USE OF ASRU* IN ATMOS**

*) Automatic Speech Recognition and Understanding

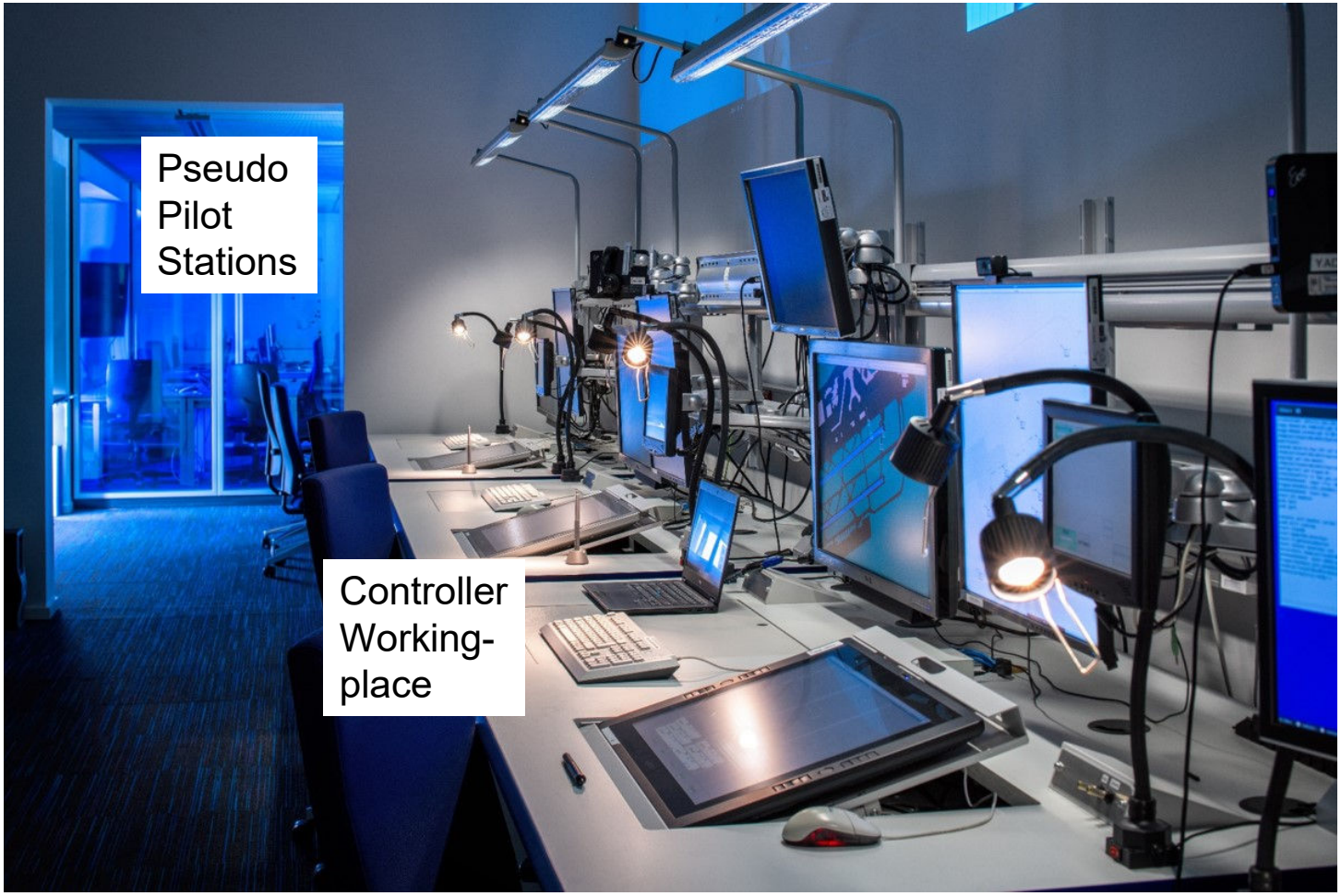
**) Air Traffic Management and Operations Simulator

Thorsten Mühlhausen, Institute of Flight Guidance, 04.11.2026

ATMOS



Pseudo pilots hold an aeronautical radio licence issued by the Federal Network Agency



Pseudo pilot actions in the ATMOS environment

	Situation awareness	Radio message	Listen to controller	Assigning the aircraft	Understanding the commands	Radio readback	Entering commands
Initial Call	X	X					
Follow of controller advisories	X		X	X	X	X	X
(Activation of special events)	X	(X)	(X)	(X)	(X)	(X)	X

Supported by ASRU

➔ **ASRU can support the pseudo pilot in 65-90% of the activities (depending on the exercise)**

Pseudopilot without and with ASRU



Descending flight level 230 with a rate of 1500 or more turning left direct DOLUR, reducing speed 250 knots Lufthansa 123

DLR

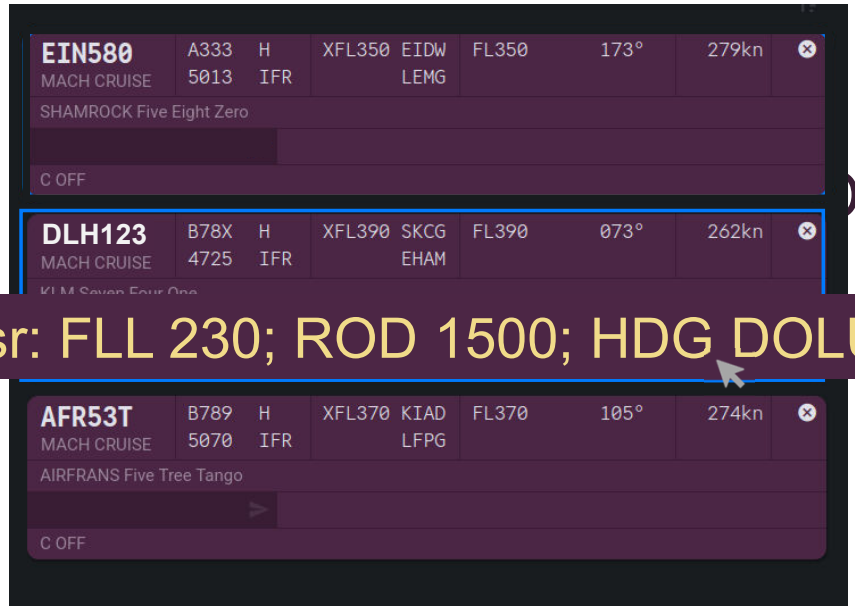
Without ASRU

UCO	callsign	type	FL	HDG	IAS	M	ROC/D	phase	rwy	Dp/Ds	route	flags	commands
	GMI3405 GERMANIA	B737	250 250	078	292 (280)	0.70	+0	CCR NAV	23R	GCFV EDDL	DL402	RT IA SP HA	MSG DL
	AAL242 AMERICAN	B763	250 250	085	278 (310)	0.67	+0	CCR NAV	23R	KORD EDDL	DL452		
	DLH123 LUFTHANS	A320	250 250	273	258 (280)	0.62	+0	CCR NAV	23R	LPFR EDDL	DL452		

MSG

DL

With ASRU



absr: FLL 230; ROD 1500; HDG DOLUR; SPD 250

This ASRU support increases the capacity of one pseudo pilot from 6 to 10-15 simultaneously controlled aircraft!



Challenge and Conclusion

Each new validation exercise requires adjustment of the speech recognition model without having recorded data

Past projects		Future projects	
• FIR Singapore	• En-route Cornwall	• En-route Solling	• …
• TMA Berlin	• En-route Celle	• TMA Athens	
• TMA Zurich	• TMA Dusseldorf	• TMA Prague	

➔ **SELF-MADE-ATC provides tools to improve the speech recognition model**

We have a win-win situation:
The speech recognition team can test their new developments
The ATMOS team can reduce the number of pseudo pilots in the trials

Impressum

Thema:	**SELF-MADE-ATC: Use of ASRU in ATMOS** Use of ASRU* in ATMOS**
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