



CYBER & SECURITY SOLUTIONS

MC_linX

The broadband mission critical
communication platform

MISSION CRITICAL COMMUNICATIONS



Leonardo MC_linX (implementation of 3GPP MCX Mission Critical Services), part of CSP (Communications Service Platform) product family, extends the wide portfolio of standard solutions for professional communications ranging from DMR to TETRA with next generation Broadband capabilities: MC PTT, MC Data and MC Video.

Current operative procedures are field proven by years of operational experience and leverage voice service availability in every circumstances. In this context the use of broadband data is emerging as operational need both in the field and in Control Room to increase “situational awareness” and guarantee a more effective and efficient operation management.

Push-to-Talk over cellular (PoC) technology complementing traditional radios has achieved worldwide adoption and is deployed in many different industries, from logistics and transportation to manufacturing and public safety organizations. PoC allows group or individual to communicate over 3G, 4G and 5G networks, providing feature rich, secure and reliable communication services.

Standard based PoC leverage on 3GPP Mission Critical Services (MCS) standards to guarantee future proof solutions, multi-vendor interoperability and functional completeness able to fulfill demanding mission critical community communications requirements.

Leonardo MC_linX is a PoC solution compliant with 3GPP Mission Critical Services Standards Release 17 for Mission Critical and Business Critical applications providing:

- instantaneous group and private high quality voice communications;
- mobile broadband multimedia applications (real time video streaming, multimedia messaging, file/video/photo transfer, database access);
- location-based services;
- Emergency, man-down/immobility
- LMR standard interaction (via IWF) for augmentation of traditional LMR systems.
- a set of APIs for third party application development.

A Flexible solution

The Leonardo MC_linX solution can be deployed over both commercial and private broadband networks on a number of technologies including 3, 4, 5G and Wi-Fi.

When deployed on 4G/5G networks MC_linX can exploit a deep integration with the core taking advantage of standard defined mechanisms to enforce Quality of Service (QCI) to provide effective and optimized communications services.

Leonardo MC_linX can also be deployed as an Over The Top (OTT) application on an existing (i.e. commercial) networks providing best effort communication services that leverage an easy-to-use interface and offloading MC_linX providers from all network management tasks.



ONE SOLUTION, SEVERAL CONTEXTS

Leveraging private ad hoc or existing commercial networks, MC_linX combines the best of professional radio functionality with the new capabilities of smartphones. It offers enhanced features such as secure messaging, video streaming, location services, full duplex calls and much more.

The flexibility and versatility of Leonardo MC_linX allow to provide an answer to communications requirement in different market sector that share the need to reliable, easy-to-use effective services.

Public Safety

MC_linX provides a complete answer to demanding needs of Public Safety community extending traditional voice communications with a rich set of mission critical broadband services that allow officers to be in constant contact with team members and control room- In addition to a rich set of group communication services, video and multimedia information can be shared among teams and control room in timely and reliable way.

User Experience is based on consolidated experience of Leonardo in providing Communication systems for Public Safety (TETRA, DMR, Analogue) ensuring an increase of first responders' effectiveness.



Transports



Mobile communications are one of the main pillars for transport operations in railways and bus context. MC_linX support effective fleet management leveraging location services and tracking capabilities.

Extensive messaging and video provide support for operations management and security enforcement. MC_linX is at the base of Leonardo FRMCS solution, which is the new standards for railways communications on broadband networks.

Ports Airports and Logistics

Smart ports and smart airports leverage communications to optimize operations, enhance security and increase traffic capability. MC_linX support effective teams' communications supporting situational awareness, information sharing with control-room and accessing live telemetry data for informed decision process.

Logistics operations can benefit from MC_linX for fleet tracking, document sharing and applications supporting documents sharing and gate operations.



Industrial Sector



Cooperation, performance, efficiency and safety and security are only some of the needs that industries have to face in order to be competitive and to adapt to rapidly changing economic scenarios.

Industry 4.0 applications can take advantage of multimedia group communications to enforce coordination among workers, enforce security by tracking personnel in dangerous areas, sharing multimedia information supporting maintenance and repair operations.

Oil & Gas and Energy

Energy infrastructures require fully integrated information and communications solutions that are both reliable and robust, designed to operate in extreme and hazardous environments and during critical and emergency situations.

Mission critical broadband mobile are essential for this market to support workforce coordination, operators' protection, deployment effectiveness effective communications (command/feedback) enhanced by multimedia and video capability.



A COMPLETE PLATFORM

MC_linX is a complete Mission Critical solution implementing all components of the functional model foreseen by with **3GPP Standard MCX**.

It includes features from MC PTT, MC Video and MC Data providing professional users with the next generation platform for Critical communications over 4G/5G networks.

It also provides all standard based configurations and management functions such as:

- Identity Management Server (IDMS),
- Configurations Management Server (CMS),
- Group Management Server (GMS),
- Key Management Server (KMS).

The solution also encompasses a Recoding System and NMS.

Designed For Flexibility

MC_linX is a cloud native platform, designed to support the modern software architectures based on containers and micro services providing benefits in terms of scalability, resiliency, efficient usage of system resources and security.

MC_linX features user and control plane separation making it ready for 5G EDGE computing deployment.

The MC_linX solution includes SIP Core component supporting all the Mission Critical Services. SIP Core is designed for small-medium deployments and test beds, reducing the amount of integration effort.

The internal SIP Core component may be easily plugged "in" and "out" at run-time with just few clicks by using the MC_linX dashboard. External IMS are supported for large-scale deployments.

An Android Client Designed For On Field Operation

MC_linX Client is developed by Leonardo leveraging the vast experience of the company in support of the first responders' community.

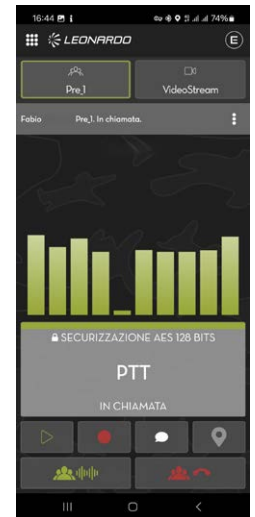
User-friendly design of the MC_linX client provides easy access to all the main functionalities.

Services can be accessed even if a conversation is in progress supporting typical mission critical use cases. Physical PTT button (including push-to-video) as well as external accessories are supported to maximize effectiveness in conversation.

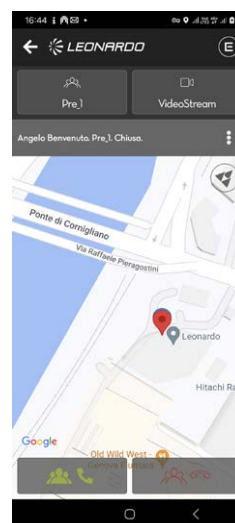
Message capability is provided in a chat style with the possibility to include documents and multimedia objects.



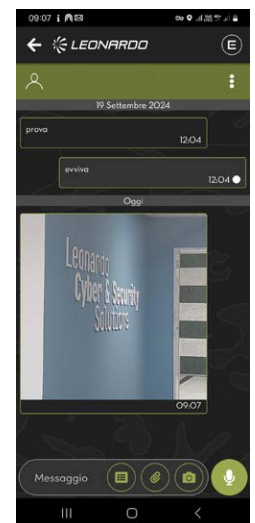
→ Client terminal typical MMI (main menu)



→ Conversation in progress



→ Map function



→ Messaging

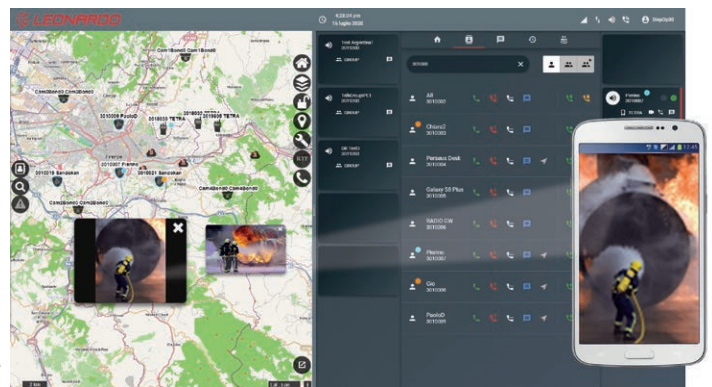


A Web Based Powerful Dispatcher

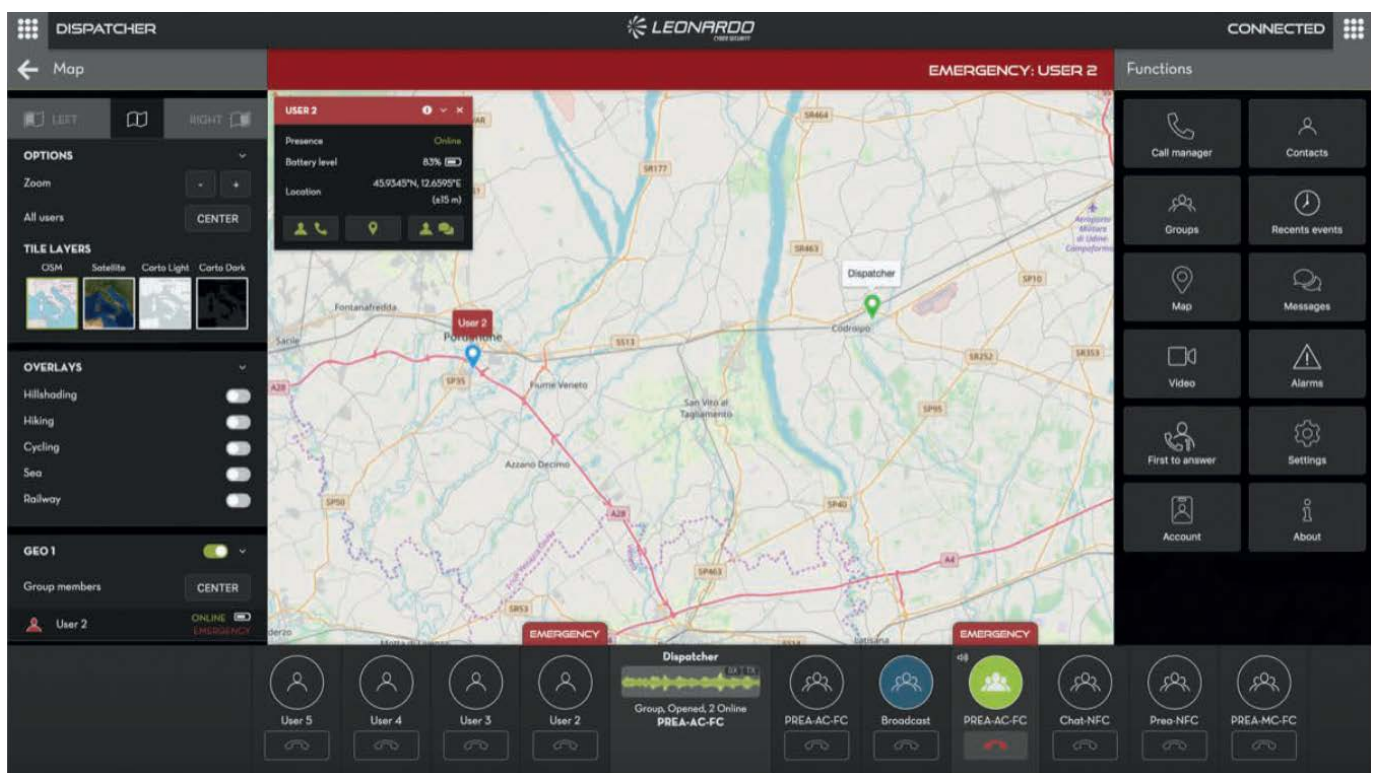
MC_linX provides different dispatching solutions designed to effectively manage daily dispatch operations and rapidly respond to incidents, urgent situations, customer requests, facility events, and other situations that require quick reactions.

Leonardo MCCR (Mission Critical Control Room) a full featured radio dispatcher is a complete solution providing multi technology capability for heterogeneous network operations.

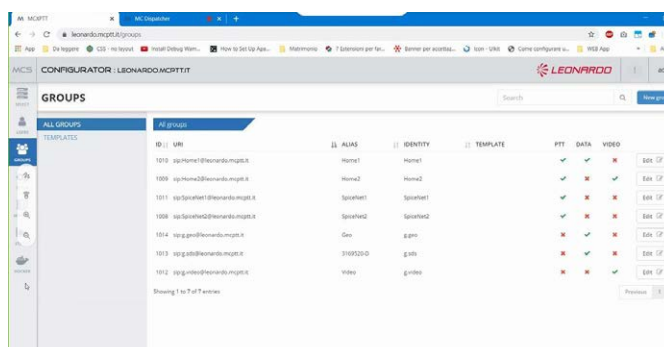
For small deployments, a full Web based solution providing PTT calls, resource location and availability, emergency calls, ambient listening and alert management through an intuitive user interface is also available.



→ Dispatcher user interface



→ Dispatcher user interface



→ Management interface

A Management Interface

The MC_linX platform is equipped with a complete tool for management and configuration operations.

It's possible to define and manage all relevant subscribers and group parameters. The tool allows to keep track of main system Key Performance Indicators concerning system usage and activities.

EFFECTIVENESS IN OPERATIONS

MC_linX solution delivers an enhanced user experience with superior performance and advanced features:

- Instant voice communication, group or private, pressing a button.
- High voice quality – use of wideband AMR codec (and ACELP as an option)
- Multimedia messaging with text, picture, video, file, recorded voice, and location
- Location-based services on device to track team members' location and share location
- Alerts –quick alert to request support in case of emergency, imminent peril or alert
- Floor Control priority feature – Allows a designated user to take over the PTT floor at any time, even when somebody else is talking.
- Emergency call
- Real-time users' presence (available, off-line)
- LMR interoperability via IWF for seamless communication with LMR users
- Man-down/immobility (configurable automatic alert in case the user falls or is inactive).

The combination of all functions allow to manage emergency situations according to 3GPP standard specifications.

Display of relevant information together with geo-referenced view of all available resources allow an effective emergency situation management.

The MC_linX provides support for Lone Worker Protection with “man-down” and “immobility” detection by means of smartphone sensors and automatic emergency call management.

Continuity with existing networks

MC_linX supports LMR interworking functions according to 3GPP standards in order to provide a smooth evolution between previous generation narrowband networks and new broadband systems.

The platform takes advantage of Leonardo CSP narrowband core network to interface the LMR system providing interoperability services with our TETRA and DMR networks.

Accessories

MC_linX client is tested and certified on a number of third party devices ensuring compatibility and optimized performance. This allows our customers to choose devices and accessories that best fit their specific needs

HIGHLIGHTS

- MCX 3GPP Standard
- Android Client optimized for on field operations
- Web based Dispatcher console
- Management and monitoring tool for configurations and KPIs
- CMS, GMS, IDMS included
- Embedded SIP core for IMS-less scenarios
- Interworking with Land Mobile Radio Systems
- OTT or full integration deployment
- 3G, 4G, 5G, Wi-Fi networks
- Recorder



FEATURES SET

| | |
|-------------------------------------|---|
| 3GPP REFERENCE SPECIFICATION | Rel 17 |
| MCPTT SUPPORTED CALLS | Chat call with floor control |
| | Prearranged call |
| | Manual and auto commencement mode |
| | Private call |
| | Ambient listening |
| | First to answer |
| | Private call call-back |
| | Pre-established call |
| | Broadcast call |
| | Emergency mode |
| MCPTT EXPOSED INTERFACES | MCPTT-1 / MCPTT-4 / MCPTT-7/ MCPTT-8 / MCPTT-9/ IWF 1/2/3 |
| MCVIDEO SUPPORTED CALLS | Chat call with floor control |
| | Prearranged call |
| | Private call |
| | Pre-established call |
| | Manual and auto commencement mode |
| MCVIDEO EXPOSED INTERFACES | MCVIDEO-1 / MCVIDEO-4 /MCVIDEO-7 / MCVIDEO-8 /MCVIDEO-9 |
| MCDATA SUPPORTED FEATURES | SDS |
| MCDATA EXPOSED INTERFACES | MCDData-SDS-1 / MCDData-SDS-2 / MCDData-SDS-3 |
| ADDITIONAL FEATURES | MCPTT QCII |
| | RX interface (MCPTT/MCVIDEO-5) |
| | Embedded SIP Core |
| | Call and data recording |
| | APIs for user provisioning |
| | MB2 interface for multicast (MCPTT/MCVIDEO-6) |
| MANAGEMENT SERVER | Management server IDMS / CMS / GMS |
| MANAGEMENT INTERFACES | CSC-1 / CSC-2 / CSC-4 |
| AVAILABLE CODECS | AMR-WB / H264 |
| DISPATCHER | Web based dispatcher |
| | WebRTC audio |
| | WebRTC video |
| | Support for custom maps |
| | Message platform |
| | Call management |
| SUPPORTED OS AND REQUIREMENT | Client: Android 6.0 or above |
| | Server: Linux Centos/ RedHat 7.0 |
| | Dispatcher/web monitoring: Chrome browser |
| SUPPORTED HYPERVISOR | VMWare vSphere 6.5.0 and above / Promox 8.3 and above |

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