Headquarters U. S. Air Force

Integrity - Service - Excellence

The Air Force's Perspective

U.S. AIR FORCE

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Overview

- Requirements and Test Training
- Test Fleet
- T&E Infrastructure
- Range Requirements
- PBD 703: Direct Funding
- PBD 703: NFAC
- Seamless Verification
- Spiral to War

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Requirements and Test Training Today

- Limited formal requirements training currently available
- Limited formal training for some key AF test domains
  - Space Vehicles
  - UAVs
  - Weapons
  - Sensors, EW, IO, and C4ISR
  - Integrated systems and systems of systems
- Available training is stovepiped and fragmented
  - No centralized or coordinated oversight of training
  - No formal process for reviewing training requirements

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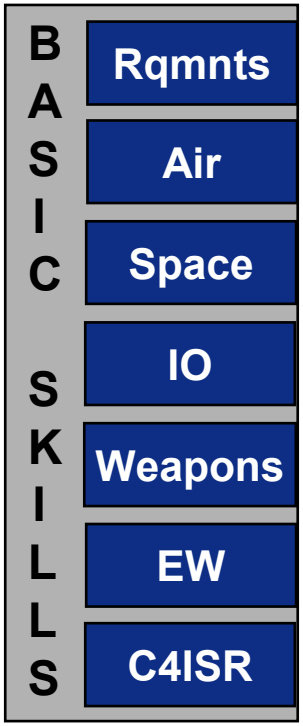
Requirements and Test Training A Better Way

Requirements and Test Institute



MAJCOM and SPO Staffs (Requirements)

Test Squadrons

Air Space Info Ops Weapons C4ISR EW

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Test Fleet

- Fleet representative A/C essential to meaningful testing
- Current test fleet composition
  - Limited fleet representative A/C (54%)
  - Organic fleet largely made up of aging A/C
  - Significant number of borrowed A/C
- The future of the AF test fleet – a new paradigm
  - Program for A/C to support test requirements (F/A-22)
  - Borrow A/C from depot for follow-on testing (RQ-4)
  - Borrow A/C from field for follow-on testing (C-130)

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Test Support Fleet

- A/C must be fleet representative for supportability
- Current test support fleet
  - Limited fleet representative A/C (40%)
  - F-16 Coral Phoenix – only supportable for 5-7 years
  - T-38 A/B – not supportable long-term
  - C-12 – no GPS
- The future of the AF test support fleet?
  - Next generation technology will drive support fleet needs
  - Upgrade / replace aging test support A/C
  - A/C must be fleet representative to keep costs in line

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Test / Test Support Fleet

- Challenges on the horizon will require a new paradigm
- AF must include test fleet in force structure programming
- CAF / MAF commitment needed for continued success

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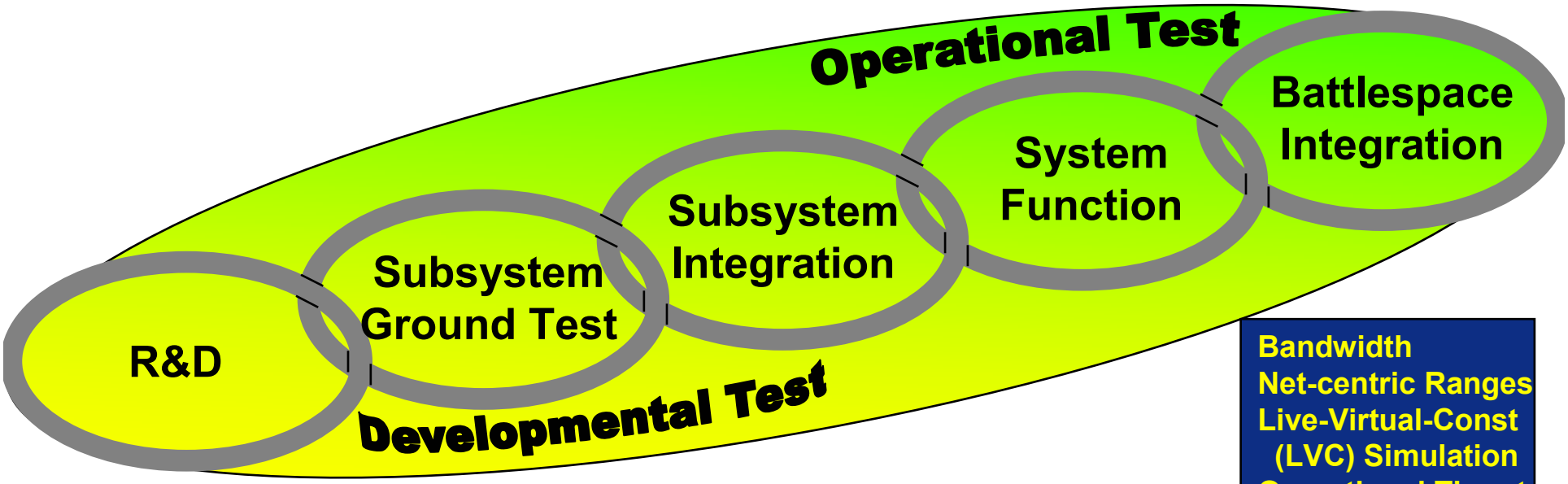
T&E Infrastructure



R&D	Subsystem Ground Test	Subsystem Integration	System Function	Battlespace Integration
Labs	Bench Test	Anechoic Chamber	Threat Sim	Bandwidth
Computers	Propulsion Cells	Radar Measures	Targets	Net-centric Ranges
Modeling & Sim	Ground Test	Open Air Ranges	Weapons Ranges	Live-Virtual-Const (LVC) Simulation
	Software Labs	Instrumentation	EW Ranges	Operational Threat Matrix
	Wind Tunnels	Telemetry	Open Air Ranges	Targets
	Climatic Labs	Ground Control	Instrumentation	Weapons Ranges
	Computers	Ground Test	Telemetry	EW Ranges
	Modeling & Sim	Climatic Labs	Ground Control	Open Air Ranges
		Computers	Computers	Instrumentation
		Modeling & Sim	Modeling & Sim	Telemetry
				Ground Control
				Computers
				Modeling & Sim

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T&E Infrastructure

- T&E requires costly / specialized infrastructure
- Facilities
  - Airfield pavements
  - Mission support and training facilities
  - Unique structures to house specialized equipment
- Equipment
  - Wind tunnels
  - Climatic and anechoic chambers
  - Simulators and high-powered computers

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T&E Infrastructure Challenges

- Numerous studies conclude recap rate is inadequate
  - Warfighting technology evolving more rapidly then ever
  - AF recap standard is 67 years … T&E may require 36-year recap
- Existing infrastructure has limitations
  - Large footprint weapons (DE, super- / hypersonics, etc…)
  - Larger bandwidth requirements
  - Systems of systems
- Next wave of new systems will only add to the stress
- Changes to T&E programming rules
- Base Realignment and Closure (BRAC)

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T&E Infrastructure

- Protecting T&E funding for Indirect costs is essential
- Plan for current / future systems (space / hyper-sonics / DE)
- BRAC may drive consolidation and present opportunities

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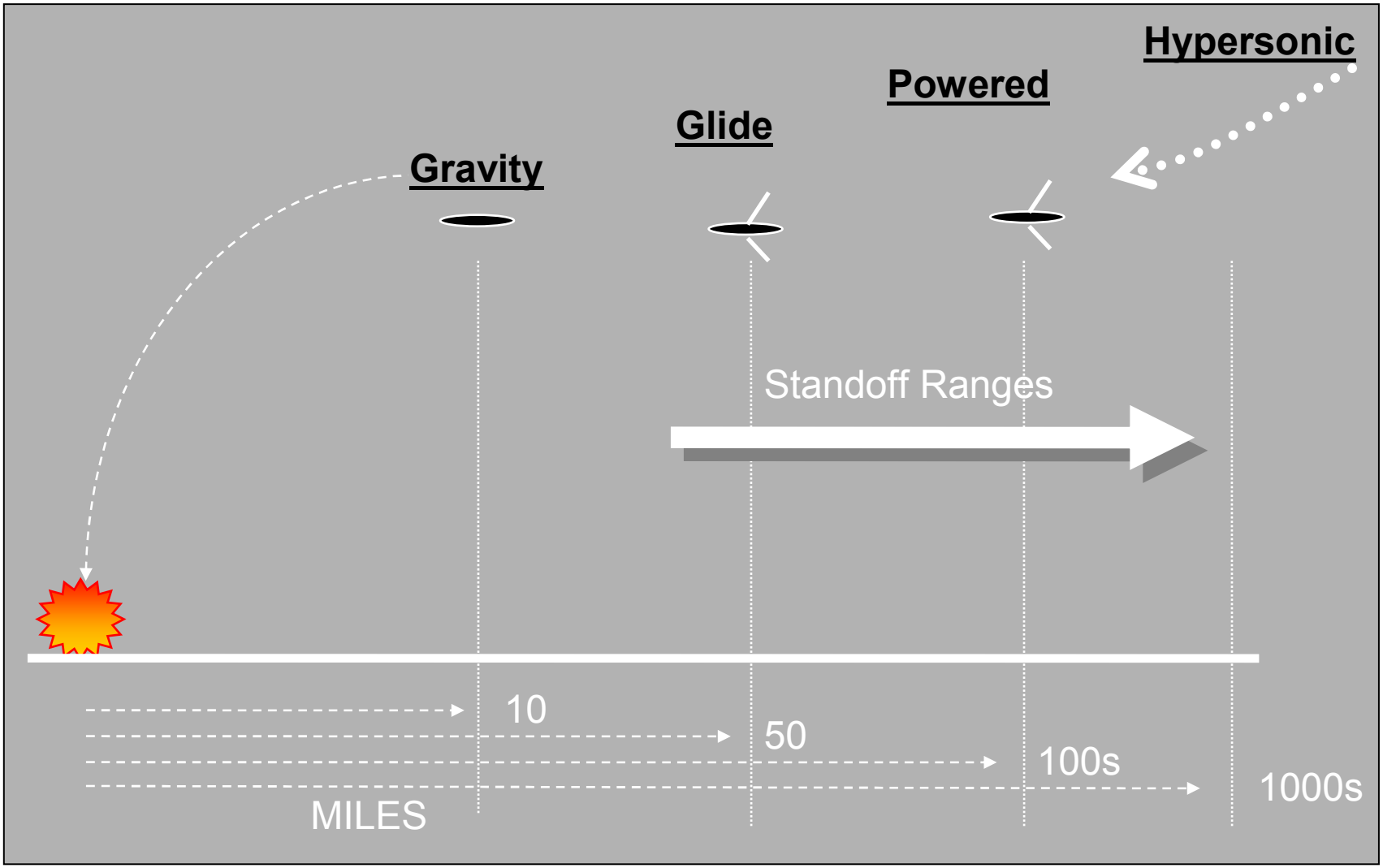
Range Requirements
Future Weapons



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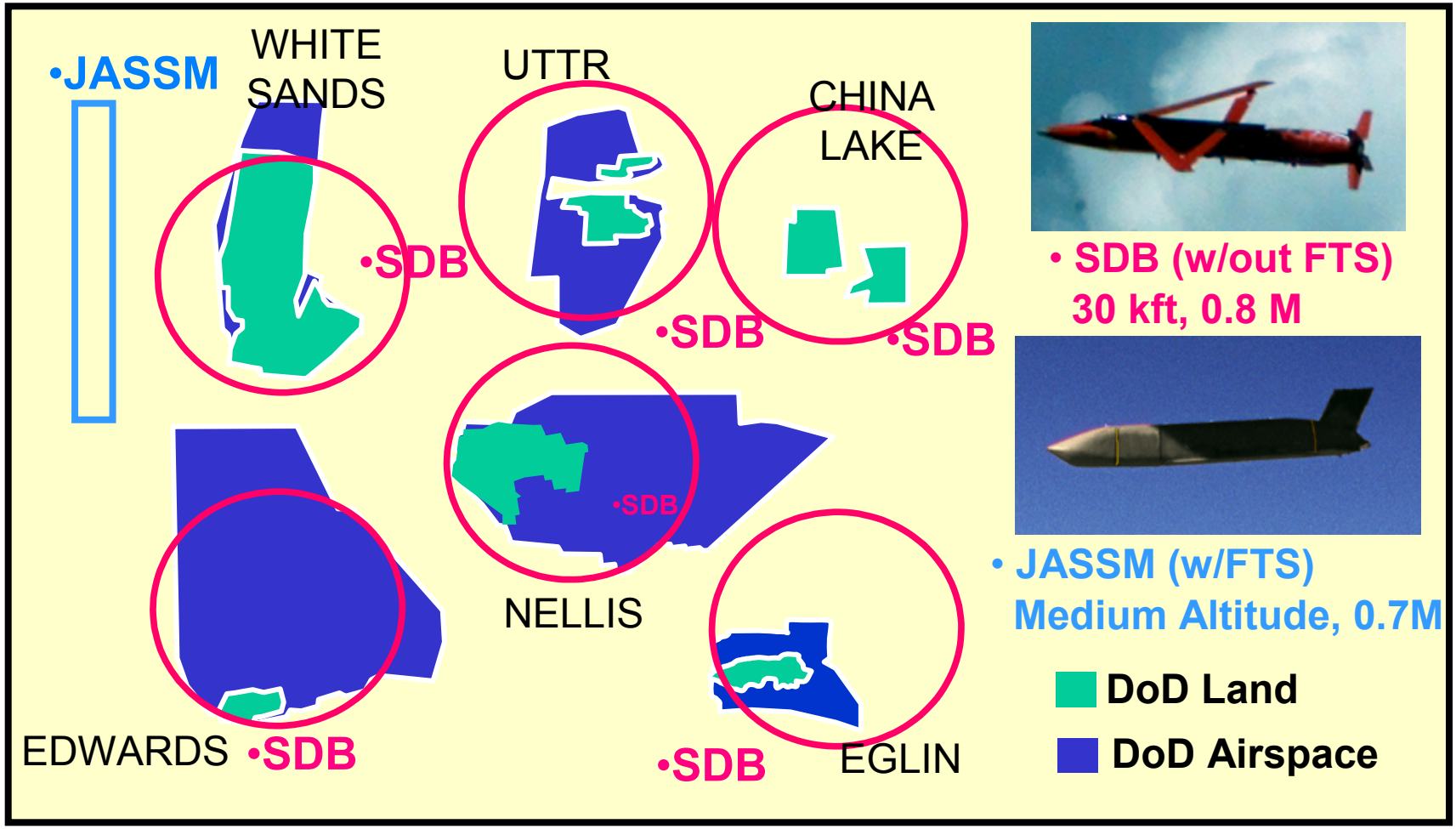
Range Requirements
Weapon Footprint



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Range Requirement Resolution

- Immediate Need
  - Small Diameter Bomb (SDB)
  - Joint Air-to-Surface Standoff Missile (JASSM)
- AFMC Studying Alternatives
  - Defining Requirement
  - Analyzing Alternatives
- Hq AF will staff proposed solution

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PBD 703: Direct Funding

- FY2003 National Defense Authorization Act (NDAA) changes T&E charging policies.
- Starting with FY2006, institutional and overhead costs for Major Range and Test Facility Bases (MTRFB) transferred from customer to institutional T&E accounts.
- Approximately $270M transferred from customer to institutional accounts in FY06.

FY 07	FY 08	FY 09	FY 10	FY 11
$277M	$287M	$297M	$307M	$318M

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PBD 703: National Full-Scale Aerodynamic Complex (NFAC)

- The NFAC is comprised of two wind tunnels (40'x80' and 80'x120') at NASA Ames Research Center, CA.
- NASA mothballed NFAC in FY 04.
- PBD 703 provided FY 06-11 funds for the AF to "initiate upgrades, restore the NFAC to full operational capability in FY 07, and sustain the facility thereafter."
- Funding profile is:

	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11
TOTAL	$5.0	$14.0	$16.0	$14.0	$11.0	$11.0	$11.0

- Current Status:
  - AFMC will execute NFAC reactivation through AEDC.
  - Congressional new start notification is in coordination.
  - Initial planning discussions between AEDC and Ames are ongoing.

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Seamless Verification Philosophy

- Full collaboration between AF Requirements-Test-Acquisition
  - Requirements written by user, testers and acquirers--together
  - Capabilities-focused, realistic and testable
- Testers assume higher level of responsibility for success
  - DT develops technology/reduces risk—demo system performance
  - OT responsible for “vectoring” program to a successful IOT&E
  - IOT&E – Becomes a capstone “graduation event”
- Fully Integrated T&E—more than just Combined DT/OT
  - All T&E stakeholders (CT, DT, OT) integrate efforts from Day 1
  - More DT/OT integration = blurring of traditional lines

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Spiral to War

- Test Requirements vs Warfighter Needs
- A Prudent Balance

Global Hawk

Predator

Sniper/Lightning

JDAM Mk 82