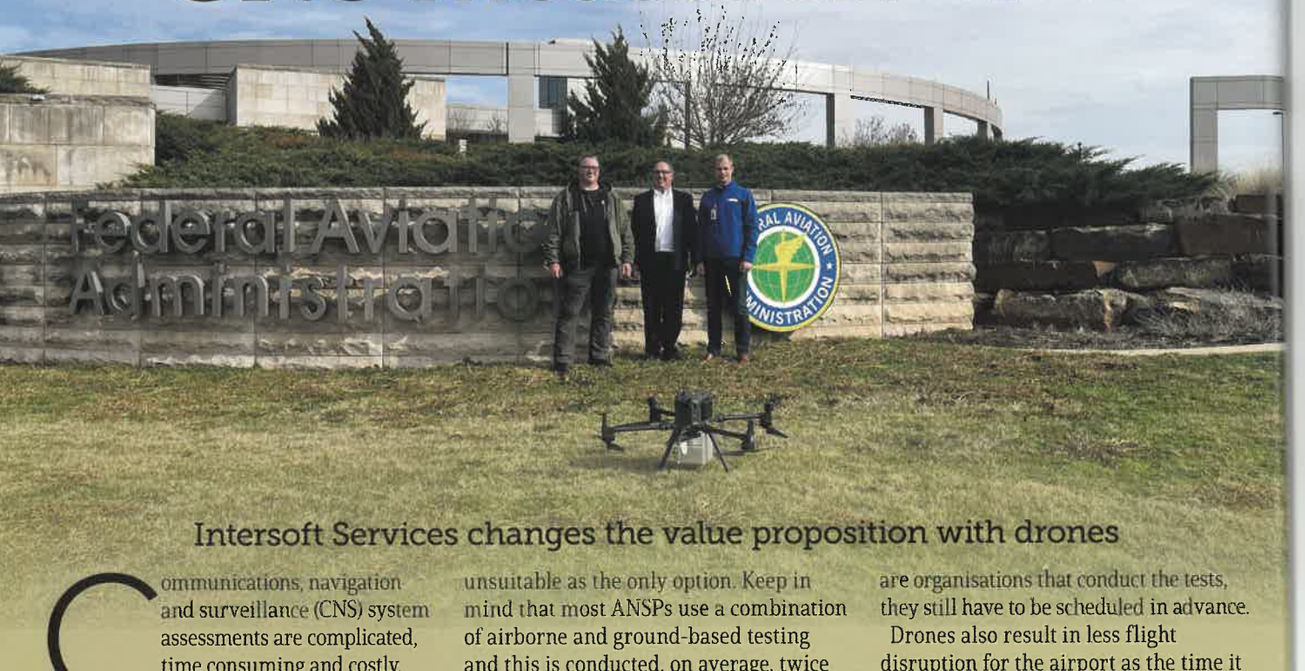
Next level CNS measurements



Intersoft Services changes the value proposition with drones

Communications, navigation and surveillance (CNS) system assessments are complicated, time consuming and costly. Let's consider the current scenario: if an ANSP wants to measure the accuracy of their radar, instrument landing systems (ILS) or other RF-based navigation aid there are two ways to do so. First is the use of an aircraft, where the planes have to be scheduled and may or may not announce their arrival to air traffic control. During the test, traffic needs to be rerouted to avoid the testing area and NOTAMS need to be issued to alert pilots of the test schedule. If this were to happen on short notice you can imagine the possible airspace disruption around airports. During this time the test planes would work to achieve specific angles of take-off and landing for roughly four hours, including as many as 10 aborted landings. This would be disruptive to a civilian airport, but in a military location the airspace could be closed for as much as one week to conduct tests.

The second option is to conduct testing from the ground. There can be challenges with interference from the airport buildings in this scenario making this unsuitable as the only option. Keep in mind that most ANSPs use a combination of airborne and ground-based testing and this is conducted, on average, twice a year. ICAO mandates checks every 180 or 360 days. For example, precision approach landing systems such as ILS can range between these timelines based on correlation between ground and flight checks. With good correlation for flight checks, 360 days can be supported.

Intersoft Services, part of the Intersoft Electronics Group, has recently launched a solution called SkyRF® that addresses these measurement requirements with drones.

Why drones?

Drones bring a different proposition to CNS measurements by combining the best of airborne and ground-based testing. As a result, the number of tests per year can be reduced by 50% because drones produce very accurate test measurements against baseline data, which increases the predictability of test results, reducing risk and flight check frequency. The difference between using drones vs aircraft affords many different types of savings. ANSPs do not have to spend time organising pilots and planes to do these tests. Although there are organisations that conduct the tests, they still have to be scheduled in advance.

Drones also result in less flight disruption for the airport as the time it takes to do the testing is reduced, and they also can be scheduled to take place in low-traffic times, which isn't usually the case with the piloted flights. Using drones also reduces impact to the ANSP yearly budget, but more importantly there are environmental benefits from lower carbon emissions and reduced noise. The flight patterns that need to be tested in the airborne scenario are easier to replicate precisely with a drone, because they fly within a centimetre of accuracy, reducing the number of repeat flights needed.

The solution

SkyRF® is offered as a certification and performance service, so there's no need for an ANSP to fly and manage drones. The service is available as a yearly subscription or on a pay-per-inspection basis depending on which system is being tested. Intersoft Services provides the drone, a drone pilot and an engineer onsite to validate the results. Another benefit of SkyRF® is that the RF control signals for the drone, the RF measurements and the air-to-ground communication are isolated and do not interfere with each other. This is an important note of caution for any organisation thinking of developing their own drone measurement solution.

Above: The Intersoft Services team at the Mike Moroney Aeronautical Center in Oklahoma City. From left: Brian Cummings (FAA), John Geraci (vice president of services at Intersoft Electronics) and Domien De Ruyck (managing director of Intersoft Electronics Services). Intersoft Services

> SkyRF® can reduce yearly tests by 50%

Michael Espinola, CEO of Intersoft Electronics US, commented: "Given 40 years of radar electronics expertise, we are well positioned to make a real change to the way aviation professionals address CNS measurements. Our very successful drone demonstrations conducted for the FAA and USAF in December 2022 confirmed that there is great interest in the technology and services. Plans are underway to incorporate user feedback into new automated drone use cases. We are working with the FAA to develop a path toward drone service implementation."

ANSPs at the core of SkyRF®

In June 2022, Intersoft Services announced its partnership with Skyguide for the deployment of SkyRF® drone measurements-as-a-service. Skyguide had already been using drones to measure CNS equipment for more than five years. During this time, they were able to gain acceptance from the Swiss Federal Office of Civil Aviation (FOCA) as well as the Military Aviation Authority (MAA) to reduce flight calibration aircraft checks by 50%. The partnership brings together Skyguide's CNS expertise in the ILS Preflight Checker software and VOR Checker software with Intersoft Services' decades of experience in radar.

Another factor which should also be highlighted is that this solution was developed with an ANSP involved, thus the final product addresses their interests, concerns and priorities. It was developed by users for users, giving it a significant advantage over other vendors.

Hervé Demule of Skyguide noted: "The partnership with Intersoft Services allows Skyguide to bring the successful experiences we have had with drone testing to more airports and ANSPs in other parts of the world. The insights we have gained have already generated positive results with our reduction in flight calibration aircraft checks, thereby reducing not only costs and operational disturbances, but also environmental impact – a key priority for Skyguide. We look forward to continuing to evolve our joint solution."

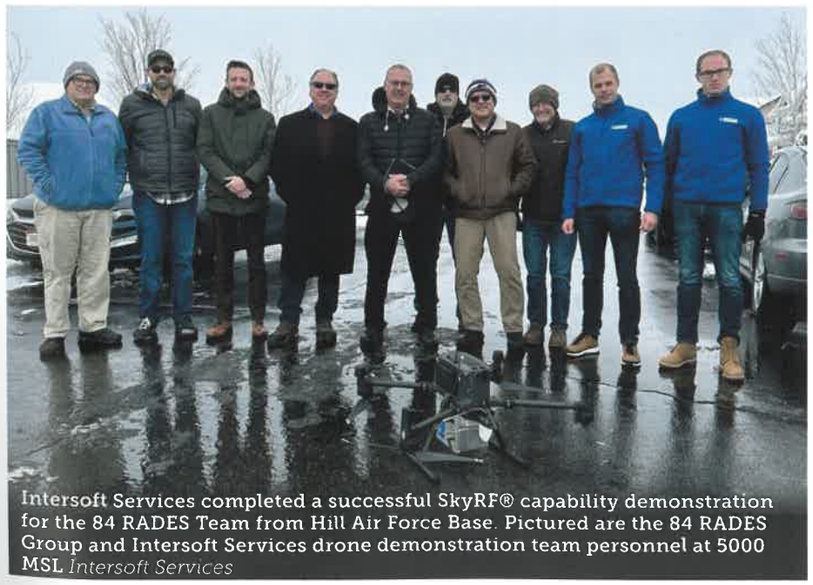
The next step

There are more exciting opportunities to come. As mentioned earlier, the drones are controlled by a pilot who is located at the airport being tested. Beyond-visual-line-of-sight (BVLOS) flying will enable the management of drones remotely, which could further reduce costs and expedite the time to provide the service. Once regulations allow for this, it can be implemented. Within five years, all test flights could be BVLOS.

The solution is also drone agnostic, meaning that if a customer wanted to provide their own drone, this would be possible. This is likely something we might see in a military scenario.

Espinola added: "As the market leader with a drone solution, we envision the service augmenting manned flight checks and, in ten years, potentially eliminating the need for flight inspection using aircraft. The implications to our customers is enhanced safety, efficiency, sustainability and fiscal responsibility." Drones continue to allow the implementation of solutions that reduce complexity, decrease the cost for the service, increase accuracy and provide a greener future. Intersoft Services is proud to be a part of this. **ATM**

Contributing writers: Hans Versmissen, Gregor Aschwanden, John Geraci



Intersoft Services completed a successful SkyRF® capability demonstration for the 84 RADES Team from Hill Air Force Base. Pictured are the 84 RADES Group and Intersoft Services drone demonstration team personnel at 5000 MSL *Intersoft Services*

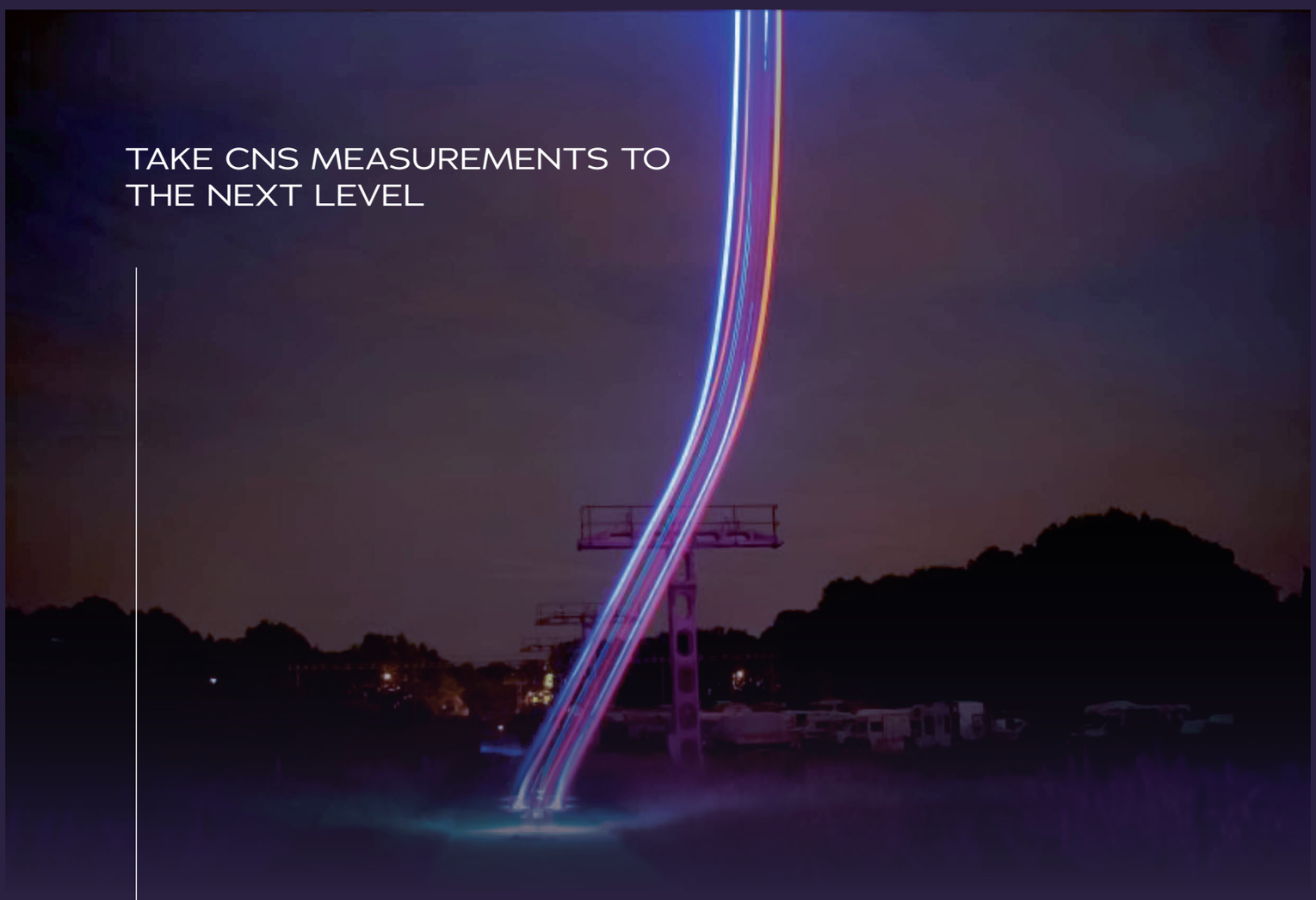
About

Domien De Ruyck

Domien is managing director of Intersoft Electronics Services. He is an experienced radar and navigation manager and engineer with an extensive history of working in the military industry. He graduated from the Royal Military Academy in Brussels with an MSc in Telecommunications.

Intersoft Services

The Intersoft Electronics Group provides state-of-the-art technology for radar system integration and service life extension. It also encompasses high-tech manufacturing facilities and a growing services organisation for CNS systems.



TAKE CNS MEASUREMENTS TO THE NEXT LEVEL

CERTIFICATION and PERFORMANCE EVALUATION AS A SERVICE

- One platform, multiple CNS:
  ILS | DME | VOR | TACAN | PSR | SSR | ...
- Cut test flights up to 50% and reduce carbon emissions
- Save costs and minimize operational impact

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