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18 September 2025

UCT study highlights aviation legislation gaps that could impact flight safety



Dr Cindy Hendrikse

Photo: Supplied

A University of Cape Town (UCT) study in [Private Law](#) has shed light on the impact of automation on air traffic controllers. By showing the gaps in legislation, procedures and technology, the study highlights risks that could impact air traffic controllers and flight safety.

The study revealed that international, European Union (EU) and local legislation do not fully address the needs and challenges of air traffic controllers.

"From surveys, air traffic controllers reported issues such as becoming overly trusting of automated systems, feeling increased workload when those systems fail, a loss of manual skills and adhering to procedures even when they aren't always accurate," said Dr Cindy Hendrikse, who graduated with her PhD in Private Law on Tuesday, 9 September 2025.

Hendrikse's thesis, titled "The Impact of Air Traffic Management Automation on the Human Performance of Air Traffic Controllers in Aviation Law", examined the impact of increasing automation and artificial intelligence on air traffic controllers, particularly in a field governed by international aviation law. It focused on the impact automation has on air traffic controllers within a highly regulated environment.

It investigated whether these laws and automated systems consider the human performance of air traffic controllers, and how air traffic controllers experience working with automation. It further aimed to give a voice to air traffic controllers who work tirelessly behind the scenes when regulators are often too removed from the actual operations.

Hendrikse holds an Advanced LL.M International Air and Space Law from the University of Leiden, the Netherlands, and commenced her studies at UCT in 2022.

"With experience in both air traffic control and aviation law, I realised there is a gap between the roles of air traffic controllers and operational procedures. This insight led me to research the reasons and whether it is, in fact, mandated by international aviation law," she said.

She used a multidisciplinary approach, including human factors research, analyses of international and EU aviation legislation, and comparisons of the legal framework of the UK, Netherlands and South Africa to highlight the lack of consideration for air traffic controllers.

The legislative analyses revealed several shortcomings, while the qualitative survey provided insights from air traffic controllers' operational experiences.

Hendrikse said that although air traffic management systems already use artificial intelligence, all air traffic controllers surveyed weren't aware of how AI is already being applied. "They also have doubts about whether AI could ever completely take over the decision-making that air traffic controllers currently handle," she added.

"The findings highlighted automation-related challenges, such as complacency and overreliance, and the survey indicated that air traffic controllers adhere to operational procedures regardless of their accuracy. Furthermore, automation failures were found to increase air traffic controllers' workload, and while no participant could identify current applications of artificial intelligence in air traffic management, most expressed distrust in its ability to manage air traffic independently," she said.

Her research goal was to demonstrate that aligning these systems, their governing legislation, and ATC operational procedures with ATCs in mind "will significantly enhance ATCs' performance and trust in automation and AI, thereby increasing safety in an increasingly technology-driven environment."

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Issued by: UCT Communication and Marketing Department

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