



# **Operational Training Environment**

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**AFLCMC/WNSJ**

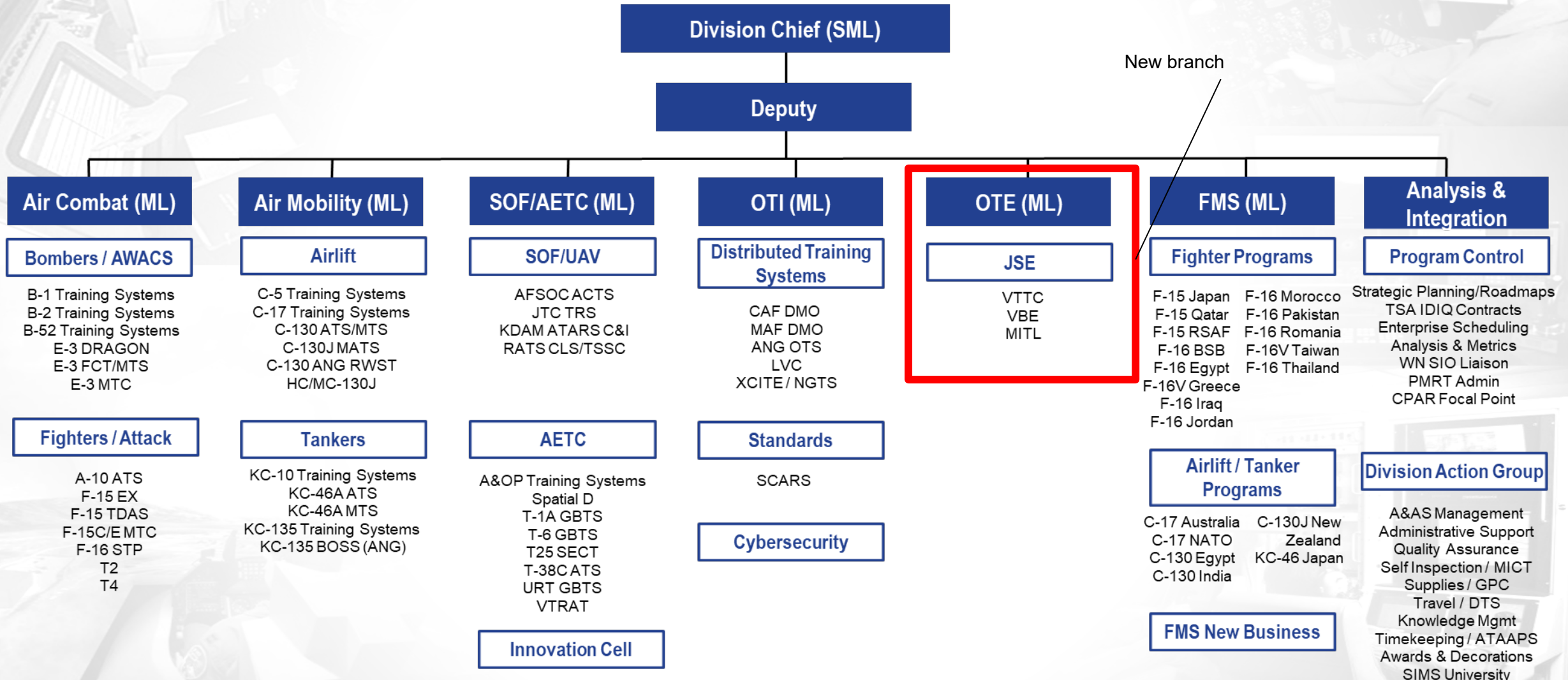
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Disclaimer: The information provided herein represents the Government's best understanding of the procurement as of the presentation date. This information should be considered preliminary and subject to change.

# WNS Overview



# Why JSE?

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## PLATFORM MISSION EFFECTIVENESS

- Full Fifth Gen+ assessments not possible on open air ranges. Requires realistic, high density threat environment and high fidelity platform representation

## INTEGRATED WARFIGHTING CAPABILITY

- Impossible to scale few vs few live tests to accurately assess theater-wide, multi-platform capabilities

## AFFORDABILITY

- Modern system-of-systems capability complexity makes open air testing prohibitively expensive

## READINESS

- Realistic environments for high end, multi-platform tactics training are severely limited

**JSE ENABLES FIFTH GEN+ OPERATIONAL TEST AND HIGH END TACTICS TRAINING IN THE WORLD'S HIGHEST FIDELITY, HIGHEST DENSITY THREAT ENVIRONMENT**

*One AFMC... Powering the World's Greatest Air Force*

# JSE Background

- **2016:**
  - JSE initiated to develop Modeling and Simulation (M&S) enterprise for the USAF and USN, initially focused on test for F-35
    - AF JSE ultimate goal is to support Developmental and Operational Test (DT/OT), High-End Advanced Training and Tactics (HEAT2), Tactics, Techniques, and Procedures (TTPs), and experimentation for 5<sup>th</sup> gen platforms
- **Feb 2022:**
  - Under the auspices of the Operational Test and Training Infrastructure (OTTI) Senior Advisory Group, Maj Gen Corcoran aligns A3 and A8 to broaden scope of current JSE development to include training for 5<sup>th</sup> & 6<sup>th</sup> gen platforms
    - Aligns CSTE funding to JSE for development of high-end training and fielding of JSE at VTTC
- **Apr 2022:**
  - VCSAF directs consolidation of programs, activities, and resources toward more efficient OTTI that synchronizes across development, test, and training
    - VCSAF directs SAF/AQ to determine new program management/acquisition approach for JSE
- **May-Jun 2022:**
  - Cross-functional team from AFLCMC, AFTC, and CMSO develops future JSE PMO approaches and coordinates with Senior Executives from SAF/AQR, AFLCMC, AFTC, and CMSO
- **Dec 2022:**
  - JSE PEO assigned; Program office identified as AFLCMC/WNS

# Upcoming Acquisitions

KEY	Full and Open
	DLA
	Undecided

JSE In A Box Hardware I

JSE In A Box Hardware II

JSE In A Box Hardware III

JSE Enterprise Sustainment

JSE Enterprise Operations

Environment Capabilities Enhancements

2023

2024

2025

2026



## JOINT SIMULATION ENVIRONMENT (JSE)

### SCOPE



Many-on-Many Mission Analysis



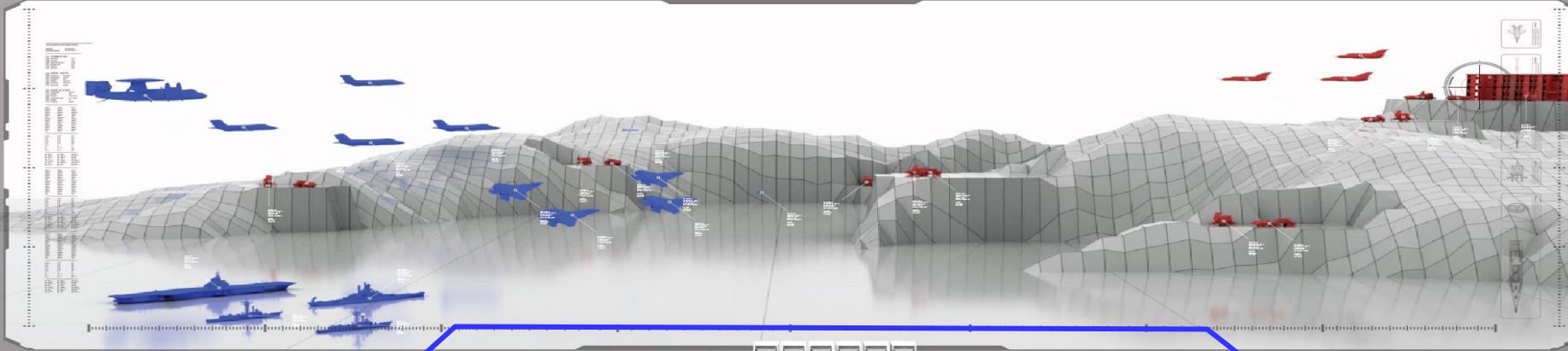
Verification and Validation



MITL Training

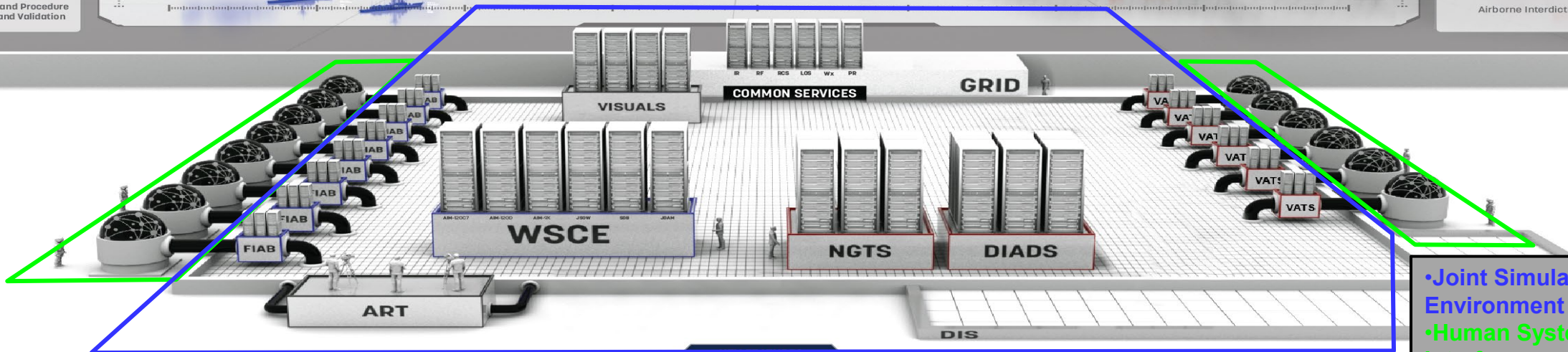


Tactics, Techniques, and Procedure (TTP) Development and Validation



### MISSION TYPES SUPPORTED

- Cruise Missile Defense (CMD)
- Defensive Counter Air (DCA)
- Offensive Counter Air (OCA)
- Suppression of Enemy Air Defenses (SEAD)
- Destruction of Enemy Air Defenses (DEAD)
- Strike
- Airborne Interdiction



•Joint Simulation Environment  
•Human System Interface



SUPPORTS ALL SECURITY LEVELS



THREAT MODELS REFLECTING THE LATEST INTELLIGENCE DATA



GOVERNMENT-OWNED EXPANDABLE ARCHITECTURE



DENSE THREAT LAYDOWNS WITH HUNDREDS OF ENTITIES



REAL-TIME MISSION PLAYBACK



BLUE AND RED MAN-IN-THE-LOOP (MITL)



INTEGRATED NEXT GEN THREAT SYSTEM (NGTS)

# JSE Core Components

**GRID: Global Reusable Interface Domain**  
 Communicates physics-based interactions and propagation effects to all entities

- WNS: Provides Systems Engineering
- Funding Source: 50/50 USAF/USN
- Integrator: NAWCAD

**Common Services**  
 Services that generate the physics-based data that describe the synthetic environment. Critical to providing a "fair fight" (e.g., RF, IR, weather, etc.)

- WNS: Provides Systems Engineering
- Funding Source: 50/50 USAF/USN
- Integrator: NAWCAD / 445 TS / SWEGs

**NGTS: Next Generation Threat System**  
 Synthetic environment generator, models hundreds of threat and friendly constructs. Hosts high fidelity MSIC and NASIC models

- WNS: Provides Systems Engineering
- Funding Source: 50/50 USAF/USN
- Integrator: NAWCAD / 445 TS / 31 CTS

**DIADS: Digital Integrated Air Defense Simulation**  
 C3, data flows/links, and operator displays of a threat IADS, early warning and height finder radars

- WNS: Provides Systems Engineering
- Funding Source: 50/50 USAF/USN
- Integrator: NAWCAD/412 EWG

**WSCE: Weapon Server Common Environment**  
 Real-time, high-fidelity kinetic weapon fly outs and Blue counter-measures

- WNS: Provides Systems Engineering
- Funding Source: 50/50 USAF/USN
- Integrator: NAWCAD / 445 TS

**VATS: Virtual Air Threats**  
 Authoritative Piloted Air Threat using NASIC TMAP models

- WNS: Provides Systems Engineering
- Funding Source: 50/50
- Integrator: XA

**ART: Analysis & Reporting Tool**  
 Enables near real-time and post mission analysis of simulation generated data

- WNS: Provides Systems Engineering
- Funding Source: 50/50 USAF/USN
- Integrator: NAWCAD

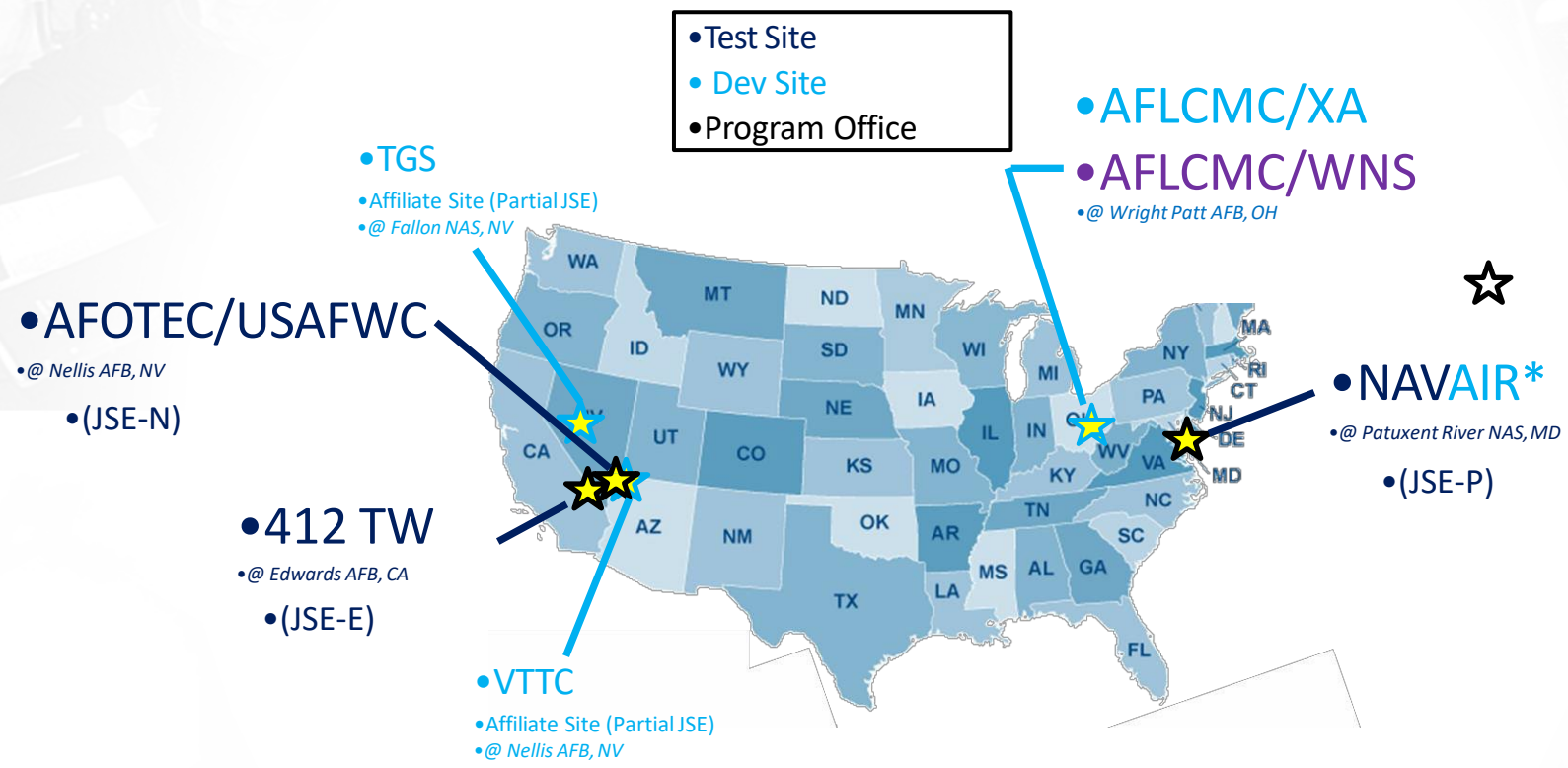
**FIAB: Fighter In A Box**  
 Rehosed OFP representing a Blue System of Interest (e.g., F-22, B-21, etc.)

- WNS: Manages fielding & sustainment
- Funding Source: Platform SPO or WNS
- Integrator: NAWCAD / 445 TS / SWEGs / XA

**HSI: Human Systems Interface**  
 Domes, visual systems, cockpits, etc.

- WNS: Manages fielding & sustainment
- Funding Source: WNS
- Integrator: WNS

# JSE Partner Sites



• \* JSE-P is operational in support of F-35 Blk 3F IOT&E



## *JSE and You*

- Future models and devices must have commonality to connect to JSE
  - GSI is the interface to JSE (how you will plug into the Global Reusable Interface Domain (GRID)); government owned standard for model development
  - Simulation Common Architecture Requirements and Standards (SCARS) Inc IV will include GSI
- Hi-fidelity (OFP-based) models of platforms and sensors required to fully leverage physics-based environment

# Points of Contact

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# Platform-in-a-Box (PIAB)



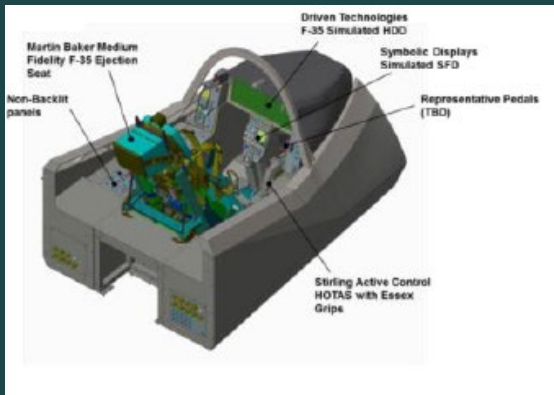
*The Home of Concurrent, Affordable Training*



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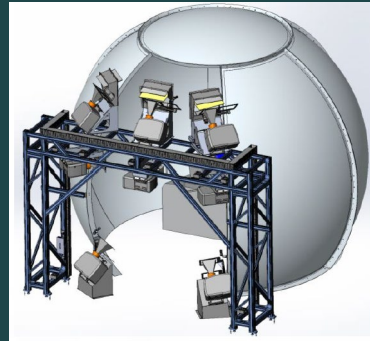
# Platform-in-a-Box (PIAB)

## Crewstation



- HDD/PCD
- HOTAS
- SoF Display
- Pedals/Helmet/Seat

## Display Systems



- Dome/Displays
- Image Generator
- Projectors
- HUD

• PIAB

- Platform OFP

## Airframe Rack



- Airframe
- Aurals
- Video Encoding
- Mission Systems
- Image Generator
- OTW Video Blending
- Mission Systems

# How to Get Grid?

Naval Air Warfare Center Aircraft Division (NAWCAD) is the **creator** and **owner** of GRID and NGTS. Access is based on 2 requirements:

- 1. Legitimate Need
  - End use for DoD test & training
  - A contract with the DoD for purposes that would require the sharing of the software
  - An established Cooperative Research And Development Agreement (CRADA) with NAWCAD
- 2. A completed agreement
  - End User License Agreement
  - An established Cooperative Research And Development Agreement (CRADA) with NAWCAD

# Joint Simulation Environment (JSE) -in-a-Box (JIAB)



*The Home of Concurrent, Affordable Training*

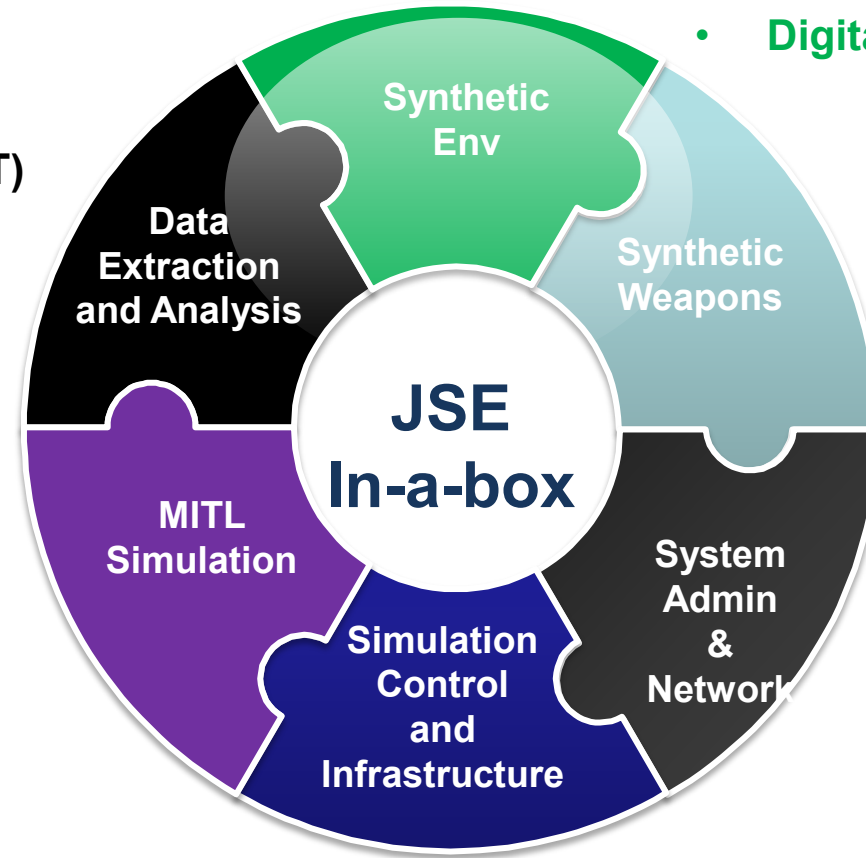


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# JSE-IAB

The JSE-IAB encapsulates the superset of JSE capability

- **Next-Gen Threat Simulation (NGTS)**
- **Digital Integrated Air Defense Systems (DIADS)**



- **Weapon Server Common Environment (WSCE) App**
- **EAAGLES Red Weapons**

- **System Administration and Networking (DAR/IA tools, network hardware)**

- **Time Server**
- **Simulation Control Executive (SCE) App**
- **Engineering Operators Station (EOS) App**

- **Playback and Recording Tool**
- **Analysis and Reporting Tool (A&RT)**
- **Extensible Architecture for the Analysis and Generation of Linked Simulations (EAAGLES) Framework (Air Threats and EBS)**
- **Global Reusable Interface Domain (GRID) services:**
  - **Line of Sight**
  - **Radio Frequency**
  - **Infrared**
  - **Natural Environment,**
  - **Pr**
- **ASTi Audio Cueing and Intercom System**
- **Architecture Management Integration Environment (AMIE)**

# WHAT'S IN A JIAB?

## •DIADS

•Digital Integrated Air Defense System (412 EWG)

- Validated C<sup>2</sup> Models
- Flexible Mission Development
- Multiple Scenario Databases
- Extensive Red/Blue Libraries
- Standard Interfaces

## •Admin

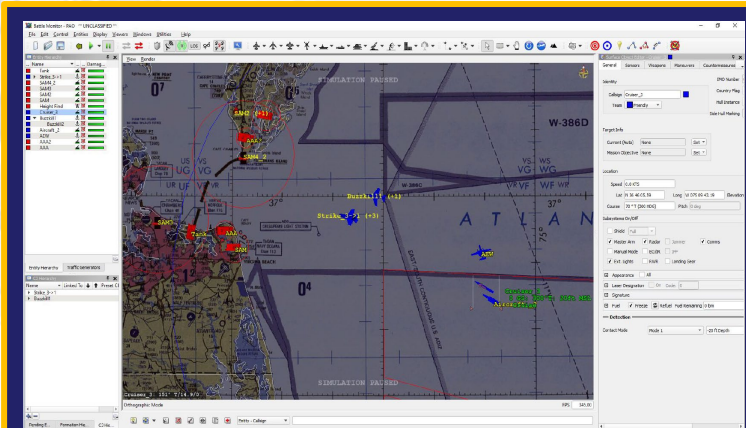
- Network Administration
- External Connectivity
- Accreditation
- Command and Control Features

## •GRID & Gridling

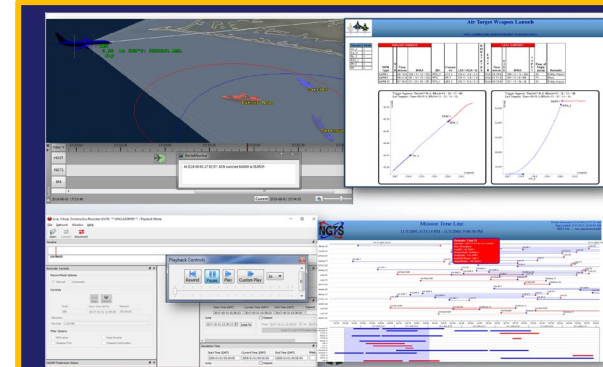
- Physics based interactions and propagation libraries
- 1x Capable (1,500 entities)

## •SimControl

- SimControl Exec (SCE)
- Eng Operators Station
- Aurals Infrastructure



- Scenario Generation
- Mission Planning
- Threat and friendly B-PMM
- SAM TMAP FC/Seeker/Flyout



- Live and post analysis
- Playback and Record
- Analysis and Reporting Toolset
- Baseline GAANT
- Shot Card
- Event Table
- Scenario Debrief Tool

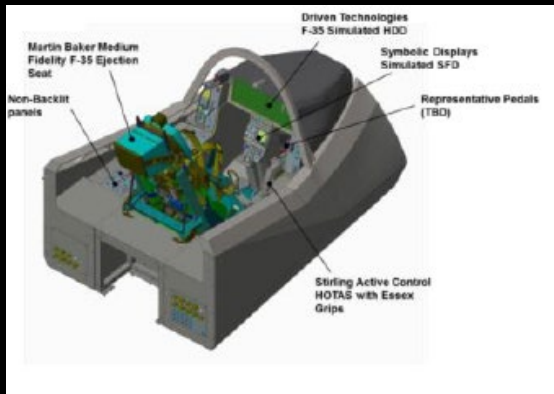
## •Weapons Server

- Blue Weapons



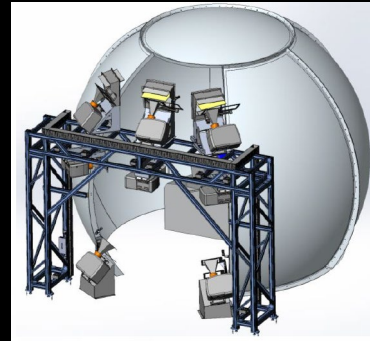
## WHAT'S **NOT** IN A JIAB (but is part of JSE)

### Crewstation



- HDD/PCD
- HOTAS
- SoF Display
- Pedals/Helmet/Seat

### Display Systems



- Dome/Displays
- Image Generator
- Projectors
- HUD

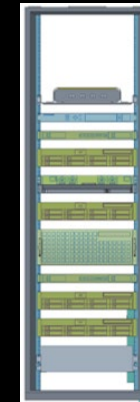
• MITL or VATS

- Red (or blue) simulators

• PIAB

- Platform OFP

### Airframe Rack



- Airframe
- Aurals
- Video Encoding
- Mission Systems
- Image Generator
- OTW Video Blending
- Mission Systems



# Other Questions?

