Hands across the ocean: UK and Canada ANSPs deepen their relationship

Jane's Airport Review

NATS and Nav Canada hope their trans-Atlantic joint ownership of Searidge Technologies will spark a new era of digital ATM. *Ben Vogel* **reports**

As reported by *Jane's*, NATS (via its commercial business, NATS Services Ltd) and its Canadian counterpart, Nav Canada, are the new joint owners of Ottawa-based Searidge Technologies.

"Searidge is now the only company in the industry to be owned by two Tier 1 air navigation service providers [ANSPs]," Searidge CEO Moodie Cheikh said before the signing ceremony on 5 May. He added that the deal delivers a "strong competitive advantage".

Searidge continues to operate under its own name, although the composition of the board is changing. As joint owners, NATS and Nav Canada are each appointing two members, while Searidge co-founders, Cheikh and chief technology officer Alex Sauriol - who both sold their stake in the new deal - will have observer status.
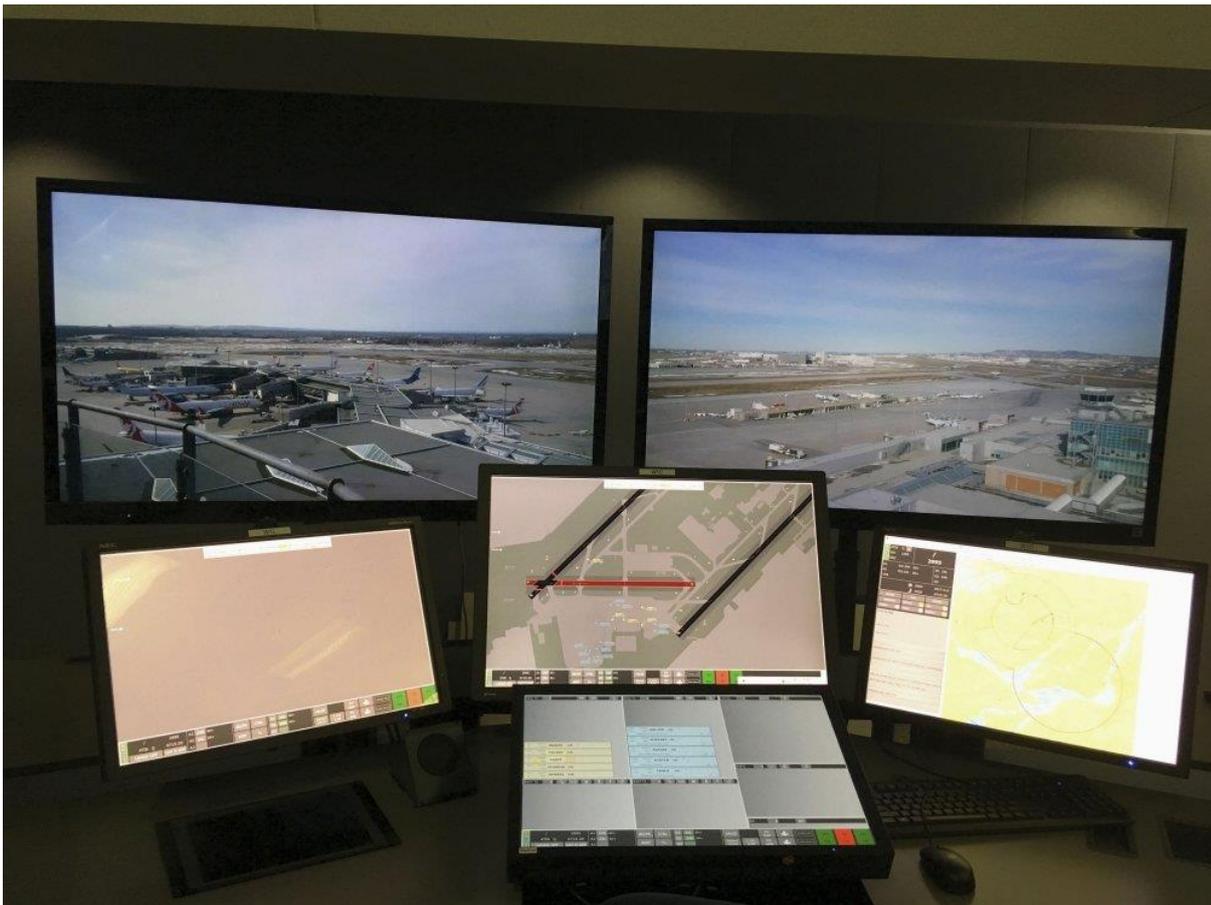
NAVCANatm integrated controller working position. (Ben Vogel)

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NATS and Nav Canada are expected to provide Searidge with the necessary financial muscle to drive ahead with innovative digital air traffic management (ATM) solutions. Wilson said that Nav Canada and NATS are building on their existing relationship to "take Searidge to the next level of growth and success", while Cheikh noted that the new-look company will be able to expand its reach into key markets and help drive innovation in an operational environment.

Both of the ANSPs and Searidge envisage a future in which digital remote technology - enabled by a network of high-definition, day/night, thermal, and pan-tilt-zoom cameras - would replace the need for fixed on-site ATC tower infrastructure at airports. "We're seeing a paradigm shift to dramatically increase the quality of the air traffic controller experience," explained Sauriol.

"Digital tower technology has the potential to completely transform the delivery of air navigation services at airports and we've been incredibly impressed by what Searidge offers," said NATS CEO Martin Rolfe. "That's why we've chosen to invest. I genuinely believe there is no good reason to build a physical tower anymore, anywhere in the world."

The 50% acquisition of Searidge marks a new milestone for NATS. "We had never acquired [equity in] a company before," Rolfe explained. Referring to work by Searidge on digital remote towers and artificial intelligence (AI) for ATM, he added that "we are on the cusp of a technical revolution".

The aviation industry is relatively conservative, so a key challenge is to gain a critical mass of cultural acceptance from users who are accustomed to traditional methods of tower control.

"It's not that big a switch to apply the same digital approach to towers that we already have in en route centres," Rolfe insisted. "It's only [perceived as] difficult because it's different."

Both Rolfe and Neil Wilson, president and CEO of Nav Canada, view a future in which digital technology holds the key to unlocking capacity, safety, and efficiency benefits for airports, airlines and, ultimately, the travelling public. "I genuinely think the way Searidge is thinking and the way the industry is going are totally aligned," Rolfe remarked. "We will see a huge change in the way that digital technology is used throughout the [ATM] value chain."

Wilson noted "enormous potential" for deployment of Searidge systems around the world, adding that the joint ownership arrangement with NATS reflects a technological affinity dating back to the early 2000s. The two ANSPs are adopting the Aireon space-based ADS-B system, for example, and the NAVCANatm subsidiary of Nav Canada supplied electronic flight strips to NATS for use at Heathrow and other major UK airports.

During World ATM Congress in March 2017, NATS announced that it will operate a remote tower demonstrator from Saab Digital Air Traffic Solutions at its Swanwick Control Centre. At first sight this appears contradictory, as NATS was already engaged in negotiations regarding Searidge. "It actually all fits together pretty well," said Rolfe. "We need to offer choice for our customers, but we think that Searidge can help us provide a new offering."

Saab Digital Air Traffic Solutions remote tower technology is being implemented at London City Airport in the United Kingdom, in a multimillion-pound project. A 50 m-tall digital tower, designed by Pascall + Watson, will be operational in 2019. The digital tower will feed data via a superfast secure fibre connection to a dedicated remote ATC room at the NATS centre in Swanwick, approximately 130 km away.

Digital projects

Searidge was the first company in the world to deliver an operational video system in an ATC tower, and since then the company has expanded its product range to include scalable and customisable digital tower solutions for airports of all sizes. It was also a founding member of EUROCAE Working Group 100 on remote and virtual towers.

Examples of Searidge digital airport remote tower projects in progress include Budapest Ferenc Liszt International, Hungary (on track to move to a second phase); Halifax Stanfield International, Canada; Jersey, United Kingdom (Channel Islands); and St Pierre and Miquelon (French overseas territories south of Newfoundland). Company officials indicated to *Jane's* that Searidge is interested in a study proposed by Highlands and Islands Airports Limited (HIAL) to build a remote tower capability covering 11 low-volume airports in Scotland.

"Budapest has turned out well," said Cheikh. "We continue to make enhancements to the system purely based on controller input … the number of sensors, and the different technology that we've had to integrate [our solution] with, means that Budapest is as complex a solution as we'll ever see in an airport."

The runway controller position used during the live RACOON trials in Milan (pictured) at the Searidge facility in Ottawa. (Ben Vogel)

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With investment support from Nav Canada, Searidge was able to participate in SESAR via the RACOON large-scale demonstration project in Italy, which saw Italian ANSP ENAV successfully

test a remote tower solution in Milan. Remote tower services (RTSs) were provided to Linate from an ad hoc remote tower centre (RTC) at Malpensa Airport, more than 70 km away from the Linate local tower. The RTC at Malpensa also provided RTS to Malpensa Airport and a third virtual airport. The remote tower working position was equipped with NAVCANatm systems, complemented by a reproduction of the 'out-the-window' view using high-definition camera sensors supplied by Searidge, as well as electronic flight strips.

"Alongside what we're doing with HungaroControl at Budapest, RACOON proved that controllers could use remote tower services at busy international airports, not just smaller airports," said Neil Bowles, Searidge head of ATM.

The demonstration facility at the new Searidge headquarters in Ottawa, showing the proof-of-concept remote tower system for Dubai. (Ben Vogel)

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Searidge also developed a proof-of-concept remote tower system at Dubai International Airport. Dubai Airports originally selected Searidge for remote situational awareness and zone occupancy of four critical intersections at Dubai International. The ATC-grade and intelligent video surveillance system went operational in November 2014.

Jane's was shown a proof-of-concept remote tower system for the airport, with 180-degree panoramic views of the airfield. Components come from the existing Enhanced Airport Vision Display (EAVD) ramp control system, but there are new features such as approach monitoring.

"The idea for approach monitoring came from Dubai Airports and DANS [Dubai Air Navigation Services]," Bowles explained. Out-of-the-window visibility at Dubai can be poor, so Searidge installed cameras looking out to the main approach paths, plus ADS-B antennas. "Effectively, we have video of the aircraft on approach with some flight information such as distance to touchdown. We also have the capability to see the next aircraft along, allowing us to determine spacing between those aircraft, using the ADS-B data."

Bowles noted that approach monitoring is now almost a standard requirement for remote tower projects. "Part of our engagement with [EUROCAE] Working Group 100 was to bring this capability into mainstream remote tower specifications."

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Filling the gaps

The new joint ownership arrangement between NATS and Nav Canada would help Searidge to fill certain capability gaps, said Cheikh, including the development of operational concepts and "the soft pieces" of a complex ATM programme. "Put this together with Searidge and Nav Canada technology, and we have a full-scale offering with no gaps. We're not simply looking at remote towers. We're looking at all sorts of applications that can work in a staffed tower, which can augment operations and can work in a contingency. Every tower at every airport is a potential opportunity for us."

Yet this strategy raises two questions. Will Searidge grow fast enough to keep pace with demand? And, if digital technology and AI can improve ramp and runway operations, can the same principles be applied to the rest of the airport?

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TIME FOR AI, SAYS SAURIOL
During World ATM Congress in March 2017, Searidge launched its Aimee AI platform. Machine-learning 'digital-assistance' functions in Aimee would enable tower and en route controllers to "increase the pace of delivery while reducing cost", said Sauriol, by helping customers to focus on core tasks while ironing out any weaknesses in the systems they use."AI is going to underpin every experience we have with technology," he predicted. Computer vision processing with Aimee is already in use at Fort Lauderdale-Hollywood International Airport in the United States for detecting and classifying ramp traffic, as part of a wider project driven by Amadeus. Searidge hopes to make its AI-based intelligent vision capability available to customers by mid-2018.By giving controllers the ability to 'train' self-learning technology simply by using it, AI will "dramatically increase the quality of the end-user experience", Sauriol said.
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