



## More real than reality?

**S**imulation technology has advanced dramatically in recent years, however you may be surprised to find that it is now so good that airports such as LAX are using it to model and test potential infrastructure developments.

The system used in this instance is NASA-owned and is currently the most advanced in the world. Supplied by Adacel, the exact same technology used is available commercially as MaxSim, using off-the-shelf hardware to keep costs to a minimum and integrate longevity into the system.

Product Director Gary Pearson spoke to the ATM Report about the cutting edge simulator: "MaxSim offers a combined tower and radar simulation and has some unique and outstanding features. Its holy grail is voice recognition, the level implemented is unprecedented and literally blows people away. In previous technologies this has never really worked, but this system is better than a real-life situation. Statistics show that in a real-life situation an average of 80% of what is spoken will be actually understood, the simulator achieves levels approaching 98%. No voice training is needed and the system copes with accents and background noise, basically any conversation that would be needed in the tower environment is available.

Not only this, but the system responds using synthesised speech, this saves a great deal of money as previously a large quantity of 'pseudo pilots' would be needed to create these responses and make the simulation happen. Its also quicker and more accurate as the realism of pseudo pilot-based simulations depended on their individual knowledge and experience."

The MaxSim system is full of finely honed details, including realistic accents, different background noises according to the situation and an upgradeable database of over 450 aircraft fully modelled. It can be scaled to the user's budget, but at the top end offers photo-realistic imagery at a resolution of 2,500 x 1,500, which is indistinguishable from normal 20/20 vision.

It also has other benefits and applications, as Pearson explained: "It only takes a couple of days to model a new aircraft, so MaxSim is an ideal tool for practising with experimental aircraft. We have a dedicated support organisation for these systems, and have received orders for up to 118 of them, including up to 94 to the US Air Force, eight to the FAA and four to ENAV."

### Automatically avoiding conflict

Adacel is also the company responsible for supplying the oceanic automation software to Lockheed Martin for the FAA's ATOP (Advanced Technologies and Oceanic Procedures) programme to improve safety and efficiency in oceanic, offshore and transition airspace. Based on Adacel's Aurora product and with radar and ADS-B data processing from Lockheed Martin, it will feature common procedures, training, and support for the three air route traffic control centres responsible for the management of oceanic airspace around the US.

The system improves the efficiency of ATM, allowing preferred routes and featuring the world's only proven automated flight plan based conflict probe (ACP).

Bill Lang, Adacel VP of the ATM business unit said: "Satellite based technologies have been used in the Pacific for some time and are now being introduced in the North Atlantic. With ATOP, three of the five North Atlantic controlling centres – New York, Reykjavik and Santa Maria (the others are Gander and Prestwick) will be using Aurora. With earlier versions of this software, Santa Maria and Reykjavik recently became the first North Atlantic service providers since the 1980's to introduce completely new flight data processing systems. These systems feature the same conflict probe to be used in ATOP and are upgradeable to include full FANS capability for ADS and CPDLC. In the New Zealand and ATOP versions it is already fully integrated with ADS and CPDLC. This permits the airlines to fly user preferred routes and to have multiple reroutes whilst in flight. No other system in operation today can do that. Although the introduction of ATOP in the FAA centres will occur during 2003-2004 our system is complete and available as a bespoke package now. It is Windows-based, wholly upgradeable and features dual redundant architecture – ensuring high reliability."

Development of the Aurora system started in the early 1990's and Adacel are very proud of its ability to probe an entire route, whilst also maintaining that probe based on a real-time flight profile: "As soon as a controller probes a route change then that airspace is reserved for that flight – this is a great cutting edge software that also integrates perfectly into domestic radar-based systems. Aurora automates many 'estimate' tasks, replaces paper with electronic information and cuts down on operator workload, resulting in better service to the airlines."