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Several partners



TELERAD at the heart of the "Resilience" operation

TELERAD systems have been deployed for many years by the French Armed Forces in the most difficult environments and now they have played a role in a new type of combat: the fight against the Coronavirus pandemic. The "Resilience" operation against COVID-19 propagation was launched on March 25, 2020 in Metropolitan France and its overseas territories and has involved many aircraft and helicopters of all types from the French Air Force and Army. Thus, 130 patients undergoing resuscitation were transferred in France and abroad to lessen the burden of hospitals in Eastern France and in the Ile-de-France region (Paris). The French Air Force was also mobilized to transport medical personnel and equipment, for example bound for Mayotte.

During this Pandemic period, TELERAD has continued its production activities so as to guarantee the delivery of critical systems to its customers. The R&D teams in parallel have continued to innovate with the launch of the new "RAVEN" project which is pushing the limits in digital software radios, facilitating their integration into on-board systems.

As part of our continual desire for innovation, we were very pleased to welcome Franck Lefèvre, the General Technical Manager for ONERA who came to tell us about the missions of this organization and its involvement in the development of space communications technologies and air traffic control..

Patrice Mariotte
TELERAD, CEO

Three questions for

Franck Lefèvre

General Technical Manager for the national aerospace research organization ONERA
(Office National d'Études et de Recherches Aérospatiales)



Please tell us about ONERA and its missions?

ONERA is a central player in aeronautics and space research in France and abroad. We have about 2000 employees, for the most part highly qualified scientifically. We operate under the auspices of the Ministry of Armed Forces and have an annual budget of €237 million, more than half of which comes from commercial contracts. As a Government research agency, ONERA works to prepare tomorrow's defense needs, to meet the future challenges of aeronautics and aerospace and to contribute to the competitiveness of the aerospace industry. We have very extensive testing resources including one of the largest fleets of wind-tunnels in the world.

We are experts in all disciplines and technologies in the field. All our major civil and military aerospace programs in France and in Europe carry ONERA's DNA: Ariane, Airbus, Falcon, Rafale, missiles, helicopters, engines, radars, and more. Our internationally recognized researchers are frequent recipients of scientific prizes and help to train many PhD students.

How is ONERA involved in the development of communications technologies in the aerospace area?

ONERA is organized into three major program departments: Defense, Aeronautics and Space and seven scientific departments. ONERA is very involved in space technologies and in particular is the project manager for the Air Forces's GRAVES space surveillance radar. We are also pioneers in the area of communications. Several areas are being explored in close relationship with players in the sector including the CNES and ESA. I can think, for example, of our work on the Ka-band, a particularly interesting radio frequency range which is beginning to be used in Europe as it offers many advantages such as high data-rate access. Another promising technology is the laser which could open the way to more robust, very high data-rate systems (several Gbits/s) with better availability. In 2019, ONERA demonstrated the benefit of adaptive optics for correcting the effects of atmospheric turbulence on future very high data-rate laser links between the ground and a geostationary satellite. With regard to adaptive optics, ONERA has gained international recognition via projects such as the real-time correction systems for optical aberrations installed on the "Very Large Telescope" situated in the Atacama Desert in Northern Chile.

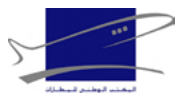
What role does ONERA play in the context of the evolution of Air Traffic Control?

Apart from the significant work done on the environmental impact of Air Traffic (decarbonization and alternate fuels, electrical, hybrid and hydrogen powered aircraft, etc.), ONERA is also involved in aeronautics and air traffic control, in particular with the SESAR 2020 (Single European Sky ATM Research) partnership as a partner of the DGAC/DSNA which manages air traffic in France. In this program, ONERA simulates, evaluates and optimizes new concepts of flexible, dynamic airspace configurations using learning techniques and taking the needs of all the players involved into account. This work has been integrated into the SINAPS demonstrator. We also have means of displaying the entire air transport system in all its actual complexity via the Iesta (now ATM Lab) platform: for example, an airport with its environment, aircraft in its air space, the monitoring of a procedure, etc.

In the context of new arrivals into the air space, ONERA is participating in the development of a concept for drone operations, taking part in dedicated committees (Civilian Drones Council, JARUS) and designing and evaluating related technical solutions in different projects, especially from the point of view of safety where it has recognized expertise. This work is needed to allow new vehicles to be integrated under the best conditions for surveillance, the transport of goods or even passengers and ONERA will play a major role in this.

With products and systems in more than sixty countries, TELERAD is specialized in the study, the development and the manufacture of radio systems used for the control of aerial and maritime navigation. A unique company in this area, it is a key player in the French and European defense, industrial and technological base.

Far west radios



To meet the needs of the growth in Air Transport on its territory, the Moroccan Airports Authority (ONDA - Office National Des Aéroports du Maroc), the guarantor of Air Traffic Control safety in the Kingdom, has launched a major program of renovation of 5 airports as well as the integration of 18 new remote VHF radio centers (new advanced antennas). Its choice is based on TELERAD equipment for the radios and associated supervision and control systems. TELERAD has been a supplier for ONDA for more than thirty years and all of its technical teams have been trained in the TELERAD training center.

TELERAD's new factory

TELERAD has been established on the Butte aux Cailles in Anglet (Pyrénées-Atlantiques) since 1986 and a bit more of a year ago, has begun an ambitious project aimed at totally restructuring its plant. This work falls into the framework of the factory of the future, designed to meet technological, or-



ganizational, environmental but also societal challenges. This will respond to many issues:

- Improved working conditions.
- Productivity
- Reinforcement of information security whether physical and software
- Reduction of our carbon footprint.

The TELERAD training center: serving professionals

The TELERAD training center offers courses in French, English and Spanish, intended

for radio system specialists whether on TELERAD equipment or in the framework of more general training programs such as that on "Radio Technology". New material is added to the catalogue each year, with in 2020, a course on "Network Programming VOIP & SNMP Series 9000-2G".

You can download the catalogue at [LINK](#)

TELERAD systems have played a role in a new combat: the fight against the Coronavirus epidemic in the framework of the "Resilience" operation



FOCUS

The pooling of air and sea rescue radio services

The International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) encourage States to create Joint Rescue Coordination Centers (JRCC) for integrating aeronautical and maritime search and rescue activities and infrastructures (ARCC: Aeronautical Rescue Coordination Centers and MRCC: Maritime Rescue Coordination Centers).

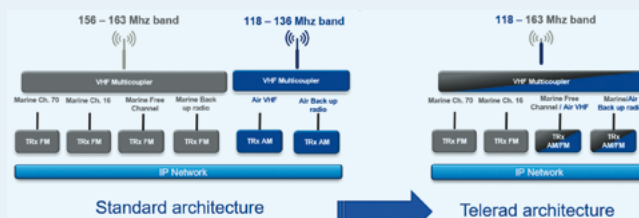
The goal is not only to provide a more effective search and rescue service but also savings. Thus, with a JRCC, there is only one single authority in charge of meeting the requirements of the ICAO and the IMO. A global approach that facilitates the coordination of operations, synergy amongst human resources and the pooling of infrastructures and equipment.

Many countries such as the United States, Canada, Norway, Sweden, Egypt, Oman, Madagascar, Australia, New-Zealand already have a JRCC and France with the JRCC of Tahiti. Placed under the responsibility of the French Polynesia Republic High Commission and based in Papeete on the Island of Tahiti, the Tahiti JRCC directs all the aeronautical and maritime search and rescue operations in its jurisdiction situated in the South Pacific, an area covering 12.5 million square kilometers.

Radiocommunications are essential for receiving distress messages and for coordinating the search and rescue operations of ships and aircraft. Organizing in a JRCC offers the immense interest of pooling ARCC and MRCC radio infrastructures and thus contributes to better VHF coverage and/or redundancy in case of incident. These operate on different frequency bands however, (118-136 MHz for ARCCs and 156-163 MHz for MRCCs), different modulation modes (AM for ARCCs and FM for MRCCs) and distinct types of links (Simplex/Duplex for ARCCs and MRCCs, Full Duplex for MRCCs). To maintain existing infrastructures and to lower costs, TELERAD has developed a "dual" radio, specifically intended for JRCCs, able to dynamically switch over from an aeronautical application to a maritime application. This equipment allows antenna

architectures to be simplified, reducing their number and limiting the problems of cohabitation and decoupling/spacing of antennas. In conformance with International Standards and providing optimal cohabitation of these two applications, this IP radio can be incorporated into any environment meeting the ED-137 standard. Multi-band, multi-mode and multi-link, this equipment also allows training operations to be streamlined, whether for its use or its supervision or for its maintenance, but also for optimizing the stock of spare parts. Lastly, its radiator-based air-cooling system does not require a fan and therefore, there is no preventive maintenance, this being a major benefit for remote and/or difficult access stations.

Duality and simplification of radio architectures



Being based on an existing coastal radio station, depending on the type of target in distress, the "dual radio" can cover the search and rescue zone in maritime or aeronautical VHF. It also provides direct communication between the target in distress and all the aerial and maritime resources committed.



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