

Sim MD Training Effectiveness Evaluation of the F/A-18 Tactical Operational Flight Trainer

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EXHIBIT FACT SHEET



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As the focus on Live, Virtual, and Constructive (LVC) training intensifies, there remains a critical need to ensure that the content and presentation methods of simulators adequately capture the fidelity of the operational domain. Given the high level of complexity inherent in developing and fielding effective training, there exists a requirement for cost-effective and empirical approaches to evaluating the capabilities of skill-based trainers. The Multi-Dimensional Simulation (Sim MD) Training Effectiveness Evaluation of the F/A-18 Tactical Operational Flight Trainer (TOFT) is a systematic documentation of pilots' assessment of the current level of fidelity in the TOFT as it relates to the Carrier Qualification (CQ) training environment.

Objectives

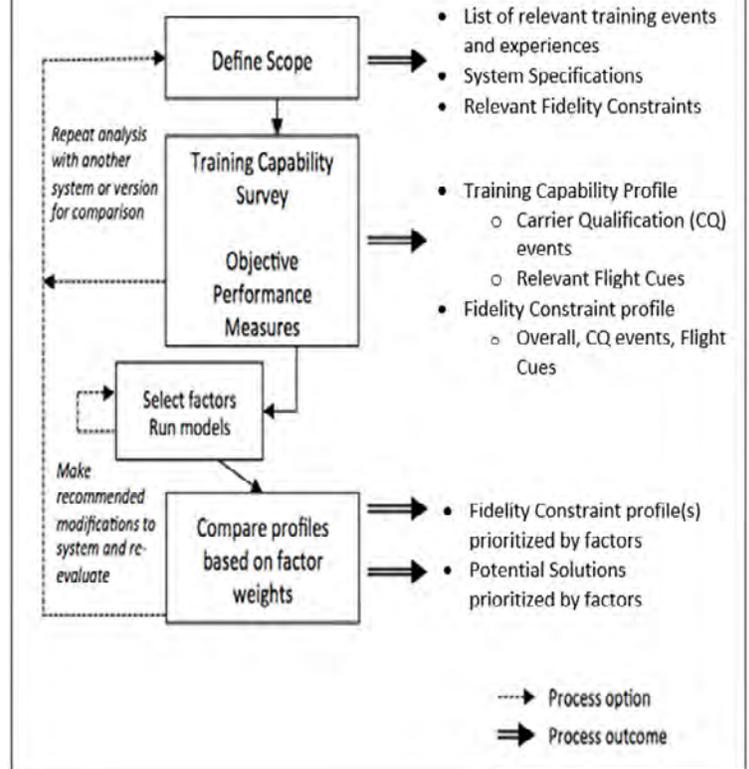
- ◆ Evaluate and document TOFT training capabilities and fidelity constraints.
- ◆ Empirically map and validate the fidelity tradespace.
- ◆ Enable analysis of the potential impact of solution options to address system constraints.
- ◆ Enable data-driven decisions about effective system use and system improvements.

Approach

- ◆ Capability information is based on ratings of CQ training events.
- ◆ CQ events represent training requirements for Navy pilots.



Training Capability Assessment Methodology



- ◆ Diagnostic information about system fidelity constraints is collected for events with low capability ratings.
- ◆ Web-based data collection is employed to ensure flexibility and ease of application across sites.

TOFT Experience Category: Case I Landings: Approach Phase

To what extent are you able to experience each of the following in the TOFT?

	0	1	2	3	4	5	
	Have not Experienced	Does not Exist	Very Inadequate	Inadequate	Borderline	Adequate	Very Adequate
Case I: Pattern Entry							
Case I: Spin							
Case I: Break							
Case I: Abeam distance							
Case I: 180							
Case I: 90							
Case I: 45							
Case I: Groove							
Case I: Fly the ball							
Case I: Fly MOVLAS							
Case I: LSO direction							
Case I: Waveoff							
Case I: Bolter							

(Representative Data Only)

TOFT Capability Evaluation – Sim MD

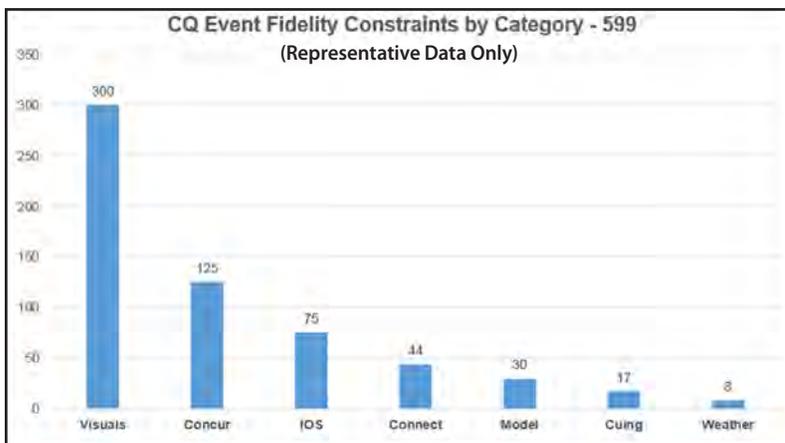
- ◆ Pilots will rate the fidelity of TOFT CQ events.
- ◆ Pilots will identify fidelity constraints for event ratings below “4” (adequate) and provide supporting explanations regarding their experiences.

CQ Event	0	1	2	3	4	5	Have not Experienced	AVG
Spin	0	1	1	13	27	1	8	3.60
Break	0	0	5	11	26	1	8	3.53
Abeam Dist.	0	0	2	4	19	0	26	3.68
180	0	0	1	9	28	1	12	3.74
90	0	0	3	12	23	1	12	3.56
45	0	2	2	9	20	0	10	3.42
Groove	0	1	2	9	21	0	9	3.52
Fly the ball	0	1	5	9	18	0	9	3.33
Fly MOVLAS	0	0	2	9	22	0	18	3.61
LSO direction	0	1	5	11	28	1	10	3.68
Waveoff	0	0	2	4	23	1	2	3.74
Bolter	0	0	1	9	20	0	16	3.56
TOTAL								3.56

(Representative Data Only)

Capability Summary CQ Event Capabilities

- ◆ Mean ratings and distribution of responses will provide a profile of the TOFT’s capabilities with respect to CQ events.



Fidelity Constraint Summary

- ◆ Fidelity constraints underlying low capability ratings can be examined at multiple levels of granularity.
- ◆ General categories: i.e., visuals and concurrency constraints were most commonly identified for CQ events.
- ◆ Specific constraints: i.e., resolution issues were the most common visual constraint identified.

Benefits and Future Directions

- ◆ Cost-effective method for assessing a system’s training capabilities, identifying and prioritizing fidelity constraints, and evaluating the impact of potential solutions.
- ◆ Detailed training capability data to inform decisions about effective system use (e.g., simulator certification) and system improvements.
- ◆ Application of method to determine added value of new technologies.