



ALTITUDE
— **ANGEL** —



Altitude Angel Empowers NATS to deliver its Central UTM Systems and Launches the Airspace User Portal

CASE STUDY: NATS

SOLUTION: GuardianUTM O/S

NATS is the UK's leading provider of Air Traffic Management (ATM) services.

In its commitment to making our skies safer and to ensure its ability to lead innovatively in the emergence of drones, it has formed a strategic partnership with Altitude Angel, the world's leading drone services company, defining Unmanned Traffic Management (UTM), to deliver it to the United Kingdom.



As a modern aviation technology company, Altitude Angel is a leading provider of standardised UTM systems which integrate with ATM technology, with the support from strategic partner Frequentis AG. Altitude Angel produces several software products aimed at addressing and supporting different sectors of the emerging commercial drone industry.

Its core solution, designed and developed for air navigation service providers, is GuardianUTM O/S. It's a next-gen airspace management operating system, designed to fully integrate drones safely into everyday ATM activities and systems, while remaining fully future-proof to evolve with the changes which are yet to come in this otherwise very emergent industry. It enables an ANSP to offer competitive, UTM foundation services to kick-start a competitive drone services economy in its country, while ensuring the ANSP can establish itself as the central and critical resource in the emerging field of UTM.

How did Altitude Angel enable NATS to become a global leader in UTM?

Working together, Altitude Angel has enabled NATS to deliver several key UTM-focused projects and is key to the NATS strategic roadmap on UTM for the next ten years.

The partnership sees NATS deploying Altitude Angel's GuardianUTM Airspace Management Operating System for national operations within the UK, serving as the technical foundation layer for UTM, while enabling NATS to utilise existing ATM systems – a critical component for successful UTM roll-out in ANSPs. Using this technology, NATS has been able to offer several new innovative services to airspace users in the UK and has big plans to roll-out several new capabilities to support drone use in the United Kingdom.

The core capabilities of the platform provide NATS with an operating system from which secure data exchange between ATM systems and UTM consumers can take place and includes the Drone Assist safety app for iOS and Android.

Partnership successfully delivers Operation Zenith – the most comprehensive drone trial

The partnership has recently delivered Operation Zenith - a programme of live demonstrations of ATM/UTM integration in controlled airspace. Operation Zenith is the most comprehensive set of drone integration scenarios taking in place in controlled airspace and has been widely regarded as the most significant demonstration in the UTM industry to date.

The demo took place at Manchester Airport, where the drones were overseen by NATS air traffic controllers who were communicating with drone operators via Altitude Angel's GuardianUTM O/S Airspace Management Operating System. Operation

Zenith proved how a series of on-airfield tasks can be performed without endangering or disrupting airport operations.

Building on success

Working closely together for nearly three years means a considerable amount of confidence and trust has been built between NATS and Altitude Angel, “two elements which are just as crucial as having great products”, notes Richard Parker, CEO of Altitude Angel.

One of NATS’s early projects with Altitude Angel, the Drone Assist app for iOS and Android, now provides over 70,000 registered drone operators in the UK with access to the best-available, most accurate airspace data and offers out-of-the-box support for the European U-Space initiative, enabling NATS to solve several emerging challenges while retaining its ability to deliver future-proof solutions.

“The attention to detail in our data, our approach to partnership and intrinsic safety-focus is something NATS observed as unmatched within the industry,” added Parker.

““ *Altitude Angel is delivering a far greater level of data integrity and attention to detail than we saw from anybody else... They have the same passion around safety you find intrinsic within NATS which means a great deal to us...*

Andrew Sage, NATS Head of Unmanned Traffic Management

For Altitude Angel, partnering with ANSPs which deploy its technology is crucial to ensuring success. “We aren’t just here to position our technology and move on,”

comments Parker. “Each ANSP is different, has unique systems and processes to follow. A significant factor in making the most of GuardianUTM O/S and the opportunities it provides is ensuring we’re there to support our partners’ ambitions for UTM, both now and in the future”. This is particularly relevant because UTM is still emergent.

Ensuring Altitude Angel’s technologies are deployable within the existing ATM environment, by supporting controllers and making use of existing investments in process and equipment, is a critical step in enabling ANSPs to deploy foundation UTM capabilities today. This capability enabled NATS to develop a seemingly non-UTM focused service which enables General Aviation (GA) pilots to submit Class D Transit Notifications to NATS digitally.

Class D Transit Notifications via the NATS Airspace User Portal (AUP)

A recent air traffic controller survey found the current handling of General Aviation (GA) flights into controlled airspace meant controllers had no prior notification from GA pilots wishing to enter, leaving the controllers little time to create a proper plan for the operation. There was also feedback from some GA pilots reporting frustration when making a controlled airspace (Class D) transit request, querying why air traffic controllers were asking so many questions before even considering their request.

That’s why, in January 2018, NATS switched-on its Airspace User Portal (AUP), a public web site which interconnects directly to the UTM backbone provided by NATS’ deployment of GuardianUTM O/S. This completely addressed the feedback from ATCOs, and now, pilots have an easier way to communicate and a more efficient mechanism for notification.

“ *Pre-notification is especially important in today's busy airspace where complex air traffic scenarios can develop rapidly. The new service, powered by our deployment of Guardian UTM O/S, will enable our ATC units to see the requests well in advance and plan ahead, which will benefit everyone involved.*

Tammy Storrow, NATS Terminal Control Safety Improvement Specialist

A phased-roll out helped NATS's controllers build confidence in the technology

The AUP system has successfully completed its initial pilot stage and NATS will roll out support for Unmanned Aerial Vehicles (UAVs) to six trial UK airports later this year. GuardianUTM O/S gives ANSPs choices about how and who can connect to their new, digital platform.

Through a simple configuration choice, ANSPs can offer secure, API access for third parties, including drone manufacturers and software developers. In addition, by enabling Altitude Angel's public cloud interface, GuardianUTM Public Cloud Connect™, ANSPs can benefit from hundreds of ready-made integrations, from the world's biggest drone manufacturers, to the niche start-ups which will, in the fast-paced world of innovation in this industry, likely become the next big thing.

These options directly support more innovative use of the airspace, while ensuring NATS can deliver safe and equitable access to the airspace via its own UTM system.

To fully support the emergence of increasing numbers of drones, NATS has also enabled Guardian UTM O/S' protected airspace management module, which is designed to deeply integrate into existing ATM systems, including surveillance radar, electronic flight strips and voice communications switches. This enables

them to safely give drone pilots digital access to controlled airspace across the entire country; **an industry first**, which truly begins to bridge the gap between the UTM and ATM environments.

Ready for the future

Operation Zenith and the AUP rollout are key milestones in the NATS and Altitude Angel partnership which was formed just eight months ago, building on two years of success working together.

Both organisations share a common objective: to help keep our skies safe. By deploying Altitude Angel's technology, NATS can now offer dedicated, world-class services to the drone industry, and is able to open the commercial opportunities on the horizon.

Evidence shows as drones continue to evolve, they will demand greater access to airspace, further challenging today's aviation systems. ANSPs currently ensure traditional airspace users can access the country's airspace safely. Drones offer a new challenge; ANSP's will need to adapt to meet future needs of their country's aviation industry.

“ *Our partnership with NATS signals innovative, global ANSPs recognise and desire to work with the best technology provider in the sector, and the importance for ANSPs to be involved in the emergence of UTM capabilities. We believe partnerships like this are the future for unlocking the potential for UAVs on a national scale, routinely and safely.*

Richard Parker, Altitude Angel CEO

In the UK we've seen a successful partnership develop; Altitude Angel providing the cutting-edge technology platform needed by NATS to integrate drones safely into its airspace. This successful partnership has demonstrated how Altitude Angel's technology can be utilised; a model which can be adopted by other ANSPs across the world.