

ElettraSuite
The complete TETRA Release 2 solution
for Professionals

ELETTRA
S U I T E

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SELEX
Communications

A Finmeccanica Company

EletraSuite • The complete TETRA Release 2 solution for Professionals

Experience in product design is fundamental when high quality; rugged design and future proof performance are important requirements, such as for mission critical applications.

The **EletraSuite** system is the natural evolution of our existing proven ELETTRA product line, completing our TETRA catalogue with **TEDS (TETRA Enhanced Data Services)** ready products. This new family of digital trunked mobile radio products provides a complete range of user services and facilities for professional mobile radio system operators and users including all of the benefits available from integration with VoIP components.

EletraSuite also offers air interface enhancements with the Air Ground Air (AGA) functionality, for either helicopters or fixed wing aircraft installations. With an increase in maximum cell radius from 58 km to 83 km, an important improvement in RF planning can be achieved with consequent Capital Expenditure and Operational Expenditure optimisation.

From single terminals, to nation wide networks, our solution is competitive and future proof, with a particular focus on customer satisfaction.

Conforming to the ETSI TETRA open standard, **EletraSuite** provides the essential core services for voice and data calls as well as a comprehensive range of supplementary and enhanced services.

With SELEX Communications support Operators can customise all of these services to meet the specific needs of their market sector or take advantage of solutions that our partners have developed, through our innovative **Application Partner Program (APPS)**.

System Users



A wide variety of services are available for both fixed and mobile users. These services can be customised at both the operator and user levels to meet all organisation specific requirements. Typical system users include:

- **Police and Security Departments**
- **Emergency Operators (Fire and Rescue)**
- **Government Agencies**
- **Defence Forces**
- **Utilities**
- **Oil and Gas**
- **Transportation (Mass Transit and Railways)**
- **Fleet Managers**

User terminals are designed for professional users and mission critical applications.

They can be vehicle mounted, transportable or hand-portable and are equipped with keypads or special function keys to call up network services.

SELEX Communications are one of the few companies in the world providing a built in mobile terminal fully compliant with the Avionics Specifications and an ATEX approved hand-held.

In addition, dispatcher equipment can be included within the network either as a stand-alone terminal or as a part of control room facilities, with a VoIP option.

Integrated Voice and Data

ElettraSuite provides full integration of voice and data thus minimising the number of network bearers and other resources hence reducing the transmission costs.

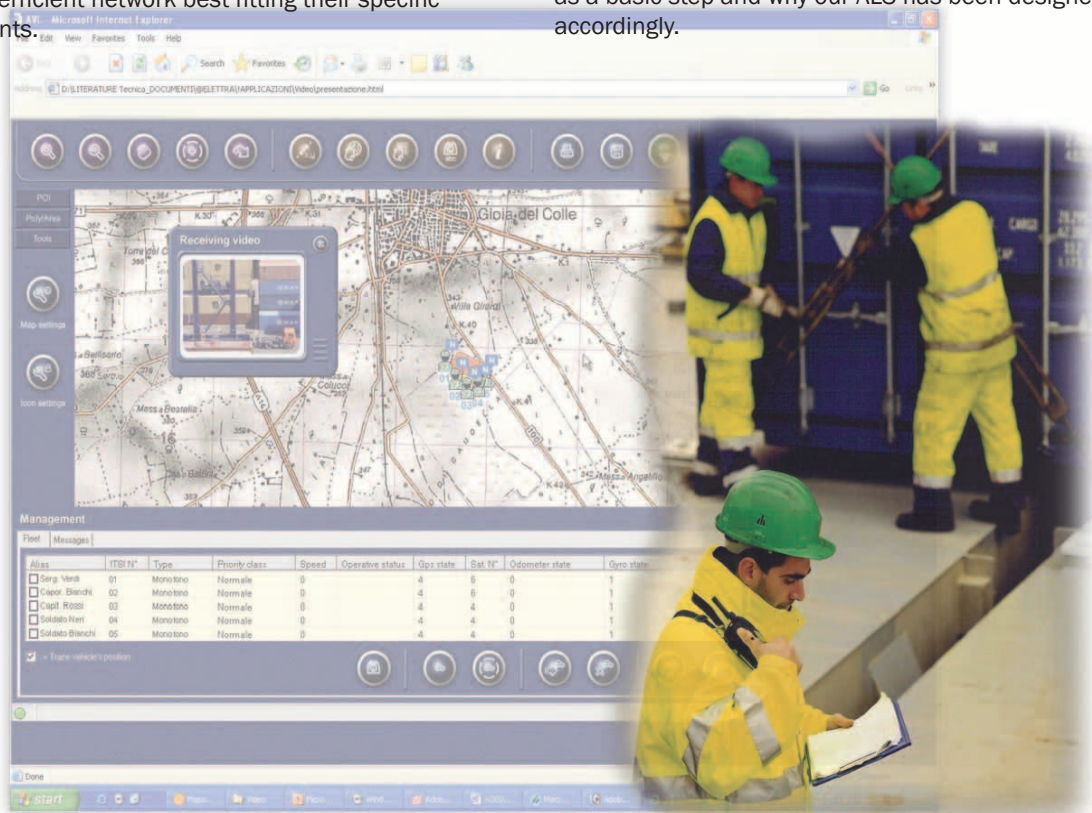
ElettraSuite fully supports IP-based applications allowing users access to intranet/internet databases and services from their mobile radio. Supporting TETRA release 2 features such as TEDS, the previous data rate limit of 28.8 Kbit/s can be exceeded by more than 10 times (> 400 Kbit/s), thus allowing new real time applications such as video transmission to and from mobile users.

Different channel bandwidths, from 25 kHz to 150 kHz, and additional modulation schemes, such as QAM, can be provided in order to define, together with the customer, a spectrally efficient network best fitting their specific requirements.

ElettraSuite supports simultaneous transmission of voice and data between system users so that in a critical situation, decisions can be taken instantaneously.

Many applications developed internally or provided by qualified partners (APPs), can add value to our TETRA network solutions, benefiting from professional experience. How to design an application can be of utmost importance, especially for our customers' "normal" scenarios.

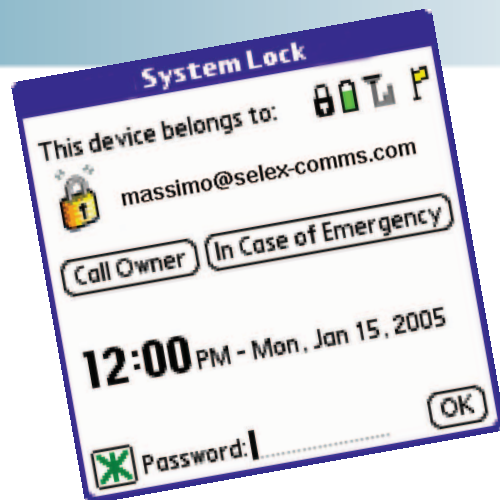
Supporting or not supporting the ETSI Location Information Protocol (LIP), for example, in an Automatic Location System (ALS), can impact on network congestion when the maximum number of resources is needed. This is why in our development procedures, customer validation is considered as a basic step and why our ALS has been designed accordingly.



Security

ElettraSuite offers two levels of encryption that can be jointly applied in order to provide the highest level of security for communications:

- **Air-Interface encryption** according to the ETSI TETRA standard (for protection of communications on the radio link) both with static and dynamic keys.
- **End-to-End encryption**, to provide protection over the whole link between users; these encryption algorithms can either be standard (up to 256 bit key length) or user specific. With SELEX Communications support Customers can develop their own algorithms for additional security, in complete autonomy.



SYSTEM ARCHITECTURE

The **ElettraSuite** modular architecture allows TETRA networks to be constructed economically and conveniently, and supports future expansion as required.

The architecture is equally cost effective for small systems, with a few hundred subscribers, and for regional or nationwide systems, supporting hundreds of thousands of users.

ElettraSuite is based on a two-tier architecture made up of **Base Stations (BS)** and **Switching & Control Nodes (SCN)**.

The network is managed by **Network Management Systems (NMS)** either co-located at SCN sites or remotely situated. Our new x50 NMS family, based on different Sun Solaris platforms, ensures a scalable and cost effective management solution.

The **ElettraSuite BS** is able to operate as a drop and insert node hence supporting a wide range of network topologies.

By the insertion of an appropriate sub module, the BS can be further enhanced to operate with an interface unit thus providing local connectivity to Dispatchers, PABX/PSTN and Network Management terminals.

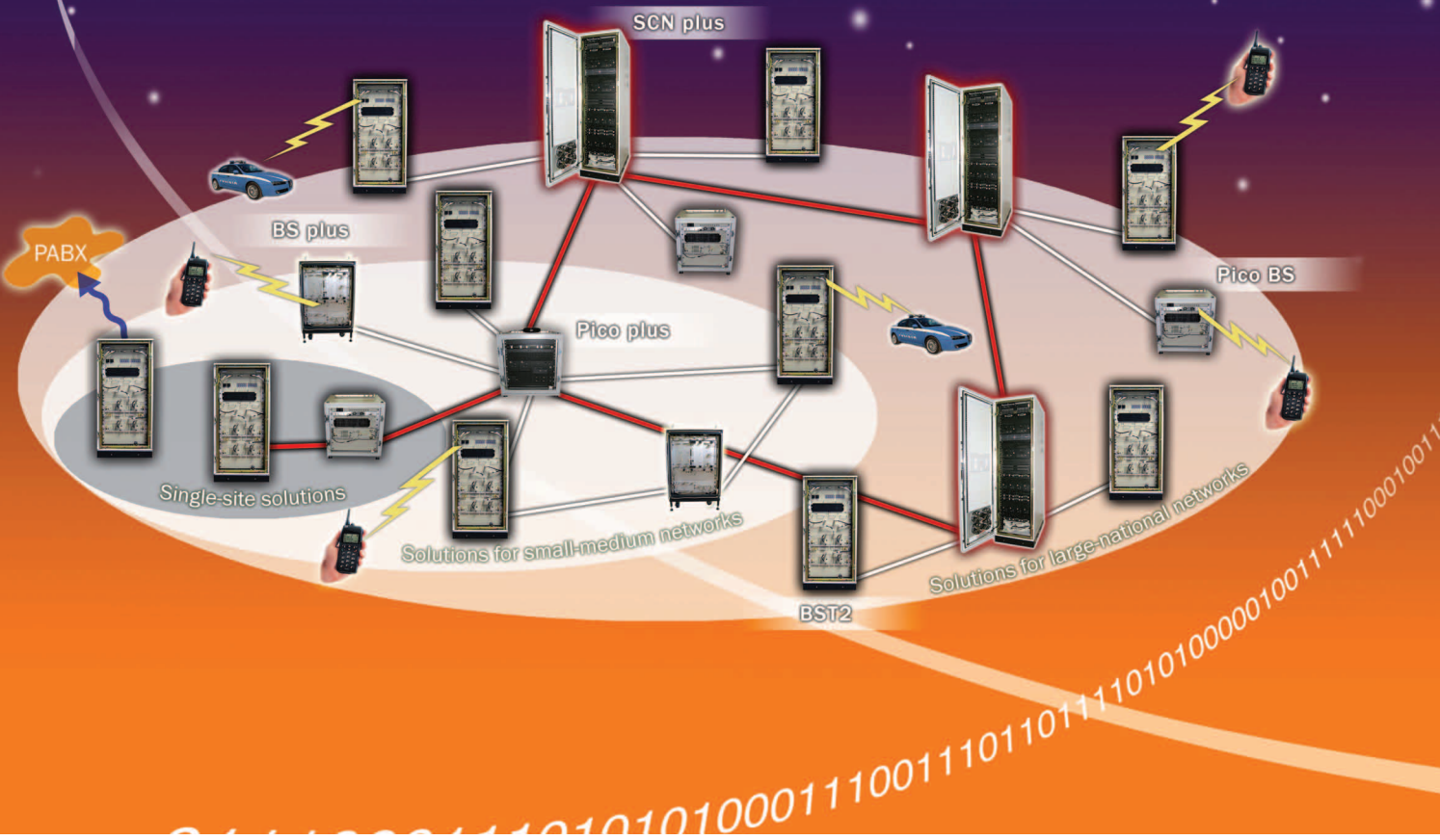
The **ElettraSuite SCN** provides powerful switching and control capabilities for traffic management and interfacing to external telecommunication networks and data hosts. Multiple SCNs can be interconnected in order to create wider networks.

More SCNs can be connected together to provide regional/national networks and increased capability.

As well as the typical star topology, with each BS linked directly to the switch, the SCN-plus implements a new algorithm for ring deployment without the need for external equipment, thereby increasing resilience through automatic recovery of faulty links.

Scalability from Single-site...

...up to National System



ElettraSuite BS Plus: first tier of the architecture

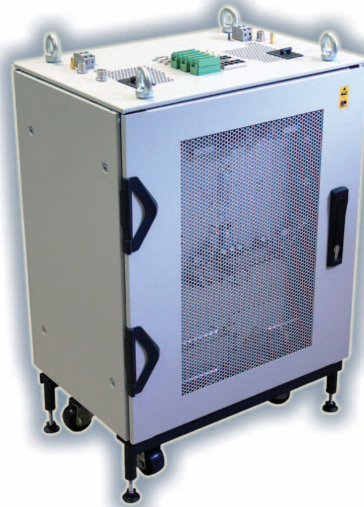
Modular in design and supporting speech and data traffic in full and half-duplex modes, the new TETRA **ElettraSuite BS Plus** is a powerful and high quality family of TETRA Base Stations, designed to satisfy the most demanding requirements of professional users. Its main strengths are:

- Extended coverage
- Small size
- Compactness
- Highest reliability
- Energy Saving Suite
- Comprehensive set of fall-back mode features
- Future proof design

Up to 8 carriers are available with a new 3 way diversity option and enhanced fallback capabilities (with no need for a local GPS receiver) supporting:

- Voice and data individual calls (half and full duplex)
- Voice and data group calls (with late entry and talking party identification)
- Short data and status services
- Priority and emergency calls
- Air interface and end-to-end encryption

- Optional redundant configuration
- Automatic protection against RF interference
- Full remote control including remote software downloading
- Simple local maintenance and diagnostics using a standard PC.



< ElettraSuite BS-Plus



ElettraSuite Pico-Plus >

ElettraSuite SCN Plus and Pico Plus: second tier of the architecture

ElettraSuite's flexible and modular architecture is based on the choice of two state-of-the-art switches.

The **ElettraSuite Pico-Plus** is our innovative optimised cost-effective switch solution for small and low-density systems. The powerful **ElettraSuite SCN-Plus** is modular, allowing functionality sharing between separate optimised modules.

Being flexible and expandable, the ElettraSuite SCN-Plus is particularly attractive for high-density regional and national systems.

The PLUS platform uses a distributed switching capability with an Ethernet/IP interconnection bus and integrates a state-of-the-art networking IP platform.

High performance in terms of call set up time and resilience are ensured by our innovative design.



ElettraSuite SCN-Plus >

ElettraSuite NMS • Network Management System



SYSTEM INTERFACES AND GATEWAYS

- Analogue PABX/PSTN
- Digital PABX/PSTN
- ISDN (basic and primary rate)
- VoIP
- PDN (TCP/IP)
- Inter System Interface (ISI)
- Dispatchers
- Control Room

With our new **ElettraSuite NMS x50** family, it is possible to take control of different technologies and devices, using standardized protocols such as SNMP.

A comprehensive set of network management facilities is available within ElettraSuite for operations, administration and management of the switching and access networks, to resolve problems before they impact on network services.

These facilities include:

- **Network operations**
Management of the network resources.
- **Subscriber administration**
The master database for network users together with its maintenance.
- **Service management**
Controlling the service capabilities of individual subscribers and groups and the management of Virtual Private Networks (VPN)
- **Security management**
Controlling access rights and confidentiality for individual users and groups.

These management facilities can be physically distributed around the network, replicated for resilience and optionally associated to regions for efficient local management.

ElettraSuite Control Rooms

With a wide range of solutions available, our ElettraSuite Control Rooms proposal offers improved operational performance with Control Room Servers (CRS), Local and/or Wide Area Dispatchers (LDS and/or WDS), Radio Dispatchers (RDS) and different gateways to be fully interoperable with other networks.

Full VoIP support provides an easy integration onto COTS hardware platforms making possible a considerable cost reduction.

Besides these typical control operations, storing and analyzing traffic (both voice and data) with our Recording Unit, or managing users' location, with the Automatic Location Server, provide scalable and efficient tools with the highest level of security.



ElettraSuite Terminals

Our proposal would not be complete without terminals.

The **ElettraSuite VS3000-2** vehicular station, together with the **ElettraSuite PUMA T3 Plus** handheld, besides supporting new features and an ergonomic design have been expressly designed to benefit from a major cost reduction exercise.

Our competitive ElettraSuite portfolio is enhanced by the new **AS-3000** terminal for Avionics applications including helicopters and fixed wing light aircraft.



< The vehicular station ElettraSuite VS3000-2

> ElettraSuite PUMA T3 Plus
Last version of SELEX Communications TETRA hand-held,

< The new equipment for avionics applications AS3000

ElettraSuite Key Design Features

- The architecture provides a cost effective solution for all system sizes by using two ranges of switches.
- Intelligence is distributed over the network: the Base Stations are provided with a feature rich fallback option, including local connectivity to external telephony and data networks.
- The system is available in all of the most commonly used frequency bands: 350 to 370 MHz, 380 to 400 MHz, 410 to 430 MHz, 450 to 470 MHz and 806 to 870 MHz. For special requests and specific markets, different frequency bands and channel spacing have also been developed.
- The system design is based on minimum link occupancy to reduce transmission costs.
- VoIP communications are fully supported as well as VoIP Dispatchers.
- The system is highly reliable due to a full set of redundancy and resilience mechanisms, including IP-based alternative routing.
- ElettraSuite offers directly connected dispatchers, either stand-alone or integrated into control rooms, which can be easily customised to satisfy the requirements of each specific user organisation.
- The system is based on future-proof design and components.
- ElettraSuite fully supports TETRA services, including all data transmission services defined by the TETRA standard.
- ElettraSuite is certified for inter-operability with all the well-known professional TETRA equipment vendors.

User Services

Voice communications:

- Point to point: half or full duplex calls
- Group calls including a wide set of ancillary services
- Broadcast calls

Data communications:

- Circuit mode data
- Packet mode data (TEDS)
- Short data service
- Status messages
- Supplementary services to enhance voice and data services:
 - PMR type e.g. call priority (including pre-emption)
 - Telephony type e.g. call forwarding

Terminals:

High quality hand portable units with encryption, supporting TETRA Multi-slot and Direct Mode capabilities. Use of a standard TETRA PEI provides a wide range of data applications from the handportables.

- Powerful mobile terminals with full TETRA functionality including:
 - Simultaneous voice and data
 - Multi-slot data
 - Direct Mode
 - PEI interface
- Dispatcher terminals; both line connected and radio connected PC based dispatch facilities



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