CSP-MCX

THE BROADBAND MISSION CRITICAL COMMUNICATION PLATFORM

LEONARDO

Current operative procedures, field proven through years of operational experience, leverage on voice service availability in every circumstances but use of broadband data is emerging as operational need for increased "situation awareness" both in the field and in Control Room for a more effective and efficient Public Safety management.

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

The industry standard based MCX platform enables immediate and secure communication services compliant with 3GPP Mission Critical Services Standards Release 15 for Mission Critical and Business Critical applications. It offers PTT communication, enhanced with Voice, Video, multimedia Chat and a set of APIs for third party application development.

The Leonardo CSP-MCX solution can be deployed over both commercial and private LTE networks to provide users with advanced functionalities as:
- 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 and LMR standard interaction (via IWF) for augmentation of traditional LMR systems.

CSP-MCX client features a fully customizable HMI for differentiated User Experience (UX) ranging from a traditional simplified two-way radio to a full standard client functionality.

A COMPLETE PLATFORM

CSP-MCX is a complete Mission Critical solution implementing all components of the functional model foreseen by with **3GPP Standard MCx**.
Includes features from MC PTT, MC Video and MC Data providing PPDR 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).

DESIGNED FOR FLEXIBILITY
CSP-MCX 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.
CSP-MCX features user and control plane separation making it ready for 5G EDGE computing deployment.
The MCX 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 mouse clicks by using the MCX dashboard External IMS are supported for large-scale deployments.

AN ANDROID CLIENT DESIGNED FOR ON FIELD OPERATION
CSP-MCX Client is developed by Leonardo leveraging the vast experience of the company in support of the first responders' community.
Usability-led design of the CSP-MCX client provides easy access to all the main functionalities, although all 3GPP services are implemented.
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.
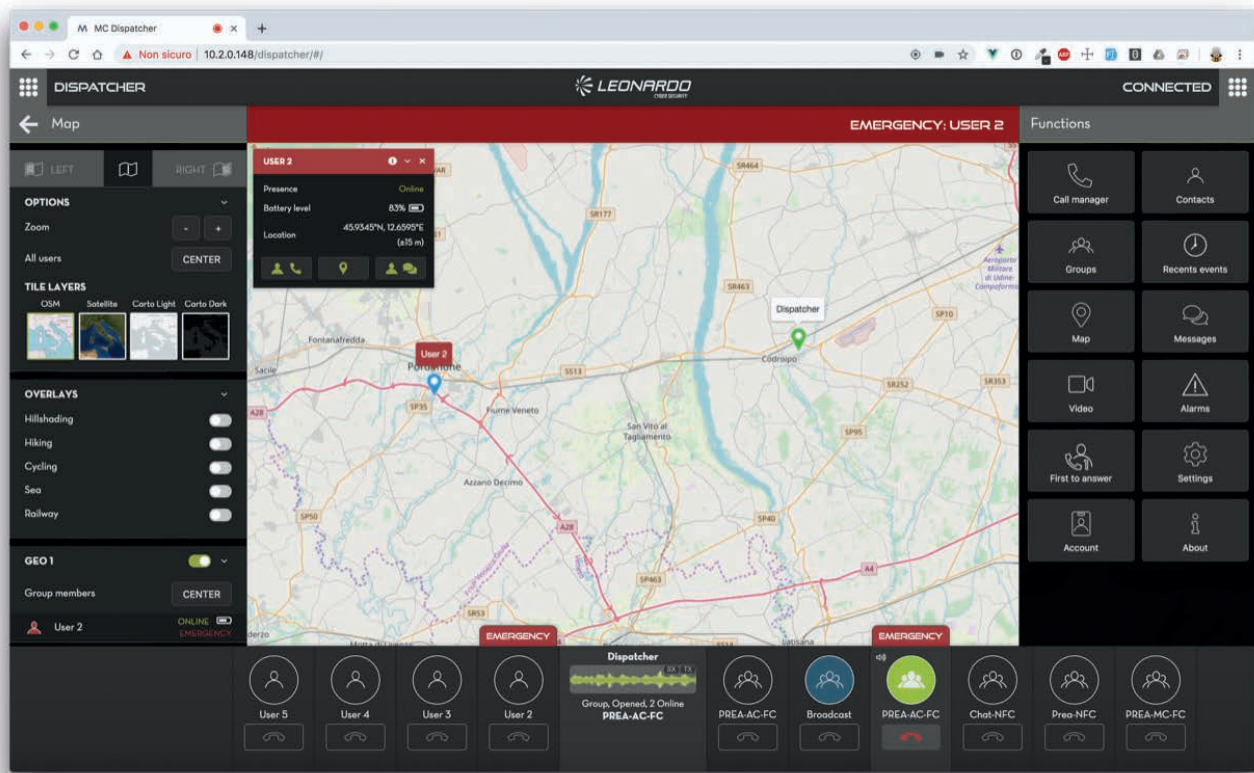Message capability is provided in a chat style with the possibility to include documents and multimedia objects.
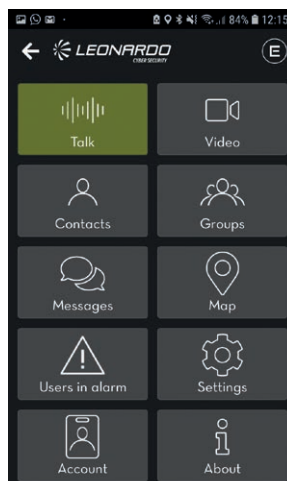
Client terminal typical MMI (main menu)
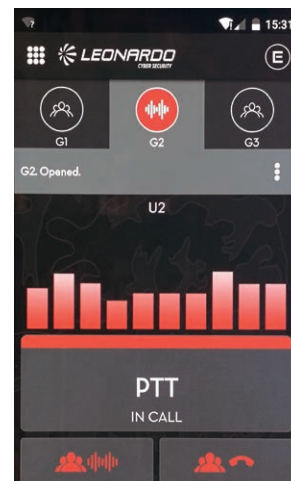
Conversation in progress

Dispatcher user interface

A WEB BASED POWERFUL DISPATCHER

The Dispatcher Console is a feature-rich Web-Based Application designed to manage daily dispatch operations effectively and rapidly respond to incidents, urgent situations, customer requests, facility events, and other situations that require quick reactions.
The Dispatcher console provides PTT calling, resource location and presence, emergency calling, ambient listening and alert management through an intuitive user interface

A MANAGEMENT INTERFACE

The CSP-MCX platform is shipped 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

CSP-MCX 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 fetaure – 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 georeferenced view of all available resources allow an effective emergency situation management,
the CSP-MCX provides support for Lone Worker Protection with "man-down"and "immobility" detection by means of smartphone sensors and automatic emergency call management.

Full-feature location services and presence management leveraging MC Data capabilities, allow for effective resources management and geographic information sharing among dispatcher and group members- Continuity with existing networks.

CSP-MCX 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

CSP-MCX client is tested and certified on a number of third party devices ensuring compatibility and optimized performance, and letting our customers to choose devices and accessories that make the most sense for their specific needs.

FEATURES SET

3GPP reference specification	Rel 14, Rel 15
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	MCData-SDS-1 / MCData-SDS-2 / MCData-SDS-3
Additional features	• MCPTT QCI • 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

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
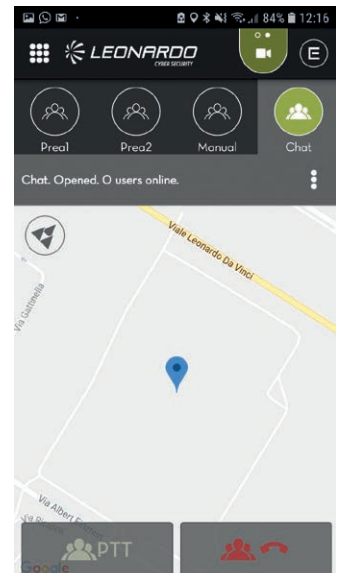
5G 3GPP 5G logo is property of ETSI. Leonardo CSP-MCX is compliant with 3GPP 5G specifications

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