



# **GPS Architecture Evolution Program Transition**

# AEP Background

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- **Contract Awarded in 1996**
- **Originally targeted for delivery in 1999**
- **Developmental delays and contract restructure**
  - IIF Vehicle split from Control Segment
  - Multiple schedule slips - Schedule no longer credible
  - Transition disconnect - Development / SATAF / OPS
  - In Jan 06 AEP was stalled
- **AEP planned releases**
  - AEP 5.2.1: Transitions ops from legacy MCS to NMCS
  - AEP 5.2.2: Flies GPS IIF satellites
  - AEP 5.5: Provides control segment functionality for SAASM

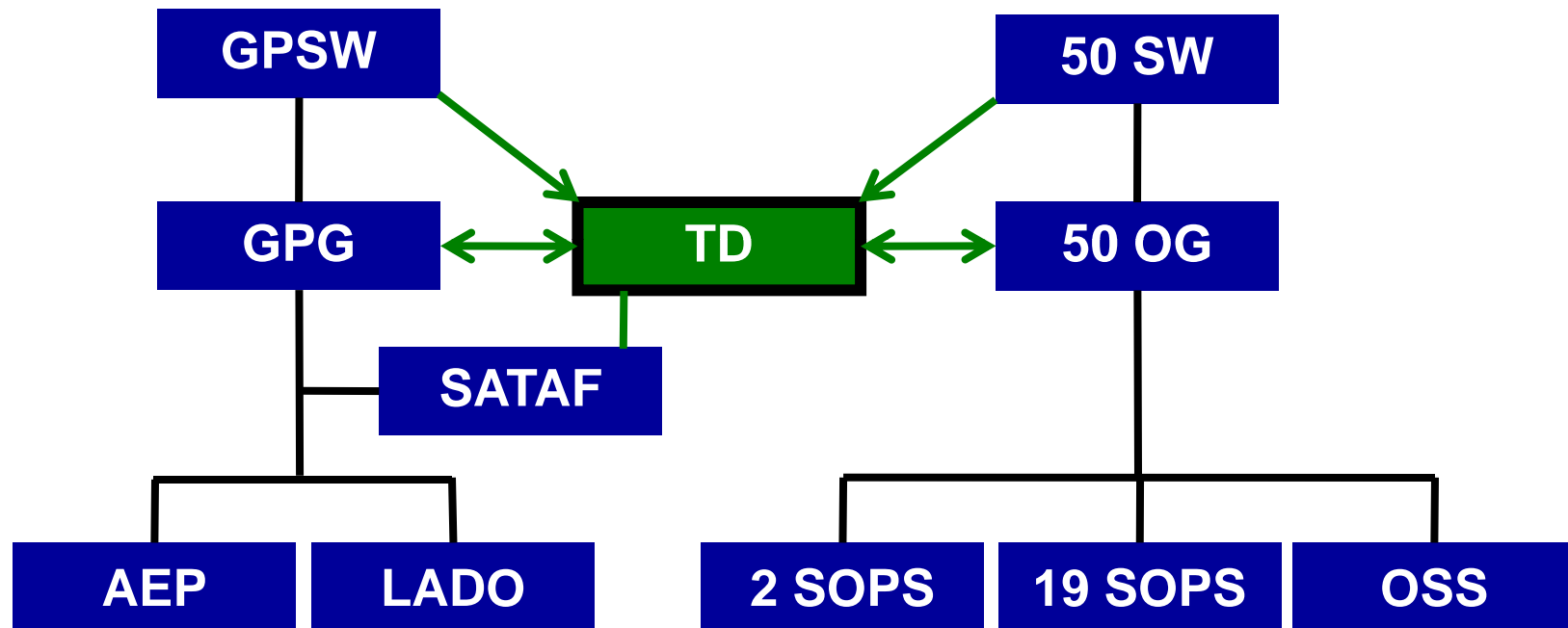
**AEP way behind schedule, cancellation being considered**

# New Direction

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- **March 06 - Direction from Col Ballenger and Col Hyten ... “Assemble “accountable” baseline plan within 30 days to ensure “soonest, safest, transition” of AEP 5.2.1 (& LADO Rel 1)”**
- **Transition Director appointed**
  - The Transition Director – dual-hatted lead for GPSW and 50<sup>th</sup> SW
  - Solid plan briefed to senior leadership on 28 April that outlined way-ahead for accomplishing transition of AEP 5.2.1 and (LADO Rel 1).
  - Acknowledged plan was aggressive but included margin to hit target
- **What Happened**
  - A very complex and difficult transition was planned, developed and executed
  - On 14 Sep 07, AEP assumed control of the constellation

# Transition Director Model



**Single Objective, Full Integration**

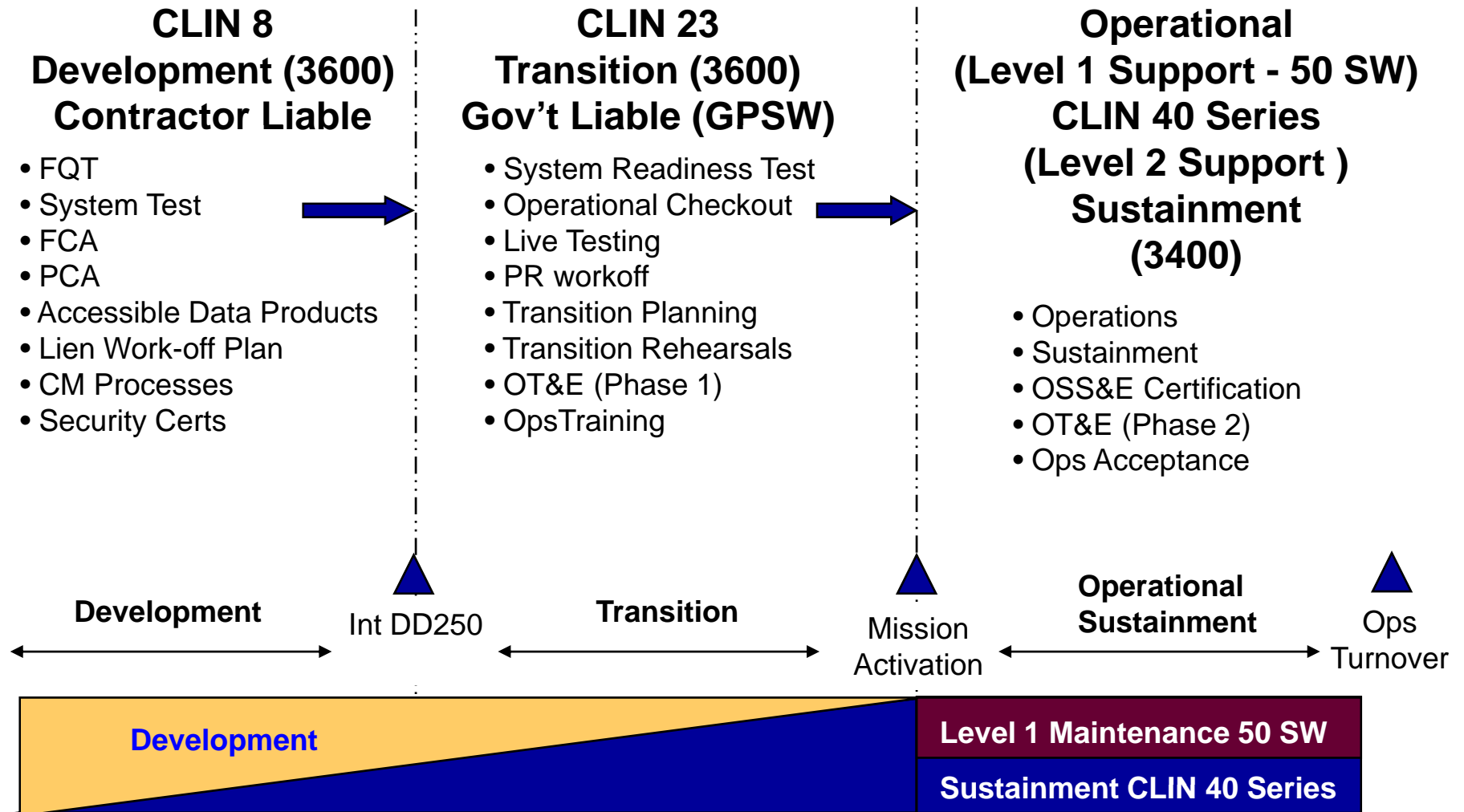
# AEP Transition Factors

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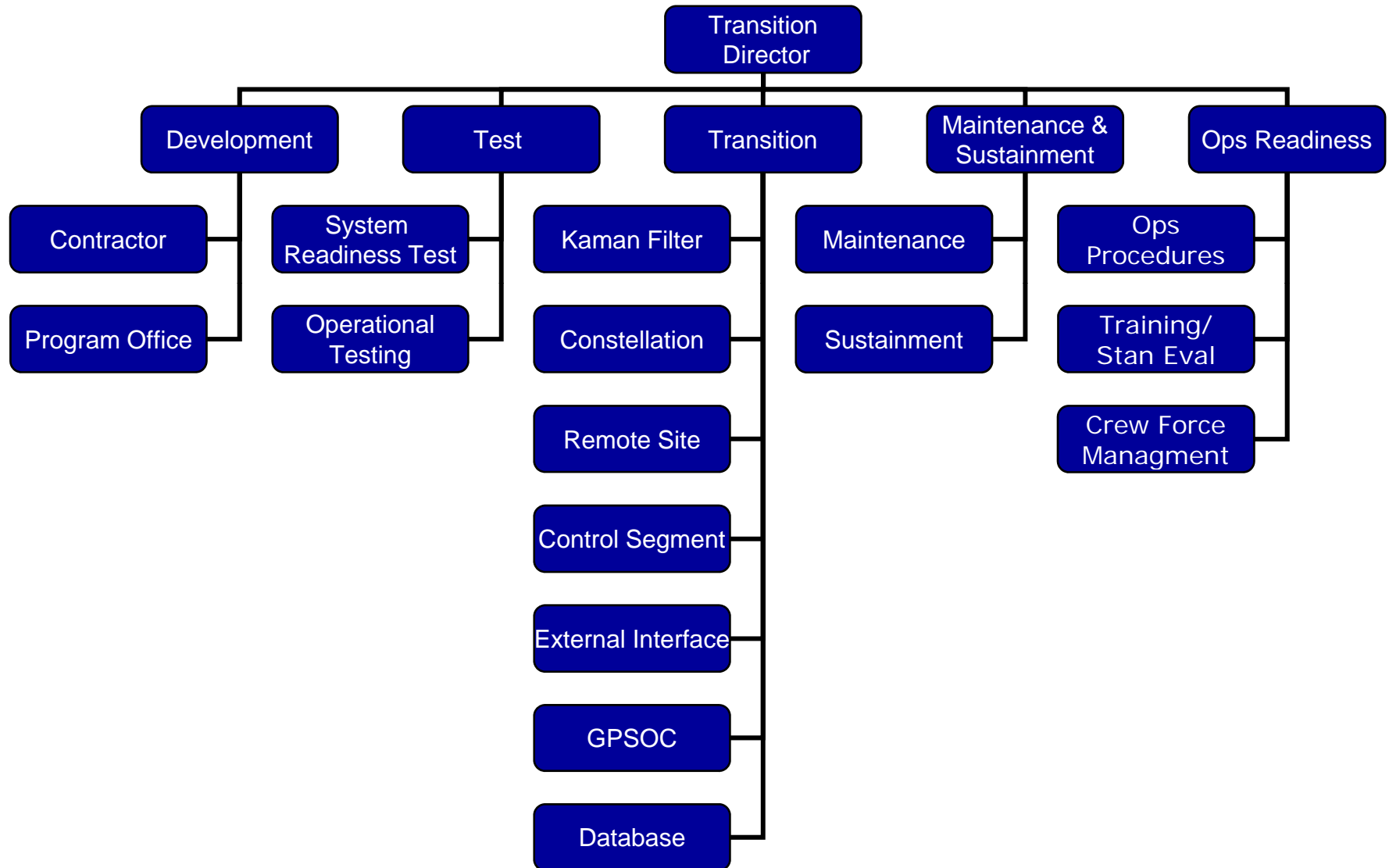
- **Complex payload management issues**
- **Integral link between ground and space segment**
- **Transition while system is operating**
- **No impact to users**
- **Constrained testing**
  
- **Worldwide utility**
- **Geo-political implications**
- **Past program delays led to increased tension between acquisition and operations**

**“This is potentially cataclysmic”**

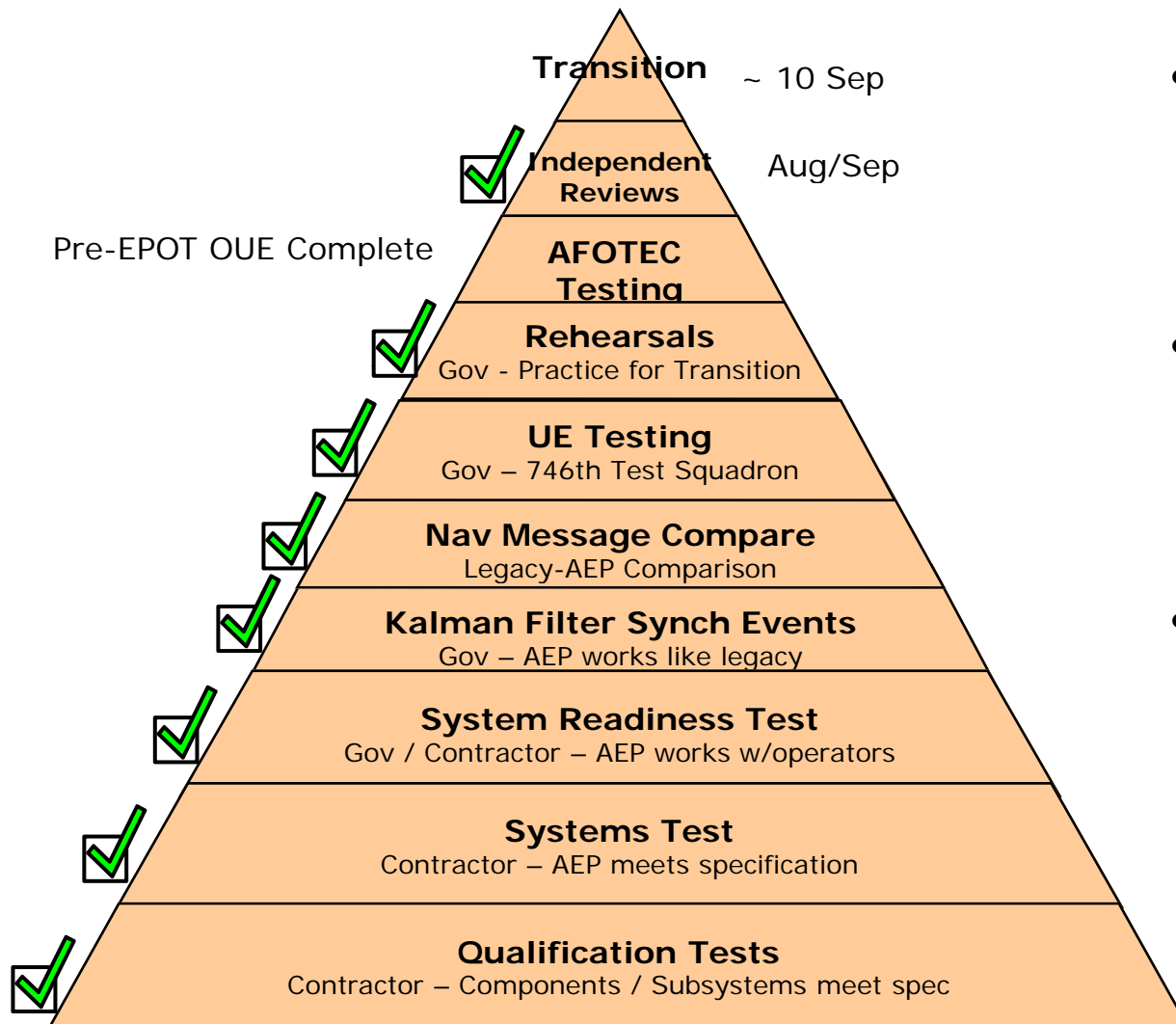
# How We Executed



# AEP Transition Team



# AEP Confidence Pyramid



- **AF conducting extensive testing to ensure no impact to warfighters**
- **Phased approach**
  - Satellites transition to new OCS one-by-one
- **Legacy system is available as a fallback through Ops Acceptance**

**MISSION – “Safest, Soonest Transition”**



# Enhanced Phased Operations Transition (EPOT)

	Phase 0	Phase 1	Phase 2	Phase 3
SV control	Legacy	Legacy	Legacy/AEP	AEP
SV shadow	AEP	AEP	AEP/Legacy	Legacy
GA/MS control	Legacy	Legacy	Legacy	Legacy/AEP
NGA Data	Legacy & AEP			
External interfaces	Legacy	Legacy/AEP		
Duration	To- 24 hrs – To	To – To+36hrs	To+36hrs – To+44hrs	To+44hrs – To+60hrs
Fallback	Do nothing	Reverse External Interfaces	Execute Phase 1 Fallback and hand back SV	Execute Phase 2 Fallback and hand back GA/MS pairs

- Phase 0 – Prep activities to sync AEP to Legacy
- Phase 1 – Synchronize AEP to Legacy. Legacy still controlling
- Phase 2 – Transition a subset of the SV constellation to AEP
- Phase 3 – Transition GA/MS pairs from Legacy to AEP
- External interfaces are transitioned in various phases based on their needs

# Key Lessons

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- **Transition cannot be an afterthought – Plan ahead**
- **High fidelity, robust testing to mitigate user impacts**
- **Leverage Integrated Testing where applicable**
- **Program scheduling must be credible**
- **Organize to facilitate decision making**
- **Transition Director construct works**

