The Broadband Mission Critical Communication Platform
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.

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 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 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 spec.          | Rel. 14  
| 3GPP reference spec.          | Rel. 15  
| MCPTT supported calls         | Chat call with Floor Control  
| MCPTT supported calls         | Prearranged Call  
| MCPTT supported calls         | Manual and auto commencement mode  
| MCPTT supported calls         | Private call  
| MCPTT supported calls         | Ambient Listening  
| MCPTT supported calls         | First to answer  
| MCPTT supported calls         | Private call call-back  
| MCPTT exposed interfaces      | MCPTT-1 / MCPTT-4 / MCPTT-7 / MCPTT-8 / MCPTT-9 / IWF  
| MCPTT exposed interfaces      | 1-2-3*  
| MCVIDEO supported calls       | Chat call with floor control  
| MCVIDEO supported calls       | Prearranged call  
| MCVIDEO supported calls       | Private call  
| MCVIDEO supported calls       | Pre-established call  
| MCVIDEO supported calls       | 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  
| Additional features           | RX interface (MCPTT/ MCVIDEO-5)  
| Additional features           | Embedded SIP Core  
| Additional features           | Call and data recording  
| Additional features           | APIs for user provisioning  
| Additional features           | MB2 interface for multicast (MCPTT/MCVIDEO-6)  
| Management Server             | IDMS / CMS / GMS  
| Management Interfaces         | CSC-1 / CSC-2 / CSC-4  
| Available codecs              | AMR-WB / H264  
| Dispatcher                     | Web based dispatcher  
| Dispatcher                     | WebRTC audio  
| Dispatcher                     | WebRTC video  
| Dispatcher                     | Support for custom maps  
| Dispatcher                     | Message platform  
| Dispatcher                     | Call management  
| Supported OS and requirements  | Client: Android 6.0 or above  
| Supported OS and requirements  | Server: Linux Centos/RedHat 7.0  
| Supported OS and requirements  | 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

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