

PRESS RELEASE
Gif-sur-Yvette, April 4, 2024

The Franco-Singapore research laboratory SONDRA celebrates its 20th anniversary

A ceremony took place on April 4, 2024 in the presence of Emmanuel Chiva, D l gu  g n ral pour l'armement, Melvyn Ong, Singapore's Permanent Secretary (Defence Development), Cheong Chee Hoo, CEO of DSO National Laboratories (DSO), Bruno Sainjon, CEO of ONERA, Romain Soubeyran, Director of CentraleSup lec, Heng Chye Kiang, Deputy Dean (Research & Innovation), College of Design and Engineering, National University of Singapore (NUS), and the laboratory's founders: Chan Hian Lim and Marc Lesturgie.

Supported by a quadripartite alliance involving CentraleSup lec, ONERA, NUS (National University of Singapore) and DSO, the SONDRA research laboratory conducts innovative studies for radar technologies in the fields of electromagnetics and signal processing. 20 years on, the commitment remains shared, and the fruitful cooperation has resulted in numerous technological projects and demonstrations, such as advancing research in surface wave radars in ONERA.

Cooperation between ONERA and Singapore's DSO was initiated in 1999 by the French DGA and Ministry of Defense. In 2004, DSTA (Defence Science and Technology Agency) and ONERA decided to launch SONDRA with two other partners with internationally recognized expertise, NUS (National University of Singapore) and Sup lec. In 2012, DSO succeeded DSTA in the quadripartite alliance. In 2015 Sup lec and Centrale merge to CentraleSup lec, now a member of Universit  Paris-Saclay

SONDRA is a unique international laboratory in France, run by a dozen permanent researchers and teacher-researchers and endowed with a budget of nearly 3M . Backed by a strong commitment from both the French and Singaporean governments, the laboratory benefits from substantial resources to enable its scientific teams to carry out academic research in the fields

of physics (propagation, environment signatures), signal processing, electromagnetism and data (e.g. AI) applicable to radar and remote sensing.

Its permanent preoccupation is to achieve field tests and validations, thanks in particular to the resources available to DSO and ONERA. SONDRAs research supports their major achievements, enabling them to make significant progress in their respective fields.

In addition to its research work, SONDRAs is also heavily involved in CentraleSupélec's educational activities. For example, SONDRAs teacher-researchers provide a course on earth observation in the first year of the engineering cycle, attended by over a hundred students.

20 years of significant advances and international recognition!

Over the last 20 years, SONDRAs has acquired international stature, as evidenced by the laboratory's systematic participation in the prestigious committees of international radar conferences, and the presence of international experts at thesis defenses.

For ONERA, thanks to SONDRAs, Singapore holds first place in bilateral cooperation outside the European Union on dual civil/defense themes. It is the only non-Western cooperation involving an integrated team. This strong relationship, founded on trust and the desire to innovate by pushing back the boundaries, has also contributed to the entry of a Singaporean institution into the prestigious IFAR (International Forum for Aviation Research) network, of which ONERA is a member and will hold the Presidency from 2023. Singapore's entry into IFAR was reflected in the decision to hold the annual IFAR summit in the city-state in October 2024. Cooperation with Singapore is also supported by technical arrangements steered by the Defence Innovation Agency (AID).

Bruno Sainjon, Chairman and CEO of ONERA, commented: " *SONDRAs represents a scientific extension of ONERA's upstream work, as well as a formidable academic environment for the recruitment of researchers. In addition, SONDRAs is more than just a laboratory; it's a community of researchers and engineers who, through their exchanges, are able to propose new cooperative ventures between its members. Some of ONERA's collaborations with DSO, some of which have been conducted under the aegis of the DGA, now go well beyond the radar field, opening up to other dual use technologies* ".

For CentraleSupélec, the technological breakthroughs achieved at SONDRAs since 2004 confirm the excellence of its research and experimental approach to radar and remote sensing technologies applied to the environment and security. It has also demonstrated its pioneering character, seizing on artificial intelligence and increased computing power in the early 2015s, for example, to take advantage of them in signal processing for radar and as a tool for the analysis of physical phenomena. These successes position the Group as a first-rate scientific research partner, and augur very promising prospects for meeting the challenges of the 21st century, particularly those linked to climate change.

"*The challenges proposed by our Singaporean partner led us to imagine how artificial intelligence techniques could be implemented to better analyze the physical phenomena that a tool like radar enables us to observe. The laboratory's researchers have thus gained international recognition as experts in earth observation*", explains Stéphane Saillant, director of the SONDRAs laboratory.

Romain Soubeyran, Director of CentraleSupélec, concludes: *"SONDRA's strength lies in the close ties of trust that have existed for 25 years between France and Singapore in terms of security and defense, as well as the academic and scientific collaborations that have been established. This proximity has naturally led our organizations to work together on electromagnetism and signal processing applied to radar. The shared successes we have achieved encourage us to pursue this collaborative and partnership approach, so that together we can advance high-level research leading to innovations and concrete applications for the benefit of both our countries.*

About CentraleSupélec - www.centralesupelec.fr

CentraleSupélec is a public scientific, cultural and professional institution, created in January 2015 from the merger of Ecole Centrale Paris and Supélec. Today, CentraleSupélec comprises 4 campuses in France (Paris-Saclay, Metz, Rennes and Reims). It has over 5,000 students, including 3,800 engineering students, and 18 laboratories or research teams. Highly internationalized (25% of its students and nearly a quarter of its teaching staff are international), the school has forged over 170 partnerships with the world's leading institutions. A leading school in higher education and research, CentraleSupélec is a benchmark in the field of engineering and systems sciences, ranked among the world's top institutions. It co-founded the Université Paris-Saclay in 2020 and presides over the Centrale Schools Group (CentraleSupélec, Centrale Lyon, Centrale Lille, Centrale Nantes and Centrale Méditerranée), which operates international sites (Beijing (China), Hyderabad (India), Casablanca (Morocco)).

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About ONERA, the French aerospace research center – <https://www.onera.fr/fr>

ONERA, a key player in aerospace research, employs around 2,000 people. Under the supervision of the French Ministry of the Armed Forces, it has a budget of 289 million euros (2023), more than half of which comes from commercial contracts. As a government expert, ONERA prepares the defense of tomorrow, meets the aeronautical and space challenges of the future, and contributes to the competitiveness of the aerospace industry. It masters all the disciplines and technologies in the field. All the major civil and military aerospace programs in France and Europe bear part of ONERA's DNA: Ariane, Airbus, Falcon, Rafale, missiles, helicopters, engines, radars... Internationally recognized and often awarded, its researchers train many doctoral students.

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