



Navy Flight Simulator Training





Evolution of Naval Aviation Simulation

A “Trainer” closely replicates some mission and aircraft systems but can’t fully replace actual flight



Continual Self Improvement

➤ 2010+ NASMP Future Vision

- 2008 - 2010 NASMP Analysis
 - Investment in fidelity and capacity upgrades required
 - Alignment with capabilities based readiness / periodic T&R revision

- 2006 - 2008 Current Trainer Evaluations
 - Training devices linked to requirements in sortie-based training matrix
 - Identified solutions to improve fidelity

- 2005 - 2006 Navy Aviation Simulator Master Plan (NASMP) Policy
 - Set expectations for simulator contribution to Readiness
 - Reduction in Flight Hours for simulator

- 1998 - 2000 Fleet Aviation Simulator Training Plan
 - Trainers intended to complement flight training vice replace it
 - Fills in readiness lost during Inter-Deployment Readiness Cycle bathtub for cost avoidance

- Pre 1998
 - Trainers for Emergency Procedures and basic cockpit familiarization only



A “Simulator” duplicates flight and could replace flight hours

Simulators have always been an integral part of Naval Aviation



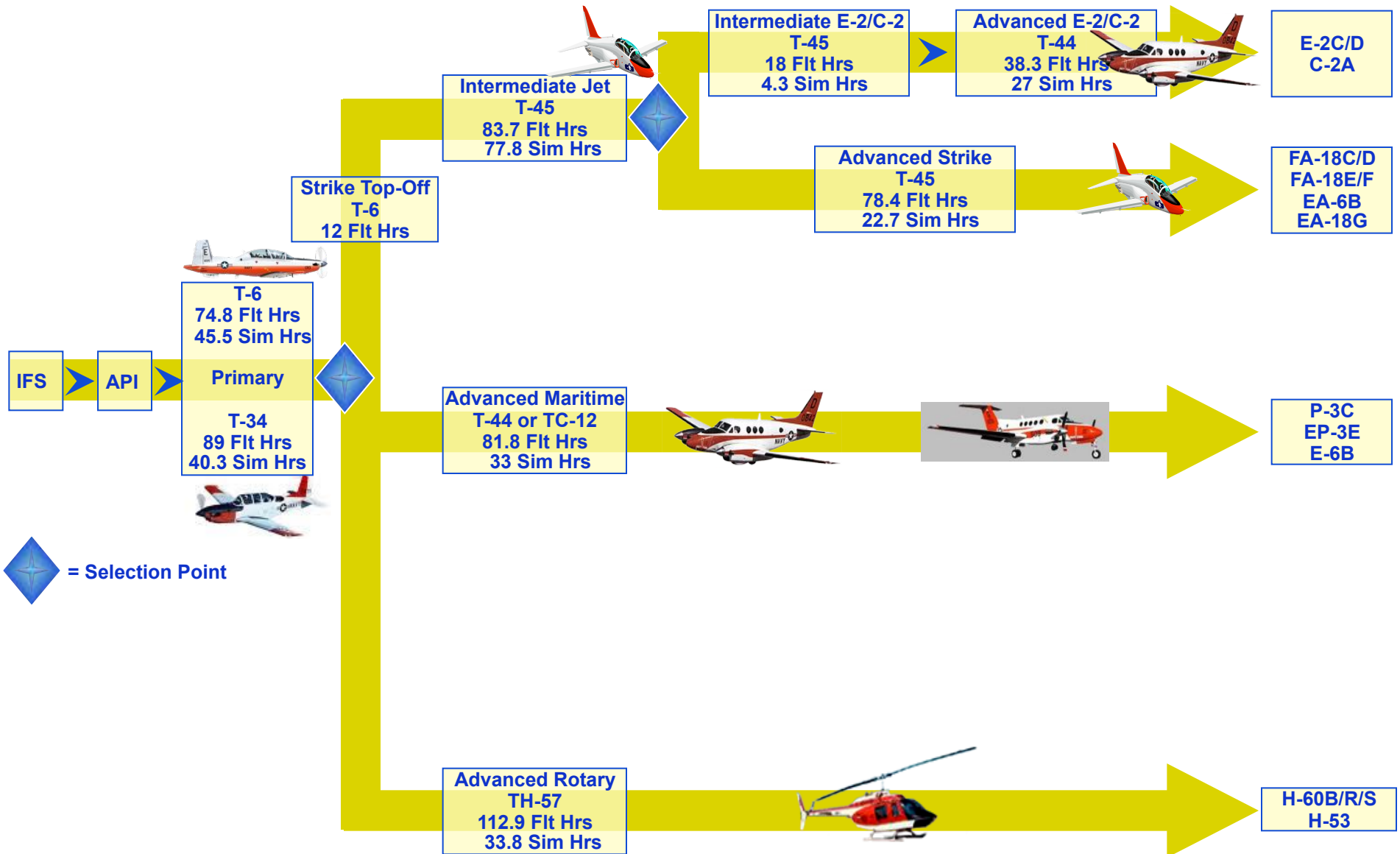
Training System Selection Process

- A Training System is the outcome of a rigorous front-end analysis and a training system requirements analysis process
- These processes yield
 - Learning objectives
 - Curricula
 - Training Media (Computer-Based Training, Classroom Lectures, and Simulators)

Simulators are an integral part of the
Aviation Training Continuum – “Street to Fleet”

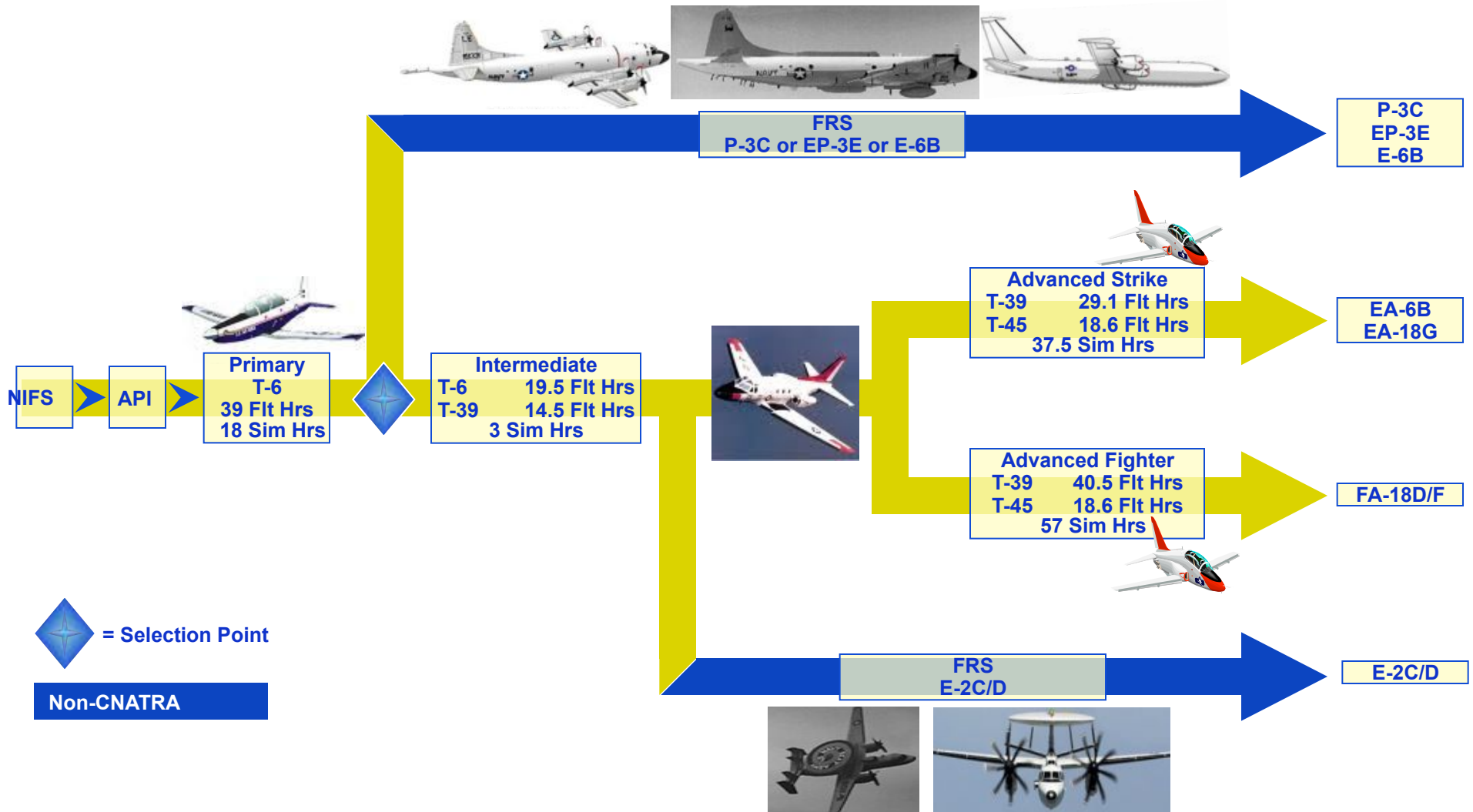


Undergraduate Pilot Training



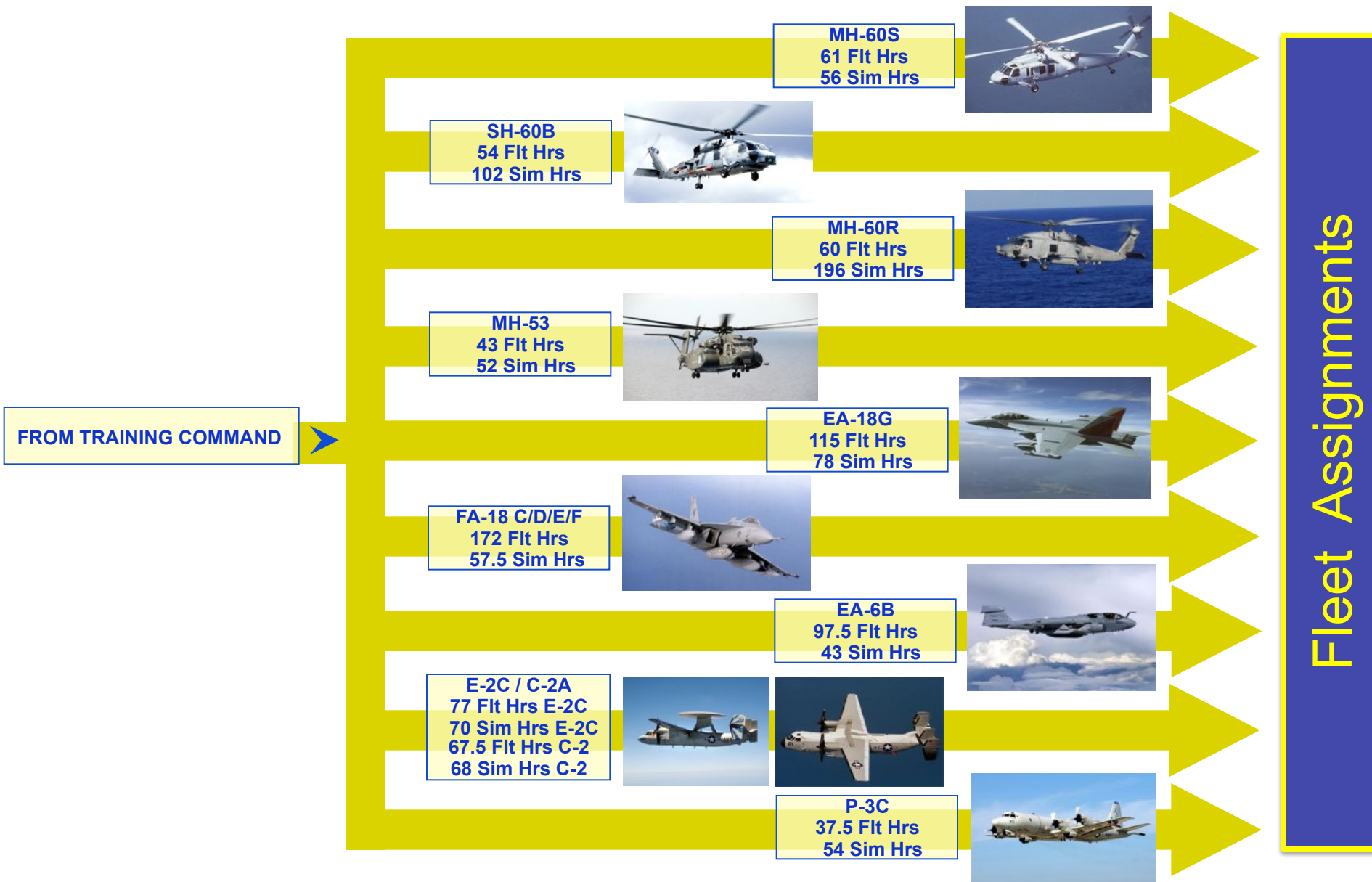


Undergraduate Military Flight Officer Training





Fleet Replacement Squadron Training





Fleet Training Accomplished in Simulators

	Current Ratio (FY10)			Trainer Limitations	Future Ratio per POR (FY 15)		
	Must do Live	Live + Sim	Must do with Sim		Must do Live	Live + Sim	Must do with Sim
F/A-18A-F	81.9%	12.5%	5.6%	<ul style="list-style-type: none"> • Visual & motion fidelity • Aero model • Mission concurrency 	68.1%	23.6%	8.3%
EA-18G	73.5%	23.5%	2.9%	<ul style="list-style-type: none"> • Visual & motion fidelity • Inadequate sensors • CVN Model 	55.9%	38.2%	5.9%
E-2C	4.2%	87.5%	8.3%	<ul style="list-style-type: none"> • Visual fidelity • External Links (A/C to control) inadequate 	4.2%	87.5%	8.3%
P-3C	50.0%	33.3%	16.7%	<ul style="list-style-type: none"> • Visual fidelity • External Links (other A/C) inadequate 	33.3%	50.0%	16.7%
MH-60S	81.8%	6.4%	11.8%	<ul style="list-style-type: none"> • Visual fidelity • CSAR Model issues • VERTREP environment 	57.6%	30.6%	11.8%
MH-60R	73.3%	23.4%	3.3%	<ul style="list-style-type: none"> • Visual fidelity • External Links (CIC) inadequate 	56.7%%	40.0%	3.3%
CNAF AVG	60.8%	31.1%	8.1%		43.9%	45.0%	11.1%

Addressing challenges to translate skills to flight hours



Anticipated ROI by Investing in Simulation

Require Investment

- Improve the fidelity of current FA-18E/F/G and MH-60R/S simulators
 - Visual display system and databases
 - Threat representation systems
 - Aerodynamic model
 - Cockpit fidelity and aural cueing
 - Weapon models
 - Radar model
 - Briefing/debriefing systems

Anticipated ROI

- Shift of T&R to simulators will result in an annual savings in the flying hour program starting in FY20
 - Overcomes training limitations of long range stand-off weapons & range restrictions
 - Reduces aircraft fatigue life expenditure
 - Enables Inter and Intra-unit training for coordinated operations
 - Enables training in more dynamic environments
 - Increase Simulator use for Fleet Readiness Training Plan by 25% to 40%

Questions

BACK - UP



Acronyms

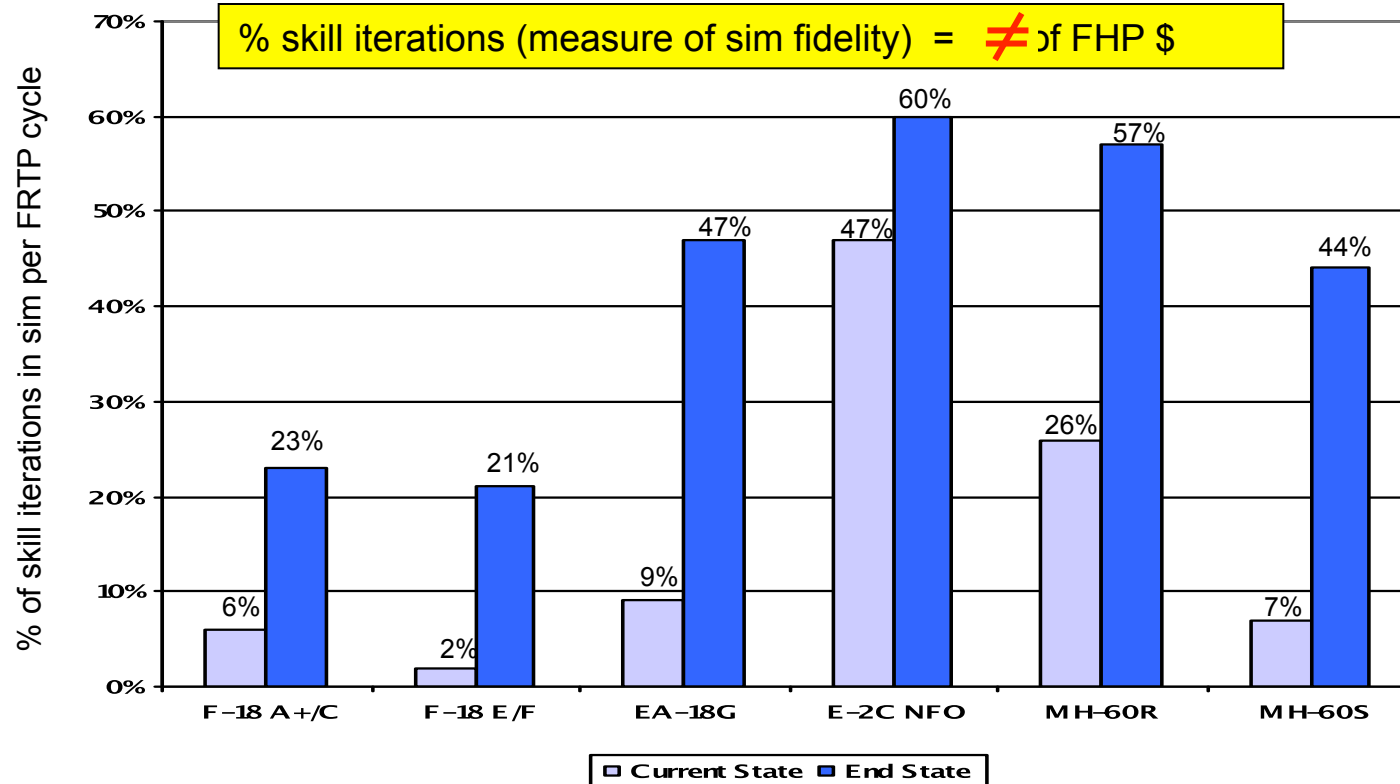
AESA	Active Electronically Scanned Array	IDECM	Integrated Defensive Electronic Countermeasures
AoA	Angle of Attack	IDIQ	Indefinite Delivery-Indefinite Quantity
ASTI	Advanced Simulator Technology Inc	IFF	Identification Friend or Foe
ATFLIR	Advanced Tactical FLIR	IFLOS	Improved Fresnel Lens Optical System
AVET	Aircrew Virtual Environment Trainer	IMDS	Integrated Maintenance Data System
AVT	Automatic Video Tracker	IOS	Instructor Operator Station
AWTD	Air Warfare Training Development	ISAR	Inverse Synthetic Aperture Radar
BDS	Brief Debrief System	JMPS	Joint Mission Planning System
CAE	Candid Aviation Electronics	JSAF	Joint Semi-Automated Forces
CNAF	Chief of Naval Air Forces	LLTV	Low-Light Level TV
CONUS	Continental United States	LVC	Live, Virtual & Constructive
DTTT	Desk Top Tactical Training	MFS	Manned Flight Simulator
EC	Enabling Capability	MIDS	Multi-functional Information Distribution System
ECP	Engineering Change Proposal	NASMP	Navy Aviation Simulation Master Plan
ECS	Environment Control System	NGTS	Next Generation Threat System
ESA	End-State Analysis	NVD	Night Vision Devices
ESM	Electronic Support Measures	OH	Overhead
ESM	Electronic Support Measures	RDT&E	Research, Development, Test, and Evaluation
FLIR	Forward-Looking Infrared	S&T	Science & Technology
FOV	Field of View	T&R	Training & Readiness
FST	Fleet Synthetic Training	TOFT	Tactical Operational Flight Trainer
HOTAS	Hands On Throttle and Stick	TS	Technical System
IA	Information Assurance	WSO	Weapon System Operator



NASMP End State Analysis

Simulator Capability Findings

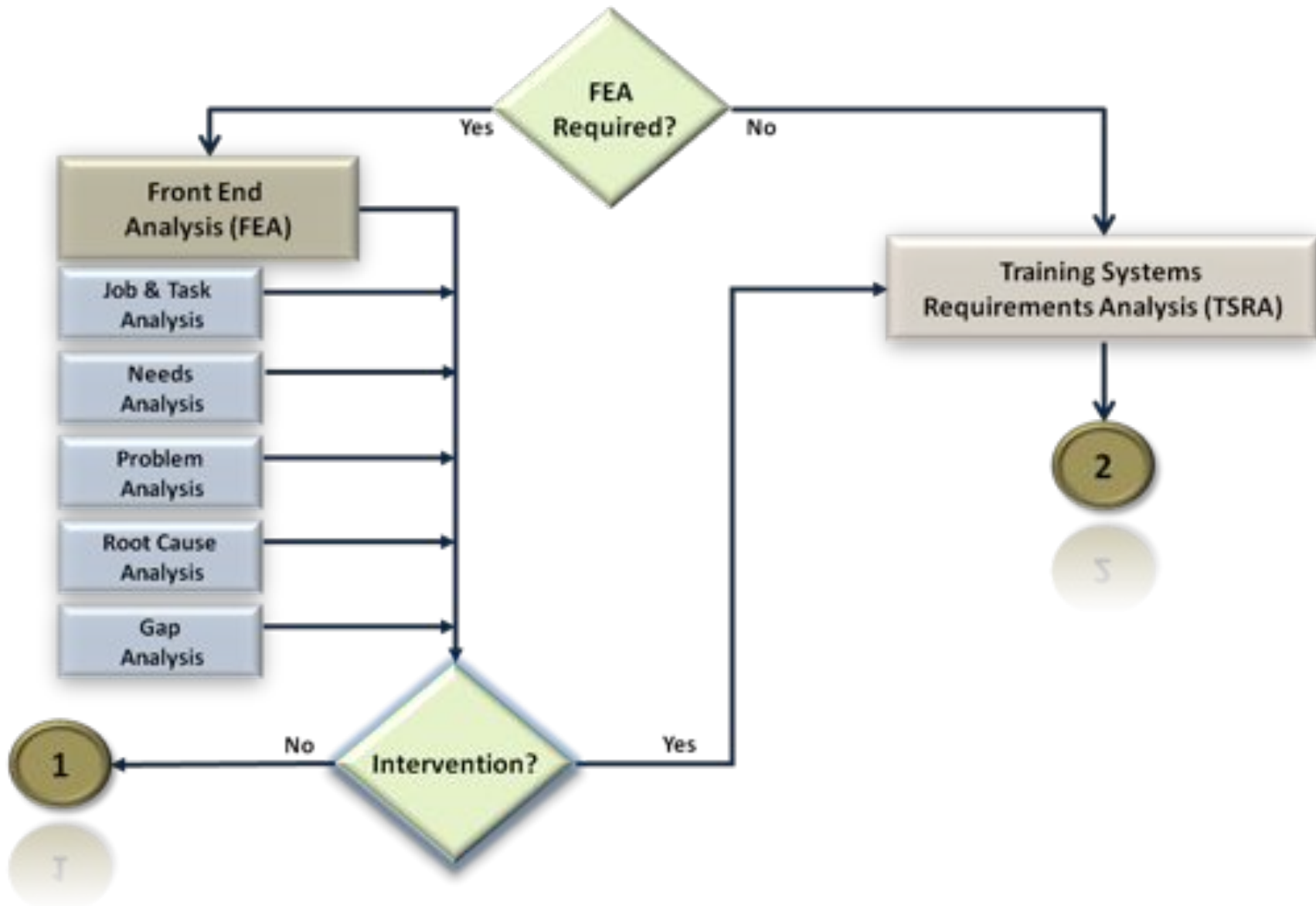
Maximum aggregate capability of simulator to accomplish total # of skill iterations required by CBTRM over an FRTP cycle



Investment required to go from current state to end state



Front End Analysis (FEA)





Training System Requirements Analysis (TSRA)

