centres or in safety-relevant ranges at organizations of public safety and in the air traffic. The system fulfills your requirements today and in the future.

MARATHON EVOLUTION® is the first communications recorder with Linux as operating system. That offers efficiency, reliability and all advantages of Open Source in one package.

MARATHON EVOLUTION® is based on recognized, highest technical industry standards. The expandable and modular architecture, together with which Linux operation system makes the system a future-safe investment.

MARATHON EVOLUTION® is characterised in particular by his extremely flexible architecture. As independent equipment the system can locally seize, store and show data at one location. On the other hand it is also ideal for organizations with several locations and central data storage.

All components of the system are scalable from four to thousands of telephone connections and/or channels. The communications recorder is to be integrated problem-free into each IT infrastructure, whereby already existing resources can be shared such as file and data base servers or archives systems. At small expenditure you can store large data sets during a long period and if necessary again call up fast, flexibly and comfortably.
Fast and simple search
The MARATHON EVOLUTION® offers many possibilities for the fast access and the immediate rendition of discussions either directly at the equipment, over the local network (LAN) or over the Internet.

| POWERplay is an efficient software with comfortable interface, which makes the search and rendition of calls in the local network or Intranet fast and simple |
| with the browser based WEBplay you can access the call database with each PC with network entrance and without any software installation over a standard browser |
| INSTANT WEBplay is the perfect browser based application for users, who need quick access to their last calls |
| Threat call Recording is an application for the purposeful recording of threatening calls with keeping the private sphere of your co-workers |
| INSPIRATIONpro is an intelligent quality monitoring solution, with which you can evaluate and analyze the calls and screen data in the call centre efficiently |
| Last Call Repeat (LCR) offers protected rendition of each telephone of the world, for example, if you do not have a network PC available |

Smooth integration
| Application DATA integration (ADI) - collection of data from customer applications and linkage with the call data base of the MARATHON EVOLUTION as well as the manual starting and stopping of the recording for the selective recording of relevant calls and data |
| Call Tagger - Free seating recording without CTI |
| CTI integration for the most common manufacturers |
| Progressive APIs (Application Programming Interface) in C++, JAVA and XML for full integration in customer environment |
TETRA FMS Switch

The TETRA FMS Switch provides integration of the German radio signalling system (Funkmeldesystem - FMS) into a TETRA network.

For the German BOS authorities (public safety organizations) the FMS has been the core of their radio signalling services for many years. At the push of a button status messages can be transmitted from mobile units to the operations center. In opposite direction the operations center can send a set of command codes to mobile units. Police, customs, fire departments and similar authorities use the FMS as an integral part of their control and management systems.

The move from analogue to digital radio there will include a longer transition period for the BOS authorities where both radio technologies will have to work side by side. This is the case for voice communication as well as for radio data transmission.

Integration of the TETRA FMS SWITCH

The TETRA FMS Switch is a PC-based Software solution which is installed between two existing subsystems of the FMS infrastructure - the radio modems and the control system. In addition the TETRA FMS Switch has an interface to the TETRA system. The SDS and Status services are used over this connection.
Description of operation

The TETRA FMS Switch maintains a database which keeps track of all mobile units belonging to the attached control system. For each mobile unit the software “remembers” if a digital or an analogue radio is installed. This way the software “knows” how to address a unit whenever the control system sends a command code to a mobile unit. The TETRA FMS switch intercepts the command, determines the proper radio system and then transmits using either the “old” analogue way or the new digital service. If the target unit has a digital radio installed the command code is translated into a respective text message which is then sent as a SDS message. Acknowledgement messages (SDS-ACK) which are generated by the TETRA SDS service in order to indicate successful or failed delivery of the SDS command message are translated into a FMS acknowledgement message and are then routed to the control center. Likewise incoming status messages from TETRA radios are translated and routed to the control system if the status can be decoded into a FMS status.
Comptel Corporation

Address
Comptel Corporation
P.O. Box 1000
FI-00181 Helsinki

Web Address
http://www.comptel.com

Contact Information
Email: emea@comptel.com
Tel: +358 9 7001131
Fax: +358 9 70011375

About the Company
Established in 1986, Comptel delivers dynamic OSS solutions, providing service-enabling mediation, charging and fulfillment capabilities. Comptel's expertise empowers service providers to focus on their core business: delivering the end-user experience.

Comptel has its headquarters in Helsinki (Finland) and offices in Australia, Brazil, China, Finland, France, Germany, India, Italy, Malaysia, Norway, Russia, South Africa, Spain, UAE, UK, and USA. Comptel has around 550 employees and a turnover of EUR 82 million (2007).

Comptel has provided solutions to 260 customers in 85 countries worldwide, directly or through our extensive partner network. Comptel customers include leading operators, such as América Móvil, Bharti, Brasil Telecom, China Mobile, Deutsche Telekom, O2, SWIFT, Telefónica, VimpelCom and Vodafone.

Managing TETRA Subscribers and Services

Solutions for TETRA Service Providers

The Comptel TETRA solution is based on the concepts of centralised network customer management, automated provisioning and usage data collection and rating.

The purpose of Comptel TETRA is to enable operators to manage organisations and subscribers in the TETRA network without extensive knowledge about TETRA technology.

Comptel TETRA enables customer organisations to perform management tasks related to their own users, services and hierarchy. It also enables creating, for example, communication profiles and privileges based on a job and role, such as a chief constable, deputy chief constable, constable, inspector or sergeant. Comptel TETRA offers means to implement a billing and account process, and provides several reports of network usage and traffic.
Telemetry/SCADA

WWAT - Wireless Wide Area Telemetry

WWAT Overview

Wireless monitoring of instrumentation sensors such as temperature, flow, pressure, voltage, current, water/fuel levels, weight, speeds, revolutions, etc. with existing SCADA software systems have been a requirement in the industry for many years.

Typical limitations with wired telemetry systems are:

- Cable distance restrictions
- Cables are vulnerable to aging, breaking and cable theft
- Cost of digging cable trenches and laying cables
- Damage of equipment due to lightning
- Maintenance of wired telemetry systems

ESS has considered the above shortcomings and has designed a unique new system called WWAT (Wireless Wide Area Telemetry) that enables wide area telemetry by virtue of wireless communications and usage of other third party communications infrastructure.

The application of remote telemetry dictates that the system is almost exclusively installed outdoors. The outdoors installation lays down unique challenges with regards to lightning and surge protection. The WWAT platform was designed with these constraints in mind and offers multiple layers of protection.

About the Company

ESS is a professional engineering company with its main focus on turnkey telecommunications solutions and products. Our innovative spirit, combined with suitable expertise and experience, has put ESS on the forefront of wireless niche applications.

ESS know-how for radio telecommunication networks is unmatched by any other company in Africa, by way of having engineered and supplied 3 out of the 4 national radio trunking networks in South Africa. All of our peripheral products are therefore optimally designed for the various wireless networks.

ESS products are predominantly used in the industrial and professional sectors. Our local design and manufacturing provides a very competitive product range and excellent backup service.

ESS products are integrated with wireless telecommunication devices such as:

- Radio (conventional, MPT & TETRA radio trunking)
- Mobile phone (cellular)
- Satellite (Iridium, V-Sat, Inmarsat, etc.)
ESS is a supplier of Wireless Wide Area Telemetry (WWAT) systems designed by our dedicated in-house Research & Development team. Driven by requirements received from the industry, ESS delivers the right product for the right application.

WWAT products are designed with a particular emphasis on modularity, reliability, ease of maintenance, simplicity of operation and cost effectiveness. We take various factors into consideration, including environmental conditions and phenomena (such as severe lightning), the shortage of skilled personnel to operate and maintain equipment and frustrations arising from the vulnerability of cable systems (aging, cable theft, damage and lightning).

The ESS staff have extensive experience in setting up national communications networks. As a result, ESS provides for a large variety of modular wireless communication media between the Remote Terminal Units (RTU) and SCADA (Supervisory Control And Data Acquisition) systems. ESS attaches high priority to message delivery and reliability, and therefore the WWAT equipment enables authentication and acknowledgements at every level of the Monitor and Control process. This will ensure robust data-integrity between RTU's and the Monitor & Control software platform. ESS also provides remote-site monitoring and control via the Internet with a secure password log-in facility for easy configuration and management by the user.

**Wireless Communication Media**

With the rapid proliferation of wireless communication technologies worldwide, ESS remains committed to providing connectivity to various communication devices such as the TETRA system ACCESSNET®-T of Rohde&Schwarz Professional Mobile Radio GmbH.
Market Segment

ESS provides equipment and assistance to approved system integrators, focusing on the following industrial and utility applications:

- water reticulation systems and electricity distribution
- the mining industry
- oil and gas plants
- building management
- industrial plant monitoring & control
- the poultry industry
- agriculture, including irrigation systems
- municipalities
- early warning systems for floods and seismic events

Benefits of ESS WWAT System

- The user can monitor and control the RTU’s remotely, thereby reducing call-outs to site and enabling the maintenance team to prepare in the event that a call-out does in fact become necessary. This allows significant operational cost savings.
- Improved service delivery by reducing water losses and electricity outages.
- Early warning of sudden changes (by means of water-leak detection and early fault detection) will inform maintenance staff before the problem escalates, thus decreasing the occurrence of water and electricity-supply disruptions. ESS equipment will assist in reducing risk-insurance premiums and increasing revenue from the supply of services such as water and electricity.
- Reduced safety risks and improved loss control through the prevention of injuries to people and damage to equipment.
- Combat downtime by analyzing fault reports.
- Improved planning to offer a better service. For example, just by knowing well in advance that a level in a silo is running low, refilling can be scheduled.
- Simple-to-configure OPC (Ole Processing Control) for SCADA connection
- Lowest total system lifecycle costs.
- Unlimited scalability of WWAT nodes, ranging from a single WWAT unit with a few I/Os to units with literally millions of I/Os to meet future demands.
- WWAT inputs can be configured for metering pulses (e.g. water and electricity)
Digital Communications Switch

eurofunk IDDS515

In order to be able to direct their deployment units quickly and effectively, public authorities and organizations with security tasks (BOS) need appropriately equipped command centres. All incoming emergency calls need to be coordinated and dispatched via a central communications system. In this area, eurofunk sets the standard with eurofunk IDDS. The Integrated Digital Dispatching System is a modularly integrated digital communications system with numerous opportunities for expansion and has a disruption-safe and forward-looking switching network technology running in the background. In a number of projects, the IDDS architecture has proven to be a very flexible and stable platform for retrieving emergency calls and radio circuits for security command centres. In addition, eurofunk's IDDS represents an optimum basis for integrating a concentrated operating terminal to control various subsystems. With its ISDN-based switching centre, quick through-connections, redundant, transparent switching network architecture and a modern operating terminal, eurofunk's IDDS is also perfectly suited to handle future needs. eurofunk's IDDS can be connected to other manufacturer’s control terminals through an open system interface. eurofunk has already successfully implemented this solution many times.

The integration of TETRA digital trunked radio systems into the IDDS radio and emergency call inquiry system has already successfully took place with the Austrian public safety digital trunked radio network.

The command centre is connected with the TETRA-gateway via ISDN-connections (E1) for the transmission of speech and control information as well as via an IP-connection for the access to the TETRA server-based services.

With the implementation of this interface the command center can use all functions of a TETRA radio unit.
Moreover, further important features for the speech and data communication in the digital radio network have already been implemented, such as:

- Processing of emergency calls from the digital radio network
- Talk group patches
- Multi-Select (call to several selected talk groups at the same time - broadcast call - for alert and tracing announcements)
- Talk group pre-selection (for the background monitoring of talk groups)
- Subscriber pre-selection (for the background monitoring of subscribers)
- Ambience listening (activation of this function on the radio unit)
- Text messages (SDS) - transmission and receipt
- Display of status messages (e.g. status 5 as speech requirement in group calls)
- Access to the subscriber list (for establishing single connections)
ErvoCom AG
Communication Systems

Address
ErvoCom AG
Mühlestrasse 23
CH-8855 Wangen SZ

Web Address
http://www.ervocom.ch

Contact Information
Email: info@ervocom.ch
Tel: +41 (0) 55 460 28 00
Fax: +41 (0) 55 460 28 01

About the Company
ErvoCom AG is a Swiss company with domicile in Wangen in canton Schwyz. With innovative and high quality products and systems in the field of communication technology ErvoCom AG has established a reputation.

The extensive services offered by ErvoCom AG include:
- Marketing and sales of communications systems and products
- Consulting, engineering and development of devices and systems
- Designing of radio networks and systems
- Installation and Service and commissioning of messaging devices and technical equipment

ErvoCom stands for innovation, continuity and reliability of the products and systems. Also, the "after-sale service has a high priority.

Tetrapol - TETRA Gateway

TPTAG - Tetrapol - TETRA Gateway

The TPTAG of ErvoCom AG provides connectivity between Tetrapol and TETRA networks and supports the following services:
- Direct voice connections between subscribers in both networks
- Voice connections between dispatchers/operating centres and subscribers in both networks, from TETRA dispatcher to Tetrapol subscriber and vice versa
- Data communication from mobiles to dispatcher/operating centre between both networks
- Data communication between dispatchers/operating centres in both networks
FEDETEC

Address
FEDETEC
Alfonso Gomez 42
28037 Madrid/ Spain

Web Address
http://www.fedetec.es

Contact Information
Email: julian.dedios@fedetec.es
      comercial@fedetec.es
Tel: +34 911 3165 70
Fax: +34 911 3165 80

About the Company
FEDETEC is a company specialised in telecommunications and control engineering. It develops and supplies its own products in the form of turnkey engineering projects that combine different technologies.

FEDETEC has been developing and implementing solutions for the most important control centres in the fields of public security, transport, utilities and industry since 1992.

Dispatcher and Emergency Call Center

GEMYC (Communication and Emergency Management System)

GEMYC system is an open platform for communication integration and emergency management in control rooms.

GEMYC is an emergency centre developed for many different services, managing incidents with the latest innovations in modern communication and emergency control room technology.

GEMYC is a modular system that can be reconfigured with different dispatch and communication interfaces. Based on a Client-Server structure it can be adapted to multiple configurations simultaneously.

GEMYC is fully compatible with all communication interfaces (radio, telephony, etc.) and allows the set up of multi-participant conferences. This is possible without substituting the existing communication systems and maintaining all the functional features for each one of them.

GEMYC is a highly specialized and flexible emergency centre, with capacity to grow, and available at an affordable price.

GEMYC includes three software applications seamlessly integrated, IC (Communication Integration), DyE (Dispatch and Emergencies) and CyP (Cartography and Positioning). These applications are installed on a client-server architecture, where each operator position is a client and with a common server for all of them. Even though the three modules work integrated, they can also be provided as a stand alone application if needed.

IC (Communication Integration) application, allows simultaneous management of all communication systems integrated in the control room. Through a common user-interface the operator has access to all communication systems independently of the technology or vendor (PMR Radio, analogue trunking, TETRA, TETRAPOL, telephony, VoIP, interphony, SOS posts, PA Systems)
FEDETEC

**GEMYC IC** integrates audio and all functionalities (Audio, PTT, selective calls, private calls, group calls, emergency calls, etc…). It includes as well, recording and statistical analysis modules.

**DyE** - Dispatch and Emergencies module is the application that allows the emergency control room operators to efficiently solve the emergencies. It is based on an Oracle Database.

The **CyP** - Cartography and Positioning application gives geographic location for fixed objects (control rooms, buildings, CCTV, etc…) and mobile objects (units and events)

From the CyP application the operator can communicate with any of the fixed or mobile objects by just clicking on it. The applications allows real-time tracking of the units and alerts when certain units enter or exit pre-defined areas, it also provides graphic reporting for:

- Events (Crime maps)
- Routes (Street or sector maps)
- Unit or patrol coverage maps
mapcom gps Telematik On-Board Units

The on-board computer MapCom GPS enables fast and safe data communication between vehicles and dispatch centre. The integrated GPS Receiver measures constantly the position and speed.

The equipment is available with external radio unit (GSM and/or trunked radio).

To save transmission costs, up to ten position signals in a message (SDS) can be combined.

With safety-relevant applications emergency calls can be addressed to the dispatcher and to certified alarm centres.

The transmission of position data takes place dependent of the following events:

- with inquiry by the centre
- after time and distance intervals
- when ignition/out
- after releasing a digital entrance
- during excess of a maximum speed
- during excess of a maximum permissible engine speed
- with arrival at destinations

Interfaces

The equipment MapCom has a set of interfaces to on-board electronics as well as to other peripheral terminals. There are two freely programmable serial interfaces (RS232), a keyboard interface (PS2 or AT) as well as a set of digital input/outputs.
fleet info Professional Fleet Management

Vehicle Detection and - Tracking

Fleet info has integrated map&guide maps and offers functions such as address search up to the house number. Further you can create your own address data, geocode and edit it.

With the help of on-board computer MapCom GPS you can determine the current position of your vehicles. The fleet info functions makes accurate control of the driven distances possible.

The distance computation between vehicle positions and stops generates an automatic proposal list and facilitates the dispatching.

Different software and data interfaces facilitate the exchange of data with other software.

The received position signals contain information apart from the geo coordinates such as date, time, speed and driven kilometres.

The digital logbook documents the activities of the drivers, so that no information is lost.

Order Management

The administration of orders is integrated in the fleet info and makes the creation of driving orders in an interface, which can be served simply possible.

The dispatcher receives a proposal list for the dispatching of an order, in which the optimal vehicle for the current order can be selected.

Dispatching orders, free text messages as well as status messages are carried out by portable radios. Fleet info has interfaces to trunked radios.

In the case of recurring orders fleet info makes the generation of multiple orders with the help of the integrated calendar possible.

The date memory function warns the dispatcher promptly, if an order becomes time-critical.

The dispatcher is informed by the arrival of new messages about the current job status optically.

Driver and Vehicle Data

The collection of work times and driven kilometres are substantial components of an accurate and time near pay slip.

Fleet info makes collection of vehicle-referred data such as ignition/out, engine speed, speed and service lives possible.
Oelmann Elektronik GmbH

Address
Oelmann Elektronik GmbH
Allerfeldstr. 17
31832 Springe/ Germany

Web Address
http://www.oelmann-elektronik.de

Contact Information
Email: Dieter.Buch@oelmann-elektronik.de
Tel: +49 (0) 5045 91050
Fax: + 49 (0) 5045 910579

About the Company
Oelmann Elektronik GmbH is working in development, manufacturing and service of electronic units and devices for the Telecommunication market since 1971.
The company, located at Springe near Hannover (Germany) has got appr. 40 employees.
Oelmann Elektronik is a qualified partner for the following services: radio frequency, low frequency and software designs, manufacturing of samples, low or high volume production.
Aspects as delivery on time, customer support and qualified staff that you can talk to directly, we consider to be very important.
Commissioned work is done according to Quality Management DIN EN ISO 9001:2000.

TETRA-ISDN Gateway

The DVS137 gateway extends the basic TETRA infrastructure by integrating a single ISDN channel into the network.
The dial number from the TETRA caller is routed via SDS to the gateway, which forwards the call to the ISDN network after verifying the access rights of the calling station.
After connecting to ISDN the gateway creates a full duplex voice callback to the calling TETRA party and couples both systems.
Calling a TETRA party from ISDN is done by first dialling the gateway’s MSN. After optionally verifying the callers ID (CLIP) the gateway awaits the TETRA ISSI of the called party to be dialled with the telephone’s numeric key pad. The gateway then creates a full duplex voice call to the TETRA party and again couples both systems.
Product Features

- Integrated mobile TETRA terminal
- External antenna connector (BNC)
- ISDN voice/data-modem
- Support of 1 ISDN-channel
- Voice coupling ISDN/TETRA via DSP
- Supply range 100-240 V_{AC} 50/60 Hz.
- 12 V_{DC} version available on request
- Full duplex voice connection (TMO)
- Half duplex during fallback mode
- Dialnumber embedded in SDS
- Programmable access rights for ISDN
- Programmable access rights for TETRA
Prescom

Address
PRESCOM / SECMAT
1/3 rue Michael Faraday
F 78180 Montigny-le-Bretonneux / France

Web Address
http://www.prescom.fr

Contact Information
Email: prescom@prescom.fr
Tel: +33 (0)1 30 85 55 55
Fax: +33 (0)1 30 45 05 49

About the Company
PRESCOM is a leading supplier of:
- telecommunications solutions for Maritime radio communication, Homeland security, Teleconferencing and on site mobile radio communication,
- interfaces, modules & cards dedicated to integrators, application developers and OEM of the telecommunication field.
PRESCOM has pioneered key technologies including signal processing (echo cancellation, coding, compression, noise suppression ...), signaling (Telephone, radio, IP ...), Multimedia Network Operating and Design of highly available systems.
PRESCOM was founded in 1982 as a privately owned company. Its headquarters are located at Montigny-le-Bretonneux, near Paris (France).

Multimedia Digital Switches / Operator Terminals

M5S Multimedia Digital Switch
PMA/PSA/PIA Series Operator Terminal

PRESCOM designs, develops and markets Multimedia Digital Switches and associated Operator terminals for Private Mobile Radio Networks (analogue and digital PMR, PMAR) such as Tetrapol, TETRA, GSM-R Networks ...).

Our Equipment is used by police departments, fire brigades, emergency health Services in their Emergency Call Centers. It enables the switching, interphony, and generalized conferencing between control room operators, radio terminals and telephone subscribers.

It is designed to address the interoperability requirements of public civil security organizations:
- Interoperability among multi-vendor radio networks
- Interoperability with recording and decision-making systems
- Interoperability with the distribution infrastructure
TETRA Mobile Radios and Hand-helds

Sepura Mobile Radios and Hand-helds

Within the range, there are radios for every situation - hand-held for personal use, mobile for vehicles and covert for surveillance use. All are available with integral GPS and their versatility and capability is extended further with software options and accessories from Sepura. Indeed, it offers the broadest range of TETRA products available.

What sets Sepura apart from its competitors is that the company is dedicated totally towards TETRA - and the development, supply and manufacture of TETRA radio terminals.

It is independent of any specific network supplier and its radios can operate on a wide range of TETRA frequency bands and on all manufacturers’ infrastructures.

Sepura maximises partner relationships within the world of TETRA through its Application Partner Programme. This extends the capability of Sepura radios and the TETRA service. It focuses on developing high value solutions for end users to highlight the unique benefits of using Sepura products.

About the Company

Sepura is a global leader in developing and supplying digital TETRA radios and accessories - secure, reliable, voice and data radio communication for public safety professionals.

TETRA, the global standard of digitally encrypted communication, allows users to communicate confidentially.
Sepura plc
Dispatcher

TETRA Computer Aided Dispatcher - TCAD

The Siemens TCAD is a PC-based application implemented in a server-client architecture and designed for the central handling of calls, short messages and data occurring in communications between subscribers, groups or fleets of subscriber deployed in terrain with hand portable, mobile or stationary terminals in a Rohde & Schwarz ACCESSNET®-T TETRA network.

In general, it can be used:
- as a centre for monitoring, alarm and control functions
- as a management operational centre
- as a dispatcher for the controlling and handling of fleets of subscribers
- for multi tenancy with VPN
- with E2EE End to End Encryption and
- with TETRA Fleet Management Solution (AVLS)

AVLS is an efficient solution for monitoring and management of mobile resources and provides tracking of mobile resource movements and displays locations on digital vector maps.

AVLS improves the information flow between Control Centre and mobile resources and helps to optimize workflow processes. It also covers the most common needs of messaging, order dispatching/confirmation, status messaging and automatic mobile resource location functions.

For all these tasks, the Siemens TCAD application offers variety of functions based on the ACAPI interface of Rohde & Schwarz TETRA system ACCESSNET®-T for voice communications, status and text messages.

The Siemens TCAD application features a modular design and can be easily extended with different add-on modules or connected to other applications.
TETRA Voice Gateway (TVG)

Siemens TETRA Voice Gateway is a new digital voice gateway designed for the Siemens TETRA CAD solution. Using VoIP technology, the TETRA Voice Gateway connects the IP based CAD clients to large TETRA radio networks over TDM based E1 interface carrying TETRA coded voice.

Benefits of the Siemens TETRA Voice Gateway

- Saving E1 interfaces to the SwMI. This is achieved by connecting directly to a compressing E1 interface, where each timeslot is subdivided into 8 subtimeslots, carrying low bit rate TETRA coded voice.
- Saving investment for interface units at TETRA SwMI, which are necessary to provide standard ISDN interface to TETRA CAD.
- Flexibility in TCAD operator network design is gained by using the VoIP technology.
- Saving investments for TDM voice connections needed to connect several dispatcher stations.
- Scalability on the side of supported number of CAD clients and number of connected calls opens possibilities for future network upgrades.

Concept

The TETRA Voice Gateway translates the voice communication between IP based network on the TCAD side and TETRA network on the mobile client side. The voice from CAD client arrives into the TVG in form of continuous stream of RTP datagrams. The asynchronous packetized voice is transparently multiplexed into specific synchronous PCM subtimeslot on the E1 interface in real time. Similarly, the voice coming from TETRA mobile users is demultiplexed from PCM subtimeslots on E1 interface and sent to appropriate CAD client in form of RTP packet stream.

The signaling happens over SIP VoIP protocol on the side of CAD system and is translated into signaling commands of A-CAPI provided by the TETRA Application Platform (TAP) on the side of TETRA SwMI.

Additional communication happens between the TVG and TCAD Server with newly developed IP based signaling interface, the Voice Gateway Control Protocol (VGCP). The VGCP protocol allows managing E1 line resources (E1 trunks and PCM subtimeslots) between the TVG and CSU. The line resource management is necessary for signaling translation between SIP and A-CAPI protocols which happens on the TVG.
End to end encryption support

The Siemens Tetra Voice Gateway implements special policy of handling VOIP streams which prioritizes the initialization vectors in case of E2EE calls

Features
- The Siemens TETRA Voice Gateway may be connected to four independent TETRA SwMIs over PRI interfaces
- TCP/IP based VGCP protocol for communication with TETRA CAD Server
- SIP protocol for connecting TETRA CAD clients is terminated in the TVG
- Support for 30 TETRA CAD clients, with 16 voice connections per client (total of 240 simultaneous voice calls)
- A-CAPI interface for communication with TETRA SwMI
- Special handling E2EE traffic

Hardware requirements

The Siemens TETRA Voice Gateway may be installed on rack mountable Fujitsu Siemens Computers RX-300S or tower (optionally rack mountable) Fujitsu Siemens Computers TX-300S family industry standard server equipped with E1 (PRI) interface card.
TETRA Voice Recorder - IP

TETRA Voice Recorder - IP solution delivers high reliability, legally admissible voice recording, precise and comprehensive call events monitoring and reconstruction. The solution is a network of interconnected high performance digital voice recorders, call related metadata data stores and playback clients. The solution is easily integrated with the digital radio network over secure IP based network connections.

Voice recording system provides secure access to all recorded call relevant metadata. With these data the operators can locate and replay call recordings based on type of the call, time of day, date and other search criteria. Recorded voice is stored directly on TETRA Voice Recorders which may be geographically distributed. This efficient storage design reduces network bandwidth utilization during normal recording operation.

Best audio quality is achieved, since there is no recompression of recorded voice.

TETRA Voice Recorder

The Siemens TETRA Voice Recorder (TVR) is powered by POSIX-like operating system. Recommended hardware for TETRA Voice Recorder is industry standard server Fujitsu-Siemens RX-300S3 with RAID5 configuration of hard drives to improve fault tolerance.

- Recording from 4 TETRA switches with single voice recorder
- Parallel recording of 960 voice channels

Voice Recording

Recording capacity of 150k channel hours is provided as standard. Optional upgrade to capacity of 300k, 450k or 600k channel hours is available on demand.

TVR takes advantage of using A-CAPI to exchange monitoring information and commands with Rohde & Schwarz DMX-500 family SwMI. Continuous real-time voice and data capturing from E1 interface(s) assures maximal monitoring reliability.

TVR supports parallel capturing from 1 up to 4 E1 interfaces. Voice data is recorded only on voice recorder which is connected to the call originating cluster.
To achieve highest efficiency and best audio quality, channels are transparently stored in TETRA format without any recompression between TETRA network and voice recording system. All call signaling data is recorded on dedicated TETRA Metadata Manager.

**TETRA Metadata Manager**

The Siemens TETRA Metadata Manager (TMM) provides storage of control, timing and other bookkeeping information. The infrastructure may be configured with separate TMM for every user organization. This design increases security and improves bandwidth allocation by geographical separation of sites.

TMM listens to all voice recorders of the TETRA network. Following security features are provided:

- SSL listening for recording - TMM accepts connections from authorized TETRA Voice Recorders (TVR) only.
- TMM accepts the connections only from authorized Tetra Playback Clients (TPC). TPC are connected to TMM via means of SSH protocol.
- No other ports of TMM are open for listening except SSL and SSH.

**TETRA Playback Client**

TETRA Playback Client is capable to replay stored VoIP data. System resilience enables to connect many TETRA Playback Clients to one TETRA Voice Recorder. Playback software is provided for Linux and for Windows platforms.

Multiple, additive search filter criteria in TETRA Playback Client dialogs, allow operator to make complex searches in recorded calls database. Actually, it is possible to reconstruct virtual call event based on logged call relevant data.

The design assures Playback Clients access control. TETRA Metadata Management accepts connection only from authorized TETRA Playback Clients. TETRA Playback Clients are connected to the TETRA Meta-data Manager via means of the SSH protocol.

**E2EE functionality**

The Siemens TETRA Voice Recorder -IP solution delivers unique E2EE encryption functionality.

The solution provides possibility of replay of end to end encrypted calls within the scope of user organizations. Thus despite sharing the same infrastructure user organization such as military and/or police can perform operations without compromising level of security and concealment.
Dispatcher System

MOSAR Dispatcher System

The MOSAR system is one of the key components in the modern day Communication Control Centres. The system provides voice and data communications through the use of fast computer networks and efficient radio resources and has been implemented for digital radio communications.

Features

The system consists of 2 main components:

- The CAD system at the control centre that facilitates communication between the controllers, maintenance personnel, security teams, etc.
- The radio infrastructure which forms the backbone for the radio communications

CAD System

It consists of the CAD Clients (MMI) at the control centres that provide the dispatching functions, signalling and voice call management, the CAD Server that handles the system level features and status & SDS management. All CAD Clients (and CAD server) are "dispatcher" to the Rohde&Schwarz radio infrastructure.

Radio Infrastructure

This forms the backbone of the communication system. It consists of several base stations, one TVR (TETRA Voice Recorder), two redundant call server (DMX and Voice over IP gateway) through which CAD Client performs voice dispatching and CAD Server performs status & SDS dispatching.
Groupe Silicomp

Features

Standard Features
- Security function such as login/logout, responsibility domains, event logging.
- Dispatch function include:
  - call management: request to talk, individual call, group call, ambient listening, group listening, broadcast group call
  - DGNA and OOCA management for group mission or event
  - location management: locate mobiles on a map through outside GPS location or on a synoptic through indoor location, GPS location logging
  - External PTT management with MAJOR BOS 1&4 handset

System Features
- Silicomp’s APPLIBUS middleware that provides server redundancy on a cluster
- Oracle Failsafe for database redundancy
- DMX and VoIP gateway redundancy: CAD MMI/CAD Server can switchover from one call server (DMX, VoIP) to the other if DMX and/or VoIP fails
- Object oriented design catering to easy modification/expansion

Benefits
- Improved service quality and safety
- Open standard tools have been used to ensure that the system is easily maintainable.
- Built-in high availability features
- Built-in API to integrate with other control centre
- Configurable GUI layout and Colors
- Easy to navigate features on the GUI to react to emergency situations
Command & Control Centre System Solution

secur.CAD

The dispatch and incident management software

secur.CAD is designed for command & control centres of
- Emergency Response Organisations
- Plant fire brigades
- Emergency and service centres

secur.CAD offers reliable support to dispatchers with respect to their operative and administrative tasks throughout the total incident process.

secur.CAD offers comprehensive functions through integration of numerous subsystems in the field of
- Incident acceptance
- Dispatch
- Alerting and notification
- Incident guidance
- Overview
- Documentation and statistic

Core Modules
- Software secur.CAD /fire /EMS /police

For integrated Command&Control Centres any combination of the modules is possible.

Additional Modules:
- //GIS (Geographical Information-System)
- //RMS by phone
- //connect (technology for real or virtual control centre network)
- //EMD - Emergency Medical Dispatch (integration of ProQA AMPDS)
- //FD (integration of ProQA FPDS)
- //phonealarm (voice unit for voice-based applications)
- //web (basic module for web connection of external workstations)
Technical Bases

secur.CAD works on all heterogeneous networks in different bandwidths and all server operating systems certified by Oracle (e.g. WINDOWS 2003 Server, UNIX, LINUX)

| Workstation computer under WINDOWS (XP) |
| Relational Database Management System (RDBMS) ORACLE |
| Redundant configuration according to state-of-the-art technique; any design up to a highly available system possible |
| Integration of a wide variety of communication services using DCOM, COM, SOAP, XML |

secur.CAD is:

| a platform-software, which allows an easy and precise adaptation to the different areas of application and customer workflows through a sophisticated configuration management |
| future-oriented system architecture by the implementation of a 3-tier-model according to Windows DNA and fully enabled for the Web |
| powerful through the combination of operating systems like Windows, Linux, Oracle database and standard GIS-components, i.e. application of world-wide available industry standards |
| intuitive to operate with low training costs |
| high-performance data model using object oriented analysis and a relational database management system |
| easy to maintain due to a combination of object oriented and component-based development methodologies |
| multi-lingual through localization of different languages |
CDR Reporting Tool

A digital, trunked radio network introduces a range of new features and capabilities. Group and individual calls, direct dialling to telephones, status and messaging are just some of the ways that help users do their job. Technology itself only provides part of the solution towards obtaining communication nirvana. It is also crucial to know how the network and features are actually being used. For example; is status messaging being widely adopted, is network capacity being exceeded or are the correct talk-groups being used?

Recording Network Behaviour

The behaviour of the network and your users is logged in intricate detail. Call Detail Records (CDRs) from the ACCESSNET®-T together with your own SICCS records provide a nearly complete picture of how the radio system is being used, how it is performing and the traffic it passes.

However, in order to reveal this crucial information you need a convenient way to unravel the data and report it as useful, meaningful information.

Syntec CDR Reporting Tool

Syntech has developed a powerful solution to help understand CDRs: the Syntech CDR Reporting Tool. This greatly simplifies the way that CDR data records can be analysed and presented.

Unravelling the Data

Recording each and every transaction on the network produces large volumes of data which can be unwieldy to manage and process. For the data to be truly useful it must be efficiently processed, analysed and presented in a meaningful and flexible way.
A Flexible Solution

The Syntech CDR Reporting Tool provides a user-friendly graphical interface that can clearly show system activity and create summary management reports. A powerful query engine provides complete freedom and flexibility to interrogate and analyse the data.

Instead of having to interpret complex tabular data and spreadsheets, the Syntech CDR Reporting Tool lets you build your own query from a series of selectable parameters. The results are presented as graphs, charts and tables which can be further customised by the operator.

Features
- Analyses CDR
- Graphical and tabular display of results
- Provides standard and fully customisable queries
- Simple to operate from a standard Windows™ PC
- Results can be exported to MIS packages and used to generate reports

Sample Results
- Calls by time, location & user ID
- Traffic by time, location & user ID
- Talk-Group membership
- Queuing performance
- Emergency status activations
- Most/least active users
T.E.S.S. Products & Services

TESS offers all services regarding TETRA systems.

- Project Management
- Project Engineering
- Installation
- Configuration
- Operating & Maintenance
- Training & Coaching

The way we understand projects

Organizations perform work. Work generally involves either operations or projects. We understand that projects are the best way to perform our work because while doing project-work it is possible for us to work together as a team and meet our customers' requirements.

For us a project is a temporary undertaking of a team to create a unique product or service as required by every individual customer. Temporary means that every project has a definite beginning and a definite end. Unique means that the product or service is different in some distinguished way from all similar products or services.

About the Company

T.E.S.S. actually is a very young company and was established as a Free Zone Company in 2006. The principle office is situated in Jebel Ali Free Zone, Dubai. From here all business in the Middle East and North Africa will be transacted.

While forcing high quality service we are a partner of Rohde&Schwarz Professional Mobile Radio, situated in Bad Muender, Germany. Rohde&Schwarz Professional Mobile Radio is the business unit for Professional Mobile Radio within the Rohde & Schwarz group of companies, supplying TETRA Systems.

For now T.E.S.S. has 17 employees, specialized and international experienced. We recruit our team members thoughtfully and place them according to their competences and our customers' wishes.
Professional Training Tools for TETRA

TETRAsim

Address
Beaconsim Oy (TETRAsim)
Pohjoinen Rautatiekatu 21 B
(4th floor)
FI-00100 Helsinki, Finland

Web Address
http://www.tetrasim.com

Contact Information
Phone: +358 50 514 9705
Email: info@tetrasim.com

About the Company
TETRAsim is a brand of TETRA products and services offered by Beaconsim Ltd.

The company was founded in 2001 and hosts its headquarters at the heart of Helsinki in Finland. The company goal is to provide the best possible tools to PMR users.

TETRAsim is all about:
- Time efficiency
- Measurability
- Cost efficiency
- Controllability
- Real scenarios

Professional Training Tools for TETRA

Trainer System
TETRAsim offers a large variety of options for the instructor to plan, control and measure the training sessions.

Dispatcher Workstation simulators
TETRAsim Dispatcher simulators are the ideal tools for training TETRA dispatchers. Simulators support all the features of the real dispatching stations from voice and data communication to network management. When used with other TETRAsim simulators, dispatchers can practice network management in a safe environment.

There is no need to build a separate network for each training session. Different network profiles can be compiled and used when needed. For instance network creation can be taught on one network and changing the communication rights for cross-organizational communication on another.

Dispatcher application developers can attain an API to connect their dispatching software to the TETRAsim Network.

Terminal simulators
TETRAsim terminal simulators provide full one-to-one functionality with the real terminals including voice and data communication between all other TETRAsim simulators. Everything from network changes to emergency calls is simulated. Our simulators also include interactive manuals for the radios and short guides to their functionality.

When combined with TETRAsim training tools, each simulator's actions and state can be seen from the supervisor's computer. Tools are provided to modify the settings of the simulated network and parameterize the terminals easily and efficiently.
Dispatch Control System

**ВИСТ Групп**

Внедрение Информационных Систем & Технологий

**KARJER**

"KARJER" mining-and-transport complex dispatch system implementation is aimed at:
- Increase of operational control efficiency of production
- Enhancement of integrity and operability of accounting and control of mining-and-transport complex application

Features and benefits of the system allow:
- To increase productive time for the use of equipment during working shift
- To ensure resource saving and reaching the necessary volumes of production at the same time
- To increase working and technical discipline of employees
- To develop the basis for objective evaluation of different services and factory sectors activities
- To create background for regular repairs and maintenance of a company's car park
- To lay the foundation for the optimization of traffic

Sources of information:
- Position, speed, course sensors (GPS)
- Car load sensor
- Fuel level sensors
- Actual digital modelling of mining
- Company database management

Consumers of information:
- Control centre of a factory as well as various users of a local company network - information on current condition and position of cars
- Other engineering facilities of a company - history for the real operating regime of equipment, downtime, daily run, volume of transported load
Functional Modules

- **BASE**
  This module set is a base of the system and provides its basic functions of trucks and excavators work control and monitoring. We can mark out the following blocks:
  - RealtimeKit (modules for open-pit operation control in real-time mode, mine production management module)
  - AnalyticKit (modules for open-pit operation analysis)
  - SetupKit (System tuning and supplemental information entering)

- **COMPLEMENTARY**
  - SmartTruck (optimization module)
  - RailRoadManager (railway transport management module)
  - RefuelManager (refueling control module)
  - TireManager (tire monitoring and stock-taking module)
  - DetailManager (units and spare parts stock-taking module)
  - MaintenanceManager (Servicing management module)
  - Diagnostics (diagnostics and technical condition monitoring module)

**System Structure**
The dispatch control system "KARJER" contains the following equipment:
  - Mobile objects equipment
  - Communication equipment
  - Control centre equipment
  - Software
  - User workplaces
Vomatec EDV GmbH

Address
Vomatec EDV GmbH
Riegelgrube 7
55543 Bad Kreuznach / Germany

Web Address
http://www.vomatech.de

Contact Information
Email: info@vomatech.de
Tel: +49 (0) 671 7961 40-0
Fax: +49 (0) 671 7961 40-10

About the Company
VOMATEC® EDV GmbH develops software solutions for the fire and disaster control and safety centres since 1992.

The VOMATEC® EDV GmbH belongs to the German market leaders in the field of software for the fire and disaster control. Apart from this they offer industry solutions for most different task ranges.

| Operating centres and alarm centres for fire-brigades, emergency services, police and security agencies |
| Disaster control information system |
| Graphic information systems |
| Country-wide systems for statistic evaluations |
| Applications of data bases |

Security Management System

ARIGON® PLUS

... the open and scalable safety management system

ARIGON® PLUS is a modular, malleable software system for the individual customer. It can be supplemented depending upon demanded capacity.

Ranges of application
- Safety and emergency call centres, operation centres
- Mobile directing centres e.g. operation control cars
- Central control units
- Factory protection force, plant security
- Disaster situation control centres
- Supervisory centres of the preventing fire protection
- Stock managements and workshops
- Commercial fields (order and account systems)

Solution for all interests of the user

The integrated management system ARIGON® PLUS has extensive tools to the treatment of all tasks. In addition diverse subsystems can be merged, which are represented together in a uniform control interface. Thus the user finds same function modes in all ranges of application. The operation is substantially facilitated by the conformity of the overall system, security in handling the software is increased and not least the training expenditure is minimized.

Individually and nevertheless standard

The possibilities of individual adaptation represents a special advantage. Customer’s requests can be adapted problem-free.

The modular structure and the scalability of ARIGON® PLUS makes it possible. This reduces costs and leaves free space for organization.

The following program modules are available:

The event management inclusive master computer works on events or procedures by introduction of measures.
These events are for example:

- Treatment of emergency call entrances
- Arrangement with damage events (master computer functions)
- Procedure with limit value excesses, fault signals or other signals by external plants
- Messages from fire and break-down alarm systems
- Movement alarms
- Requirements of admission systems

In the range of the industrially application events are also everyday procedures, which must be worked on.

The danger management is a producer-independent interface for communication with alarm signalling devices. An alarm unit administration is additionally contained, in which the daily tasks are documented such as maintenance and examination of the plants including inspection results.

The program module **Control** makes the central unification of all interfaces possible. Amongst other things also fire alarm systems, entrance control systems, all building services, monitoring of processes and plants, switching and control centres, the video monitoring, as well as the alerting belongs to the control module.

The interface is arranged for the individual customer according to the attached terminals.

Of course all tracers and logic elements can be served also over touch panel. A parallel operation by hardware installed switches as relapse level is possible.

**Example: Alerting and identification evaluation**

- Both digital and analogue alarms can be dispatched by ARIGON® PLUS.

**Example: FMS**

- The status monitor offers an overview of the current status of resources, like vehicles, persons, devices and organizations. The appearance of the status monitor can be individually parameterized.

**Example: Measured variable processing**

- Apart from the possibility of displaying measured values in most different ways, ARIGON® PLUS reacts automatically at limit value excesses by release of before-ready scenarios.

With these scenarios it can be for example an alarm release, automated notifications, releasing signal generators or also controlling of certain plants (etc. connect from exhausts, throttles of a temperature).

Also a program module for audio communication can be integrated. This program module permits a connecting of all audio signals on a control element.
The dispatcher must not change between different listening and speech units, but can have all audio signals over a single listening/speech set. The change-over between the terminals, selection of the radio links and the operation of the telephone system are steered by the software.

- Public Branch Exchange inclusive emergency call
- Radio
- ELA
- Telephone number recognition
- GSM binding

The ARIGON® PLUS mass notification makes an automatic notification of as many as desired participants after defined scenarios possible. The announcement of pre-recorded voice messages is also possible.

Possible devices:
- Telephone
- GSM telephone
- SMS
- e*Cityruf
- Fax
- E-Mail
- analogue radio alarm units
- digital radio alarm units

The graphical information system supports in the operations centre, at the danger management, during the monitoring of technical data and operating conditions.

All controllable and adjustable elements (lighting, gates, plants, video cameras, etc.) can be served also from the software.

- Object plans
- Area maps
- Situation map guidance
- GPS binding
- Integrated active switching interfaces
- Symbol library with over 400 symbols, freely expandable by the user
- Geo correlation of the points of event
To the management there is a multiplicity of further program modules:

- Reports and statistics
- Administration of orders
- Billing
- Document management
- Organizations and companies
- Vehicle administration
- Personal
- Address administration
- Directory/accessibilities
- Stock management
- Ordering

ARIGON® PLUS is constantly extended. Please you ask for the availability of these and further program modules.
ZAO TETRASOFT

Address
ZAO TETRASOFT
Tarasa Shevchenko emb. 23-a
121151 Moscow - Russia

Web Address
http://www.tetrasoft.ru

Contact Information
Email: a.goncharov@tetrasoft.ru
Tel: +7 095 980 0659

About the Company
In 2001 a software development department in the JSC Professional Telecommunications company was founded, main activities are:
- system integration
- engineering during the construction of TETRA networks.

2004: Creation of separate company for software development, "ZAO Tetrasoft".

Since 2004 ZAO Tetrasoft is part of the consortium TETRASVYAZ.

The consortium provides a full range of services in the field of professional radio:
- design and construction
- system integration
- supply of equipment and software
- consulting
- services and others

Dispatcher System

Tetrasoft Dispatcher

Purpose
- Administration in accordance with the specific character of the technological processes of customer.

Functions
- Voice calls between manager and subordinate staff taking into account the organizational management structure of the company
- Send text messages
- Send data (files, technical reference information)
- The formation of groups depending on situation (Dynamic Group Number Assignment - DGNA)
- Patterns of typical messages and documents
- Interactive map display of the location of TETRA subscribers
- Recording the work of dispatcher
- Opportunity of hierarchical subordination of the dispatcher panels
- Identification of each user dispatcher panel
- Exchange with information systems such as ASU, DBMS
- The possibility of adaptation by the customer

Monitoring of mobile subscribers on the map. In the dispatcher application "navigation" can be integrated.

In this case in the user DP appear the following additional features:
- Monitoring of the movement of mobile subscribers in real time
- Obtaining precise coordinates of the location of mobile subscribers
- Fast-setting voice communication and sending SDS to mobile subscribers