

Space-enabled drones deliver rapid coronavirus response

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Credit: European Space Agency

Satellite-enabled drones have accelerated the provision of life-saving medical supplies at NHS hospitals in Scotland, boosting the country's efforts to combat COVID-19.

The fleet took to the skies to ferry coronavirus tests and samples, medicines, and other much-needed equipment between [medical practices](#) in Argyll and Bute, a region of western Scotland which encompasses thousands of kilometers of coastline and several islands.

Drone delivery cut the average transport time in these sparsely populated remote communities from 21 hours using the existing road-based system to 60 minutes, enabling healthcare teams to provide COVID-19 diagnoses more speedily, which helped to ease pressure on overstretched NHS services.

Completed by London-based air mobility company Skyports in collaboration with the NHS, the demonstration could pave the way for a permanent unmanned aerial delivery network as early as 2022.

The project—which took place between June 2020 and May this year—was supported by ESA and the UK Space Agency as part of an initiative to accelerate the development of space-based solutions to COVID-19 and other pandemics.

It was carried out in partnership with the [Argyll and Bute Health and Social Care Partnership](#) (HSCP), the NHS organization that oversees the area's healthcare.

During the project, drones crisscrossed the region's skies supported by space data.

The drones flew pre-programmed flight paths based on coordinates and altitude levels provided by a global space-based navigation system, while [telecommunications satellites](#) enabled operators on the ground to constantly monitor aerial progress and take control if required; Earth observation data was used for topographical analysis and mission planning.

An online booking management system—developed by IT company and project partner Deloitte—enabled NHS staff to quickly request pick-ups.

Drones were dispatched from a hospital on the mainland to collect patient samples from three smaller medical facilities so they could be returned for analysis. Outbound journeys were used to deliver medicines, sample tubes, and test kits.

Alex Brown, head of operations at Skyports, said: "During the project, our drones flew over 14 000 km beyond the visual line of sight, saving over 11 000 hours in time spent waiting for samples. This demonstrates the reliability and robustness of our service, and the huge potential it has to improve healthcare outcomes in remote communities. With the support of ESA and the UK Space Agency, we look forward to further developing our technology to create a service that is commercially available

within the next year."

Provided by European Space Agency

Stephen Whiston, head of strategic planning, performance and technology at Argyll and Bute HSCP, said: "Argyll and Bute HSCP is delighted to be at the forefront of using this innovative technology to demonstrate how unmanned drones can enhance logistics operations and improve services for patients and clinicians in some of our most remote and island communities.

"Removing distance as a barrier to obtain faster results improved the quality and speed of service to patients, it also supported our doctors and nurses by providing faster results to aid and inform their decisions on care and treatment of their patients in our hospitals."

Emily Gravestock, head of applications strategy at the UK Space Agency, said: "The UK space industry has some of the brightest minds in the country and this is a fantastic example of the efforts the sector has made to overcome the biggest threat we have faced for decades.

"The COVID-19 pandemic has highlighted how challenging logistics in healthcare can be. By harnessing space technology, these drones are meeting those challenges and taking the pressure off our hardworking NHS staff—delivering tests and samples, medicines, and other vital equipment."

The project was supported by ESA's Directorate of Telecommunications and Integrated Applications through its ESA Space Solutions program, which helps European businesses to develop space-based ideas that improve everyday life.

Arnaud Runge, ESA medical engineer and technical officer for the Skyports project, said: "This project provides more evidence of the fantastic potential space has for the health sector. Being also a commercial pilot, I am well aware of the challenges and regulatory implications of sharing a common airspace between drones and other aircraft. This makes the [project](#) achievements from Skyports even more impressive and it opens the door to a new range of medical [drone](#)-based services."

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