

**BY ORDER OF THE COMMANDER
ARNOLD ENGINEERING
DEVELOPMENT COMPLEX**

**ARNOLD ENGINEERING AND
DEVELOPMENT COMPLEX (AEDC)
INSTRUCTION 63-101**



7 JUNE 2024

Acquisition

**LIFE CYCLE SYSTEMS ENGINEERING
OF TEST CAPABILITIES AND
INFRASTRUCTURE**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available on the e-Publishing website at www.e-Publishing.af.mil for downloading or ordering

RELEASABILITY: There are no releasability restrictions on this publication

OPR: AEDC/CT

Certified by: AEDC/CT
(Mr. Edgar K. Tucker)

Supersedes: AEDCI 63-101, 6 June 2024

Pages: 9

Implementing Operational Safety, Suitability and Effectiveness (OSS&E) and Life Cycle Systems Engineering (LSE). This publication implements Air Force Test Center Instruction (AFTCI) 63-100, Air Force Materiel Command Instruction (AFMCI) 63-1201, Implementing OSS&E and LSE. It provides guidance and procedures on AEDC Systems Engineering (SE) process throughout the Complex. It applies to individuals at all levels who are executing programs/projects intended to modify, develop, and field new test and evaluation (T&E) capabilities for the purpose of supporting U.S. Air Force and other Department of Defense (DoD) T&E requirements. T&E capabilities include the equipment and facilities that are directly and primarily used to support test operations; it does not include general purpose facilities and infrastructure. This publication may be supplemented at any level, but all supplements must be routed to the Office of Primary Responsibility listed above for coordination prior to certification and approval.

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SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. Major changes include corporate structure governance and systems engineering policies.

Chapter 1

SYSTEMS ENGINEERING OVERVIEW

1.1. The purpose of this AEDCI is to establish standard AEDC T&E Enterprise Systems Engineering (SE) processes. This AEDCI outlines the SE technical management oversight required to ensure that the T&E capabilities developed and fielded satisfy customer and user requirements. All “shall” statements in this Instruction are mandatory unless waived by the AEDC Technical Authority (TA). All requests for waivers to this AEDCI should be submitted to the OPR.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. The AEDC/CC shall:

- 2.1.1. Appoint, by name, a Complex Technical Authority (TA).
- 2.1.2. Advocate for resources necessary to conduct and sustain effective and efficient SE processes, tools, and procedures.
- 2.1.3. Approve and implement an organizational SE Instruction consistent with Air Force Test Center (AFTC) and Air Force Material Command (AFMC) Instructions (AFTCI 63-100, AFMCI 63-1201).

2.2. Complex Technical Authority (TA) shall:

- 2.2.1. Establish Complex AEDC Engineering Panel (EP) to administer implementation of organizational SE processes; approve SE process tailoring criteria.
- 2.2.2. Ensure organizational SE process documents (instructions and procedures) are reviewed bi-annually and updated as required.
- 2.2.3. Keep the Complex workforce current with respect to evolving SE policies and guidance.
- 2.2.4. Ensure self-assessments of the Organizational SE processes are conducted using the AF Systems Engineering Assessment Model (AF SEAM) as a guide and tailored as appropriate.
- 2.2.5. Approve AEDC Decision Authority (DA) appointments.
- 2.2.6. Ensure periodic reviews of applicable projects/programs occur at least annually.
- 2.2.7. Establish tailoring criteria to be applied in administering the organizational SE Instruction.
- 2.2.8. Ensure that Critical Information and Indicators List (CIIL) is identified and protected in according with AF and local CIIL policy and procedures.
- 2.2.9. Approve AEDC SE waivers.
- 2.2.10. Chair the AEDC EP.
- 2.2.11. Appoint the AEDC EP Secretariat.
- 2.2.12. Formally report AEDC EP activities to AEDC Integration Board as required.

2.3. Decision Authority (DA) shall:

- 2.3.1. Chair assigned project SE reviews.
- 2.3.2. DA can delegate chairperson duties for a review meeting(s).
- 2.3.3. Review and approve the project's Systems Engineering Approach (SEA) and other SE documentation.
- 2.3.4. Ensure the project is aligned with AEDC strategic direction, objectives, and expectations.

2.4. AEDC Engineering Panel (EP) shall:

- 2.4.1. Facilitate SE implementation across AEDC enterprise.
- 2.4.2. Establish AEDC T&E Enterprise SE governing body of representatives. EP membership shall include Technical Directors from the 804th Test Group and 704th Test Group, Chief Engineers from the 804th Test Group, Test Support Division (AEDC/TSD), senior technical representative from the Plans and Programs Division (AEDC/XP), and Branch/Squadron-level Technical Advisors. Additional organizations and personnel, both government and contractor, may be asked to participate by the EP chair when specific technical expertise is required (e.g., Technical Advisory Forum/Future Technical Leader Forum/Technical Engineers/Systems Engineers). AEDC EP membership serve as liaisons to their respective organizations on SE and engineering & technical management matters.
- 2.4.3. Establish a Steering Group to advise membership of actionable priorities and facilitate achievement of milestones.
- 2.4.4. Establish Committees as required.
- 2.4.5. Serve as the forum for collection and discussion of T&E SE processes.
- 2.4.6. Meet as required, but not less than quarterly.

2.5. AEDC EP Secretariat shall:

- 2.5.1. Facilitate the implementation of the AEDC Senior Technical Director initiative to enhance technical rigor. Be the focal point for EP meeting requests, schedule, and coordinate EP meetings, provide the agenda to all EP members in advance of each EP meeting, collect and track the action items resulting from each EP meeting, and collect and distribute the meeting minutes from each EP meeting.

2.6. Division/Group Leadership shall:

- 2.6.1. Be accountable for implementation of this AEDCI.
- 2.6.2. Appoint, by name, a Technical Authority for the 804th Test Group, 704th Test Group, AEDC/TSD, AEDC/XP and Branch/Squadron-level Technical Advisors.
- 2.6.3. Certify self-assessments of the organizational SE processes are conducted at least annually using the AF SEAM as a guide and tailored as appropriate.
- 2.6.4. Approve Program/Project Management Plan (PMP) or equivalent documents.
- 2.6.5. Certify all capability development projects/programs above AFTCI 63-100 limit in total development costs are properly documented in a PMP or equivalent document.
- 2.6.6. Conduct periodic reviews of applicable projects/programs at least annually, or whenever a change to the project/program baseline is necessary.
- 2.6.7. Ensure subordinate organizations follow requirements outlined in this AEDCI.

Chapter 3

GUIDANCE AND PROCEDURES

3.1. Corporate Governance:

3.1.1. Reference AEDC Corporate Governance AEDCI 90-601 for Council, Board, Panel and Committee structures.

3.1.2. AEDC Complex specific requirements and not duplicate Higher Headquarters (HHQ) direction. Reference Chapter 3 of AFTCI 63-100 for higher headquarters SE process requirements.

3.2. AEDC Systems Engineering Processes:

3.2.1. The planning, development and sustainment of Test Capability and Infrastructure (TC&I) follows a standardized set of SE process across the Complex. Details describing the process steps, entry and exit criteria for the major decision points are specified in AEDC Systems Engineering Handbook. The AEDC Systems Engineering Handbook provides best-practice guidance for implementing the SE approaches.

3.2.2. The Handbook calls out the utilization of four SE forms which are listed in [Attachment 2](#) Prescribed Forms. The forms shall be used to document the SE process steps, entry and exit criteria. The four forms are the AEDC Form 1565 Deficiency Summary List; AEDC Form 1568 System Verification Review (SVR) and Functional Configuration Audit (FCA) Checklist; AEDC Form 1569 Physical Configuration Audit (PCA) and Configuration Item Verification Review (CIVR) Checklist; and AEDC Form 1683 Technical Review Record.

3.3. Strategic Planning Process:

3.3.1. AEDC Complex LSE process for TC&I are driven by the AFTC Improvement and Modernization (I&M), Central Test and Evaluation Investment Program (CTEIP) Planning and Execution Guide (PEG) and AEDC Complex Integration Board planning processes. AEDC strategic planning process takes inputs from a variety of sources, including HHQ direction, leadership, customers and the internal AEDC SE processes, to create the AEDC Strategic Plan which provides direction for use in updating test capability roadmaps.

3.3.2. The AEDC organization managing the project has the responsibility for ensuring efficient use/execution of existing and the acquisition of new assets. For a capital improvement project's life cycle, the SE process begins when a need is funded, and a project is created.

3.4. Integration Resource Planning Processes:

3.4.1. Information on test capability requirements, gaps, planning development and modernization projects which have been coordinated through formal LSE processes are provided as inputs to the AEDC resource planning and programming processes where they are rolled up and prioritized with other organizational resources requirements. The planning processes at AEDC are facilitated by Plans and Programs Division (AEDC/XP), Program Management (AEDC/PM) and Financial Management (AEDC/FM) organizations. Once vetted through AEDC Corporate processes, they are provided as inputs to AFTC T&E planning process structure described in AFTCI 90-601 Corporate Governance instruction.

3.4.2. The AEDC Capabilities Based Planning AEDCI-90-700 identifies needs/gaps requirements to Capability Analysis and Risk Assessment (CARA) and HHQ AFTC Mission Area Panels (MAP) via Capability Roadmaps. CARA process of identifying capability owners Integrated Requirement Lists (IRL) which are used as planning tools for integration planning processes at AEDC.

3.4.3. AEDC utilizes a capabilities-based planning process to execute against the AFTC Resourcing Guide for Strategy, Planning, Programming, Budgeting & Execution (SPPBE) and Supporting Processes. Test Capability Roadmaps Guide Capability Analysis and Risk Assessment (CARA) stakeholders in resource prioritization and allocation efforts during annual Program Objective Memorandum (POM) and Financial Plan (FinPlan) activities.

RANDEL J. GORDON, Colonel, USAF
Commander

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

DAFI 63-101_20-101, *Integrated Life Cycle Management*, 15 Feb 2024

AFMCI 63-1201, *Integrated Life Cycle Systems Engineering and Technical Management* 2 Dec 2022

AFTCI 63-100, *Life Cycle Systems Engineering of Test Capabilities and Infrastructure*, dated 24 May 2017, *Certified Current*, 15 December 2020

AEDC *Systems Engineering Handbook*, 3 Jan 2024

AEDC *Engineering SharePoint Site*: <https://usaf.dps.mil/teams/21854>

Prescribed Forms

AEDC-1565 – *Deficiency Summary List*

AEDC-1568 – *System Verification Review (SVR) and Functional Configuration Audit (FCA) Checklist*

AEDC-1569 – *Physical Configuration Audit (PCA)/Configuration Item Verification Review (CIVR) Checklist*

AEDC-1683 – *Technical Review Record*

Adopted Forms

DAF 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AEDC—Arnold Engineering Development Complex

AEDCI—Arnold Engineering Development Complex Instruction

AF SEAM—Air Force Systems Engineering Assessment Model

AFI—Air Force Instruction

AFMC—Air Force Materiel Command

AFMCI—Air Force Materiel Command Instruction

AFTC—Air Force Test Center Instruction

AFTCI—Air Force Test Center Instruction

CARA—Capability Analysis and Risk Assessment

CTEIP—Central Test and Evaluation Investment Program

CIIL—Critical Information and Indicators List

DA—Decision Authority

DoD—Department of Defense

EP—Engineering Panel

HHQ—Higher Headquarters

I&M—Improvement and Modernization

IRL—Integrated Requirement Lists

LSE—Life Cycle Systems Engineering

MAP—Mission Area Panels

OPR—Office of Primary Responsibility

OSS&E—Operational Safety, Suitability, and Effectiveness

PEG—Planning and Execution Guide

PMP—Program/Project Management Plan

RDS—Records Disposition Schedule

SE—Systems Engineering

SEA—Systems Engineering Approach

TA—Technical Authority

T&E—Test and Evaluation

TC&I—Test Capability and Infrastructure