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OF THE AIR FORCE**

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Operations

AIR FORCE EXPERIMENTATION



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This Air Force Instruction (AFI) implements Air Force Policy Directive (AFPD) 10-28, *Air Force Concept Development and Experimentation*. It applies to all Air Force active and reserve units, and to Air National Guard (ANG) units in United States Title 10 status, when sponsoring, participating in, or otherwise supporting experimentation in support of AF and joint capability development. This AFI is approved for public release; distribution is unlimited. This AFI may be supplemented at any level, but all direct Supplements must be routed to the Office of Primary Responsibility (OPR) of this publication for coordination prior to certification and approval. Refer recommended changes and questions about this publication to the OPR using the Air Force (AF) Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through the appropriate functional chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) maintained in the Air Force Records Information Management System (AFRIMS) located at <https://www.my.af.mil/afirms/afirms/afirms/rims.cfm>. This AFI will be revised, as required, to address changes, additions, and/or deletions.

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Chapter 1

OVERVIEW

1.1. Purpose. Per AFPD 10-28, the AF uses experimentation to help mature concepts, to identify gaps in future capabilities, and to evaluate solutions that potentially mitigate current and future capability gaps. This AFI establishes responsibilities and describes processes for experimentation, including Title 10 Wargames sponsored by Headquarters Air Force (HAF), Major Commands (MAJCOM), the Air National Guard (ANG), Direct Reporting Units (DRU), and Field Operating Agencies (FOA). This AFI also establishes responsibilities for AF support to experimentation and related activities sponsored by the Joint Staff, Combatant Commands (CCMD), sister Services and other organizations external to the Department of the Air Force. This AFI is not intended to govern wargaming or other experimentation for education, training, or scientific research and development prior to prototyping demonstrations in an operational environment.

1.2. Objectives. This AFI establishes an institutional approach for experimentation, including wargaming, when used to support concept and capability development. Specific objectives of this AFI are to:

1.2.1. Implement AFPD 10-28.

1.2.2. Describe how the Deputy Chief of Staff, Operations, Plans and Requirements (AF/A3/5) and subordinate organizations provide Policy, Guidance and Oversight (PGO) for HAF and MAJCOM sponsored experimentation, as assigned by AFPD 10-28.

1.2.3. Identify HAF and MAJCOM responsibilities for experimentation sponsored by AF organizations as well as by organizations external to the Air Force.

1.2.4. Describe best practices for the design, execution, reporting, and transition of experiments and wargames.

1.2.5. Provide specific guidance for Chief of Staff of the Air Force (CSAF) directed Title 10 Wargames.

Chapter 2

RESPONSIBILITIES

2.1. The Deputy Chief of Staff, Operations, Plans, and Requirements (AF/A3/5) shall:

- 2.1.1. Provide PGO for all HAF and MAJCOM level experimentation IAW AFD 10-28.
- 2.1.2. Be responsible to the CSAF for AF participation in and support to joint experimentation, as described in CJCSI 3010.02C, and other applicable Chairman of the Joint Chiefs of Staff (CJCS) directives and guidance.
- 2.1.3. Be responsible to the CSAF for AF participation in and support to sister Service experimentation, including Title 10 Wargames.
- 2.1.4. Be responsible to the CSAF for all aspects of the Unified Engagement (UE) Title 10 Wargame, including design, execution, reporting, and transition.
- 2.1.5. Coordinate with other HAF 2-Digit Organizations and MAJCOMs as required, to fulfill all assigned experimentation responsibilities.

2.2. The Director of Operational Planning, Policy, & Strategy (AF/A5X) shall:

- 2.2.1. Oversee a management structure and coordinate as required to enable AF/A3/5 PGO for HAF and MAJCOM level experimentation:
 - 2.2.1.1. Disseminate AF/A3/5 experimentation guidance.
 - 2.2.1.2. Collect information to enable AF/A3/5 experimentation oversight.
 - 2.2.1.3. Enable the exercise of AF/A3/5 responsibilities for supporting joint and sister Service experimentation, including Title 10 Wargames.
- 2.2.2. Represent the AF in senior leader Joint Concept Development & Experimentation (JCD&E) governance meetings.
- 2.2.3. Direct all aspects of the UE Title 10 Wargame, to include designating a Wargame Director.

2.3. The Chief, Concepts, Strategy, and Wargaming (AF/A5XS) shall:

- 2.3.1. Develop and implement a management structure to enable AF/A3/5 PGO for HAF and MAJCOM level experimentation, reference Paragraph 2.2.1 and its subparagraphs.
 - 2.3.1.1. Develop, implement, and maintain an AF-wide electronic information sharing capability that:
 - 2.3.1.1.1. Tracks selected AF and non-AF experimentation activities to improve awareness across the AF and prevent/resolve scheduling conflicts.
 - 2.3.1.1.2. Archives AF experimentation reports IAW Attachment 2 paragraph A2.4.
 - 2.3.1.1.3. Tracks AF and externally sponsored experimentation participation requests to ensure a coordinated effort is made to validate and provide AF support to such activities.

2.3.1.2. Coordinate, as required, directly with other HAF, MAJCOM, ANG, DRU, and FOA organizations, to ensure fulfillment of AF/A3/5 experimentation responsibilities and ensure synchronization of experimentation and wargaming efforts.

2.3.2. On behalf of AF/A3/5 and AF/A5X, manage AF participation in and support to CJCS directed experimentation and similar activities sponsored by sister Services.

2.3.2.1. Integrate AF objectives into joint and sister Services experimentation, when appropriate.

2.3.2.2. Participate in planning conferences/workshops associated with joint and sister Services experimentation, as appropriate.

2.3.2.3. Review and coordinate on joint and sister Services experimentation plans and reports, as appropriate.

2.3.2.4. Coordinate, as required, directly with the Joint Staff, CCMD staffs, sister Service staffs, and any other organizations external to the Department of the Air Force (DAF).

2.3.2.5. Promulgate CJCS experimentation guidance and results, as appropriate, to sponsors of AF experimentation.

2.3.2.6. When requested by CJCS, develop prioritized experimentation needs or other related inputs for CSAF approval.

2.3.2.7. Prepare periodic summary reports documenting AF-wide experimentation results and AF support to Joint Staff, CCMD, and sister Services sponsored experimentation IAW Attachment 2, paragraph A2.4.

2.3.2.8. Represent the AF for Colonel (or civilian equivalent) and Action Officer-level JCD&E governance and planning meetings.

2.3.3. Design, execute, prepare reports on, and monitor transition activities related to the UE Title 10 Wargame, per Attachment 4.

2.3.3.1. Develop and coordinate: UE objectives, scenario considerations, host MAJCOM selection, key partner participation, and final reports with analysis, recommendations, and follow-on actions.

2.3.3.2. Develop memoranda outlining support requirements between HAF and the UE host MAJCOM.

2.3.3.3. Coordinate for required UE participation and other support from HAF, MAJCOM, ANG, DRU, FOA, the Joint Staff, sister Services, partner nations, and other organizations external to the AF.

2.3.3.4. Incorporate tailored multinational workshops into UE, in close coordination with the host MAJCOM. Ensure results are documented IAW theater security cooperation plans.

2.3.3.5. Document and brief UE findings, recommendations and follow-on transition actions at all appropriate levels. Publish a final report after UE completion.

2.3.3.6. Coordinate all aspects of post UE activities to include tracking of follow-on initiatives and any other CSAF directed actions.

2.3.4. Develop, operate and maintain a deployable Wargaming Information Environment (WIE) to support HAF and MAJCOM level experimentation, including Title 10 Wargames. (Refer to Attachment 3.)

2.3.5. Assist AF experimentation sponsors, as required, in sourcing support from HAF, MAJCOM, ANG, DRU, FOA, the Joint Staff, CCMD staffs, sister Services, and other organizations external to the sponsor's organization.

2.3.6. Coordinate on and prioritize (if required) all external requests for AF support to national level, Department of Defense (DOD), Joint Staff, or sister Services sponsored wargame/experimentation activities.

2.3.7. Assist AF/A8XC and MAJCOMS to ensure realistic air and space representation and appropriate data standards, enumerations, hardware, and architectures are employed for wargames and other experiments.

2.4. The Deputy Chief of Staff, Strategic Plans and Programs (AF/A8) shall:

2.4.1. Be responsible to the CSAF for all aspects of the Futures Game (FG) Title 10 Wargame, including design, execution, reporting, and transition.

2.4.2. Advocate for future programming actions related to FG results.

2.5. The Director of Strategic Planning (AF/A8X) shall:

2.5.1. Serve as the Executive Wargame Director for the FG Title 10 Wargame and direct FG planning and execution.

2.6. The Chief, Future Concepts (AF/A8XC) shall:

2.6.1. Plan and execute the FG Title 10 Wargame and serve as the FG Wargame Director.

2.6.2. Develop and coordinate for CSAF approval: FG objectives, scenario, key partner participation, final reports and follow-on tasks.

2.6.3. Develop memoranda as required outlining support requirements between HAF and MAJCOM/other key participants.

2.6.4. Coordinate FG support from HAF, MAJCOM, ANG, DRU, FOA, the Joint Staff, CCMD staffs, sister Services, partner nations, and other organizations external to the DAF.

2.6.5. Document and brief FG findings, recommendations and follow-on actions at all appropriate levels. Publish a final report after FG completion.

2.6.6. Coordinate all aspects of post FG activities to include tracking of FG concept and capability studies, and any other actions directed by CSAF.

2.6.7. Determine Information Technology (IT) and modeling and simulation (M&S) requirements for FG execution and adjudication. Coordinate IT and M&S support with AF/A5XS, as required.

2.6.8. Develop and maintain the AF Toolbox for use in wargaming and experimentation sponsored by the AF and by organizations external to the DAF, as appropriate.

2.7. AF Experiment Sponsors shall.

- 2.7.1. Design, execute, prepare reports on, and monitor transition for HAF 2-digit or MAJCOM commander directed experimentation.
- 2.7.2. Inform AF/A5XS of planned wargames or other experimentation designed to help mature concepts, to identify gaps in future capabilities, and/or to evaluate solutions that potentially mitigate current and future capability gaps.
- 2.7.3. Source support for their sponsored activities directly from HAF, MAJCOM, ANG, DRU, FOA, the Joint Staff, CCMDs, sister Services, partner nations, and other organizations external to the sponsor's organization. Coordinate with AF/A5XS for assistance, as required.
- 2.7.4. Follow AF/A3/5 guidance for AF experimentation and consider related Core Function Lead Integrator (CFLI) needs when developing objectives.
- 2.7.5. Provide experimentation data/results to support CJCS directed reporting, when requested by AF/A5XS.
- 2.7.6. Report experimentation results to AF/A5X IAW Attachment 2, paragraph A2.4. Distribution should also include CFLIs for their consideration in developing Core Function Concepts and Core Function Master Plans, as appropriate.
- 2.7.7. Track to completion any doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) changes resulting from experimentation. Provide updated status to AF/A5XS and the appropriate MAJCOM Commander/HAF 2-digit, as required.
- 2.7.8. Nominate critical emerging needs/gaps identified through experimentation as capability-based assessment topics for AF Requirements Oversight Council (AFROC) review and prioritization IAW AFD 10-6, *Capabilities-Based Planning & Requirements Development*, and its implementing instructions.

2.8. Experimentation Support. HAF, MAJCOM, ANG, DRU, and FOA organizations shall support experimentation as follows, subject to resource availability.**2.8.1. General responsibilities:**

- 2.8.1.1. Provide inputs to AF experimentation objectives and design, to include needs based on key elements of Core Function Concepts and Core Function Master Plans, as appropriate.
- 2.8.1.2. Provide prioritized experimentation needs and inputs for experimentation reports when requested by AF/A5X, in support of AF/A3/5 experimentation responsibilities.
- 2.8.1.3. Provide personnel/expertise to support experimentation when requested by AF/A3/5, AF/A5X, or AF/A5XS.
- 2.8.1.4. Provide personnel/expertise to support the FG Title 10 Wargame, when requested by AF/A8, AF/A8X, or AF/A8XC.
- 2.8.1.5. Provide personnel/expertise to support AF-sponsored experimentation, when requested by sponsoring organizations.

2.8.1.6. Coordinate with AF/A5XS on all requests for experimentation support received from organizations external to the DAF. CCMD requests to subordinate AF service components are exempt from this coordination requirement, but AF/A5XS should be kept informed of any such requests.

2.8.1.7. Plan and conduct commander-directed experiments and wargames.

2.8.2. Specific organizational responsibilities:

2.8.2.1. **The Assistant Secretary of the Air Force for Acquisition (SAF/AQ)** shall provide personnel with expertise in science and technology and related information support for wargames and other experiments.

2.8.2.2. **The Deputy Chief of Staff, Manpower, Personnel and Services (AF/A1)** shall assist in identifying senior AF leaders with the required background, skills, and/or qualifications to participate in AF, Joint Staff, or sister Services experimentation.

2.8.2.3. **The Deputy Chief of Staff, Intelligence, Surveillance and Reconnaissance (AF/A2)** shall:

2.8.2.3.1. Provide proper representation of intelligence, surveillance, and reconnaissance capabilities and related information support for wargames and other experiments.

2.8.2.3.2. Assist in providing proper representation of adversary capabilities and related information to support Red Team functions for wargames and other experiments.

2.8.2.3.3. Assist in scenario development for wargames and other experiments.

2.8.2.4. **The Deputy Chief of Staff, Logistics, Installations, and Mission Support (AF/A4/7)** shall provide proper representation of logistics, security, civil engineering capabilities, and related information support for wargames and other experiments.

2.8.2.5. **The Director of Studies & Analysis, Assessment, and Lessons Learned (AF/A9)** shall provide strategic assessment and analysis support for wargames and other experiments.

2.8.2.6. **The Assistant Chief of Staff, Strategic Deterrence & Nuclear Integration (AF/A10)** shall provide proper representation of strategic deterrence, nuclear capabilities, and information support for wargames and other experiments.

2.8.2.7. **The Director of the Office of Cyberspace Operations (AF/A3C/A6C)** shall, in coordination with Air Force Space Command (AFSPC), provide proper representation for policy, guidance, and oversight of cyber operations and information technology capabilities for wargames and other experiments.

2.8.2.8. **The Director of Operations (AF/A3O)** shall assist AF/A5X and AF/A8X to ensure representative and realistic weather data is made available for integration into Title 10 Wargames and other experiments.

2.8.2.9. **Air Combat Command (ACC)** shall provide proper representation of the AF core function capabilities and technologies for which they are responsible for wargames and other experiments.

2.8.2.10. **Air Education and Training Command (AETC)** shall provide proper representation of doctrinal issues for wargames and other experiments.

2.8.2.11. **Air Force Materiel Command (AFMC)** shall:

2.8.2.11.1. Provide proper representation of the AF core function capabilities and technologies for which they are responsible for wargames and other experiments.

2.8.2.11.2. Provide authoritative system fact sheets of future capabilities for inclusion in the AF Toolbox.

2.8.2.12. **Air Force Space Command (AFSC)** shall:

2.8.2.12.1. Provide proper representation of the AF core function capabilities and technologies for which they are responsible for wargames and other experiments.

2.8.2.12.2. Provide authoritative epoch-specific space and cyberspace orders of battle and system fact sheets for inclusion in the AF Toolbox.

2.8.2.13. **Air Mobility Command (AMC)** shall provide proper representation of the AF core function capabilities and technologies for which they are responsible for wargames and other experiments.

2.8.2.14. **Air Force Global Strike Command (AFGSC)** shall provide proper representation of the AF core function capabilities and technologies for which they are responsible for wargames and other experiments.

2.8.2.15. **AF Reserve Command (AFRC)** shall provide representation of AF Reserve force capabilities and technologies for wargames and other experiments.

2.8.2.16. **Air National Guard (ANG)** shall provide proper representation of ANG force capabilities and technologies for wargames and other experiments.

2.8.2.17. **Air Force Special Operations Command (AFSOC)** shall provide proper representation of the AF core function capabilities and technologies for which they are responsible for wargames and other experiments.

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DCS, Operations, Plans and Requirements

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

- CJCSI 3010.02C, *Joint Concept Development and Experimentation (JCD&E)* 15 January 2012
- CJCSI 3170.01H, *Joint Capabilities Integration and Development System*, 10 January 2012
- JP 1-02, *Department of Defense Dictionary of Military & Associated Terms*, 8 Nov 2010, as amended 15 July 2012
- AFMAN 33-363, *Management of Records*, 1 March 2008
- AFPD 10-6, *Capabilities-Based Planning & Requirements Development*, 31 May 2006
- AFPD 10-28, *Air Force Concept Development and Experimentation*, 17 April 2012
- AFPD 90-11, *Strategic Planning System*, 26 March 2009
- Alberts, David S., Richard E. Hayes, Dennis K. Leedom, John E. Kirz, and Daniel T. Maxwell, *Code of Best Practice for Experimentation*, Washington, DC, DoD Command and Control Research Program (CCRP) Publication Series, 2002
- Alberts, David S. and Richard E. Hayes, *Code of Best Practice for Campaigns of Experimentation: Pathways to Innovation and Transformation*, Washington, DC, CCRP Publication Series, 2005
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Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

- ACC—Air Combat Command
- AETC—Air Education and Training Command
- AF—Air Force
- AF/A1—Deputy Chief of Staff, Manpower, Personnel and Services
- AF/A2—Deputy Chief of Staff, Intelligence, Surveillance and Reconnaissance
- AF/A3/5—Deputy Chief of Staff, Operations, Plans and Requirements
- AF/A3O—Directorate of Operations
- AF/A3C/A6C—Directorate of Cyberspace Operations
- AF/A4/7—Deputy Chief of Staff, Logistics, Installations and Mission Support
- AF/A5X—Directorate of Operational Planning, Policy & Strategy
- AF/A5XS—Concepts, Strategy, and Wargaming Division

AF/A8—Deputy Chief of Staff, Strategic Plans and Programs

AF/A8X—Directorate of Strategic Planning

AF/A8XC—Future Concepts Division

AF/A9—Directorate of Studies & Analyses, Assessments, and Lessons Learned

AF/A10—Assistant Chief of Staff, Strategic Deterrence and Nuclear Integration

AFAMS—Air Force Agency for Modeling & Simulation

AFGSC—Air Force Global Strike Command

AFI—Air Force Instruction

AFMC—Air Force Materiel Command

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFRL—Air Force Research Laboratory

AFS—Alternative Force Structure

AFSOC—Air Force Special Operations Command

AFSPC—Air Force Space Command

AMC—Air Mobility Command

ANG—Air National Guard

CCMD—Combatant Command(s)

CFLI—Core Function Lead Integrator

CIO—Chief Information Officer

CJCS—Chairman, Joint Chiefs of Staff

CJCSI—Chairman, Joint Chiefs of Staff Instruction

COA—Course of Action

CSAF—Chief of Staff of the U.S. Air Force

DAF—Department of the Air Force

DOD—Department of Defense

DOTMLPF—P – Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy

DRU—Direct Reporting Unit

FG—Air Force Future Capabilities Game

FOA—Field Operating Agency

FYDP—Future Years Defense Plan

HAF—Headquarters United States Air Force

IAW—In Accordance With

IT—Information Technology

JFC—Joint Force Commander

JP—Joint Publication

MAJCOM—Major Command

M&S—Modeling & Simulation

MoA—Measures of Achievement

MoE—Measures of Effectiveness

NAF—Numbered Air Force

ONR—Office of Naval Research

OPR—Office of Primary Responsibility

OSD—Office of the Secretary of Defense

PFE—Programmed Force Extended

PGO—Policy, Guidance, and Oversight

SAF—Secretary of the Air Force

SAF/CIO A6—Assistant Secretary of the Air Force, Chief, Warfighting Integration & Chief Information Officer

SLS—Senior Leader Seminar

UE—Unified Engagement

USAF—United States Air Force

WIE—Wargaming Information Environment

Terms

Air Force Experiment Sponsor: An AF organization that designs, executes, prepares reports on, and monitors transition for an experiment in accordance with AFI 10—2802.

Air Force Toolbox— Official repository of Air Force Program of Record and future concept systems and platforms. The Toolbox is maintained by AF/A8XC and used to develop Toolkits for use by the Air Force, sister Services, OSD, Joint Staff, and other organizations. (AFPD 10-28, 17 Apr 2012)

Air Force Toolkit— A subset of the Air Force Toolbox; tailored to meet customers' needs; used to execute wargame, conduct experiments, run exercises, or provide analysis. (AFPD 10-28, 17 Apr 2012)

Experiment— A process to explore the effects of manipulating a variable; an analytical activity to determine the efficacy of something previously untried, examine the validity of a hypothesis, or demonstrate a known or believed truth within a specific context. (CJCSI 3010.02C, 15 Jan 12)

Experimentation— An iterative process for developing and assessing concept-based hypotheses to identify and recommend the best value-added solutions for changes in doctrine, organization, training, materiel, leadership and education, personnel, and facilities and policy required to achieve significant advances in future joint operational capabilities. (CJCSI 3170.01G, Mar 09). For the purposes of AF CD&E, experimentation methods include wargaming, exercises and experiments, with wargaming as the primary method of CD&E experimentation. Experiments can be another method of experimentation. Experimentation can include live, virtual and constructive activities to provide a “low-risk” environment to explore and assess new or refined concepts, processes, technology, tactics, techniques and procedures. Exercises are not an explicit experimentation activity, but can provide a venue to explore some limited experimentation objectives. (AFPD 10-28, 17 Apr 2012)

Programmed Force Extended— The Programmed Force Extended is a planning excursion developed to support a strategic risk assessment. For planning purposes, the Programmed Force is projected two additional Fiscal Years Defense Plan (FYDP) periods in order to support a comparison with the Planning Force. This comparison provides a basis for assessing strategic risk with respect to the future security environment. (AFPD 90-11)

Test and Evaluation (T&E)— The act of generating empirical data during the research, development or sustainment of systems, and the creation of information through analysis that is useful to technical personnel and decision makers for reducing design and acquisition risks. The process by which systems are measured against requirements and specifications, and the results analyzed so as to gauge progress and provide feedback (Reference AFI 99-103)

Title 10 Wargame— A CSAF-directed, HAF-conducted wargame which explores current and future issues impacting doctrine, force structure and concepts (future, employment, operational, etc.). HAF conducts two Title 10 wargames: 1. Unified Engagement (UE) is the biennial wargame operationally focused to address military challenges and concept exploration (traditionally 12 years out), and 2. The AF Future Capabilities wargame (FG) is the biennial wargame focused on addressing future concepts and force structure alternatives (traditionally 20+ years out). (AFPD 10-28, 17 Apr 2012)

Wargame— A simulation, by whatever means, of a military operation involving two or more opposing forces, using rules, data, and procedures designed to depict an actual or assumed real-life situation. (Joint Publication 1-02, 8 Nov 10, as amended through 15 Aug 11)

Wargame Director— The senior officer responsible for ensuring the accomplishment of experiment or wargaming objectives.

Attachment 2

PLANNING, EXECUTION, REPORTING AND TRANSITION

A2.1. Purpose. This attachment provides a set of general organizing principles/guidelines for AF organizations sponsoring experiments/wargames to consider. It is intended to inform these activities, and provide experimentation and wargaming reporting guidance. This information is derived from the *Code of Best Practice for Experimentation Series* and *Code of Best Practices for ONR Operational Experimentation* (reference Attachment 1).

A2.2. Planning and Organizing

A2.2.1. Planning:

A2.2.1.1. Identify, collect, and prioritize candidate experimentation needs. AF sponsored experimentation should support the development of AF and joint capabilities. Therefore, potential sources include: AF capability-based assessments, CFLI Core Function Concepts and Core Function Master Plans, CJCS, CCMD, and sister Service plans, concepts, capability assessments, etc.

A2.2.1.2. Develop a central hypothesis and/or objectives that map to experimentation needs, concepts, capability gaps, or potential solutions to be evaluated. Obtain approval from the experiment/wargame sponsor.

A2.2.1.3. Determine the type of experiment/wargame (e.g., discovery, hypothesis, demonstration) necessary to produce relevant and useful results.

A2.2.1.4. Develop analytical questions that support hypothesis/objectives, and develop a data collection and analysis plan to answer the questions during the course of the experiment/wargame.

A2.2.1.5. Select and develop an experiment/wargame scenario.

A2.2.1.6. Develop interrelated metrics that will shape the data collection and analysis plan.

A2.2.1.6.1. Develop Measures of Achievement (MoA) capable of assessing the overall success of evaluating the central hypothesis and/or solutions.

A2.2.1.6.2. Develop Measures of Effectiveness (MoE) that map to analytical questions and support MoA assessment.

A2.2.1.6.3. Develop Measures of Performance that support MoEs and consist of observable/recordable data to be collected during an experiment/wargame.

A2.2.1.7. Draft an experiment/wargame execution plan, to include a timeline with key milestones identified. Obtain approval from the experiment/wargame sponsor.

A2.2.2. Organizing:

A2.2.2.1. Designate an AF organization responsible for planning and executing the experiment/wargame.

A2.2.2.2. Identify candidate experiment/wargame stakeholders within and external to the AF.

A2.2.2.3. Obtain and document support commitments from participating organizations.

A2.2.2.4. Identify organizations and individuals as needed to serve as experiment/wargame host, director, controller, and other key roles.

A2.2.2.5. Evaluate the feasibility of partnering or integrating with other experiments/wargames (or exercises, as applicable) for efficiency/synergy.

A2.2.2.6. Establish a proposed location/facility for the experiment/wargame.

A2.2.2.7. Establish preliminary resource requirements, including: manpower, logistics, training, support, and network/communications. Prepare an estimate of required funding. Provide preliminary resource requirements to applicable experiment sponsor offices to ensure resources are allocated in time for proper planning.

A2.2.2.8. Identify one or more organizations responsible for implementing or otherwise transitioning experiment/wargame results in support of AF or joint capability development.

A2.3. Execution

A2.3.1. Install and test equipment and systems (venue permitting).

A2.3.2. Validate/exercise event design to include training and practice runs for participants/players, experiment control team, and data collection/analysis team.

A2.3.3. Conduct frequent close observation of data collection efforts for proper time samples and format.

A2.3.4. Provide frequent status updates to key members of the experiment team, experiment/wargame director, and participants/players on metrics, objectives, and overall progress.

A2.3.5. Ensure analytical results are understood and relevant to decision makers.

A2.3.6. Present “hot wash” and/or “quick look” information to key participants immediately after experiment conclusion in preparation for a final analysis report.

A2.4. Reporting

A2.4.1. Reporting of HAF and MAJCOM level experimentation results serves several purposes:

A2.4.1.1. Informs other AF and MAJCOM/CFLI decision processes by the sharing of findings and results.

A2.4.1.2. Reduces the risk of unintentional duplication of efforts.

A2.4.1.3. Enables achievement of results that can serve as a research data base to inform future experimentation, formal Test and Evaluation (T&E), and development of potential solutions to capability gaps.

A2.4.1.4. Supports the development of AF inputs to other required Office of the Secretary Defense (OSD) and CJCS reporting.

A2.4.2. Report submission:

A2.4.2.1. Per paragraph 2.7.6, HAF and MAJCOM level experiment sponsors will submit copies of post-event reports to AF/A5XS (afa5xs.workflow@pentagon.af.mil or af.xoxs@pentagon.smil.mil). Reports shall include the following minimum elements:

- A2.4.2.1.1. Event title.
- A2.4.2.1.2. Sponsoring organization and key partners.
- A2.4.2.1.3. Event description.
- A2.4.2.1.4. Scenario timeframe.
- A2.4.2.1.5. Summary of milestones/significant events.
- A2.4.2.1.6. Experiment objectives.
- A2.4.2.1.7. Summary of participation.
- A2.4.2.1.8. Specialized technologies employed, if applicable.
- A2.4.2.1.9. Identification of outcomes and recommendations.

A2.4.3. Report Disposition. AF/A5XS shall:

- A2.4.3.1. Maintain an electronic archive available to the AF experimentation/wargaming community of all reports received.
- A2.4.3.2. Prepare semi-annual summaries of experiment/wargame reports received and AF participation in experimentation/wargames sponsored by AF, CJCS, CCMD, and sister Services. Coordinate for distribution to all HAF 2 Letters and MAJCOMs/CFLIs.

A2.5. Transition Considerations. Ultimately, successful transition of solutions identified through experimentation result in meaningful change for the warfighter. The transition of experiment/wargame results requires careful attention throughout planning and execution to maximize opportunities for impact after completion.

- A2.5.1. Keep senior leaders informed at key decision points throughout the experiment planning and execution phases.
- A2.5.2. Develop a transition strategy that identifies potential transition paths for implementing validated experiment solutions.
 - A2.5.2.1. Potential transition paths include changes to elements of doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P).
- A2.5.3. Develop a transition implementation plan that describes potential courses of action for passing experimentation findings and conclusions to responsible requirements organizations and other interested parties.
- A2.5.4. Follow-up with organization responsible for transitioning results until transition is complete.

Attachment 3

WARGAMING MODELING AND SIMULATION SUPPORT

A3.1. Purpose. This attachment describes the WIE developed, operated, and maintained by AF/A5XS. The WIE is a deployable and scalable capability that includes IT and M&S tools. It uses both industry standard and emerging technologies, and will work within Assistant Secretary of the Air Force, Chief, Warfighting Integrations & Chief Information Officer (SAF/CIO A6) and Air Force Research Lab implementation guidelines and procedures where applicable. AF/A5XS will evaluate new tools as required to ensure wargame participants have access to the best available IT and M&S resources.

A3.2. The WIE will consist of multiple IT and M&S tools that enhance experimentation and wargaming events to include:

- A3.2.1. Collaborative software.
- A3.2.2. Integrated models and simulations.
- A3.2.3. Visualization tools.
- A3.2.4. Office automation tools.
- A3.2.5. Business intelligence tools.
- A3.2.6. Databases and data warehousing tools.
- A3.2.7. Instant messaging tools.
- A3.2.8. Identity and access management capabilities.
- A3.2.9. Data processing capabilities.
- A3.2.10. Business process management tools.

A3.3. The WIE may also incorporate joint and sister Service IT and M&S tools to support achievement of specific experimentation and wargaming objectives. Other potential IT and M&S tools that could be used include, but are not limited to:

- A3.3.1. Time-phased force and deployment data creation.
- A3.3.2. Ballistic missile defense modeling.
- A3.3.3. Air refueling capability.
- A3.3.4. Space asset modeling.
- A3.3.5. Air platform orbit modeling.
- A3.3.6. Ground coverage by aerial and space based assets.
- A3.3.7. Communications modeling and nodal analysis.
- A3.3.8. Hazardous nuclear/chemical/biological trend analysis and modeling.
- A3.3.9. Campaign modeling and analysis.
- A3.3.10. Data creation and analysis.

A3.4. WIE support can be used in the following areas:

- A3.4.1. Game IT and M&S design.
- A3.4.2. Game system accreditation support.
- A3.4.3. IT and M&S support.
- A3.4.4. Deployable WIE and support activities.
- A3.4.5. Data development and management.
- A3.4.6. Product evaluation support.
- A3.4.7. Custom solution support.

A3.5. IT and M&S Support Requests. Requests for IT and M&S support for experimentation should be forwarded to AF/A5XS for review and assistance. After reviewing requests, AF/A5XS will assist as able in providing the support and/or identifying other AF organizations capable of doing so. If necessary, AF/A5XS will act as an initial liaison to assist experimentation sponsors obtain IT and M&S support from other AF organizations.

Attachment 4

UNIFIED ENGAGEMENT

A4.1. Overview

A4.1.1. UE is an Air Force Title 10 Wargame sponsored by AF/A3/5 to address CSAF-approved objectives. UE provides the Air Force with a means for critical self-examination to guide capability and concept development for future operations. It also offers unique opportunities for Airmen to foster and build relationships with sister Services and the air forces of Allies and other Partner Nations.

A4.1.2. UE emphasizes operational challenges from the perspectives of a Joint Task Force (JTF) Commander/staff and subordinate Joint Functional Component Commanders/staffs. Interactions with and between Combatant Commanders/staffs and their subordinate components are also examined. Typical UE scenarios are set approximately 12 years in the future—far enough in the future to distinguish from the scenarios associated with current CCMD contingency plans, yet not so far that data about friendly and potential enemy forces and systems is not readily available to support realistic planning, modeling and simulation. By studying a timeframe outside the FYDP, the full range of DOTMLPF-P solutions can be considered for addressing capability gaps.

A4.1.3. AF/A3/5 partners with a MAJCOM, as directed by the CSAF, to develop the regional focus for a given iteration of the UE Wargame. Joint and Partner Nation representatives can also be included in wargame design and execution to incorporate their expertise and perspectives. As appropriate to the specific UE regional focus, scenario and objectives, representatives of other U.S. Government Departments/Agencies can also be key contributors to UE.

A4.1.4. UE consists of a series of multiple workshops and other planning activities that take place over the course of an execution phase lasting roughly one year. This series culminates in a wargame-style event (“capstone wargame”), conducted roughly every other year. Following wargame execution, AF/A3/5 prepares a report of findings and recommendations for submission to CSAF, while simultaneously beginning the design phase for the next UE iteration.

A4.2. Purpose. The development of specific wargame objectives is a key early step in the planning stage of any UE cycle. (See A4.3.) These objectives define the specific purpose for a given iteration of the wargame. However, the following five overall goals outline the enduring purpose of UE:

A4.2.1. Enhance joint/combined warfighting relationships and capabilities. By designing the wargame around the priorities of a MAJCOM and the associated CCMD/components, and maximizing the use of personnel from these organizations, UE reinforces the same organizational and personal relationships that are central to actual contingency plans and operations. The wargaming environment also provides these warfighters with an opportunity to understand how existing capabilities will or should evolve to meet the future demands of the area for which they are responsible.

A4.2.2. Prevent or mitigate operational surprise. UE scenarios are designed to provide a plausible strategic backdrop for operational decision making, and the wargaming

environment allows competing decisions to be extrapolated to logical conclusions. This time-tested methodology often results in operational outcomes other than what was originally planned by either friendly or enemy forces, leading to potentially important insights and discovery. In doing so, UE helps commanders and their staffs prepare themselves for such experiences.

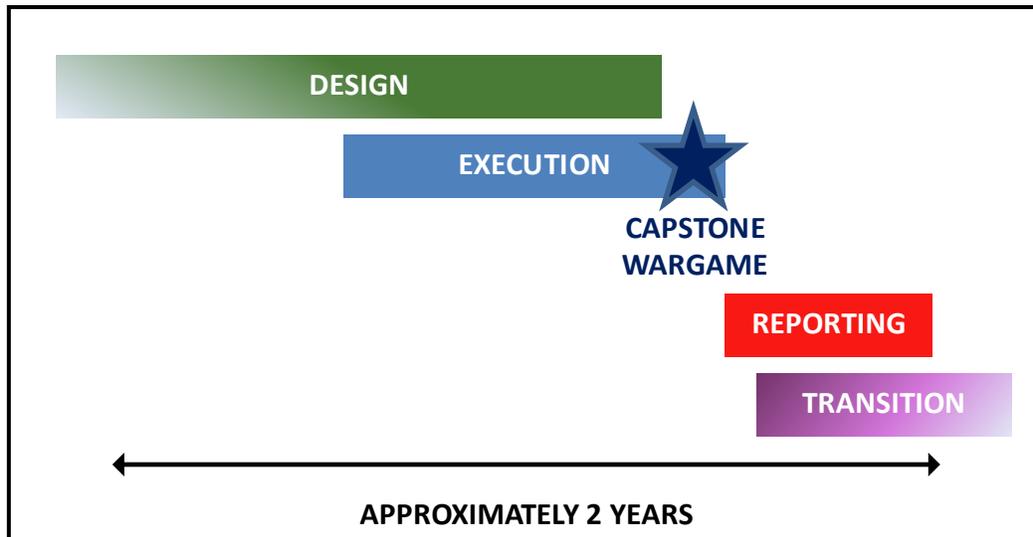
A4.2.3. Explore concept, capability, and capacity shortfalls. UE provides an operational lens through which documented Air Force capability gaps can be examined, both to understand the implications of these gaps across the joint force, and to develop mitigating strategies. UE is also an opportunity to subject emerging warfighting concepts to scrutiny by operational planners, with the goal of improving or discarding such concepts on the basis of their merits. Finally, wargame results can reveal previously undocumented needs/gaps in Air Force capabilities.

A4.2.4. Build and nurture partnerships and alliances worldwide. Multinational participation is a hallmark of modern operations involving Air Force forces and UE is designed to match this reality. Representatives of partner nations and their air forces are involved throughout the UE planning and execution efforts, to include robust role play by international officers in key wargame positions. Targeted partnership seminars are also used to maximize the opportunities for Air Force leaders to interact with their regional counterparts in order to build and nurture relationships that are key to advancing U.S. interests worldwide.

A4.2.5. Develop Airmen and our joint partners for operational and strategic leadership. UE provides a unique opportunity for many AF senior leaders and staff officers to experience first-hand the complexities of leading a representative joint/coalition military operation. The emphasis on interaction between functional components, the JTF headquarters, and multiple combatant commands provides a rare venue for exercising such aspects of joint doctrine, particularly in the context of a high-tempo, cross-domain, and full-spectrum combat operation.

A4.3. Timeline. AF/A3/5 synchronizes four distinct efforts over a two year timeframe to successfully accomplish UE. These efforts consist of wargame design, execution, reporting and transition. (See Figure A4.1.)

Figure A4.1. Notional UE Timeline



A4.3.1. **Design.** AF/A5X carries out all aspects of planning associated with UE Wargame design. This planning begins in advance of UE execution, and continues until the start of the capstone wargame. The period where wargame design and execution overlap is a key characteristic of UE, allowing for extensive interaction between these two efforts: the wargame design influences execution, and the role player decisions early in execution also shape the ultimate design of the capstone wargame. Wargame design consists of the following key elements:

A4.3.1.1. Nomination of a MAJCOM to partner with AF/A3/5 and host the capstone wargame and other key events.

A4.3.1.2. Determination of Partner MAJCOM priorities and translation of those priorities into wargame focus areas.

A4.3.1.3. Identification of wargame stakeholders across HAF and other MAJCOMs/NAFs, CCMDs/components, Services, U.S. Government agencies, and Partner Nations.

A4.3.1.4. Development of wargame objectives by: solicitation of stakeholder inputs; drafting and coordination; obtaining CSAF approval; and development of data collection/analysis plans.

A4.3.1.5. Development of wargame scenario, friendly and enemy orders of battle, tasking orders and other strategic guidance.

A4.3.1.6. Drafting a wargame timeline (player events, design activities, other milestones) that accounts for and ideally complements other DOD, HAF and Partner MAJCOM activities.

A4.3.1.7. Planning of individual workshops and other events.

A4.3.1.8. Outreach to senior leaders, player education/training, strategic communications.

A4.3.1.9. Acquisition, configuration and transportation of computers, servers, software and other critical equipment and supporting data. This includes the development of new software and adaptation of existing applications.

A4.3.2. **Execution.** UE execution begins with the first “in-role” wargame event, typically a simulated National Security Council meeting that establishes the political/strategic context for operational planning, and continues through the adjudication of the final operational move at the capstone wargame. There are five distinct elements of UE execution: wargame control, operational planning, data collection/analysis, network operations, and security.

A4.3.2.1. Wargame control consists of all actions and decisions that establish the environment in which role players and adjudicators carry out their assigned responsibilities. The wargame director leads a team of scenario creators, data collectors, analysts, and facilitators who closely monitor progress towards wargame objectives. The director and control team are responsible for establishing the operational conditions under which wargame play begins, providing strategic guidance and other information/decisions to role players, and determining the timeframe for individual wargame moves.

A4.3.2.2. Crisis action planning in UE conforms to current doctrinal and/or other established procedures. Role playing participants are the primary operational planners, with support from the wargame control team in the form of strategic guidance and tasking. Crisis action planning takes place over the course of UE execution, culminating in the final move of the capstone wargame.

A4.3.2.2.1. Crisis action planning workshops are conducted to set the stage for wargame moves at the capstone wargame. The events are typically conducted in the host-MAJCOM's theater of operations to facilitate maximum participation of the planners assigned to the associated CCMD and its Service components.

A4.3.2.2.2. Functional workshops are executed to analyze or plan a specific functional area of relevance to operations planning.

A4.3.2.2.3. Partnership workshops are essential components of UE execution that enable the AF to incorporate a wide range of international perspectives in the pursuit of wargame objectives. These workshops use basic wargaming methods and tools, and also support theater security cooperation goals by creating military-to-military engagement opportunities for regionally focused AF senior commanders and their staffs. AF/A5X plans and executes UE partnership workshops in close coordination with MAJCOM staffs and the associated CCMD staff.

A4.3.2.2.4. A capstone wargame culminates UE execution where opposing teams plan sequential moves that are independently adjudicated by subject matter experts. Move adjudication relies predominantly on expert judgment, supplemented by the use of models and simulations. Role player decisions during the course of the moves and the adjudicated operational outcomes are analyzed to generate observations, insights and conclusions that inform Air Force capability development and future planning.

The capstone wargame is typically conducted in the host MAJCOM's theater of operations to maximize participation by the "warfighters" assigned to that CCMD.

A4.3.2.3. AF/A5XS collects data throughout UE execution, and analyzes that data to form observations, insights and recommendations relevant to wargame objectives.

A4.3.2.4. Network operations are a key aspect of UE execution. Refer to Attachment 3 for a detailed description of the Wargaming Information Environment.

A4.3.2.5. Physical and information security are also key components of UE execution.

A4.3.3. Reporting

A4.3.3.1. Senior Leader Seminar. The first opportunity to formally out brief UE results and emerging insights to an external audience is during the Senior Leader Seminar (SLS), conducted as soon as practical after the final move of the capstone wargame. The Wargame Director, the Senior Air Force officer participating in UE, and other senior leader participants use the SLS to share their experiences with the host MAJCOM leadership, as well as with the CSAF and other AF senior leaders. Senior leader representatives from other Services, the Joint Staff, and the CCMDs can also participate in the SLS. The SLS provides a means for the CSAF and other senior leaders to provide early feedback on wargame results to guide follow-on analysis, reporting and transition efforts.

A4.3.3.2. Post-wargame analysis consists of two distinct efforts: validation of subjectively adjudicated outcomes via modeling and simulation; and detailed study of data collected throughout the wargame to verify emerging insights and/or identify other insights.

A4.3.3.3. AF/A5XS prepares and coordinates a written report that documents wargame design, participation, outcomes and findings. The report is drafted for submission to and approval by the CSAF. UE reports can consist of sections classified at different levels, based upon the nature of the information and the intended audience. At a minimum, they should include unclassified summaries of all major design elements and findings.

A4.3.3.4. AF/A5X presents summary briefings on UE outcomes and findings to select senior leaders from HAF, MAJCOMs, CCMDs, OSD, the Joint Staff, sister Services, and other U.S. Government organizations. These briefings are used to inform a wider audience and to increase support for UE transition efforts.

A4.3.4. Transition

A4.3.4.1. Development of follow-on actions. AF/A5XS works closely with appropriate HAF and MAJCOM organizations, and in some cases with organizations external to the AF, to develop a set of follow-on actions intended to either implement UE findings/recommendations or to conduct additional study where needed. On behalf of AF/A3/5, AF/A5XS coordinates proposed follow-on actions and prepares AF/A3/5 transition action recommendations for CSAF approval.

A4.3.4.2. AF/A5XS tracks completion of follow-on actions, and provides periodic status updates to AF/A5X and AF/A3/5.

Attachment 5

FUTURE CAPABILITIES GAME

A5.1. Overview. The Future Capabilities Game (FG) is an AF Title 10 Wargame sponsored by AF/A8 to address CSAF approved objectives. FG provides the AF with a means for critical self-examination to inform force structure planning and investment strategies.

A5.1.1. FG is CSAF's far-term, strategic-level wargame focusing on future force structure alternatives and employment concepts. FG focuses on force-on-force engagement from the Joint Force Commander (JFC) perspective. FG examines several CSAF objectives that are derived from enduring challenges to the Air Force. These objectives use alternative force structures and employment concepts and are examined against the programmed force. FG scenarios are set 20 years in the future far enough into the future to distinguish from the scenarios associated with current CCMDs contingency plans and to allow wargaming of two distinct, technologically feasible, and cost neutral Blue Forces, yet not so far that data about friendly and potential enemy forces is not available (or cannot be generated) to support realistic planning and M&S. By studying a timeframe outside the Future Years Defense Program, a full range of force structure concept employment solutions can be considered for addressing capability gaps.

A5.1.2. AF/A8 partners with all MAJCOMs, Numbered Air Forces (NAFs) and AF agencies. Joint, DOD, US Government, and Allied representatives provide a unique perspective and expertise; so they also participate in wargame planning and execution.

A5.1.3. FG is built using an iterative approach consisting of a series of build-up workshops and planning activities that take place over a two-year planning cycle. These events culminate with a capstone wargame. After completion of capstone, AF/A8 prepares a report of findings and insights, and a set of recommendations for CSAF approval.

A5.2. Purpose. FG execution supports both the Strategic Planning Process and force structure planning efforts. FG assesses the ability of an alternative AF force structure to meet the operational requirements of a JFC approximately 20 years in the future. The game compares performance of an Alternative Force Structure (AFS) to the performance of Programmed Force Extended (PFE). It also focuses on specific, CSAF-approved objectives. These objectives define the specific purpose for a given iteration of the wargame. FG has the following four enduring purposes:

A5.2.1. Enhance joint and combined warfighting relationships and capabilities. By designing the wargame around adapted OSD-approved planning scenarios, FG reinforces the organizational and command relationships central to contingency planning and operations. Future wargames provide warfighters with an opportunity to understand how existing and future capabilities may evolve to meet future challenges.

A5.2.2. Prevent or mitigate technological/operational surprise. FG scenarios are designed to provide a plausible strategic backdrop for operational decision-making. This unique wargame - where two different blue forces fight a common enemy in a common scenario - allows a detailed evaluation of potential, future force structures. This time-tested methodology often results in operational outcomes other than what was originally planned by either friendly or

enemy forces, thereby faithfully representing the fog and friction inherent to actual combat operations.

A5.2.3. Explore concept, capability, and capacity shortfalls. FG provides an opportunity to subject emerging warfighting concepts to scrutiny by operational planners, with the goal of improving or discarding such concepts on the basis of their merits. FG also provides a strategic lens through which documented AF capability gaps can be examined. This provides an understanding of the implications of these gaps across the coalition and joint force, and helps evaluate proposed alternative force structure solutions. Finally, wargame results can reveal previously undocumented AF capacity gaps.

A5.2.4. Develop Airmen and our joint partners for operational and strategic leadership. FG provides a unique opportunity for many AF senior leaders and staff officers to experience first-hand the complexities of leading a representative joint/coalition military operation. The emphasis on interaction between functional components, the Coalition Joint Task Force headquarters, and multiple combatant commands provides a rare venue to exercise joint doctrine in the context of high-tempo, full spectrum combat operations.

A5.3. Timeline. AF/A8 synchronizes five distinct efforts over a two-year timeframe to successfully accomplish FG. These efforts consist of wargame design, planning, execution, reporting, and follow-on analysis. (See Figure A5.1.)

Figure A5.1. Notional FG Timeline



A5.3.1. **Design.** Wargame design consists of nominating objectives, identifying stakeholders, developing a scenario, developing a schedule/timeline, and constructing the wargame framework. This phase continues well into the planning phase. The period where wargame design and planning overlap is a key characteristic of FG, allowing for extensive interaction between these two efforts. FG design influences both planning and the ultimate structure of the alternative force. Design includes:

A5.3.1.1. Nomination of wargame objectives by soliciting input from enduring partners; drafting and coordination; obtaining CSAF approval; and development of data collection/analysis plans.

A5.3.1.2. Identification of wargame stakeholders across HAF, other MAJCOMs/NAFs, CCMDs/components, sister Services, other U.S. Government agencies, and Allied Partners.

A5.3.1.3. Development of wargame scenario, friendly and enemy orders of battle, tasking orders and other strategic guidance.

A5.3.1.4. Development of a wargame schedule/timeline (player events, design activities, other milestones).

A5.3.1.5. De-confliction from other DOD, HAF and Partner MAJCOM/NAF activities.

A5.3.1.6. Construction of the wargame framework. The FG process historically uses current doctrinal and/or established procedures (Military Decision Making Process and the Combined Command and Control structure). However, wargame designers must remain open to the possibility of modifying these processes and structures.

A5.3.2. **Planning.** FG planning begins with the first objective-based seminar and ends with campaign plan development during a Courses of Action (COA) Conference. Planning actions impact wargame design and wargame design impacts planning actions. Planning consists of, but is not limited to:

A5.3.2.1. Hosting objectives-based workshops/seminars. These events educate and inform AF Senior Leaders, validate and verify wargame design concepts, and narrow the AFS options.

A5.3.2.2. Collaboration with enduring partners, preparation of senior leaders, player education/training, and strategic communications.

A5.3.2.3. Nominate Blue and Red Team Leads.

A5.3.2.4. Develop the AFS. AFS development allows two Blue force structures to be compared and contrasted. The AFS is derived to address the CSAF-approved objectives by modifying the PFE. The AFS must consist of force options that are technologically feasible. The AFS must also match the cost of the PFE.

A5.3.2.5. Develop Courses of Action. The COA Conference requires the PFE, AFS, and Red teams to perform operational planning to address the challenges presented in the FG scenario.

A5.3.3. **Execution.** FG execution has four distinct elements: wargame control, data collection, analysis, and game play.

A5.3.3.1. Wargame control consists of all actions and decisions that establish the environment in which role players and adjudicators carry out their assigned responsibilities. The wargame director leads a team of scenario creators, data collectors, analysts, and facilitators who closely monitor progress towards wargame objectives. The director and control team are responsible for establishing the operational conditions under which wargame play begins, providing strategic guidance and other

information/decisions to role players, and determining the timeframe for individual wargame moves.

A5.3.3.2. The Capstone event is typically preceded by a conference that performs final planning based on JFC COA selection and executes “Move Zero.” At Move Zero teams develops and executes a feasible force flow that meets JFC operational objectives.

A5.3.3.3. AF/A8 assembles a simulated National Security Council (NSC) to represent the interface between civilian policy-makers and senior military officials responsible for executing the policy. Individuals with first-hand experience at this level of government play the roles of National Security Advisor, Secretary of State, Secretary of Defense, Secretary of the Treasury, Director of National Intelligence, and Chairman of the Joint Chiefs of Staff. NSC guidance is documented and translated into orders and memoranda for use by wargame players.

A5.3.3.4. A capstone wargame culminates FG execution. In this event, opposing teams plan sequential moves that are independently adjudicated by subject matter experts. Move adjudication relies predominantly on expert judgment, supplemented by the use of M&S. Role player decisions during the course of the moves and the adjudicated operational outcomes are analyzed to generate observations, insights and conclusions that inform AF capability development and future planning. The capstone wargame is typically conducted at the LeMay Center Wargaming Institute at Maxwell AFB.

A5.3.3.5. AF/A8XC collects data throughout FG execution and analyzes that data to develop and document observations, insights and recommendations relevant to the wargame objectives.

A5.3.4. **Reporting.** The first FG reporting event is the initial out-brief presented to the CSAF at the Capstone event. Other reporting products include post-game workshops and analysis to develop the final report, and all prescribed and requested Senior Leader back-briefs.

A5.3.4.1. Post-game workshops. A series of small, rapid succession post-game workshops focused on the major insights presented at FG’s initial out-brief. These events are used to refine and validate the capstone event insights. Individuals with JFC experience typically lead the workshops.

A5.3.4.2. Post-game analysis. Further analysis is then accomplished to refine and validate the capstone event insights. This includes a review of all notes and records from the capstone event to include player comments, player move sheets, adjudication transcripts, and Senior Leader direct input. M&S results will be reviewed and additional data runs may be executed. The results of post-game analysis are documented in the CSAF-signed, FG Final Report.

A5.3.5. **Follow-on Analysis.** The CSAF-signed FG final report mandates follow-on tasks with proposed OPRs.

A5.3.5.1. Follow-on actions are developed in coordination with the proposed OPR during the writing of the FG final report. All follow-on actions are fully coordinated.

A5.3.5.2. Tasking and tracking of follow-on actions. AF/A8XC through the AF/CC Executive Services sends out the follow-on actions to the respective OPRs and tracks action completion. The OPR is responsible for completion of all actions pertaining to the

follow-on actions to include researching and producing a response. The OPR is also responsible for fully coordinating the final response.

A5.3.5.3. Compilation of follow-on actions. AF/A8XC will compile all follow-on actions for final submission to the CSAF, and coordinate them across all HAF 2-digit organizations and CFLIs.