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*Integrity - Service - Excellence*

# **Air-Ground Integrated Layer Exploration (AGILE) Fire Phase II**



Success and Challenges of  
Distributed Testing

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*Mr. Timothy Menke  
Technical Director  
ASC/XRA (SIMAF)  
Wright-Patterson AFB OH  
timothy.menke@wpafb.af.mil*



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# Briefing Roadmap



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- Air Force –Integrated Collaborative Environment (AF-ICE)
- AGILE Fire Phase II
- Customers
- Executing Organizations/Supporting Organizations
- Customer Successes in Distributed Testing
- Distributed Testing Challenges
- Distributed Testing Requirements
- Questions



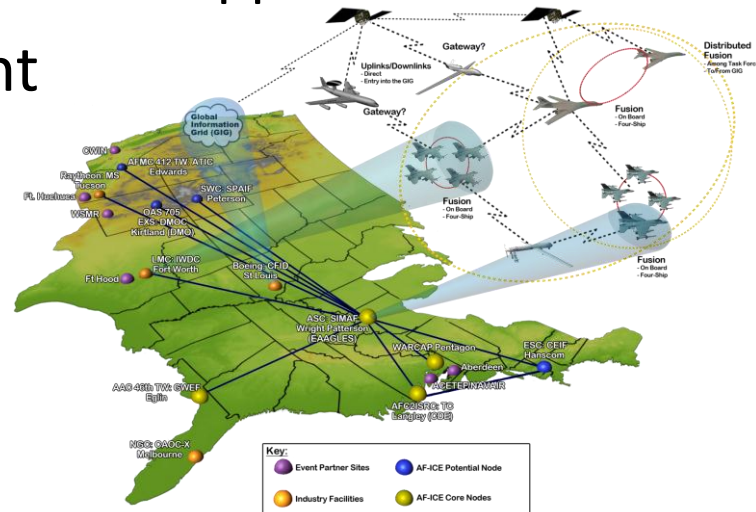
# AF-ICE



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- Air Force – Integrated Collaborative Environments (AF-ICE)
  - An LVC capability for acquisition & testing
  - Analytical Rigor is a foundational element
  - Provide decision quality data for decision support
- AGILE Fire is SAF/A6 sponsored event with significant contributions from the AGILE partnership



***AF-ICE: An integration and interoperability range – efficient, effective, validated***



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# AGILE Fire Theme/Objective



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- Theme: Explore system interoperability integration procedures and information exchange requirements within and between space, air and ground domains to execute *operational realistic mission threads*
- Objective: Provide a venue for capturing data based on project requirements and to facilitate planning, technical discussions, to construct a robust integrated Live, Virtual, and Constructive (LVC) environment solution with the main goal to collect analytically relevant data for decision support.

*Analytical Rigor to support Decision Makers*



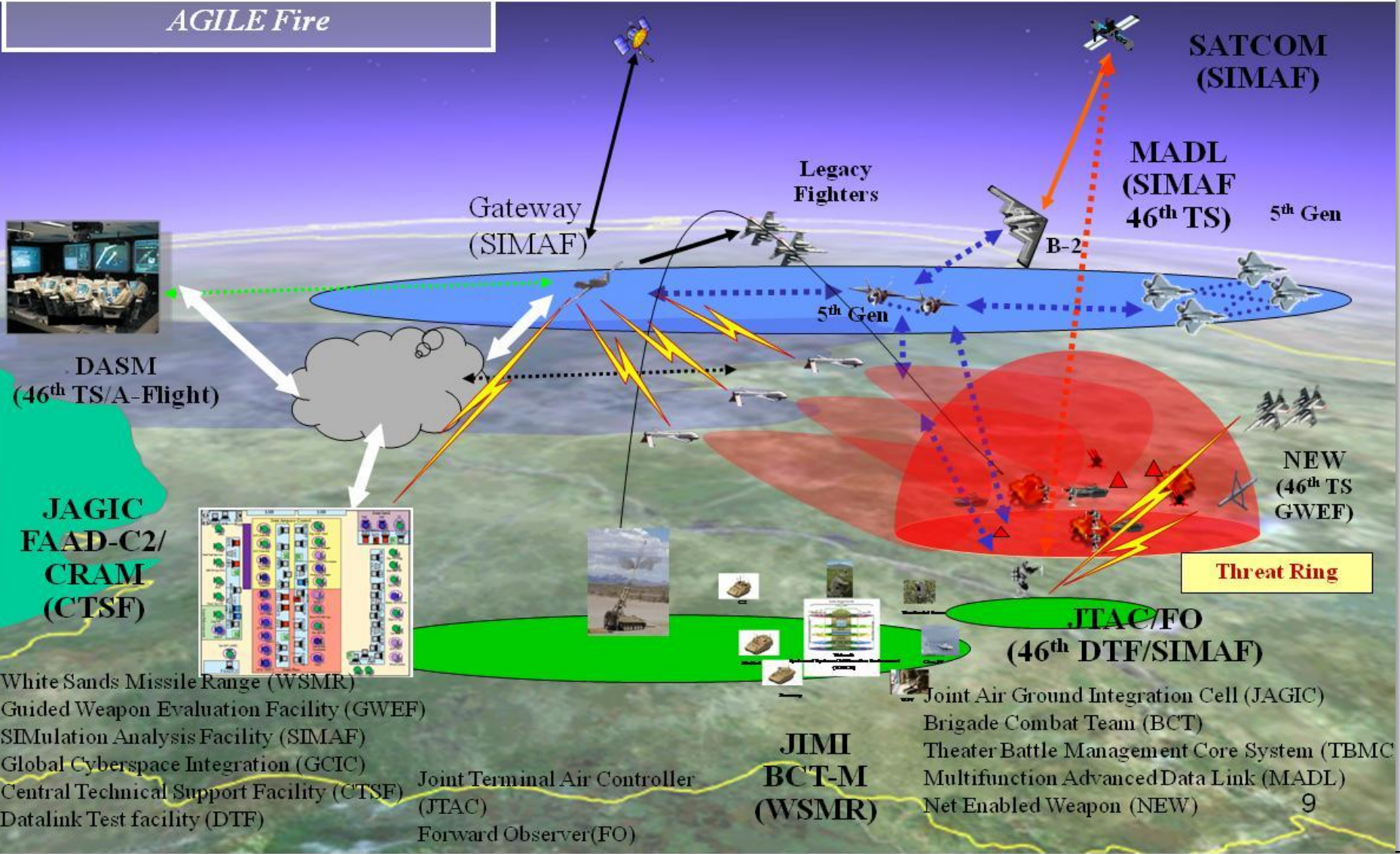
# AGILE FIRE Ph II OV-1



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## AGILE Fire





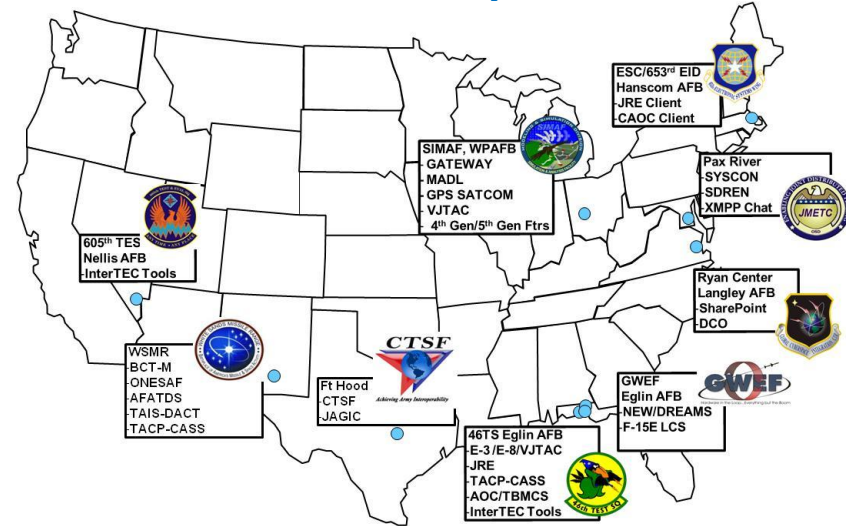
# AGILE Fire Ph II Customers



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- Multifunction Advanced Data Link (MADL)
  - AFMC/Electronic Systems Center (ESC), SAF/A6W
- Gateway
  - AFMC/ESC; Air Force Command and Control Integration Center (AFC2IC)
- AFATDS – TACP CASS
  - PM AFATDS/TACP-CASS/Ft Sill FSC
- Joint Air Ground Integration Cell (JAGIC)
  - ACC/A3D – USAF OPR
  - Joint and Combined Integration (JACI) – USA OPR
- Dynamic Air Space Management
  - AFMC/ESC-PM TBMCS/PM TAIS/PM AFATDS
- Counter – Rocket Artillery and Mortar (C-RAM)
  - PEO C3T/PD- CRAM
- Net-Enabled Weapon (NEW)
  - NEW Interoperability Working Group (NEWIG), SAF/A6W
- Capability Net Centric Test & Training (CNCTT)
  - 505th Command Control Wing (CCW)



## AGILE III's Schedule

- AGILE III's execution is planned for 14-18 February 2011



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# Executing Organizations



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- ASC/XRA
  - Simulation and Analysis Facility (SIMAF)
- 46<sup>th</sup> TW
  - 46<sup>th</sup> Test Squadron/Command & Control Test Facility
  - Guided Weapons Evaluation Facility (GWEF)
- ESC
  - 653<sup>rd</sup> Electronic Systems Wing, Enterprise Integration Division
- 505<sup>th</sup> CCW
  - 605<sup>th</sup> Test & Evaluation Squadron/Capability for Net-Centric Test and Training
- Air Force Command and Control Integration Center (AFC2IC)
- Central Technical Support Facility (CTSF)
- White Sands Missile Range (WSMR)

USAF

USA



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# Supporting Organizations



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- Joint Air-Ground Integration Cell (JAGIC)
  - ACC/A3D
  - 712<sup>th</sup> Air Support Operations Squadron
  - Joint and Combined Integration (JACI)
  - Fires Center of Excellence (FCoE) TRADOC Capability Manager, Fire Support C3 (TCM-FSC3)
- PEO C3T/PD CRAM
  - Counter Rocket, Artillery, and Mortar (C-RAM) Program Directorate
- Program Manager AFATDS
- Program Manager TAIS
- Program Manager TACP-CASS
- Net Enabled Weapon Interoperability Working Group (NEWIWG)
- JFCOM/J8
  - J84 Capability Test & Evaluation
  - Joint Fires Integration & Interoperability Team (JFIIT)
- Program Executive Office Integration
  - Product Manager (PM) Joint Interagency Multinational Interoperability (JIMI)
- Joint Mission Environment Test Capability (JMETC)
- Interoperability Test & Evaluation Capability (InterTEC)





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# AGILE FIRE II CUSTOMER SUCCESSES



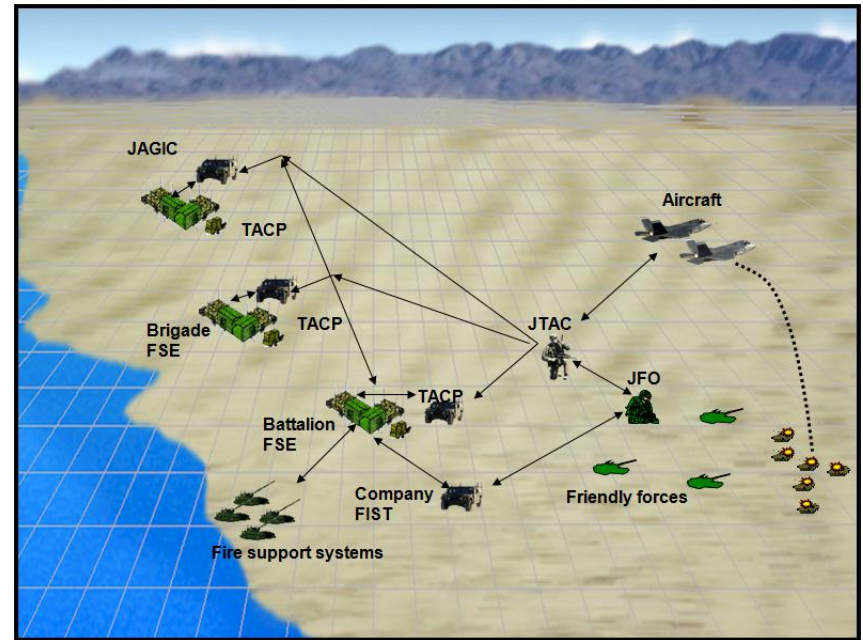
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# AFATDS – TACP CASS VMF



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- Current issues with integration of two software systems
  - Army system for prosecuting targets using surface fires
  - Air Force system for prosecuting targets using CAS
- AGILE Fire provided backdrop for risk reduction testing of new software versions to allow interoperability between systems.
- First time the two actual systems were interfaced – issues found and actions recorded to take back to AFATDS and TACP-CASS system engineers to include in next software revision
- Improvements will be tested in subsequent AGILE Fire events



Advanced Field Artillery Tactical Data System (AFATDS)  
Tactical Air Control Party Close Air Support System  
(TACP CASS)



# Dynamic Airspace Management (DASM)



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- Warfighter Problem: Lack of ability to dynamically integrate airspace C2 and fires over and within a Ground Commander's Area of Operation
- DASM utilizes TBMCS, TAIS and AFATDS to rapidly deconflict airspace for air or ground use
- During AGILE Fire II DASM prototype exceeded expectations
  - Positive effect on speed of integration
  - Increased speed of deconfliction
  - Particular note made of ability to deconflict rockets used in joint airspace
- Future AGILE Fire events will be used to influence development of emerging TTPs and C2 systems

**With Airspace Information Service, ACMs are available regardless of status and NOT dependent on correlation to ACO.**

**Common Cross-Service View of Airspaces**

**Dynamic availability of airspace information via the Airspace Information Service enables a Joint view of airspace**

**Improved AFATDS 4D Deconfliction due to a more complete and timely airspace picture because AFATDS now consumes all valid geometries ...not just corridors.**



Theater Battle Management Core System (TBMCS)  
 Tactical Airspace Integration System (TAIS)  
 Advanced Field Artillery Tactical Data System (AFATDS)



# AGILE Fire II Successes



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- AGILE Team has matured the distributed event process making it easier to systematically execute distributed LVC events (planning, integration and execution)
  - Positive Impacts to numerous programs; results in combat!
- JMETC has proven to be a reliable network for AGILE
- Efficient & collaborative use of Joint analytical resources (in addition to service capabilities)
  - Assess systems/capabilities with joint application (e.g. DASM)
  - Capture data, conduct analysis and reporting
- AF-ICE PE for sustainment of the developing environment
  - Facilitation team, continuity, distributed execution
- Technical Joint Windows Warfare Assessment Model (JWINWAM) configuration and software support



# AGILE Fire II Challenges (1/2)



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- Information Assurance
  - Services/systems adhere to different standards, policy and procedures
  - Time to achieve a C&A for tools/models/systems
  - Modified DIACAP (MDIP) to establish a DAA authority able to adjudicate non approved software for use in the RDT&E environment
- Event Control /Management Tools
- V&V of distributed environments
- Bringing on New participants



# AGILE Fire II Challenges (2/2)



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- **Planning management**
  - IA strictures and documentation requirements are changing more rapidly than procedures and techniques to meet them
  - Technical and Operational architectures – for both tactical-system realism and commensurate instrumentation - continue to increase in detail, scope, and complexity
  - Planning the Operational contexts and technical environments is becoming more SME-specific, and man-hour intensive
  - Un-synchronized (tools and technique) collaboration, across Service and vendor ranges and labs, using non-integrated process-management, creates continuous detail and versioning errors (distributed man-hours)  
(Requirement: need a tool like Team-Center SE across the enterprise)
- **Continues to be a “discovery” effort across the Enterprise**
  - “Real-Time Analysis” capability continues as an underlying imperative
  - Exploration and “development” of tools and techniques is often discouraged by (local and installation) Security mandates and objectives are currently imposed upon even the RDT&E environment
  - Sharing of GOT’s SW tools across the Enterprise is often stopped short by Security, licensing, and inadequate support



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# AGILE Fire II Requirements



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- Central Tool Host/Repository: Have tools provided at a central location – ADOBE, Chat, SharePoint
- Formalized LVC V&V: V&V of LVC environment characteristics and customer interactions needs to be formalized
- Training: A process for educating organizations new to distributed LVC testing
- Process to support rapid C&A of tools for use in the RDT&E LVC environment



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# AGILE Fire II Requirements



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- Dedicated documentation of the AF-ICE/AGILE Fire joint distributed test environment
  - Documentation of the AF-ICE “playbook” as it relates to specific AGILE events
  - Data mining of customer project plans and reports to support various data calls
- Products include: AF-ICE overall TAP, briefings, playbook, Information management “Book\_boss”
  - Standardized, reusable products: test run matrix, mission threads, analysis plan, DMAP/DCAP, spiral plans, comm./chat/OPTASK instructions, player list, ports and protocols, site architectures and environment architecture,
- Joint Collaboration Tool to support System Engineering process and products across the Distributed LVC Enterprise





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# Requirements to support Joint Interoperability Testing



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- Automated DIS/TENA compliance tool (could be part of environment VV&A)
- Need a System Model Availability & Accreditation repository and authority
  - Where do the services obtain models of the other service systems? Who authenticates the models for interoperability test purposes?
- Need for Radio/Terminal, Network, Application, and Propagation models
  - Who does the V&V and accredits the models for use?
- Consensus on how we model communication “effects” in a distributed environment
  - Need for a standard communication server?



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# Summary



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- AGILE is a cost effective venue using LVC for distributed testing of air and ground Integration/Interoperability
  - Proven itself to its customers/many successes
- JMETC has demonstrated its value and reliability over a series of events during the last three years
- Challenges remain in the areas of maturing these types of venues to support the growing requirement for integrated system of systems assessment and testing