

Headquarters U.S. Air Force

Integrity - Service - Excellence

State of Air Force Modeling and Simulation - An Implementer's and Integrator's Perspective



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AFAMS/CC
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Overview

- **Some Definitions to Get us on the Same Page**
- **Update of Last Year's AF M&S Conference Action Items**
- **Your New AFAMS!**



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Maximizing warfighter performance and decision making...

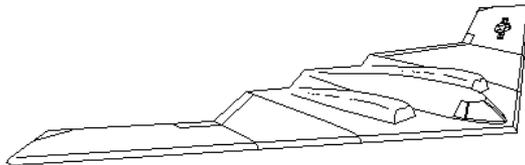
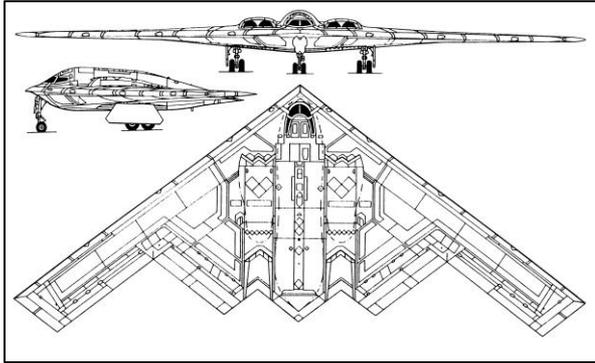
Some Definitions to Get Us on the Same Page

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What is M&S?



- **Model** – A physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process (DoD Directive 5000.59-M, 1998)
 - A model is a simplified representation for a more elaborate or complex item
 - Ex: B-2 wind tunnel model, lift equation ($L = \frac{1}{2} C_l \rho A v^2$), flight control process
- **Simulation** – A method for implementing a model over a period of time (DoD Directive 5000.59-M, 1998)
 - Using models, simulations dynamically shows what has, is or may happen
 - Ex: B-2 flight in a wargame, simulator or live training/test mission

***Modeling and Simulation (M&S) - The discipline that comprises the development and/or use of models and simulations.
(DoD Directive 5000.59, 2007)***



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Types of Simulations: *Live, Virtual and Constructive (LVC)*

Live

“... involving real people operating real systems.”



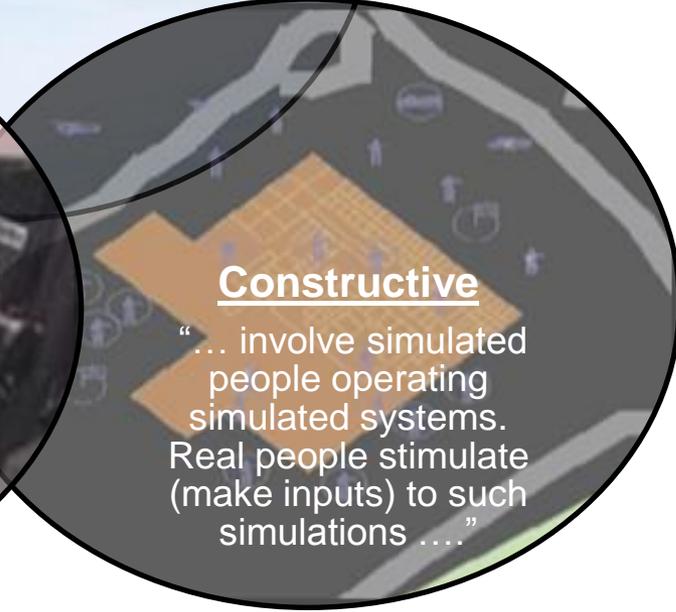
Virtual

“...involving real people operating simulated systems.”



Constructive

“... involve simulated people operating simulated systems. Real people stimulate (make inputs) to such simulations ...”





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Update of Last Year's AF M&S Conference Action Items

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Last Year's Conference Theme

**“Compelling Synchronized Solutions...
Today”**

Relevant... Effective... Get it done!

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Last Year's Breakout Sessions

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Breakout Session	Major Issues Addressed	Status
Acquisition	Identify current M&S acquisition capabilities, gaps and shortfalls for support of acquisition process.	
Agile Combat Support (ACS)	Logistics M&S Integrated Process Team (IPT) Process, Logistics in Wargames and Exercises, Expeditionary Combat Support School Simulations and Security Forces use of Simulation.	
Cyberspace	Define stakeholders and their roles within the AF-wide Cyber M&S Community and stand-up of Cyberspace M&S IPT.	
Irregular Warfare (IW)	Identify IW capabilities, gaps and shortfalls that exist today across the spectrum for M&S solution.	
LVC – Integrating Architecture (LVC-IA)	Enterprise Architecture for LVC Environment (EA-LVCE) Initial Capability Document (ICD), Revitalization of Knowledge Management Program and current status of the M&S Workforce initiative.	
Space	Short term and long term objectives to develop a training and exercise M&S capability .	

Solution to issue is being implemented and is on track for completion or is completed.

Solution to issue is being implemented but has significant barriers to overcome for completion.

Solution to issue is not being implemented.

● Improving
 ● Steady Progress
 ● Worsening



Acquisition Breakout Sessions

Update

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- **Description:** This session presented information on *M&S initiatives supporting activities across the acquisition life cycle* including Research & Development, Analysis, Program Management, Developmental Test, Operational Test, etc. This information, along with facilitated panel and working group discussions, *identified current M&S acquisition capabilities, gaps and shortfalls*. Participants had an opportunity to share lessons learned, identify collaborative opportunities and *develop near-term actionable M&S solutions*
- **Major Action Item(s):** Eight specific actions to help advance the use of M&S to support the acquisition process were developed and captured in four goals
 - Promote effective M&S tools and data use across life cycle phases and programs (OPR: AFMC/ENS)
 - Foster interoperable and integrated M&S capabilities through a common framework (OPR: AFAMS)
 - Improve Air Force M&S capability and credentials to support acquisition life cycle (OPR: ESC/EN)
 - Provide increased M&S expertise and understanding to ensure consideration of M&S in acquisition program (OPR: SAF/AQRE)
- **Update:** Goals captured in “Acquisition M&S Strategic Plan” for implementation
 - Received vector check from SAF/AQ
 - Formal coord complete, awaiting final re-structure of AF M&S Governance before SAF/AQ’s approval



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Agile Combat Support (ACS) Breakout Sessions Update

- **Description:** This session focused on *M&S solutions for ACS Functional Capability Areas*. There were four ACS-related discussions demonstrating LVC simulation-related ACS solutions, and the challenges/issues and gaps which still exist within the field. The four discussion areas were: *Logistics M&S IPT Process, Logistics in Wargames and Exercises - Airbase Simulation, Expeditionary Combat Support School Simulations, Security Forces use of Simulation*
- **Major Action Item(s):**
 - ACS Functional Capability Leads will leverage maturing Logistics M&S IPT processes / lessons learned (OPR: AFAMS, AFMC ACS)
 - ACS co-leads will examine AF M&S Resource Repository (AFMSRR) and AFSPC/A9 AF Space Analysis Resource Portal for possible leveraging (OPR: AFAMS)
 - ACS community leverage OSD Automated Vulnerability Evaluation for Risks of Terrorism (AVERT) in use at AF Security Force Center (OPR: USAF Expeditionary Center, AF/A4/7Z, AFMC ACS)
- **Update:**
 - AFAMS has been observing and providing insight to medical, security and logistic capability leads on Logistics M&S IPT processes / lessons learned
 - AFAMS has reinvigorated its knowledge management efforts to be able to capture ACS M&S information
 - AFAMS is conducting study of simulation of logistic movement for major exercises



Cyber Breakout Sessions

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- **Description:** The focus of the Cyber Modeling & Simulation (M&S) Breakout Session was to *define stakeholders and their roles within the AF-wide Cyber M&S Community* and discuss the viability and potential way-ahead in organizing these stakeholders into a chartered and regularly *convening Integrated Process Team (IPT)*
- **Major Action Item(s):**
 - Establishment of a “AF Modeling And Simulation Command (AFMSC)” (OPR: ???)
 - AF commits sponsorship, resources to solve M&S problems spanning multiple domains (space, cyber, logistics, etc)
 - Top-down commitment would solve symptoms that grass-roots enduring IPT effort is not resourced to solve
 - Follow-up on key ideas in Cyber Session (OPR: AFAMS)
 - Finalize list of POCs for Cyber M&S Community Stakeholders
 - Rally stakeholders at Cyber M&S Working Group this summer
 - Explore idea of creating AFI for M&S processes
 - Further review cyber M&S capabilities, gaps, solutions at classified level
- **Updates:**
 - AF conducted AFSO21 M&S Governance Event to develop stronger oversight of AF M&S
 - AFAMS established “Space and Cyber” LNO established at AFSPC
 - Working closely with AFSPC/A3 and A9 to define M&S roles within AFSPC
 - Aug 10 Working Group conducted M&S requirement data call and prioritization



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IW Breakout Sessions

Update

- **Description:** This session presented IW information and its M&S implications across all services. They focused on Joint operational concepts to give better understanding within the IW spectrum and, through facilitation, our panel members *identified IW capabilities, gaps and shortfalls that exist today across the spectrum so that actionable M&S solutions may be determined*
- **Major Action Item(s):** CSAF identify “the M&S Executive Agent” and set the organization; consider a PEO like office with oversight authority. (Action – A6W to A6 to CSAF)
- **Updates:**
 - Joint Staff is in process of re-defining IW
 - AF conducted AFSO21 M&S Governance Event to develop stronger oversight of AF M&S



LVC Breakout Sessions

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- **Description:** This session provided the audience an *update on the Enterprise Architecture – Live, Virtual and Constructive (EA-LVCE) Initial Capabilities Document (ICD), Knowledge Management and Workforce Development*. The EA-LVCE is undergoing a rigorous analysis process to ensure it appropriately identifies and justify needs vs. wants – and to ensure it is responsive to the Warfighters’ needs. The session focused on the ICD, a discussion on the *revitalization of Knowledge Management Program* and current status of the M&S Workforce initiative. The LVC-IA breakout session is an integral component of the LVC Working Group (WG) that’s composed of representatives from the functional and cross-functional communities. The LVC Working Group meets periodically throughout the year
- **Major Action Item(s):** EA-LVCE IS THE SOLUTION (OPR: AFAMS)
 - Consensus from group that it is the AF solution
 - Continue the formal AF/Joint requirements process and execution of the LVC-IA 5-Year Plan
- **Update:**
 - EA-LVCE
 - AF Requirement Oversight Council has approved EA-LVCE ICD
 - EA-LVCE ICD almost thru Joint Capability Integration and Development System (JCIDS) process - Resolving other Services non-concurs
 - Knowledge Management (KM)
 - Creating SharePoint KM site and developing incentive-driven business model to support AFMSRR and AF M&S Warfighting Operational Requirement Database (M-SWORD)
 - Workforce Development
 - Nine AF M&S Courses have been developed and eight courses taught so far
 - M&S Special Experience Identifier has been codified for mil personnel
 - Awarded after taking “M&S Managers Course”
 - Will leverage “Ops” civilian government civilian career field for civilian M&S professional



Space Breakout Sessions

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- **Description:** This session focused on both *short term and long term objectives to develop a training and exercise modeling and simulation capability* allowing for dynamic scenario generation and training that transitions from tactical to operational to strategic seamlessly. The session covered space modeling in the context of Space M&S for constructive simulations (campaign, mission, engagement) with the purpose to provide SA on the current state and near term goals.
- **Major Action Item(s):**
 - Capture stakeholder agencies for “All Things Space (ATS)” training & exercise kickoff forum for Summer 2010 (OPR: USSTRATCOM)
 - Plan Of Action & Milestone (POA&M)
 - For CORONA TOP (Training & Exercise only)
 - JSpOC Mission System (JMS) - Stimulated by Space Systems Generator(SSG) at Global Lightning 2011 (GL-11)
 - AFAMS: Advocate GPS Environment Generator (GEG)/SSG to JLVC v4.5 baseline
- **Update:**
 - Joint Space Training Federation - A Joint space training simulation initiative
 - Established charter and management plan
 - Memorandum of Agreement between major players is still in the works
 - JMS block 0 has been fielded at the JSpOC but not in time for GL-11.
 - DMOC-S has demonstrated the ability to stimulate components of JMS with M&S and create training scenarios for the JSpOC operators
 - GEG/SSG has been added to the JLVC Federation
 - First use planned for Blue Flag 11-2



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What's Changed

- **AF/A3O is LVC Operational Training (LVC-OT) Lead with a new AF/A3O LVC-OT policy division(s)**
 - **Operational training is mission-oriented training for all AF operations in support of warfighter readiness**
- **As AF/A3O's LVC-OT execution arm, AFAMS focus is now on integrated and distributed operational training from use of:**
 - **Simulators and associated models**
 - **LVC infrastructure**
- **New construct requires close coordination of touch points with other primary M&S functional communities – Analysis and Acquisition**
- **Core Functional Lead Integrator (CFLI)/MAJCOM customer focused - Flattens organization with new divisions dedicated to AF's Service Core Functions and maintains LVC Foundation Div**
 - **AF's Service Core Functional Divisions focus on required integration, program and requirement support as needed by CFLIs/MAJCOMs**
 - **LVC foundation focus on LVC infrastructure**
 - **Standards and architecture**
 - **Knowledge Management**
 - **Workforce development (being reviewed)**
- **11 of 35 Tasks will be transferred or are already done by MAJCOM and/or HAF**
 - **Workforce development and AF M&S message development transferred**
 - **Exploitation of simulation for ... already done by MAJCOMs**
- **Effective sometime in Aug 11 if approved by AF/A3O**

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AFAMS OV-1



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Aim High... Fly-Fight-Win ...

By maximizing warfighter performance and decision making for all operations through seamless integration of live, virtual and constructive environments for operational training.



“User-Friendly” Oversight and Insight

Joint
LVC Environment



- Effective
- Efficient
- Interoperable
- Cost Saving

Power Source
(Funding, People, Trust and Policy)



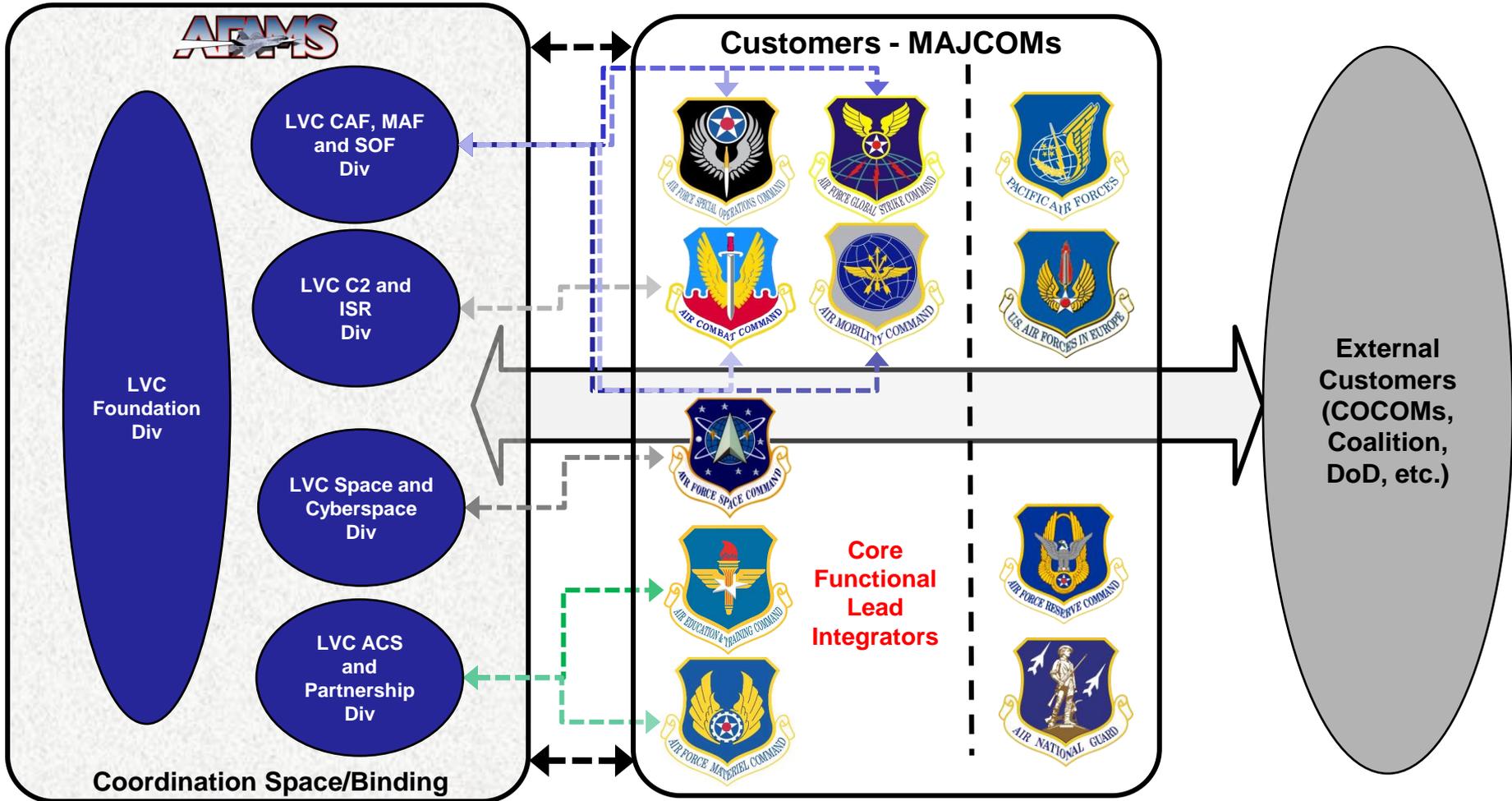

- NO!**
- Redundancies
 - Resource waste
 - Inefficiencies
 - Resources Cuts

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External Operations



If confusing press here



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Questions?



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and Decision Making on the
Tip of the Spear*

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