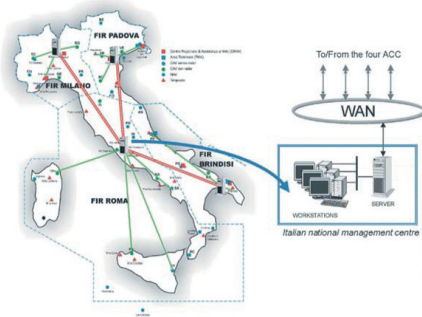


ATC Communications



Leonardo portfolio includes a wide range of solutions for Control Towers, Air Control Centres (ACC), Airports, Nation-wide systems.



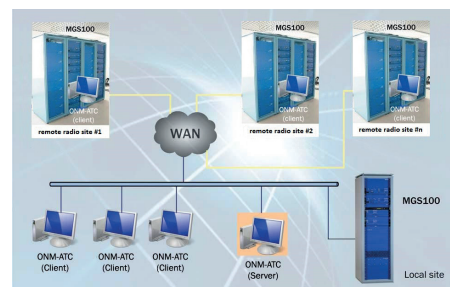
Leonardo customer base include, among others, the Italian ANSP (ENAV) and Air Force (A.M.), the Civil Aviation Authority of China (CAAC), NATO Communications and Information Agency (NCIA), Israel Airport Authority (IAA), the Airport Authority of India (AAI), AirNav Indonesia, Malaysia Department of Civil Aviation (DCA), Kenya Civil Aviation (KCAA) and Kenya Air Force (KAF).

Leonardo ATC communication capabilities encompass design, manufacture, and support of a wide range of integrated systems and equipment. Ground-to-air communication solutions are based on the OTE ARES radio series with operative band in:

- VHF & UHF, for communications in the traditional voice Amplitude Modulation (AM-DSB)
- VHF for Data-Link in Air Traffic Control (ATC) communications and Airline Operational Communications (AOC), employing VDL-2 and ACARS operating modes Data-Link is interoperable with SITA and ARINC network infrastructures.

ONM100 NETWORK MANAGEMENT

Leonardo ONM ATC Network Management provides easy configuration and control of a wide variety of third-party equipment and devices. The SNMP v2.0 manager allows third-party COTS devices to be integrated, including UPS, IP switches and routers, ground radio stations.



ONM ATC Network Management architecture has been realized according to the ITU-T M.3010 recommendations. Its technology-independent Management Information Model is aligned with ITU-T M.3100 standards. The ONM-Client is based on WebStart technology which allows a centralized management of ONM baselines, especially in case of different Clients distributed over a wide area. ONM ATC Network Management allows 100% remote handling of radio equipment and ancillaries, and local and remote software upgrading of MGS100 VHF/UHF radio stations. ONM ATC Network Management advanced graphical user interface, hosted in ONM-Clients, provides quick and easy access to network topology and network element details. Statistics are available to identify trends in the performances of the entire ATC radio network. ONM ATC Network Management platform provides multiple network Operators with several levels of security privileges. Customer may assign user accounts by associating user name, password, and role by opportunely configuring smart card readers or finger print devices.

GAT100 GATEWAY

GAT100 Gateway manages the interface towards a new ground to air communication infrastructure of already installed analog radio equipment. GAT100 provides complete and reliable integration of voice, data, and control functionalities of a Radio Ground Station in IP-based transport networks. Integration of legacy VHF/UHF radio stations is provided by means of 4W/4WE&M and serial interfaces compliant with EUROCAE ED136, ED137B, and ED138 standards. GAT100 provides, among others, the following functionalities:

- Radio control sharing between several VCSS and Network Management Systems (ONM-100) connected to the same equipment
- Operational command coordination (e.g. frequency/mode change from VCSS) with Management commands (sent for instance from the Operational Network Management)
- Remote fill-gun capability through DS102 management interface
- Analogue 4W/4WE&M to VoIP transcoding, and vice-versa, according to EUROCAE ED 137B.1 standard
- Simultaneous and independent VoIP communication channels (up to four channels for each GAT100 module)
- RS232/422/485 serial radio interface management, associated to radio remote control and monitoring functionalities, either by TCP tunnelling or serial protocol
- Main/Standby radio changeover

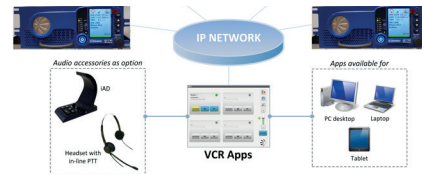
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VOIP REMOTE CONTROLLER (VRC)

VoIP Remote Controller (VRC) operating position matches the advantages of VoIP protocol, according to EUROCAE ED137B standard, with a powerful HMI based on touch screen colour LCD display.



VoIP network architecture implements new concepts to support interconnections of the same radio sites with more VCS systems belonging to different Control Centres. This kind of VoIP architecture allows Radio Ground Station connectivity towards “alternate” VCS, according to a proper Disaster Recovery policy and procedures supporting ACC reconfiguration and merging.

VRC operating positions offer the maximum connection flexibility in terms of number of operating positions and radios to be connected. The systems can be configured as:

- Remote Control Unit for emergency radio systems
- Remote Control Unit for main radio systems of small Airports / ATC centres

VRC operating positions include:

- Tablet with Linux OS
- Headset with boom microphone or gooseneck microphone with embedded loudspeaker and audio interfaces for additional ancillaries (e.g. earphone)

Each Remote Control Unit (RCU) can manage multiple OTE ARES radios connected through IP network, including:

- Different TX and RX audio communication management
- Display of incoming audio communications
- Display of radio transmission (PTT response)
- Settings of main radio parameter (e.g. squelch and frequency value)
- High level of radio and IP connection status of each channel
- General volume control of audio ancillaries
- Radio architecture configuration (IP addressing, radio channel type, frequency availability)

The headset, equipped with a high-resistant PTT button that ensures long-lasting durability, provides:

- Noise Cancelling Microphone
- Acoustic-Shock-Protection
- Coolmax® ear cushions for higher wearing comfort
- High wearing comfort with optional spacer-distance-clip

The Integrated Audio Device (IAD) allows audio call management of VRC VoIP Remote Controllers. The mechanical structure integrates one loudspeaker (3W), microphone, and 1W LED courtesy light.

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