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Several partners



2023: Return of the Airplane

After two difficult years marked by the Covid epidemic, 2023 is set to see the return of the Airplane. The number of commercial flights and passengers transported are now at their highest levels ever, drones are stakeholders in the European One-Sky and airborne mobility is becoming greener.

To celebrate this return to center stage on the aeronautic scene in all its forms, come and meet TELERAD and find out about its technological experience at the 54th edition of the Paris-Le Bourget Air and Space Exhibition (SIAE), the premier air and space exhibition worldwide, created in... 1909!

In the framework of this "renewal exhibition" and the initiation of an inclusive, resilient and sustainable European One-Sky, we are pleased to welcome Andreas Boschen, Executive Director of SESAR3 Joint Undertaking.

Have a great air show.

Patrice Mariotte
CEO of TELERAD

Three questions to:

Andreas Boschen

Executive Director of SESAR3 Joint Undertaking



What is the mission of the SESAR 3 Joint Undertaking?

The SESAR 3 Joint Undertaking (SESAR 3 JU) was launched officially in December 2021 within the framework of Horizon Europe. Bringing together the EU, Eurocontrol, and organisations covering the entire aviation value chain, including drones, this new European partnership will invest more than EUR 1.6 billion between now and 2030 to accelerate, through research and innovation, the delivery of an inclusive, resilient and sustainable Digital European Sky. Building on the achievements of its predecessor, the SESAR 3 JU will drive an ambitious programme to make Europe's aviation infrastructure fit for the digital age, while contributing towards the sector's net zero ambitions.

The single European sky aims to reduce the fragmentation of Europe's airspace, thereby increasing its capacity and the efficiency of air traffic management and air navigation services. What are the main milestones and where are we with this initiative?

Today, air traffic management (ATM) is geographically fragmented preventing resources to be allocated when and where needed to accommodate traffic demand dynamically. It means that if one air traffic control centre has a problem, its impact will inevitably spread across the network. As the technological pillar of the Single European Sky, our focus has been on decoupling ATM from the physical infrastructure, looking to digitalisation to develop a service-based system of systems, which is interoperable and scalable according to traffic. We are concentrating our research efforts on the virtualisation of data services, automation technologies, real-time information exchange between stakeholders and the introduction of satellite-based services for communications, navigation and surveillance. These offer the greatest potential to make Europe's airspace more seamless and ATM services more efficient, not to mention safer and more environmentally sustainable. So far, we have delivered more than 150 digital solutions, many of which are already in deployment, with more in the pipeline as part of our new programme. The aim is to deliver the full set of mature solutions necessary to make this paradigm shift by 2040.

What is the status of research and innovation programme and what are some of the key technologies?

Our aim is to accelerate the digital transformation of ATM. In this respect, we will first build on research outcomes from our legacy research and innovation programme (SESAR 2020) to show at scale, through five very large-scale demonstrators, the benefits of a number of quick wins for greener aviation and urban air mobility and engage with stakeholders to get moving on their implementation. In addition, under our first calls for exploratory and industrial research, we have selected 48 projects for a total investment of EUR 350 million to foster new and innovative ideas, as well as to fast-track the uptake of innovations across Europe as of 2023. More calls will be opened between now and 2027, as the programme progresses.

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.

Airspace World 2023: TELERAD celebrates its pearl anniversary with Skyguide

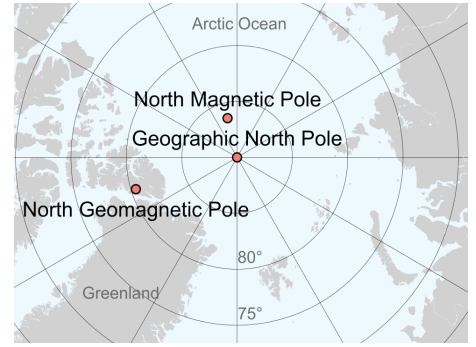
In the framework of the first edition of the Airspace World exhibition, which was held in Geneva at the beginning of March, the TELERAD



stand was the center for discussions with the major players worldwide in the field of Air Traffic Control (ATC). The high point of these three days was the visit to the Swiss civil aviation, radio installations and the remote control and supervision system, Skyguide with which TELERAD has been a partner for more than 30 years. This visit was able to highlight the excellence of the TELERAD systems with its more than 700 radios installed over 26 sites.

TELERAD at the North Pole!

TELERAD radio-beacons have been used in Polar expeditions for more than 40 years, in particular by the teams from the Expéditions Polaires Françaises (EPF). TELERAD has just delivered a mobile radio-beacon for the new European expeditions to the Arctic region or-



ganized each year at the beginning of spring. Being able to be commissioned remotely, this allows aircraft to be guided to the polar base within which, more than a hundred scientists study the icecap and its environment.

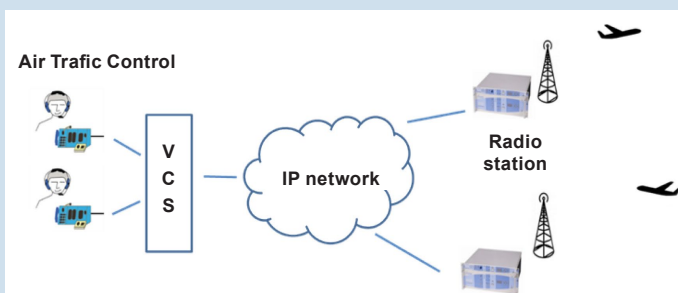
FOCUS

The hidden part of the iceberg or the ground-air communications ground segment

When you talk of aeronautical communications or ground-air communications, you immediately think about the invisible radio-frequency wave, sending voice or data between the air traffic control and the aircraft. This wave referred to as the “signal in space” is defined by the standards and recommendations of the ICAO (International Civil Aviation Organization, www.icao.int). However, you mustn’t forget the hidden part of the iceberg or the ground-air communications ground segment.

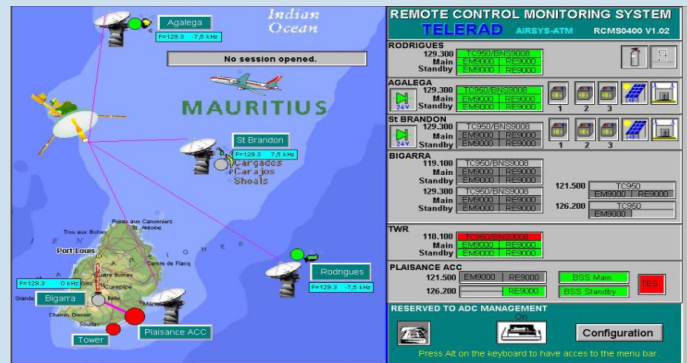
This segment groups together infrastructures whose complexity depends not only on the size of the system and the number of frequencies to manage but also on the distance between the air traffic controller and the site where the radio installation is located. In practice, the typical infrastructure is made up of:

- Operator stations or control positions comprising the interface between the controller and the system, situated in the control room or the tower.
- A “radio set” or VCS (Voice Communication Switch), situated in the technical room.
- A radio station comprising transmission and receiving equipment and the antenna system that can be situated at hundreds, even thousands of kilometers from the “radio set”.
- A supervision system.



To carry the radio signal, the choice and orientations will take into account the topology of the terrain and any other criteria, whether technical, technological, economic, geographical or environmental.

On the local or national scale, “wired” technology is the most widespread solution. Originally, this consisted of simple copper pairs but



To provide radio coverage over the Indian Ocean, the Mauritius Department Of Civil Aviation relies on advanced stations situated on the Archipelagos of Agalega and Saint Brandon and Rodrigues Island. The different stations equipped with TELERAD radios are interconnected with the Plaisance Center via satellite links.

nowadays, specialized lines adopt new technologies based on optical fiber links offering physical support to IP networks and able to transport voice over the “VoIP” Internet Protocol. Paradoxically, the ground-ground segment of aeronautical ground-air communications can be achieved using radio waves. For example, the use of Radio Beams provides an interesting alternative for getting around having to excavate trenches in rocky or mountainous terrain.

The extreme case is where the connection between the operator station of the air traffic controller (or the VCS - Voice Communication Switch) and the radio station, can pass via a satellite link. This is the case for the VHF radio coverage over the Indian Ocean for Mauritius (figure 2) or in the case of tactical operations conducted from Mainland France (TELERAD Communication letter of December 2018 “Convergence in the service of tactical operations” [LINK](#)).

Being faced with the permanent growth in air travel and economic and environmental challenges, infrastructures must constantly evolve while ensuring technological transitions. This interconnection of systems remains a major challenge for which TELERAD over the years has developed both a comprehensive expertise and unique systems. For more information: [LINK](#)

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