NEXTGEN Training Technologies

CBTA- Current Developments in pilot training

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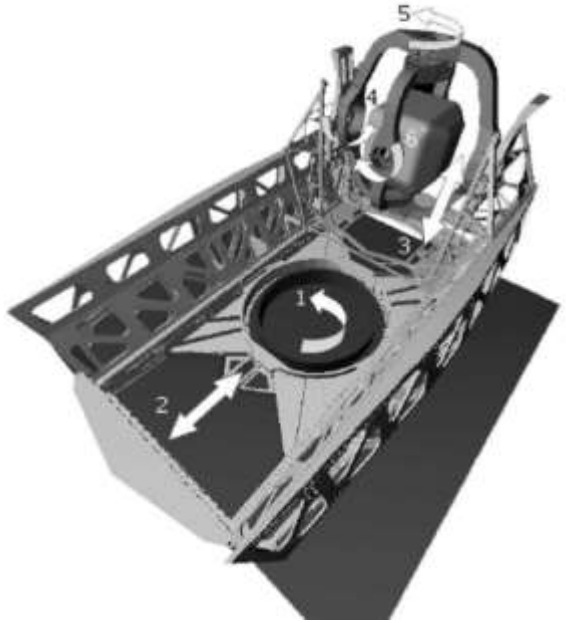


- PM and creator of Desdemona simulator
- EASA RMT.0196 WG-2 member
- ICAO PTLP WG-3 member

- CEO RotorSky GmbH (ATO)
- CEO NCCH AS (FSTDO)
- CEO MAC GmbH (Aviation consultancy)

Pilot training

How do we train pilots?

Which tools do we use?

How it all started – The Sanders teacher 1910

Credit: hispaviacion.es

Classical Training Tools

Modern Training Tools

Pilot training

How do we use them?

Classical task-based pilot training

Credit: Aviation Voice

Pilot training paradigm shift

Credit: IATA 2020

Pilot competencies

Pilot competencies	
• Application of Knowledge [KNO] • Application of Procedures and Compliance with Regulations [PRO] • Aeroplane Flight Path Management, automation [FPA] • Aeroplane Flight Path Management, manual control [FPM]	• Communication [COM] • Situation Awareness and Management of Information [SAW] • Leadership and Teamwork [LTW] • Workload Management [WLM] • Problem Solving and Decision Making [PSD]

What is the way forward?

Merge new training demand with new tools

Credit: EASA

The slices of the new simulator

FSTD CAPABILITY SIGNATURE (FCS)

H.	FSTD FEATURE	
1.	Flight deck layout and structure	*(N/G/R/S)*
2.	Flight model	*(N/G/R/S)*
3.	Ground reaction and handling characteristics	*(N/G/R/S)*
4.a	Aeroplane systems *(fixed wing)*	*(N/G/R/S)*
4.b	Helicopter systems *(rotary wing)*	*(N/G/R/S)*
5.	Flight controls and forces	*(N/G/R/S)*
6.	Sound cue	*(N/G/R/S)*
7.	Visual display cue	*(N/G/R/S)*
8.a	Motion cue	*(N/G/R/S)*
8.b.	Vibration cue *(rotary wing)*	*(N/G/R/S)*
9.	Environment — ATC	*(N/G/R/S)*
10.	Environment — Navigation	*(N/G/R/S)*
11.	Environment — Atmosphere and weather	*(N/G/R/S)*
12.a	Environment — Aerodromes and terrain *(fixed wing)*	*(N/G/R/S)*
12.b	Environment — Landing areas and terrain *(rotary wing)*	*(N/G/R/S)*

Credit: EASA

Training tasks as per FCS

AMCx1 Appendix 9 Part-FCL

	MULTI-PILOT AEROPLANES AND SINGLE-PILOT HIGH-PERFORMANCE COMPLEX AEROPLANES	Training Task Classification (If Applicable)	Testing and checking (T&C) Training (T)	1. Flight deck/cockpit layout and structure; S;R;G;N	2. Flight model (aerodynamics and engine) S;R;G;N	3. Ground handling S;R;G;N	4. Aircraft systems S;R;N	5. Flight controls and forces S;R;R1;G;N	6. Sound cues R;G;N	7. Visual cues S;R;G;N	8. Motion cues R;R1;N	9. Environment - ATC S;G;N	10. Environment – navigation S;N	11. Environment – Atmosphere and weather R;G;N	12. Environment – aerodromes and terrain S;R;G;N
	Manoeuvres/Procedures														
Section 1 Flight preparation															
1.1.1	Performance calculation	NA	T&C	NA											
		NA	T	NA											
1.2	Aeroplane external visual inspection; location of each item and purpose of inspection	NA	T&C	NA											
		NA	T	NA											
1.3	Cockpit inspection	NA	T&C	S	N	N	S	S	R	S	R	S	S	R	R
		NA	T	S	N	N	S	R	G	N	N	G	S	G	N
1.4	Use of checklist prior to starting engines, starting procedures, radio and navigation equipment check, selection and setting of navigation and communication frequencies	NA	T&C	S	S	R	S	R	R	S	R	S	S	R	R
		NA	T	S	S	G	S	R	R	N	N	G	S	G	N

EASA

Credit: EASA

Potential variants of FSTDs

FSTD features: 13

Possible fidelities: 4

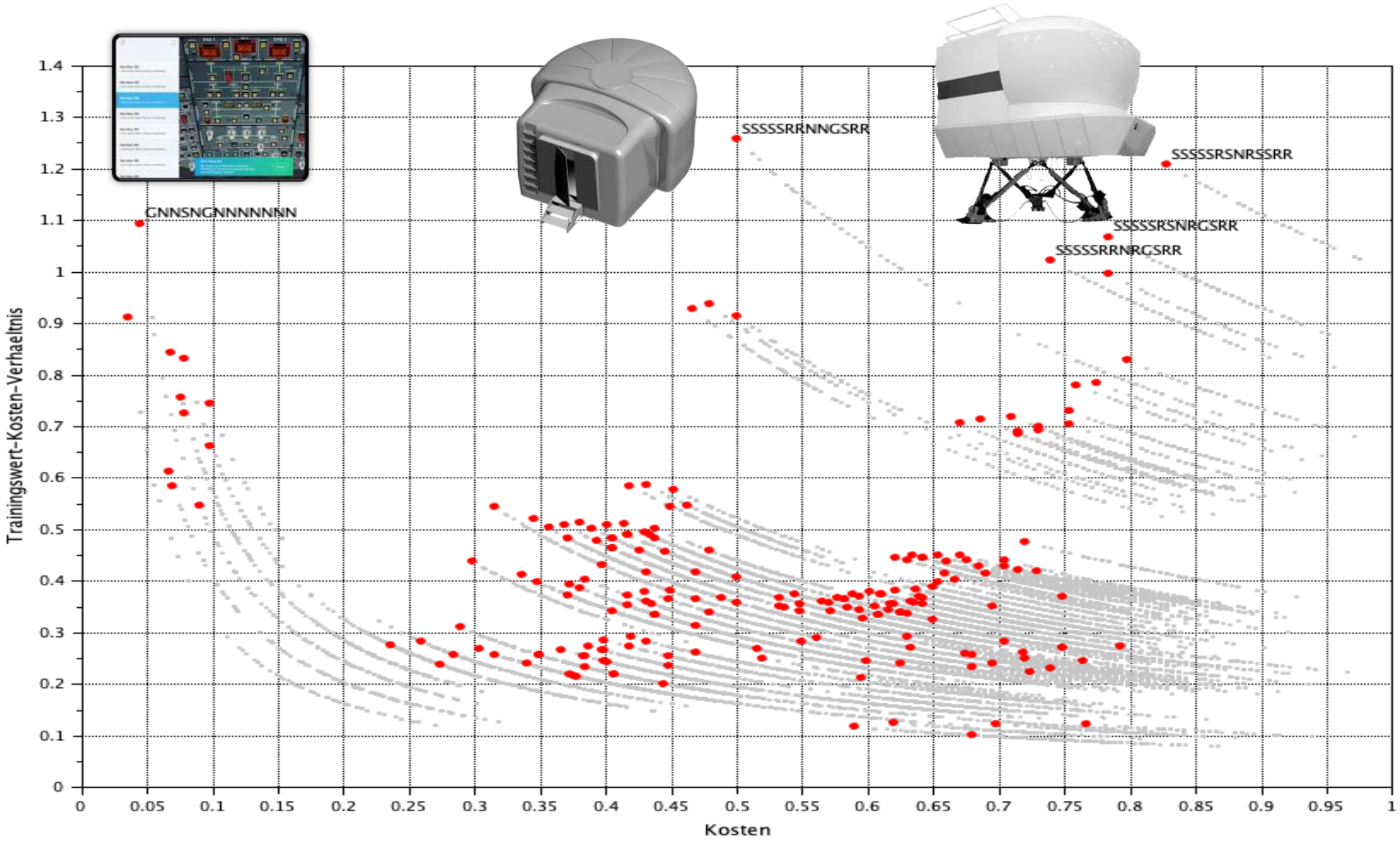
67 108 864 variants

Training value assessment

What is the cost vs training value?

Credit: MAC

Training value vs costs (type-rating fixed-wing)



Credit: MAC GmbH

Challenges of the future

Every training provider needs to do its own assessment for their training demand?

RotorSky most recent investment

- Expected training value 60%
- Investment 25%

- Cost Savings at least 1/3
- Additional training 40%

EmPACT research activity

Thank you