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This Instruction implements Department of Defense (DoD) Directive (DoDD) 5000.59, *DoD Modeling and Simulation (M&S) Management*; DoD Instruction (DoDI) 5000.61, *DoD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A)*, DoDI 5000.70, *Management of DoD Modeling and Simulation (M&S) Activities*, Air Force Instruction (AFI) 36-2201, *Air Force Training Program,* AFI 36-2251, *Management of Air Force Training Systems,* Air Force Policy Directive (AFPD) 16-10, *Modeling and Simulation*, Air Force Handbook (AFH) 36-2235, *Information for Designers of Instructional Systems – ISD*, Air Force Space Command Instruction (AFSPCI) 10-260, *Tactics Development Program,* AFSPCI 10-415, *Weapons and Tactics Program* and AFSPCI 36-283, *Space Training System Management*. It applies to all Space and Missile Systems Center (SMC) activities using Modeling and Simulation (M&S) for Live Virtual Constructive - Operational Training (LVC-OT) and/or primary/fundamental training leading to operational training. This instruction applies to all personnel assigned to SMC and its operating locations, to include active duty military, reserve, National Guard, DoD civilian employees and contractors specifically supporting the program. This instruction describes the roles and responsibilities as well as the processes and procedures for managing the SMC training system requirements, acquisition and fielding as well as management systems interacting with the U.S. Air Force and DoD distributed training systems. The Space Training Acquisition Office (STAO) is designated by the Commander, Space and Missile Systems Center (SMC/CC) as the Office of Primary Responsibility (OPR) and the centralized IPT for SMC mission ready space training systems. Refer recommended changes and questions about this publication to the OPR using the AF Form 847, *Recommendation for Change of Publication*; route the AF Form 847 from the field through major command

(MAJCOM) publications/forms managers.   Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 36-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS).   The authorities to waive directorate/unit level requirements in this publication, in accordance with AFI 33-360, *Publications and Forms Management*, are identified with a Tier ("T-0, T-1, T-2, T-3, and T-4") number following the compliance statement:

T-0 – SMC/CC

T-1 – SMC/RN Director

T-2 – Mission System, System Program Office (SPO) Director

T-3 – STAO Chief

T-4 – Standard Space Trainer/Mission Specific Vendor Plug-in (SST/MSVP) System PM

Requests for waivers must be submitted in writing to the appropriate party based on the tier of the request as described in this instruction. A formal review will be held involving the requestor, the tier level executive, and the STAO.   Once a determination has been made, it will be communicated in writing back to all stakeholders affected by the decision.

1. **General Information.**

    1.1. **Program Purpose and Objectives.** SMC/CC has designated the Space Training Acquisition Office (STAO, SMC/RNT) as the centralized SMC lead for the management of all Training System Requirements Analysis (TSRA) Standard Space Trainer (SST) Architecture and Mission Specific Vendor Plugin (MSVP) and Distributed Mission Operations - Space (DMO-S) development and sustainment. The STAO executes all acquisition and sustainment actions for operational training systems as part of the prime mission systems' Integrated Product Team (IPT). These activities include, but are not limited to: Request For Proposals (RFPs), technical evaluations, contracting actions, program management, systems engineering, cost and schedule, risk, and Deficiency Report (DR) process. The STAO works with each SPO to monitor existing training systems, plan to upgrade to SSTs and transition management to STAO where applicable. STAO is an integrated member of the prime mission system IPT, the mission system Integrated Test Team (ITT) and the mission System Program Office (SPO) Configuration Control Board (CCB) process. The STAO supports each prime mission system PM, Product Support Manager (PSM), HQ AFSPC and Training Planning Teams (TPT) to ensure TSRAs are completed in time to support System Training Plan (STP) development and updates. STAO provides resources that will allow SMC Directors to focus on operational mission system development while at the same time deliver space training capabilities that meet AFSPC/CC's Space Mission Force (SMF) advanced training requirements. This division of operational system and training system management is in alignment with processes used by AF aircraft acquisition entities. SMC Mission SPOs shall work with the STAO to have their operational training systems acquired, developed and sustained according to this SMCI utilizing the SST/MSVP/DMO-S enterprise architecture unless express written permission releasing them from this requirement by the SMC/CC.

    1.2. **Overview.** In the memo, *Space Mission Force (SMF) and Ready Force Program (RFP) Implementation Guidance,* issued 29 July 2015, AFSPC/CC Gen Hyten stated in regards to Enterprise Space Operations and enabling an SMF: *"The SST undergirds the entire effort. While conceived as a procurement and training efficiency, the SST must evolve to enable the SMF to streamline training across the enterprise. This standardization allows much faster certification, advanced training and rapid mission change. It must also enable connection to distributed mission operations centers to further develop multi-domain combined effects training and tactics development."*

    1.3. **Space Training Enterprise.** Per AFI 36-2251, *Management of Air Force Training Systems*, the STAO is the space enterprise lead for space operations training system management and with the responsibility to encompass all space portfolio programs regardless of location. These duties include, but are not limited to, support to the TPT, participation in all space mission systems training forums, updates to TSRAs, membership to mission system CCBs, coordinating authority on STP writing and updates, and the inclusion of STAO on modifications to mission systems and impact to training systems to achieve and maintain HQ AFSPC Simulator Certification (SIMCERT) requirements, IAW *System Procedures Trainer SIMCERT Master Plan.* STAO's role is to manage the training enterprise as a whole, providing a single execution organization for operations training systems both to the SMC/CC and to AFSPC A2/3/6T. The relationship between the STAO and a SPO can be documented in a Memorandum of Agreement (MOA). All training systems are required to

interface with DMO-S. The requirements for this technical interface are determined by analysis of the Tactics, Techniques, and Procedures (TTPs) and TSRA for each mission system.

1.4. **Fielded Training Systems.** System Improvement Plans are required for fielded training systems rated below green on SIMCERT. For SST systems managed by the SPO, the SPO will be responsible for these plans and provide them to the STAO. For SST systems managed by the STAO, the STAO will be responsible for these plans. For non-SST systems managed by the SPO, the SPO will be responsible for developing these plans, providing them to STAO. Plans will be submitted for approval to the TPT. The TPT chair will ensure that the plan is published within 180 days of the SIMCERT report and is included in updates of the STP as an annex. TPTs will review the viability of improvement plans in the same annual review cycle of the STP. A copy of the initial report will be forwarded to the STAO who will then advise the TPT on updates to the plan as an annex to the STP. The report, at a minimum, must capture specific deficiencies, cost to improve, time to field, overall training system impacts and sustainment over life cycle. Updates to the TSRA should focus on alternative training solutions as outlined in Section 3. However, in lieu of System Improvement Plans, the SPOs can work with the STAO and submit an SST implementation plan that must be coordinated and approved by the TPT.

1.4.1. Many of the currently fielded training systems do not have the ability to operate in the required networked DMO-S environment and in most cases would be extremely cost prohibitive to upgrade these systems to having the required functionality to transmit and receive data across a network. While training systems were required to be DMO-S compatible, AFSPC had not defined requirements when many of these systems were fielded. Retrofitting fielded systems is possible but is not cost effective. TPTs will capture, through the STP, the SPO-assessed technical ability and cost effectiveness of a currently fielded system to connect to the DMO-S. This will be weighed along with its priority to AFSPC for inclusion and training events requiring DMO-S to meet SMF objectives to determine a Course of Action (COA). Updates to the TSRA should identify training events that are effective DMO-S events and that support Contested, Degraded and Operationally limited (CDO) environments.

1.5. **Enterprise End State.** Over time, the objective of the enterprise is to obtain cost effective and useful training systems for the operator that meet operational training requirements as validated by the TPT and achieve a green rating on SIMCERT. These systems may change over time based on evolving TPT training requirements and/or up to date TSRAs with a required DMO-S capability and is reflected in a current STP. A long term strategy across the Fiscal Year Defense Program (FYDP) will be constructed by the STAO in conjunction with AFSPC A2/3/6 and the SMC SPOs. On an annual basis, the STAO will provide to the SMC/CC and all SPOs the state of training systems, measures of effectiveness, resource requirements and emerging systems to ensure that the SMC's objectives will be met.

2. **Responsibilities.**

2.1. **SMC/CC.** The SMC Commander establishes this policy to enable STAO to meet the objectives as outlined in paragraph 1.1. This policy defines the training system as an integral component of the weapon system as the operations component and the training component.

2.1.1. Prior to RFPs for training systems, the TSRA shall be updated or initiated by the STAO and the STP shall be updated by the TPT as required dependent upon operations system maturity. This step will ensure that the training system is correctly scoped for its requirements. (T-0)

2.1.2. Training systems must be in alignment with HQ AFSPC policy for fielding prior to operating the system. This policy states that training systems need to have high fidelity in presentation and able to operate in a DMO-S environment and that the system of choice is the SST. The SST is used to provide initial thru advanced space training, to include Initial Qualification Training (IQT), Mission Qualification Training (MQT), Recurring Training (RT), Advanced Training (AT – for SMF, Combatant Command, CAF, Joint and Coalition training and exercises) and evaluations of Mission Ready (MR) and Combat Mission Ready (CMR) crews.   (T-0)

2.2. **SMC/RN and the STAO.** Under the auspices of the SMC Range and Network Division (SMC/RN), the STAO (SMC/RNT) will be the centralized lead for space training systems, providing a standardized process and efficiencies across the SMC enterprise. This includes accomplishing TSRAs to identify training requirements, meeting the training need dates, and delivering SSTs that will meet SIMCERT requirements. STAO will be the lead for the SPOs for their training systems throughout the systems' lifecycle (e.g. monitoring the status of currently fielded training systems, their configuration and participation in their CCBs) and will continue their duties under AFI 36-2251. STAO shall be the lead for all SPOs to produce training products including TSRAs, SSTs, and MSVPs. Funding shall be provided by the mission system SPO to the STAO to pay for training system development that will be comprised of an SST/MSVP that is DMO-S compatible and achieves a green SIMCERT rating meeting existing and operational training requirements. STAO will act on behalf of the program manager for the training system development maintenance/sustainment support, and training system upgrades/technology insertion. The SPO retains ownership over the operational system requirements throughout the process while STAO is responsible for the TSRA, SST and MSVP requirements and associated DMO-S requirements to ensure the training system will meet SIMCERT under AFI 36-2251. STAO will be involved with each mission system TPT and will work with users, instructors, and Operations Support Squadrons (OSSs) to ensure the training system meets training requirements.

2.2.1. The STAO's focus is CMR/MR Training and centralized management fulfills the intent of Headquarters Air Force (HAF) and HQ AFSPC direction. This approach will ensure the training system is given the same priority as the mission system.

2.2.1.1. **Training System Requirements Analysis (TSRA).** The TSRA completes the initial step of the Air Force Instructional Systems Development (ISD) process described in AFH 36-2235. ISD is an iterative process for training system development, requiring front-end requirements analysis. It is designed as an organized, deliberate, but flexible process that defines what the operators' training needs are. The TSRA is required to be completed at some point pre-Milestone B in order to provide input for the STP development. The STP needs to be coordinated for approval by AFSPC prior to Milestone-B. The due date for the TSRA will be agreed to in the MOA with enough time prior to the due date of the STP in order for it to be effectively developed. The TSRA front-end analysis, as described in AFI 36-2251, provides inputs and supporting rationale to TPTs for development of STPs which in

turn cover the entire training process for a system. The STP talks to how the training needs defined in the TSRA will be met. The STAO will leverage its broad training expertise gained from supporting training for all SMC space missions to bring standardization and efficiency to the TSRA effort. The TSRA reports define training system requirements and risks as related to development and implementation of a training system. They also include but are not limited to:

2.2.1.1.1. Tasks that cannot be currently or adequately trained

2.2.1.2. How subsystems and components should be integrated into training system, to include upgrades

2.2.1.3. Evaluation of the proposed training system solution

2.2.1.4. Potential alternatives for the training system solution

2.2.1.5. Recommendations for new technology applications

2.2.1.1.1. **Approach to TSRA Development and Delivery.** TSRA development requires ISD Subject Matter Experts (SMEs) with experience in producing courseware and training system products. These ISD SMEs will work with the respective mission SPO to development the TSRA. Centralized accomplishment of TSRAs provides a standard format and consistent quality product that will provide SPO PMs with clear training system options and associated implementation schedules. The TPT, co-chaired by the PM and AFSPC, tasks the STAO to initiate the TSRA. The TPT validates the TSRA when delivered, providing a firm base to select training equities from classroom instruction to training system solutions. The TSRA can be done in parallel with mission system development and should not impede the development of the mission system. The TSRA needs to occur prior to the start of the development of the training system or its update based upon the operations system.

2.2.1.1.1.1. The TSRA is comprised of four reports. Each report is provided at intervals during the TSRA. These reports are analyses of the following: Mission/Task, Objective/Media, Training Requirements, and Training System Basis. Each report builds upon the previous one. For planning purposes, a TSRA takes approximately twelve to eighteen months to complete. Operations system maturity, completeness of mission system Government Furnished Information (GFI), and access to mission system SMEs correlates to the time required for TSRA completion.

2.2.1.2. **TSRA Analysis Tool / Database.** STAO maintains a TSRA Analysis Tool/Database repository for space training data for all systems, expediting updates to the TSRA as required. It allows for a seamless TSRA update as the system evolves, providing a quick and efficient process for PMs working with the STAO to complete the required TSRA. Access to the TSRA Analysis Tool/Database repository will be given to stakeholders upon request. The STAO also has close working relationships with HQ AFSPC requirements and training personnel.

2.2.1.3. **Relationship of the TSRA to the STP.** The TSRA creates a detailed set of tasks that must be trained and identifies how the tasks can be trained. Using the

TSRA task analysis and training recommendations, the STP then creates the strategy defining how the tasks will be trained. The STP is produced by the TPT, so equities in training will be worked through, prioritized and viewed through the available resources for the weapon system. The STAO will provide processes for TSRA and STP development to the TPT IAW AFI 36-2251 along with experienced TSRA SMEs to support requirements definition and analysis. The TSRA shall cover the whole span or training needed to include recommendation for the training system. These processes will ensure TSRAs are completed and updated in time to support STP development and/or STP updates.

2.2.1.4. **Relationship   of   TSRA   to   Simulator   Certification (SIMCERT).** SIMCERT standards are maintained by AFSPC A2/3/6TT. The TSRA defines training requirements that inform the STP and SIMCERT criteria. The STAO will leverage its understanding of SIMCERT requirements and user training needs to ensure the production of a training system that allows the set of operational training requirements to be met, achieving a green SIMCERT rating..

2.2.2. **Standardized Space Trainer (SST) and Mission Specific Vendor Plug-in (MSVP).** AFI 36-2251 mandates that the SST architecture and MSVPs be used for training systems to provide initial thru advanced space training. (T-0)

2.2.2.1. The base SST architecture and MSVPs requirements are defined specifically to meet TSRA requirements to pass SIMCERT. With its ability to evolve for advanced training of rapidly changing missions and connect to the DMO-S, SSTs are integral to the SMF initiative, undergirding the entire effort.

2.2.3. **Distributed Mission Operations - Space (DMO-S).** SMC/RN is the PMO for DMO-S. It executes the development and sustainment of the current DMO-S capability, and is poised to enable SMF at each wing and the Joint Space Operations Center (JSpOC). The STAO is the SMC and HQ AFSPC SME for the DoD's Joint Live, Virtual, Constructive (JLVC) environment. This skill set provides standardization, space training expertise and training focus needed to bring space operations to the advanced level required for SMF. The SMF in turn supports AFSPC objectives in Combatant Command (CCMD), Combat Air Forces (CAF) and Mobility Air Forces (MAF) exercises. STAO will educate the stakeholder community on the enhanced training capabilities DMO-S furnishes and provide a unified approach to trainer development to ensure all SSTs and MSVPs are properly integrated with DMO-S in a cost efficient fashion. The integration of all trainers with DMO-S will use a standardized technical interface. AFI 36-2251 and the AFSPC LVC-OT Flight Plan both dictate that training systems will interface with DMO-S. DMO-S is a key enabler to SMF implementation. (T-0)

2.2.4. **Product Acceptance Test (PAT).** For STAO-managed training system contracts and developments, PAT is the test event at the end of Developmental Test and Evaluation (DT&E) that the STAO uses to certify that the training system is ready for SIMCERT and denotes the transition of the system from development to sustainment. STAO chairs the team that leads the PAT with involvement from the SPO and HQ AFSPC so they can assess the system and work together to help prepare the plan for SIMCERT. PAT will

include DMO-S integration tests as the training system requirements and/or SIMCERT criteria dictate.

2.2.5. **Simulator Certification (SIMCERT).** The Operational Test and Evaluation (OT&E) event for training systems is SIMCERT. This testing is administered by AFSPC as an independent assessment of the training system's capabilities to meet training requirements. SIMCERT Criteria that were previously defined by AFSPC/A2/3/6T shall be used with any updates learned through the training system development as needed.

2.2.6. **Sustainment.** Unlike traditional operational weapon systems that go through development by the acquisition command and then turnover to the operational command, the training systems will not be turned over to operators for sustainment. STAO will manage the sustainment and upgrades to the training system over its lifetime, effectively managing the training system throughout its lifecycle. Ideally, this will minimize sustainment costs across the entire SMF training enterprise. The STAO will also work with the SPO to determine a need date for and will provide Independent Government Cost Estimates (IGCEs) to the SPO for sustainment activities for their specific training system to provide timely support to the three year POM cycle. The training system CCBs will continue to be chaired by the STAO with participation from the SPO and end user. The STAO will collect all Change Request Forms (CRFs) from the stakeholder community and capture updates to the operational system from the SPO in order to accordingly update the training system. The training system CCB will be responsible for adjudicating CRFs. Additional modifications to the training system that are driven by SMF implementation will be handled in a similar manner. The SPO is responsible for providing all sustainment funding for its training system and participation in the space training enterprise to include DMO-S. STAO will work with the SPO, users, instructors, and OSSs to document in the MOA the process for obtaining job guides and coordinating synchronization of changes made to the operational system through sustainment with the SST MSVPs also in sustainment. STAO will need a substantive list of software changes that affect how the operator interacts with the mission system that would cause potential changes to the training system. Activities will include, but are not limited to:

2.2.6.1. Bi-annual Site Surveys by STAO contractors of operational systems

2.2.6.2. A list of and access to software changes made by sustainment contractors (unless prohibited by data rights restrictions)

2.2.6.3. Participation in sustainment IPTs and working groups

2.2.7. **STAO Acquisition Process.** The process outlined in Figure 1 displays the interaction between HQ AFSPC, the TPT, the STAO, and the SPO during the development of requirements for training, identification of simulator training tasks, acquisition strategy, development, and fielding of the training system, its connection to DMO-S and the sustainment of the training system over the lifetime of the operational system. This process allows for dynamic interaction between the SPO, STAO and HQ AFSPC during various programmatic events, increasing transparency in the training systems' development. Several products are generated while developing and sustaining a training system, as illustrated in the triangle at the end of Figure 1. The relationship between the SPO, STAO, TPT, and HQ AFSPC evolves during the different phases. In

the case where a program is progressing without a CDD, an equivalent type of high level requirements document will be used to support TSRA validation.

2.2.7.1. Under centralized space training enterprise management, the STAO will manage the acquisition and sustainment of all SST and DMO-S (space M&S for space training and exercise) efforts, except in the following circumstances:

2.2.7.2. The STAO, SPO and HQ AFSPC determine (based on TSRA results and approved STP) the best way ahead for a particular program is a training device other than the SST. In that case, the non-SST training device solution will be managed by the SPO

2.2.7.3. The program is a Special Access Program with Special Access Required (SAP/SAR) and it is determined by the SPO and HQ AFSPC that the STAO cannot be given the billets required to manage the SST development and sustainment. This will be reported to SMC/CC along with the decision to use or not use the SST as the training device for the SAP/SAR program. In the case where the STAO is not managing the SST development, HQ AFSPC A2/A3/6T will work with the SPO to ensure: (a) a TSRA is accomplished, (b) an STP is approved, and (c) a determination is made on whether an SST or other solution is the best approach for the particular SAP/SAR program

2.2.7.4. The STAO and SPO both agree that the best approach for a particular space M&S solution for training & exercise would be for the SPO to manage M&S development and sustainment

2.2.7.5. In all 3 cases, if the way ahead is agreed upon, nothing more needs to be accomplished in the way of SMC/CC approval. However, the STAO/SPO/HQ AFSPC agreed way forward must be briefed during normal system status briefings and meetings such as a Pre-Early Strategy and Issue Session (ESIS), ESIS, Acquisition Strategy Panel (ASP), and Program Management Review (PMR). A decision from SMC/CC will only be required if the SPO and RN do not agree on the best approach.

2.2.7.6. In certain instances, the trainer will not be an SST, or the STAO may not manage the particular space training M&S effort. Regardless, it is still required that all SPOs coordinate all space training systems and LVC for operational training activities with the STAO. The only exception is where SAP/SAR security clearance has not been given.

Figure 1. Space Training System Requirements and Acquisition Process.
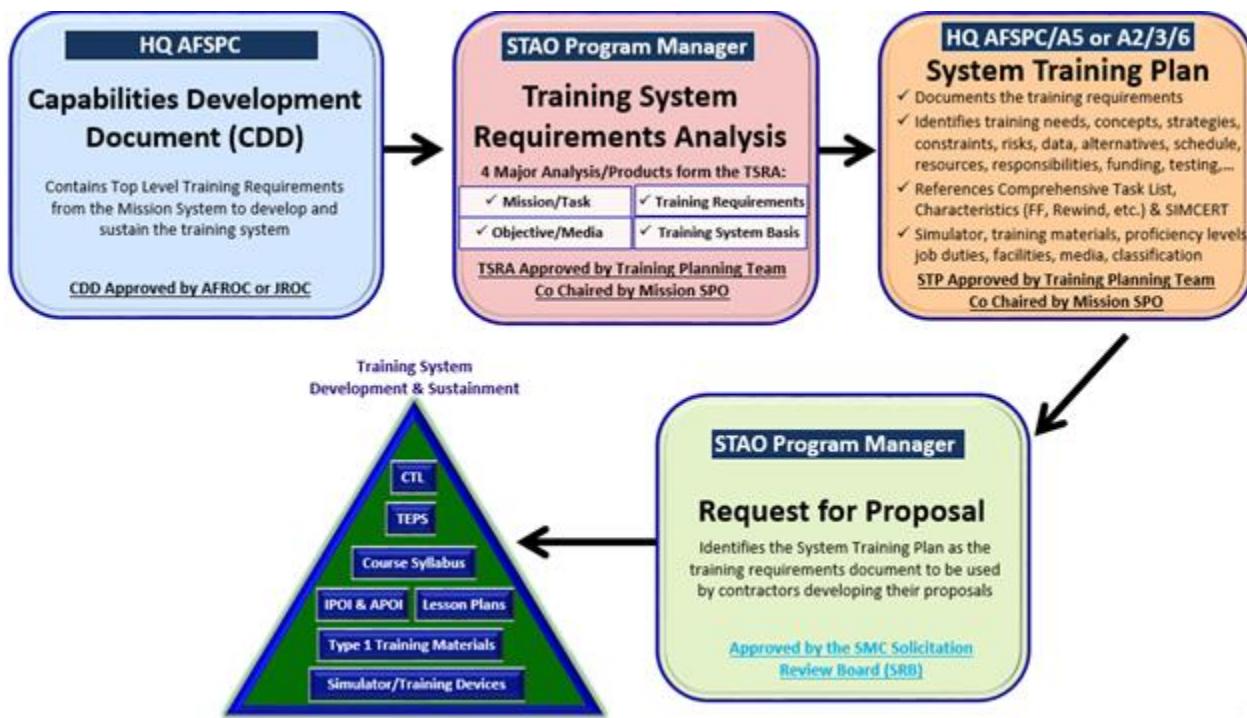
2.3. **SMC Directorates (Mission SPOs).** The STAO will serve as a lead supporting the PM's IPT in the process of training system acquisition and development. Training systems are meant to be a functional analog to the operational system in order to provide required training to the SMF. In order to achieve this, the STAO requires transparency into the system requirements and development of the operational system. SPO resources will be provided in a timely manner to acquire a training system that will meet SIMCERT requirements for CMR/MR crew positions, the details of which will be described in an MOA between STAO and the SPO. Funding and acquisition resources must be prioritized in order to meet the training Key Performance Parameter (KPP) objectives. (T-0)

2.3.1. **Provide Technical Resources.** The SPO will provide needed SMEs and GFI to the STAO in order for the STAO to properly define training system requirements for RFPs, specifications, and other acquisition and/or technical related documents. STAO will work with the SPO to develop the TSRA and the SST/MSVP. Operator requirements will be coordinated with AFSPC and the SPO. The SPO will provide STAO access to operations system developers and SMEs, as required, during the TSRA and again during the SST/MSVP development. SPOs will also ensure that any technical data will be provided (unless prohibited by data rights restrictions) and aide the STAO in obtaining unit checklists, Technical Orders (TOs) and any other materials that will support the TSRA process and MSVP development. The SPO will also provide SMEs to participate in training system development and sustainment IPTs, ITT, Working Groups (WGs), and boards (e.g. CCB) to ensure the STAO has the right expertise on its mission systems to accordingly develop and sustain a training system that will achieve a green SIMCERT rating. (T-0)

2.3.1.1. SPO SMEs (government and/or contractor) will review technical products to ensure that the development of the training system is consistent with the design of the operations system for crew interaction with the system. The SMEs will provide feedback which may result in creation of DRs. The SMEs will author and/or review DRs found during the mission system development to ensure they are communicated to the SST/MSVP developers and changes are integrated into design of the training system. Attention to system behavior and errors relative to crew operations will be evaluated as part of ongoing SME participation in training system development, IPTs and working groups.

2.3.2. **Provide Program Funds.** As the PM for the mission system, the SPO is responsible for funding most activities involved in the development and sustainment of their training system. It's important to note that before program development begins the SPO shall allocate sufficient funds to accomplish a TSRA. The SPO should plan to provide funds to support activities for training system development and sustainment throughout the lifetime of the weapon system, including periodic reviews and updates of the TSRA in accordance with AFI 36-2251. STAO will provide the SPO cost estimates to support funds allocation for all activities related to the development and sustainment of the training system. The SPO will incorporate STAO drafted Comprehensive Cost and Requirements (CCaR) inputs into their SPO CCaR requirements to provide the budget for training system development and sustainment. A complete list of items that need to be funded by the SPO are listed in Table 1 of section 2.4.1. (T-0)

2.3.3. **STAO Inclusion in Mission SPO Change Process.** SPOs will include the STAO in the mission system change process for new and existing training systems to facilitate enterprise-wide management. CCB membership may be codified by agreement in either the CCB charter or the MOA between the SPO and STAO. The SPO is responsible to ensure that the STAO is informed of any modification to existing mission systems, including updates, to ensure the SST/MSVP is concurrent with the mission system. The SPO recognizes that any changes made to the operational system after training system development has started could have cost and schedule impacts to the SST/MSVP development and DMO-S integration. (T-1)

2.3.3.1. **Synchronization of Ops Systems and Trainer Development.** It is of critical importance that the SST/MSVP stays concurrent with the Operational System in order for it to accomplish its training mission. As the operational system changes, so too shall the training system. The details for participation in meetings and delivery of required information and products will be detailed in the MOA between the SPO and the STAO. Below is a list of some of the required activities to support this: (T-1)

2.3.3.1.1. STAO participation in requirements IPTs and WGs between the SPO and HQ AFSPC

2.3.3.1.2. STAO involvement in Program Reviews (e.g. SRR, PDR, CDR)

2.3.3.1.3. STAO access to Operational System CCBs to monitor changes impacting MSVPs
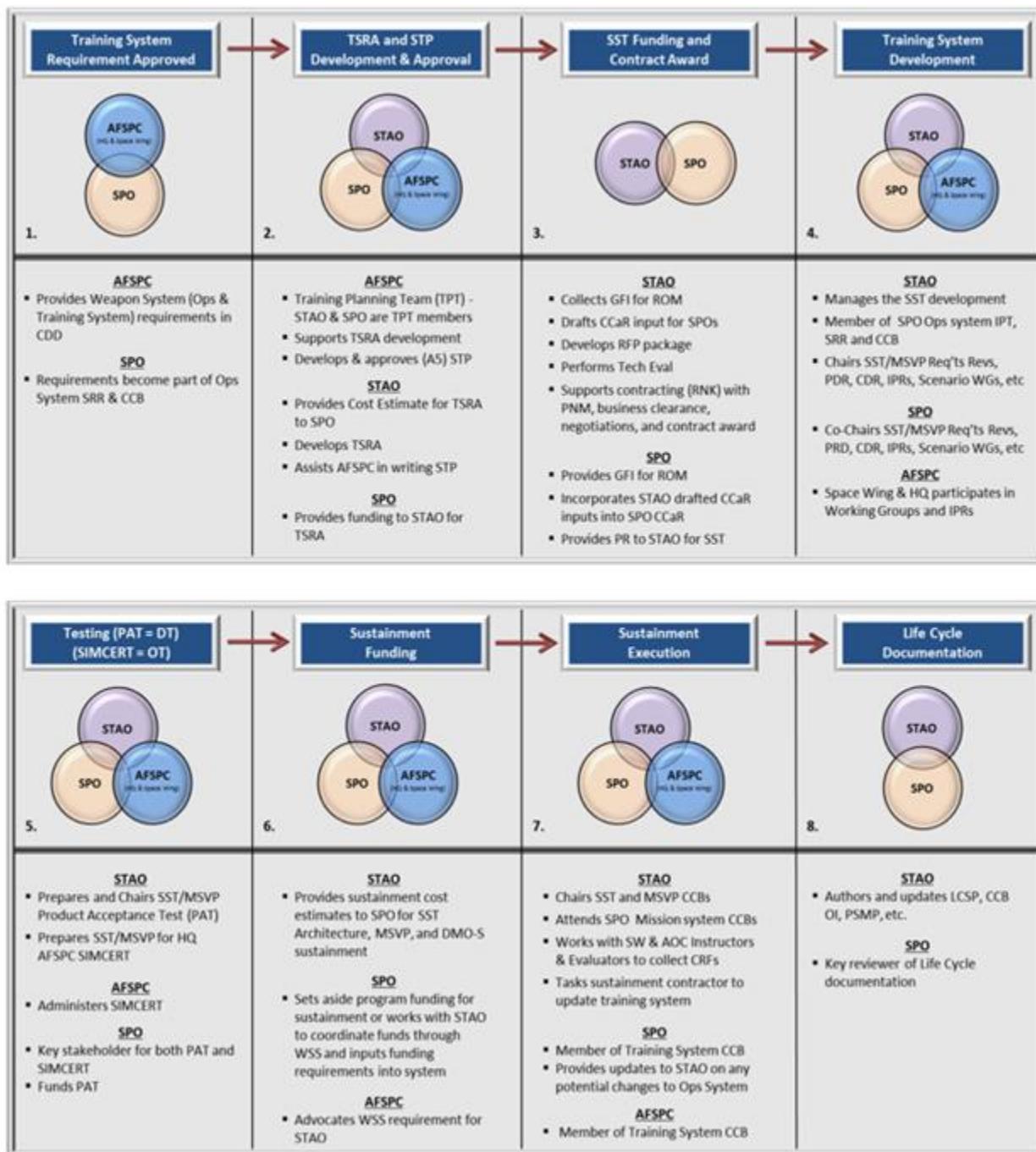
2.3.3.1.4. STAO involvement in ITTs

2.3.3.1.5. STAO and MSVP developer access to Operational System developmental meetings (e.g. Monthly SPRINT meetings, Requirements Reviews, Design Reviews)

2.3.3.1.6. SST/MSVP developer access to operational systems, developmental databases, Software Developer's Kits (SDKs) or like tools

2.3.3.1.7. SPO support for timely provision of all relevant documentation to the SST/MSVP Developer

2.3.3.1.8. SPO involvement in the STAO managed SST CCB/CRF submission process

2.3.3.1.9. SPO participation at STAO Sustainment IPRs

2.3.3.1.10. Reliable availability of sustainment funding to accommodate required updates

2.3.3.1.11. In the case of program delays in the development of the operational mission system, the SPO must recognize that these delays may preclude them from providing required materials to STAO for training system development. By being unable to provide the above materials in a timely fashion, cost and schedule impacts to the SST/MSVP will occur that may require additional funds from the SPO to manage. The STAO will work with the SPO to determine the best course of action depending on the scope of the operational mission system delay.

2.3.4. **Memorandum of Agreement (MOA).** The program office and the STAO will develop a MOA covering the processes and requirements in this SMCI. This relationship will be defined early in the development or for an update of the system. The STAO will be the OPR for this MOA. (T-0)

2.4. **Responsibilities across Training System Lifecycle.** Figure 2 shows the relationships between the three agencies, STAO, AFSPC and the SPOs, and their responsibilities throughout the training system lifecycle. The STAO is a service provider to the SPOs, leveraging skills and experience into acquiring and maintaining an effective training system that meets SIMCERT.

Figure 2. STAO, SPO and HQ AFSPC Responsibilities.

Training System Requirement Approved	TSRA and STP Development & Approval	SST Funding and Contract Award	Training System Development
1.	**2.**	**3.**	**4.**
AFSPC • Provides Weapon System (Ops & Training System) requirements in CDD **SPO** • Requirements become part of Ops System SRR & CCB	**AFSPC** • Training Planning Team (TPT) - STAO & SPO are TPT members • Supports TSRA development • Develops & approves (A5) STP **STAO** • Provides Cost Estimate for TSRA to SPO • Develops TSRA • Assists AFSPC in writing STP **SPO** • Provides funding to STAO for TSRA	**STAO** • Collects GFI for ROM • Drafts CCaR input for SPOs • Develops RFP package • Performs Tech Eval • Supports contracting (RNK) with PNM, business clearance, negotiations, and contract award **SPO** • Provides GFI for ROM • Incorporates STAO drafted CCaR inputs into SPO CCaR • Provides PR to STAO for SST	**STAO** • Manages the SST development • Member of SPO Ops system IPT, SRR and CCB • Chairs SST/MSVP Req'ts Revs, PDR, CDR, IPRs, Scenario WGs, etc **SPO** • Co-Chairs SST/MSVP Req'ts Revs, PRD, CDR, IPRs, Scenario WGs, etc **AFSPC** • Space Wing & HQ participates in Working Groups and IPRs

Testing (PAT = DT) (SIMCERT = OT)	Sustainment Funding	Sustainment Execution	Life Cycle Documentation
5.	**6.**	**7.**	**8.**
STAO • Prepares and Chairs SST/MSVP Product Acceptance Test (PAT) • Prepares SST/MSVP for HQ AFSPC SIMCERT **AFSPC** • Administers SIMCERT **SPO** • Key stakeholder for both PAT and SIMCERT • Funds PAT	**STAO** • Provides sustainment cost estimates to SPO for SST Architecture, MSVP, and DMO-S sustainment **SPO** • Sets aside program funding for sustainment or works with STAO to coordinate funds through WSS and inputs funding requirements into system **AFSPC** • Advocates WSS requirement for STAO	**STAO** • Chairs SST and MSVP CCBs • Attends SPO Mission system CCBs • Works with SW & AOC Instructors & Evaluators to collect CRFs • Tasks sustainment contractor to update training system **SPO** • Member of Training System CCB • Provides updates to STAO on any potential changes to Ops System **AFSPC** • Member of Training System CCB	**STAO** • Authors and updates LCSP, CCB OI, PSMP, etc. **SPO** • Key reviewer of Life Cycle documentation

2.4.1. **Program Authority and Funding Responsibilities.** Table 1 summarizes the decision authority and responsible funding organization for steps in the space training systems development process. Mission SPOs are required to fund the development and sustainment of their mission system SST/MSVPs and the associated integration into DMO-S.   STAO is the program manager who administers the development and sustainment contracts. The SPO will provide a certified funding document based on the IGCE of cost from the STAO for the below training system development activities as

seen in Table 1. The STAO and the SPO will work out the scheduling of when funds are needed for each activity. Based on that schedule, the STAO will also work with the SPO to determine a need date for and provide IGCEs of cost for budgeting in the near term and for the POM cycle. The SPO is responsible for creating an ongoing sustainment budget for its training system within its own program dollars and with the STAO to advocate, incorporate and add the SST/MSVP/DMO-S sustainment funding requirement to the existing STAO managed Weapon System Sustainment (WSS) input. This input is a separate training system expense entry from the operational system input managed by the SPO. A monthly report will be provided upon request to the SPO highlighting cost and schedule performance on their SST/MSVP development and/or sustainment. These details will be documented in the MOA between STAO and the SPO.

Table 1. Program Authority and Funding Responsibilities

Training System Development Event	Program Authority	Responsible Funding Organization	Performing Organization
TSRA	STAO	Mission SPO	STAO
STP	HQ/AFSPC	HQ/AFSPC	Government
SIMCERT Criteria Definition	HQ/AFSPC/A2/3/6TT	HQ/AFSPC/A2/3/6TT	Government
SST MSVP Requirements Development, RFP Generation, Source Selection, Contract Administration	STAO	STAO	Government
SST Architecture	STAO	STAO and/or Mission SPO	STAO
SST MSVP Development, Installation, Test	STAO	Mission SPO	STAO
DMO-S Integration	STAO	Mission SPO	STAO
SIMCERT Test and Certification	HQ/AFSPC/A2/3/6TT	HQ/AFSPC/A2/3/6TT	Government
Product Acceptance Testing (PAT)	STAO	Mission SPO	Government and STAO
Sustainment	STAO	Mission SPO	STAO

3. Summary. This SMCI delineates the roles and responsibilities of the STAO, SMC Mission SPOs and HQ/AFSPC throughout the lifecycle of the development and sustainment of space training systems. It further dictates that the STAO will be the lead organization for the management of the space training enterprise, which includes the SST program (Architecture, MSVPs, Hardware and MSVP integration into the DMO-S architecture), DMO-S program (space M&S used by the DMOC-S for LVC operational training, exercises and mission

rehearsal) and the TSRA process (required for every new system and updates when directed by the mission Training Planning Team). In addition, the SMCI recommends that a MOA be put in place between the STAO and SMC Mission SPOs to document further details and agreements (e.g. meeting participation, data exchange with operational system development, program deadlines, etc.) for the development of SST MSVPs to meet mission requirements.

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Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

Strategic Plan for the Next Generation of Training for the Department of Defense, Office of the Under Secretary of Defense (Personnel & Readiness), 23 Sep 2010

Chairman of the Joint Chief of Staff (CJCS) Instruction 3500.01H, *Joint Training Policy and Guidance for the Armed Forces of the United States*, 25 Apr 2014

"Integrating Architecture for Air & Space Live Virtual and Constructive Environments Initial Capabilities Document" JROCM 161-11, 1 Dec 2011

DoDD 5000.01, *The Defense Acquisition System*, 20 Nov 2007

DoDI 5000.02, *Operation of the Defense Acquisition System*, 7 Jan 2015

DoDD 5000.59, *DoD Modeling and Simulation (M&S) Management*, 8 Aug 2007

DoDI 5000.70, *Management of DoD Modeling and Simulation (M&S) Activities,* 10 May 2012

Strategic Plan for Transforming DoD Training, 5 Feb 2009

DoDI 5000.61, *DoD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A),* 9 Dec 2009

DoDI 8500.01, *Cybersecurity*, 14 Mar 2014

DoDI 8510.01, *Risk Management Framework (RMF) for DoD Information Technology*, 12 Mar 2014

DoDI 8320.04, *Item Unique Identification (IUID) Standards for Tangible Personal Property,* 3 Sep 2015

DoD *Acquisition Modeling and Simulation Master Plan*, 17 Apr 2006

MIL-STD-196E, *Joint Electronics Type Designation System,* 17 Feb 1998

MIL-STD-881C, *Work Breakdown Structures for Defense Material Items*, 3 Oct 2011

MIL-STD-961E, *Department of Defense Standard Practice: Defense and Program-Unique Specifications Format and Content*, 27 Oct 2015

MIL-STD-1472G, *Department of Defense Design Criteria Standard: Human Engineering*, 11 Jan 2012, 11 Jan 2012

MIL-STD-1464A, *Military Standard: Army Nomenclature System,* 15 May 1987

MIL-STD-1661*, Military Standard:Mark and Mod Nomenclature System,* 1 Aug 1978

MIL-HDBK-1812, *Department of Defense Handbook: Type Designation, Assignment and Method for Obtaining*, 14 Feb 1997

Department of Defense Integrated Master Plan and Integrated Master Schedule Preparation and Use Guide, Version 0.9, 21 Oct 2005

DoD Guide for Achieving Reliability, Availability, and Maintainability (RAM), 3 Aug 2005

DoD Risk, Issue and Opportunity Management Guide, June 2015

Department of Defense Earned Value Management Implementation Guide, Defense Contract Management Agency, Oct 2006

Initial Capabilities Document for Integrating Architecture for Air & Space Live, Virtual, and Constructive Environments (IA-ASLVCE), CSAF signed, 1 Dec 2011

"*Support to the Distributed Mission Operations – Space (DMO-S) and the Joint Space Training Federation (JSTF) Program Modeling and Simulation (M&S) Development*" (FA2534-14135-0500), 21 Aug 2014

"*Space Modeling and Simulation (M&S) Capability*" Memorandum from CDR USSTRATCOM, 28 Jul 2010

"*Space Modeling and Simulation (M&S) Capability*" Memorandum from CSAF, 29 Nov 2010

AF Space & C4ISR CONOPS, 28 Apr 2006

AF Joint Integrating Concept for C2, 1 Sep 2005

United States Air Force Live Virtual Constructive - Operational Training (LVC-OT) Flight Plan, 22 Feb 2013

AFI 10-204, *Participation in Joint and National Exercises*, 27 Mar 2015 AFI 21-103, *Equipment Inventory, Status and Utilization Reporting,* through Change 1, 10 Sep 2014

AFI 23-111, *Management of Government Property in Possession of the Air Force,* with AFGM 2016-01, 29 Oct 2013

AFI 33-360, *Publications and Forms Management,* 1 Dec 2015

AFI 36-2201, *Air Force Training Program,* 15 Sep 2010

AFI 36-2251, *Management of Air Force Training Systems*, 5 Jun 2009

AFI 63-101/20-101, *Integrated Life Cycle Management*, through Change 2, 23 Feb 2015

AFI 90-1601, *Air Force Lessons Learned Program*, 18 Dec 2013

AFI 99-103, *Capabilities-Based Test and Evaluation*, 16 Oct 2013

AFPD 16-10, *Modeling and Simulation*, 23 Jan 2015

AFH 36-2235 Vol. 1, *Information for Designers of Instruction Systems - ISD Executive Summary for Commanders and Managers*, 2 Sep 2002

AFMAN 33-282*, Computer Security (COMPUSEC)*, 27 Mar 2012

AFMAN 36-363, *Management of Records*, 1 Mar 2008

AFMAN 63-119, *Certification of System Readiness for Dedicated Operational Testing*, 19 Feb 2016

"Establishment of the Distributed Mission Operation Center for Space (DMOC-S)", Memorandum from AFSPC/CC, Dec 2004

"*Identify Program office for Joint Space Training Federation (JSTF) Initiative*", Memorandum from AFSPC/CC, 18 Aug 2011

"*AFSPC/CC Memo, Identify Program office for Joint Space Training Federation (JSTF) Initiative, 18 Aug 11*", Memorandum from SMC/CV, 26 Sep 2011

AFSPCI 10-102, *Air Force Space Command Concept Development*, 13 Mar 2013

AFSPCI 10-260, *Tactics Development Program,* 23 Feb 2016

AFSPCI 10-415, *Weapons and Tactics Program*, 14 June 2013

AFSPCI 10-605, *Operational Acceptance Process*, 20 Jun 2016

AFSPCI 36-283, *Space Training System Management*, 2 Aug 2004

AFSPC *Implementation Guidance for Stand-up of Space Mission Force and Ready Force Program*, 30 May 2015

Air Force Space Command Live Virtual Constructive – Operational Training (LVC-OT) Flight Plan, 29 Sep 2015

AFSPC *Functional Concept for Space Control Operations*, 12 Feb 2008

AFSPC *Functional Concept for Space Force Enhancement*, 5 Jul 2007

AFSPC *Functional Concept for Command and Control of Space Forces*, 14 Mar 2007

AFSPC *Functional Concept for Space Superiority Operations*, 1 Sep 2005

AFSPC *Functional Concept for Space Support*, 25 May 2007

AFSPC *Functional Concept for Cyberspace Operations*, 14 Jun 2010

AFSPC *Enabling Concept for Space Domain of Distributed Mission Operations*, 6 Jun 2011

AFSPC *Enabling Concept for Joint Space Training Federation*, Draft

AFSPC *Enabling Concept for Space Operations Training*, 19 May 2010

AFSPC *Standard Space Trainer (SST) Operational Requirements*, 21 Jul 2008

AFSPC *Operating Concept for the Joint Space Operations Center Mission System*, 1 Nov 2009

Standard Space Trainer (SST) Architecture Life Cycle Sustainment Plan (LCSP), 13 Jan 2011

AFSPC *System Procedures Trainer SIMCERT Master Plan,* 24 Jun 2011

AFSPC Guidance Memorandum (GM) 13-1, *Space Operations Crew Force Management, Training, Standardization and Evaluation,* 20 Mar 2013

DMO-S Training Planning Team Charter, 27 Apr 2011

DMO-S System Training Plan (STP), 1 Feb 2012

DMO-S Life Cycle Sustainment Plan (LCSP), 16 Jun 2012

Distributed Mission Operations - Space (DMO-S) Integrated Management Plan (IMP), Draft

Technology Development Strategy (TDS) Distributed Mission Operations – Space (DMO-S), Draft

SMC OI 61-X, *Standard Space Trainer (SST) Configuration Control Board (CCB) Operating Instruction,* Draft

ANSI/IEEE STD 610.12-1990 (R2002), *Standard Glossary of Software Engineering Terminology*

IEEE/EIA 12207-2008*; Standard for Information Technology – Software Life Cycle Processes,* 31 Jan 2008

IEEE 1278, *Enumeration and Bit Encoded Values for use with Protocols for Distributed Interactive Simulation Applications*, 25 Mar 2005

IEEE 1516-2010 - *Standard for Modeling and Simulation High Level Architecture - Framework and Rules*

Abbreviations and Acronyms

AETC— Air Education and Training Command

AF— Air Force

AFAA— AF Audit Agency

AFI— Air Force Instruction

AFH— Air Force Handbook

AFPD— Air Force Policy Directive

AFMAN— Air Force Manual

AFSPC— Air Force Space Command

AFSPCI— Air Force Space Command Instruction

AFSSI— Air Force System Security Instruction

ANSI— American National Standards Institute

API— Application Programming Interface

APOI— Annual Plan of Instruction

ASP— Acquisition Strategy Panel

AT—Advanced Training

C4ISR— Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance

CAF— Combat Air Forces

CC— Commander

CCaR— Comprehensive Cost and Requirements

CCB— Configuration Control Board

CCMD— Combatant Command

CDD— Capabilities Development Document

CDO— Contested, Degraded and Operationally limited [environment]

CDR— Commander

CMR— Combat Mission Ready

COA— Course of Action

CONOPS— Concept of Operations

CRF— Change Request Form

CSAF— Chief of Staff of the Air Force

CTL— Critical Task List

CTS— Combat Training Squadron

DMO— Distributed Mission Operations

DMO—S - Space Domain of Distributed Mission Operations

DMOC-Space - Distributed Mission Operations Center - Space, 705 CTS OL-A

DoD— Department of Defense

DoDD— Department of Defense Directive

DoDI— Department of Defense Instruction

DR— Deficiency Report

DT&E— Development, Test and Evaluation

ESIS— Early Strategy and Issue Session

FYDP— Future Years Defense Program

GAO— Government Accountability Office

GFI— Government Furnished Information

HAF— Headquarters Air Force

HDBK— Handbook [Acquisition Guidance]

HQ— Headquarters

HLA— High Level Architecture

I—Plan - Implementation Plan

IA— Information Assurance

IA—ASLVCE - Integrating Architecture for Air & Space Live Virtual and Constructive Environments

IEEE— Institute of Electrical and Electronics Engineers

IGCE— Independent Government Cost Estimate

IPOI— Initial Plan of Instruction

IPR— Interim Program Review

IPT— Integrated Product Team

IQT— Initial Qualification Training

ISD— Instructional System Development

JLVC— Joint Live Virtual Constructive

JROCM— Joint Requirement Oversight Council Memo

JSpOC— Joint Space Operations Center

JSTF— Joint Space Training Federation

KDP— Key Decision Point

KPP— Key Performance Parameter

LCSP— Life Cycle Sustainment Plan

LVC—OT - Live Virtual Constructive - Operational Training

M&S— Modeling and Simulation

MAF— Mobility Air Forces

MAJCOM— Major Command

MOA— Memorandum of Agreement

MQT— Mission Qualification Testing

MR— Mission Ready

MSVP— Mission Specific Vendor Plug-in

OI— Operating Instruction

OL-A, 705 CTS - Operating Location - A, 705th Combat Training Squadron (DMOC-Space)

OPR— Office of Primary Responsibility

OSS— Operations Support Squadron

PAT— Product Acceptance Testing

PM— Program Manager

PMO— Program Management Office

PMR— Program Management Review

POM— Program Objective Memorandum

PR— Purchase Requisitions

PRD— Program Review Document

PSMP— Product Support Management Plan

RDS—Air Force Records Disposition Schedule

RFP— Request for Proposal

RMF— Risk Management Framework (IA)

ROM— Rough Order of Magnitude

RT— Recurring Training

SAP— Special Access Program

SAR— Special Access Required

SDK— Software Developer's Kit

SIMCERT—Simulator Certification

SISO— Simulation Interoperability Standards Organization

SMC— Space and Missile Systems Center

SMCI— SMC Instruction

SME— Subject Matter Expert

SMF— Space Mission Force

SPO— System Program Office

SRB— Solicitation Review Board

SRR— System Requirements Review

SST— Standard Space Trainer

STD— Standard [Acquisition Guidance]

STP— System Training Plan

STAO— Space Training Acquisition Office (SMC/RNT)

T2— Training Transformation

TDS— Technology Development Strategy (Acquisition)

TEPS— Total Evaluation Performance System

TO— Technical Order

TPT— Training Planning Team

TSRA— Training System Requirements Analysis

TTP— Tactics, Techniques, and Procedures

US— United States

USAF— United States Air Force

USSTRATCOM— United States Strategic Command

VV&A— Validation, Verification and Accreditation

WG— Working Group

WSS— Weapon System Support

Terms

Advanced Training— Advanced Training is the formal training requirements beyond weapon system qualification training necessary for mission success in a contested, degraded and operationally limited (CDO) environment; initial, unit, or mission qualification training with defined objectives. As such, Advanced Training is focused on Combat Mission Ready / Mission Ready (CMR/MR) crewmembers and teams, both in space and cyberspace, and can encompass Continuation Training, if practical. Service and/or joint exercises, mission rehearsals, and unit-level events that incorporate tactics, techniques and procedures for one or more weapon system make up advanced training. Advanced training may be conducted across the LVC spectrum and may encompass more than operations training, such as maintenance or support functions.

Constructive— A class of simulation typified by wargames, models and analytical tools. Models and simulations that involve simulated people operating simulated systems.

Distributed Environment—A model in which training systems located on a networked system can communicate and coordinate actions by a shared digital environment. The training systems can then interact with one another in the environment, modeling an area of operations such as air, land, sea or space. A distributed environment allows for non-collocated training systems to conduct training or mission rehearsal in large scale, force on force events or small scale training events. Examples of distributed environments vary from service oriented architecture based systems to multi-player gaming.

Federation— Distributed Environment. When assembling a distributed environment (i.e., federation), several DoD Components and/or contractors are often involved each having a different Designated Approving Authority. Responsibility for security of the overall M&S network is complicated and ambiguous. The M&S activities may also include multiple levels of security which leads to further complexity in accrediting the M&S environment. Separate independent accreditations do not add up to a federation accreditation.

Live— A class of simulation that uses live personnel on real equipment in the process.

Operations System— The operations system is designed to use live systems to conduct the mission of that system. It allows the full crew, to include non-CMR/MR members, to conduct the real-world mission the system was intended to fulfill.

Simulator Certification (SIMCERT)— The process in which ensuring through validation of hardware and software baselines that a Training System and its components provide accurate and credible training. The process also makes sure the device continues to perform to the delivered specifications, performance criteria, and configuration levels. It will also set up an audit trail regarding specification and baseline data for compliance and subsequent contract solicitation or device modification.

Training System— An offline capability that provides realistic training scenarios for operations crews. It is not connected to any operational feeds or networks, in compliance with AFSPCI 36-283 that there is separation from the operations system and the training system physically and electronically. The training system may be of low, medium and high fidelity of presentation. AFSPC policy is to field high fidelity training systems, specifically the SST.

Training Transformation (T2)— Secretary of Defense-level initiative to prepare individuals, units, and staffs for the new strategic environment and to provide enabling tools and processes to carry out missions

Virtual— A simulation involving real people operating simulated systems. Virtual simulations inject human-in-the-loop in a central role by executing motor control, decision making or communication skills

Weapon System— The combination of the operation system and the training system. As a total of the two elements, the prioritization of resources for concurrency, modernization and upgrade is equal. The TPT will determine the timeline for fielding or modification of the training system prior to the operations system in close conjunction with the PM.