Headquarters U.S. Air Force

Integrity - Service - Excellence

SDDP & CEIT
(From TB to IB to OB)

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7 February 2012

SDDP – Services Development and Delivery Process
CEIT – Consolidated Enterprise Information Technology
TB – Target Baseline
IB – Implementation Baseline
OB – Operational Baseline

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- **IT Infrastructure Challenges**

- **Overview of Services Development and Delivery Process (SDDP)**

- **Overview of the AF CEIT Baseline Strategy**

- **Building New CEIT Capabilities**

- **Target Baseline Overview**

- **Implementation Baseline Overview**

- **Operational Baseline Overview**

- **Summary**

- **Management and sustainment**
  - **Lack of unified governance and configuration management**
  - **Many application-specific infrastructures**
  - **Duplicate licensing**

- **Time to deliver**
  - **Outpaced by technology change**
  - **Resource intensive C&A**

- **Enterprise defense**
  - **Many application-specific security models**
  - **Technical monitoring and administration**

We need an enterprise approach to IT

SDDP Steps Simplified

1. **Define the user end result (not just the gaps in the current solution)**

2. **Define processes to further elaborate/support end result (AFSO21, COIs)**

3. **Define material solution & develop implementation plan**
   - **Reuse, build, buy, modify**

4. **Plan and develop the solution**
   - **Target Baseline → Implementation Baseline → solution basis**

5. **Test, C&A, Help Desk support setup**

6. **Deploy and Operate the solution**
   - **Operational Baseline**

CEIT Strategy - Objectives

- **Eliminate duplicative work in the development and independent fielding of similar infrastructure requirements**

- **Reduce the risk and difficulty in maintaining and supporting a large number of different infrastructures**

- **Ensure that the AFNET is secure and that all computer/network configurations are aligned to the same security standards**

- **Improve cost and time efficiency in how we develop mission and business systems Provide C&A inheritance, enterprise licensing & commodity procurement services to programs**
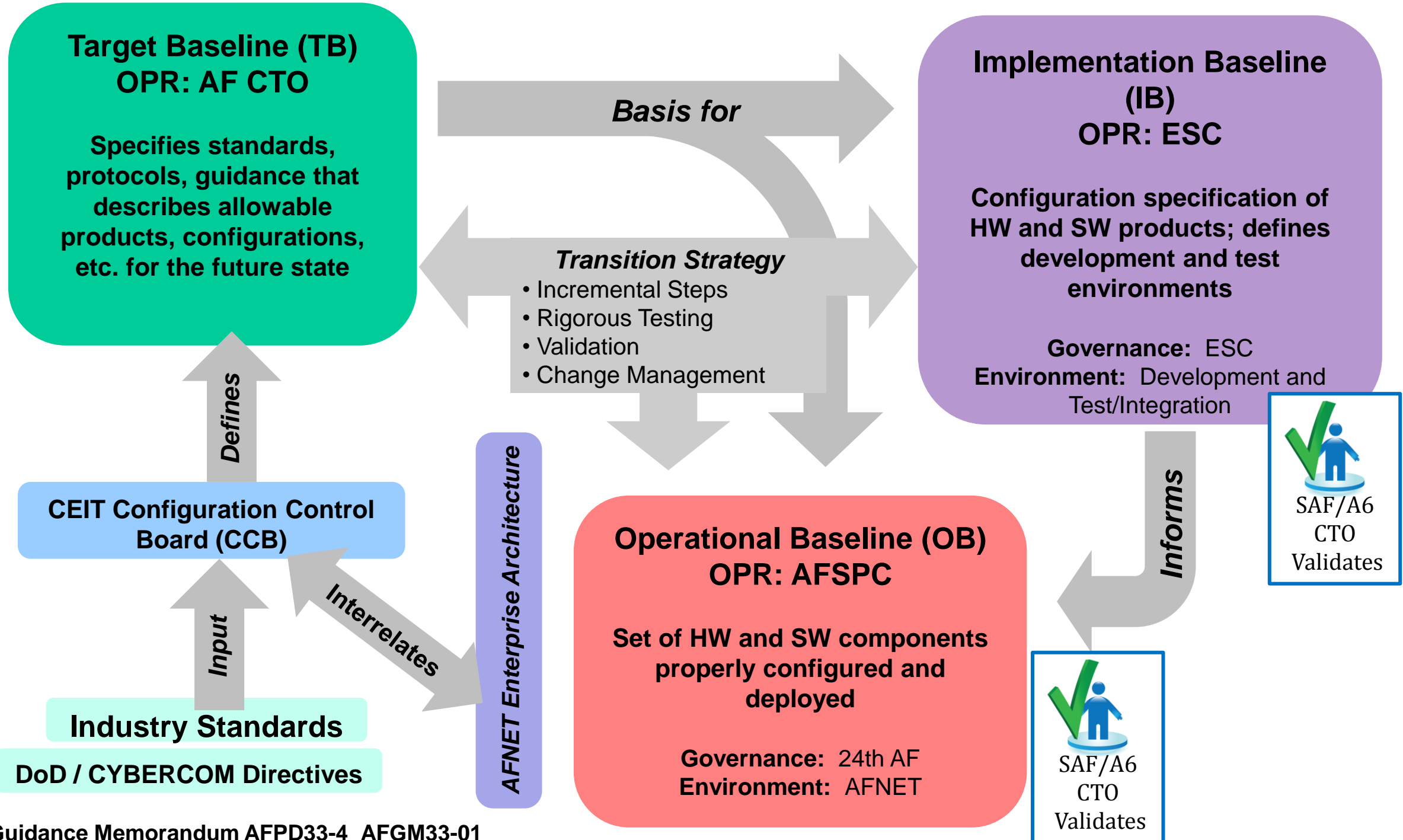
The CEIT is defined by a trio of baselines:

- **Target Baseline (TB)** - specifies the standards, protocols, guidelines and implementation constraints for the future state of the AF IT infrastructure – the "To-Be" infrastructure

- **Implementation Baseline (IB)** - the set(s) of acquisition selected products and their configurations that implement the Target Baseline – the transition from the architecture (TB) to the operational (OB) infrastructure

- **Operational Baseline (OB)** – the set of components of the IB configured and deployed across the topology of the AF IT infrastructure to provide the required warfighter capabilities and performance – the "As Is" infrastructure

- **A CCB and CM plan will exist for each baseline**

* Derived from the Air Force Consolidated Enterprise IT Baseline Configuration Control Board Charter

CEIT Baseline Relationships*

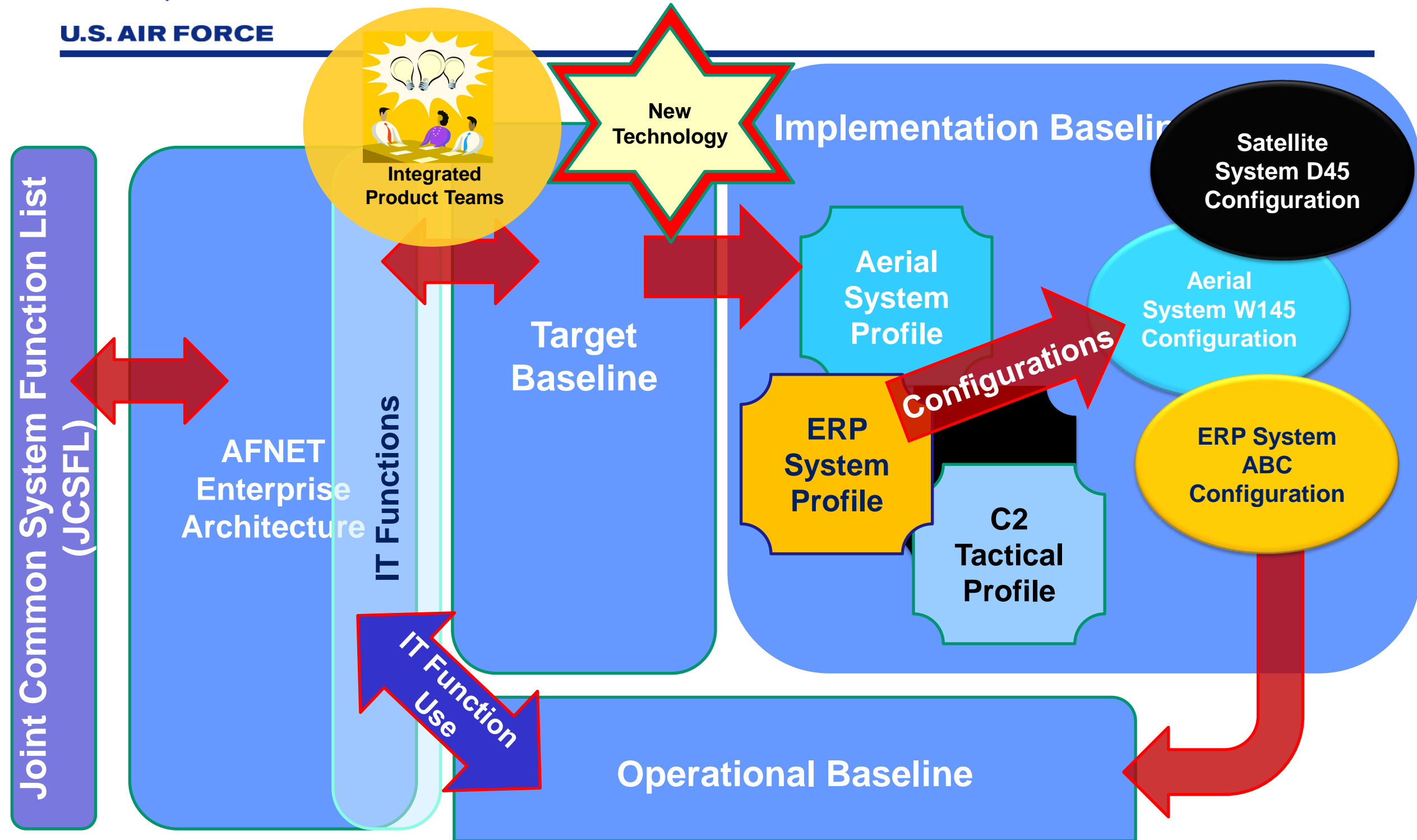**Target Baseline (TB)**
OPR: AF CTO

Specifies standards, protocols, guidance that describes allowable products, configurations, etc. for the future state

Basis for

Implementation Baseline (IB)
OPR: ESC

Configuration specification of HW and SW products; defines development and test environments

Governance: ESC
Environment: Development and Test/Integration

Transition Strategy
- Incremental Steps
- Rigorous Testing
- Validation
- Change Management

Defines

CEIT Configuration Control Board (CCB)

Input

Interrelates

AFNET Enterprise Architecture

Industry Standards

DoD / CYBERCOM Directives

Operational Baseline (OB)
OPR: AFSPC

Set of HW and SW components properly configured and deployed

Governance: 24th AF
Environment: AFNET

Informs

SAF/A6 CTO Validates

SAF/A6 CTO Validates

* Guidance Memorandum AFPD33-4_AFGM33-01

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CEIT Overview

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Joint Common System Function List (JCSFL)

AFNET Enterprise Architecture

IT Functions

Integrated Product Teams

New Technology

Target Baseline

Implementation Baseline

Aerial System Profile

ERP System Profile

C2 Tactical Profile

Configurations

Satellite System D45 Configuration

Aerial System W145 Configuration

ERP System ABC Configuration

IT Function Use

Operational Baseline

CEIT Reference Model

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Presentation

Enterprise Applications

Mission Applications & Services (consumes CEIT Services)

Enterprise Management

Application/Ops Mgmt

Device/Ops Mgmt

Network/Ops Mgmt

Data/Information

Application Foundation

Computing Services

Storage

Network Communications

Security

Legacy, Non-CEIT Systems and Applications
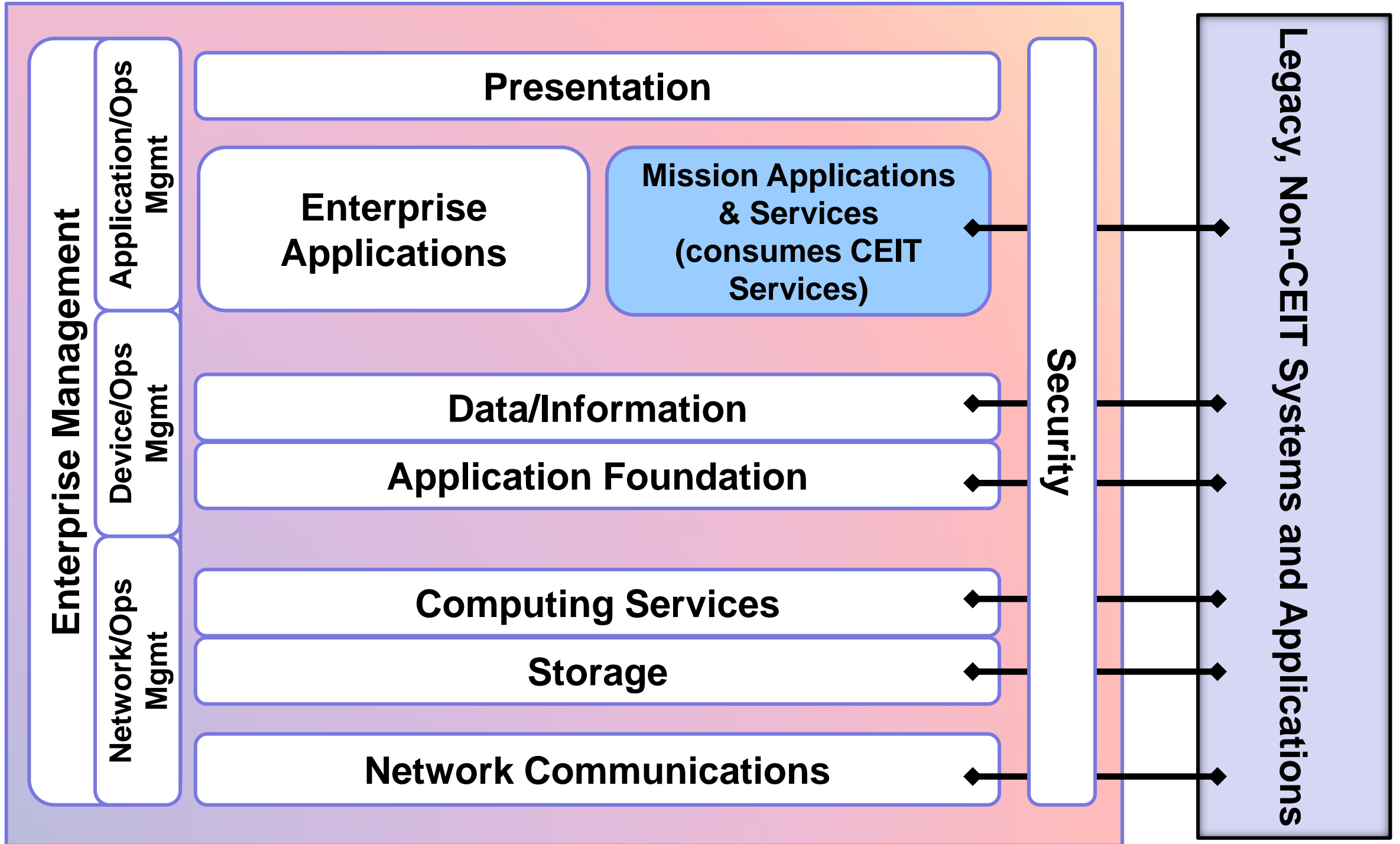
Reference Model Services

Presentation
Provide Presentation Services
Provide Widget Library
Provide User Defined Operational Picture
Provide Web Browsing
Provide Automated User Assistance

Enterprise Management
Provide Service Desk Capabilities
Provide Patch Management
Provide Asset Management
Dynamically Discover Assets
Provide Problem Mgmt Services
Provide Configuration Mgmt
Establish Space Timing/Positioning (GPS)
Information Correlation

Provide Digital Policy
Provide Quality of Protection
Provide Email System Mgmt
Provide Enterprise Info Mgmt/ Enterprise Info Services
Prioritize System Restoration
Perform Trend Analysis
Detect & Remediate System Vulnerabilities
Conduct Modeling & Simulation

Device Ops/Mgmt
Provide Client Device Processing
Monitor Computer Devices
Provide Deployed Personal Edge Devices

Network Ops/Mgmt
Provide Domain Name Services
Provide Directory Services
Establish Bandwidth Mgmt
Monitor and Analyze Network Events
Perform Traffic Mgmt
Provide Policy Mgmt
Route Based on Content
Provide Spectrum Mgmt
Control Multicast Traffic
Transfer Data via Dynamic Precedence
Enforce Policy-based Routing
Respond to Network Security Incidents
Develop CND Courses of Action
Execute Network Design Plan
Assist Network Design Planner

Application Ops/Mgmt
Monitor Application Performance Management
Maintain Application
Provide Application Library/Store
Provide Project Management Services
Provide COOP Services
Monitor Cloud Virtual Machines

Mission / Functional Unique Applications & Services

Application Foundation
Provide Web Services Discovery
Provide Web Services Directory
Provide Work Flow Services (e.g. , Case Mgmt support)

Host Application
Provide Web Hosting
Provide Web Caching

Provide Web Services
Provide Load Balancing
Provide Discovery Management
Provide Geographic Info Services

Data/Information
Mediate Information
Provide Asynchronous Messaging
Provide Synchronous Messaging
Publish and Subscribe

Provide Database Services
Aggregate Data
Mediate Protocols
Translate Human Language
Trans-code Data

Provide Enterprise Document Management
Compress/Decompress Data
Mine Data
Provide Metadata Tagging Capability

Computing Services
Provide Operating System Services
Establish Media Synchronization Functions
Provide Audio Production
Provide Virtualization Capabilities

Provide Grid Computing
Provide Fault Tolerant Services
Provide Backup and Recovery
Archive/Retrieve Data
Provide Cloud Computing Services

Storage
Replicate Stored Data
Provide SAN
Provide Storage Array Systems
Provide Storage Management Service

Compress Data within Storage Area
Provide Storage Virtualization
Provide Network Attached Storage
Provide Online Disk Management Services

Network/Communications
Provide Network Timing
Establish Streaming Media
Establish Streaming Audio
Establish Streaming Video
Route Data
Negotiate Services Across Networks
Establish Programmable Radio Networks

Control Radio/Terminal Equipment Interface
Provide Telemetry Connectivity
Provide Mobile (Ad Hoc) Computing
Establish SATCOM Connectivity
Establish Cognitive/Intelligent Spectrum Utilization

Provide IPv6 Capabilities
Transport Classified Data
Transfer of Information/Data
Establish Mobile Radio Connectivity
Provide Radio Frequency Identification (RFID)
Provide Tactical Data Link
Manage Information Delivery

Enterprise Applications
Provide Email Services
Provide Collaboration Services
Provide Office Automation App Services

Security
Provide Authentication
Control Access
Enforce Access Control
Provide Access Control Services
Implement Identity Management
Provide Authorization/ Privilege Management
Provide Public Key Infrastructure (PKI)
Implement Ports, Protocols, and Services Policies
Configure IPS
Protect Network Boundaries
Protect Critical System Information
Provide Cryptographic Services
Support Investigations & Forensics
Provide Proxy Services
Provide Firewall Mgmt Services
Provide Virtual Private Network (VPN)
Protect Information
Provide Multi-Domain/ Enclave Security
Secure Multi-Level Authenticate
Protect Data At Rest
Protect Data in Transit
Protect Data in Processing
Provide Email Hygiene

IT Function Technology Profile

- **General Information**
- **Reference Architecture and DoD Mappings**
- **Function Dependency List**
- **Technical Implementation Profile**
    - **Technical Guidance Statements**
    - **Technical Requirements Statements**
    - **Performance Requirements**
    - **Standards References**
- **Maturing Guidance**
- **Compliance Testing**
- **Key Programs Investigating Related Technologies**
- **Data**
- **References**

Implementation Baseline Introduction

- **The Implementation Baseline translates the Target Baseline vision into concrete Implementation Profiles to provide specific infrastructure capabilities to satisfy a specific set of mission requirements.**

- **Each Implementation Profile is derived by analysis of requirements across multiple criteria:**
    - **Size/location of user community (e.g., >100,000 vs. 1-10)**
    - **Mobility of end user platform (e.g., fixed data center vs. handheld)**
    - **Network connectivity (e.g., big fiber-optic pipes vs. DIL)**
    - **Stand-up/Tear-down time & complexity (e.g., months vs. hrs)**
    - **Availability & COOP requirements (e.g., 99.999% up vs. 95%)**
    - **Processing workload (e.g., scientific vs. business transactions)**
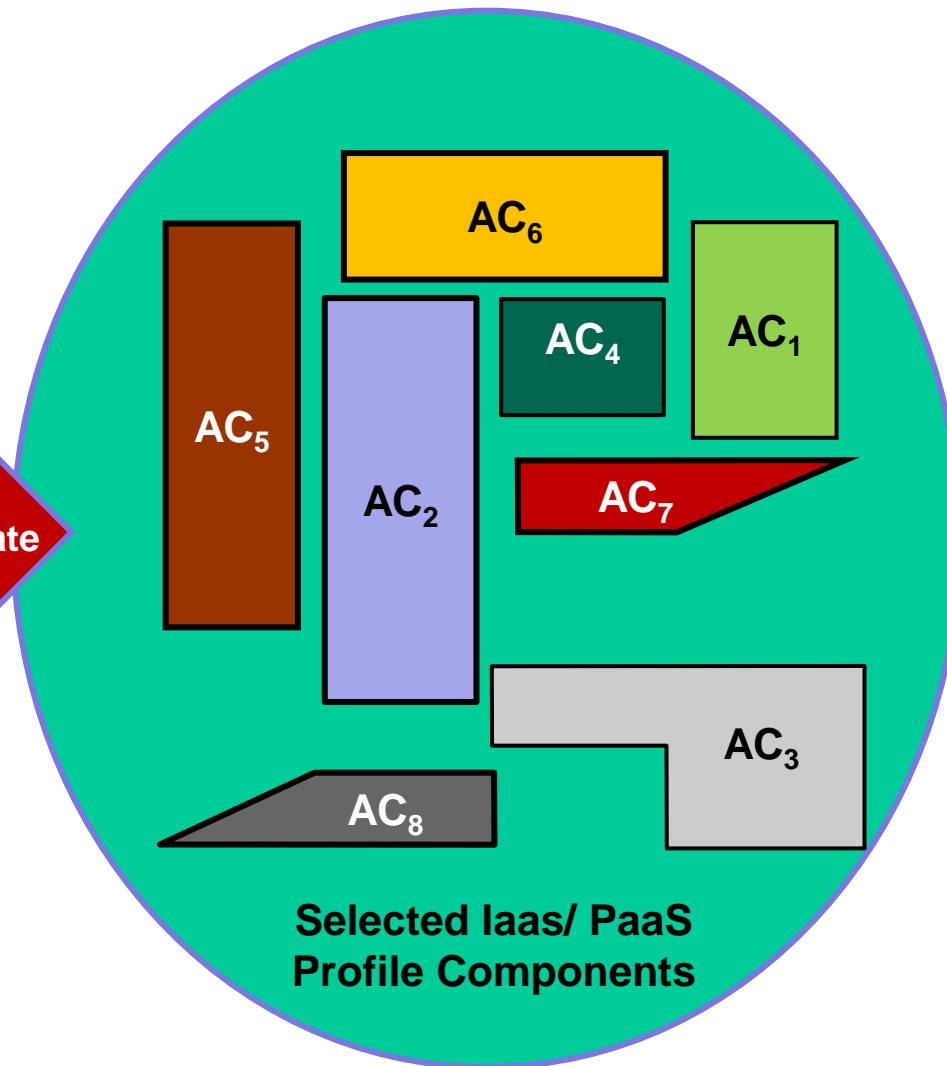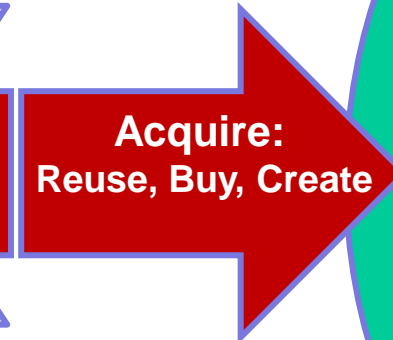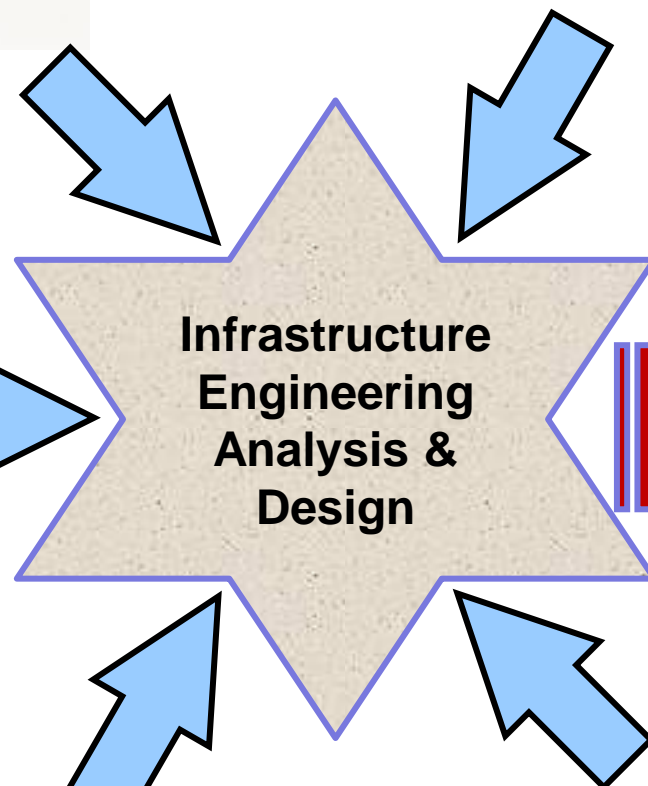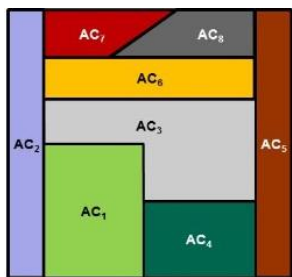   - **Future capacity plans/predictions**

Profile Engineering Approach

Target Baseline Technical Profiles

Mission Requirements

Current Implementation Baseline Profiles (IaaS/PaaS)

Infrastructure Engineering Analysis & Design

Acquire: Reuse, Buy, Create

Reuse Considerations (e.g., GOTS, licenses, DoD Enterprise Services)

Industry Product Offerings

AC_6

AC_4

AC_1

AC_5

AC_2

AC_7

AC_3

AC_8

Selected IaaS/ PaaS Profile Components

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Mission/Functional Services Ride on Infrastructure

Acquired Components

Selected IaaS/PaaS Profile Components

AC5, AC6, AC4, AC1, AC2, AC7, AC3, AC8

Integrate, Test and C&A
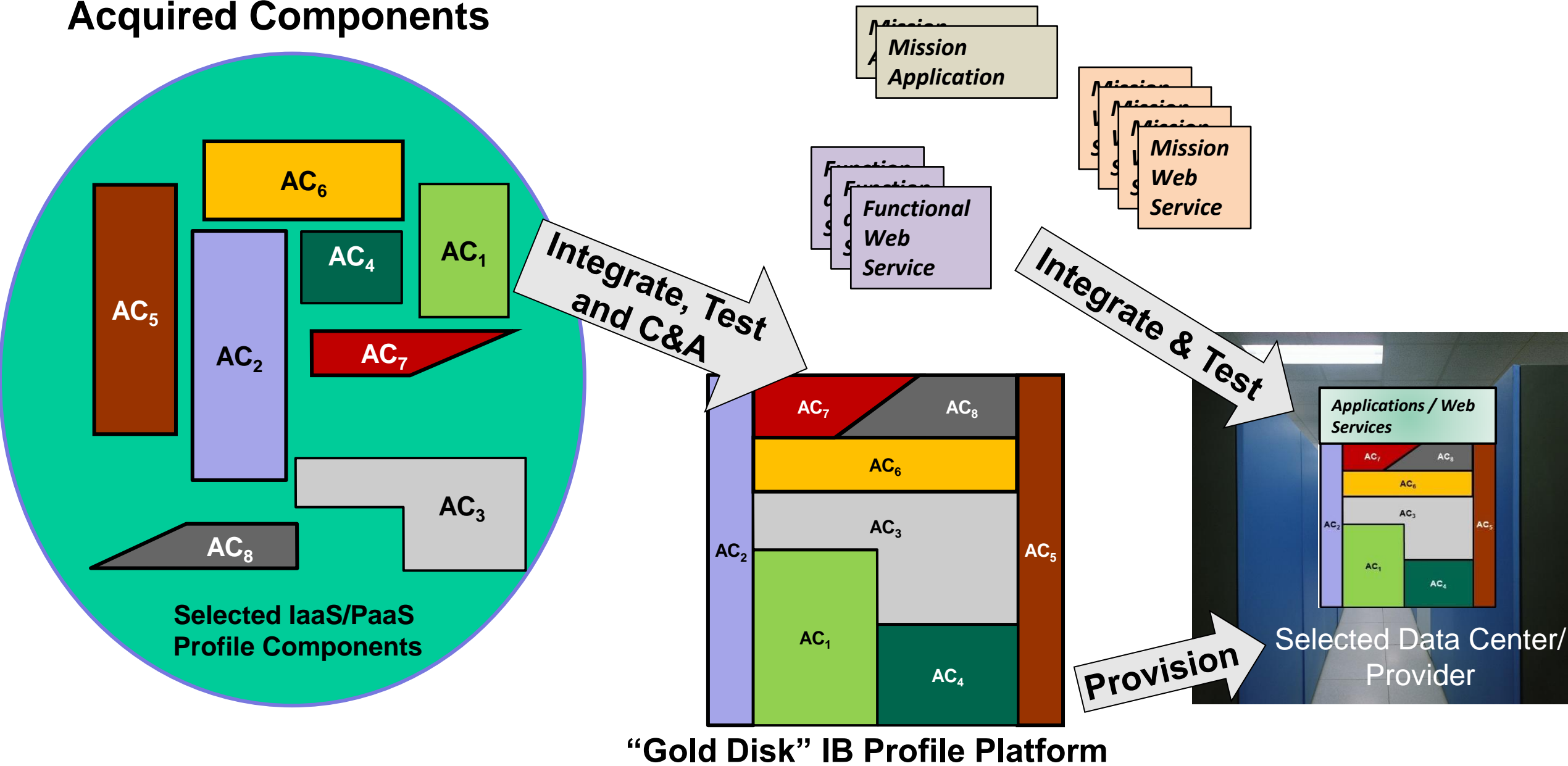
"Gold Disk" IB Profile Platform

AC2, AC7, AC8, AC6, AC3, AC1, AC4, AC5

Mission Application

Functional Web Service

Mission Web Service

Integrate & Test

Provision

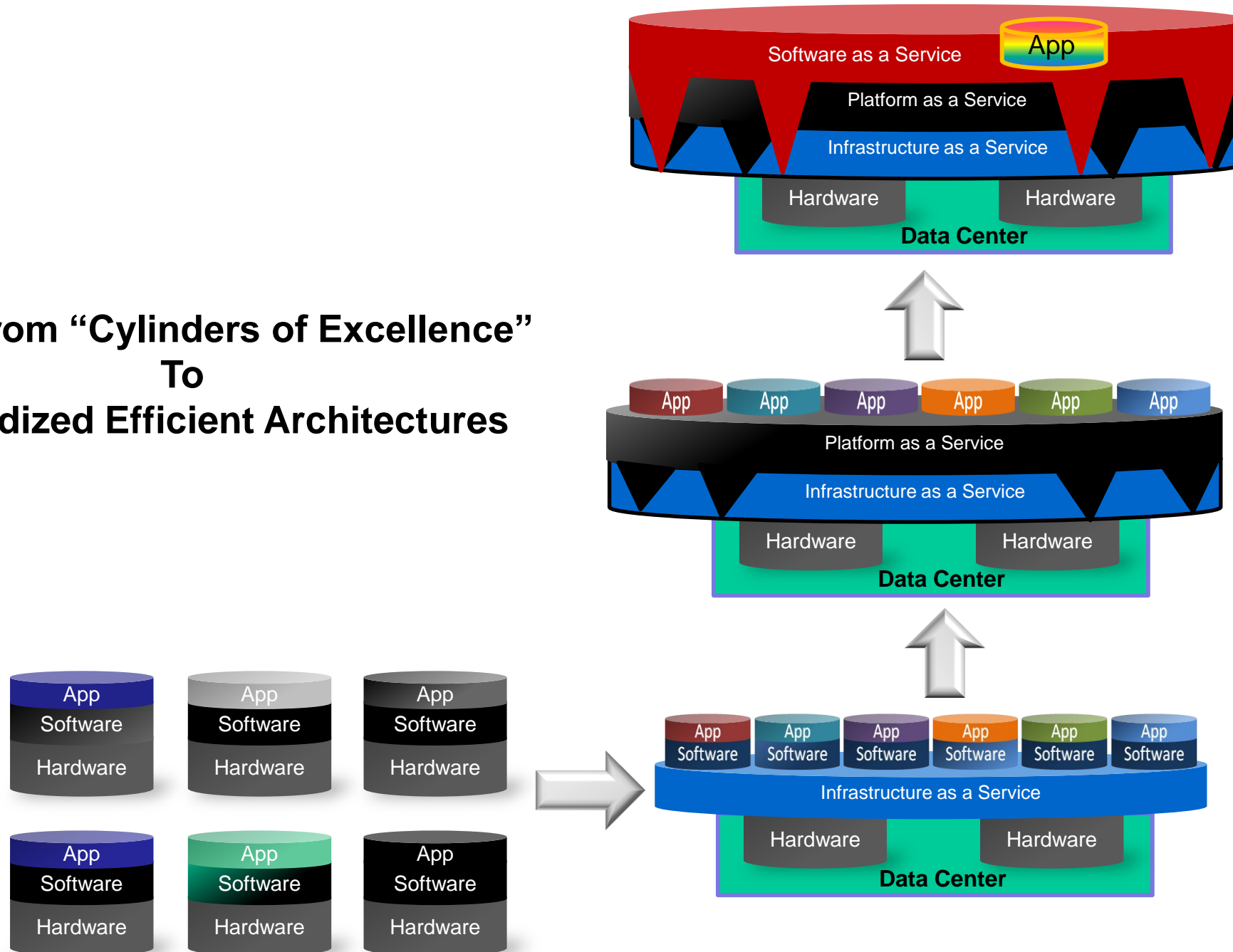Applications / Web Services

Selected Data Center/ Provider

"X as a Service" Tiers

Moving from "Cylinders of Excellence"
To
Standardized Efficient Architectures

IB Profile Elements

- **Infrastructure/Platform as a Service**
  - **Software/hardware configurations that the mission systems, services and applications will ride on**

- **Enterprise services**
  - **Shared AF/DoD enterprise-wide services (e.g., DNS, AFDS, enterprise management, system eHealth log)**

- **Enterprise applications**
  - **Shared AF/DoD enterprise-wide applications (e.g., e-mail, SharePoint)**

- **External interfaces**
 - **Non-AF interfaces, services and applications with which AF systems interoperate**

CEIT Implementation End State

- **Commonality:**
  - **Infrastructure as a Service (IaaS): includes network and physical infrastructure**
  - **Platform as a Service (PaaS): managed services platform**
  - **Software as a Service (SaaS): providing enterprise services**
  - **PoR inherits C&A from IaaS/PaaS**

- **Capability:**
  - **Lightweight mission/functional services (leverage SaaS, PaaS & IaaS)**
  - **ERP-like COTS capabilities (leverage PaaS & IaaS)**
  - **Stand-alone systems (leverage IaaS)**

- **All Physical Environments:**
  - **Terrestrial**
 - **Aerial**
  - **Space**

Web 2.0 presentation layer

Space | Aerial | Terrestrial

SaaS

PaaS

IaaS
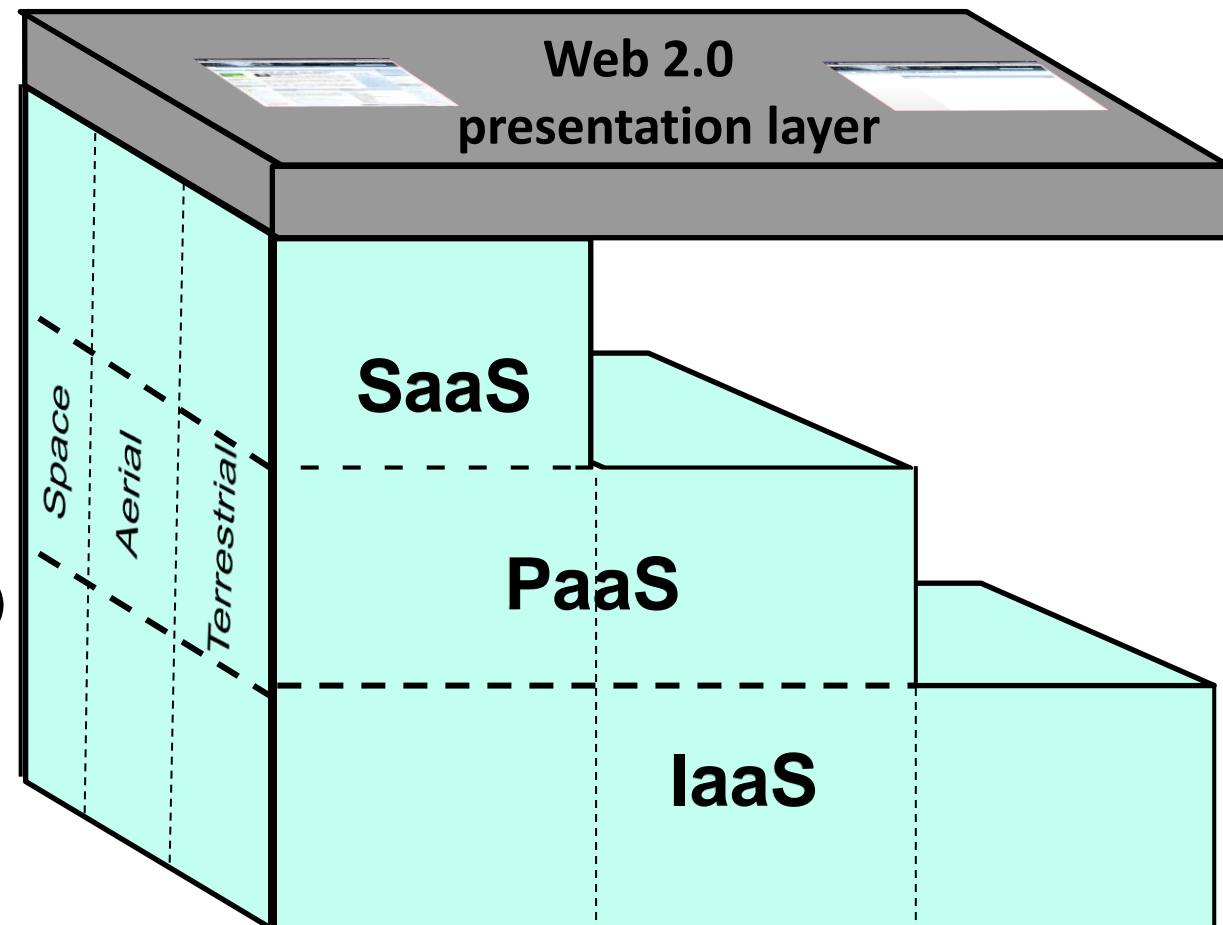
Programs build applications & services to fit on infrastructure provided

Enterprise Integration & Test

- **Test PoR solutions in realistic environment**

- **Aid PoRs in packaging and provisioning solutions for fielding**

- **Analysis/report on the performance of services running on AF Operational Environment**

- **Integrate upgrades and patches to the Infrastructure**

- **Advise on AF IT infrastructure and the CEIT Baselines**
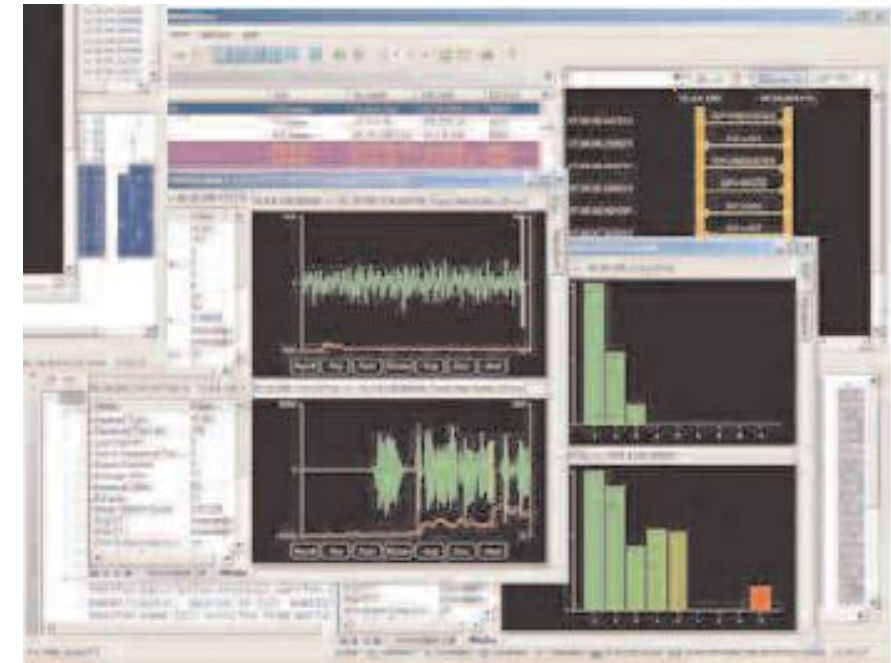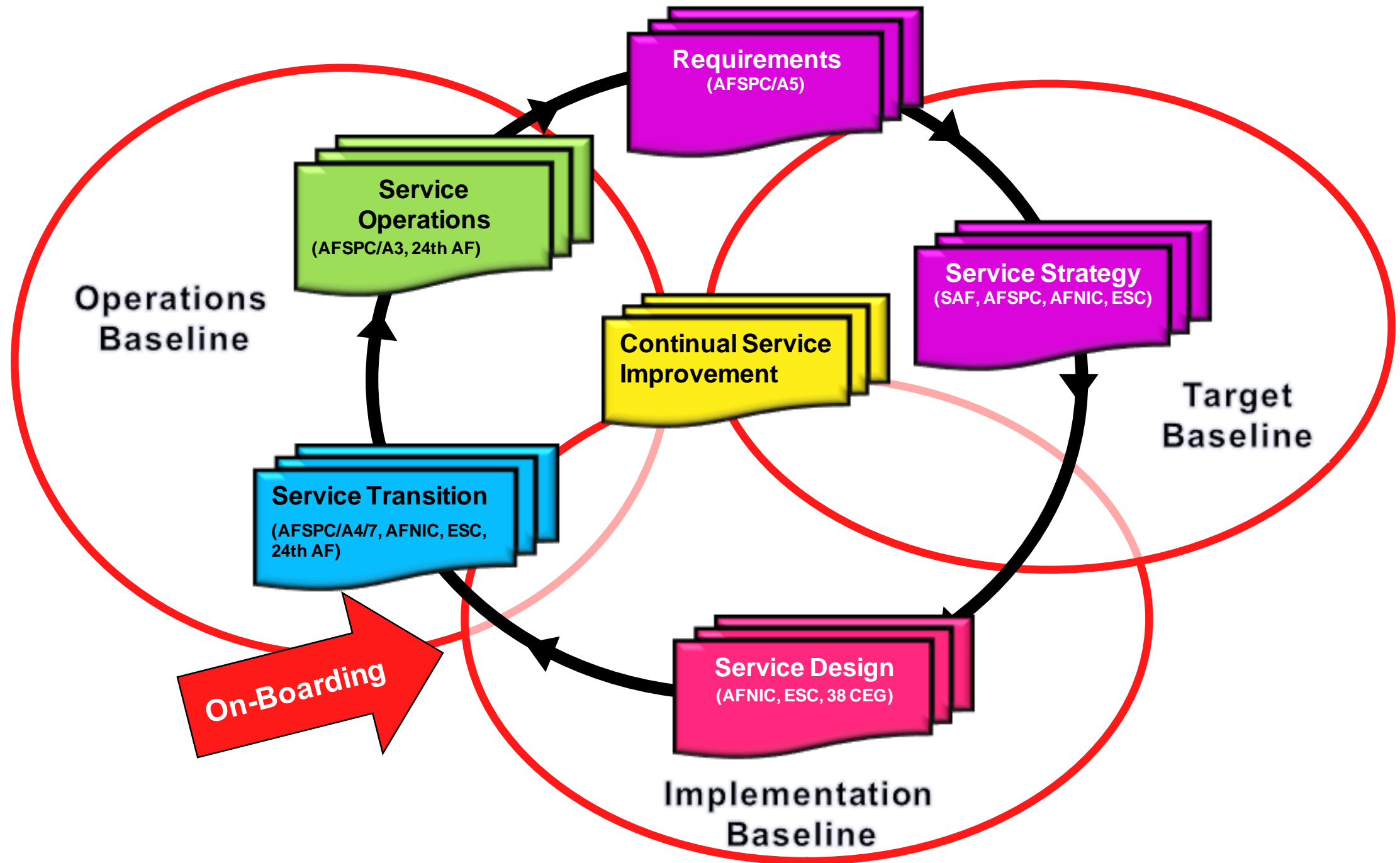
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- **The Operational Baseline specifies the deployed AF infrastructure capabilities**
    - **Necessary to satisfy mission requirements**
    - **Based on specifications and configurations supplied by the IB**

- **The Operational Baseline includes:**
    - **Component inventory of all equipment and software on the network**
    - **Infrastructure component configurations and topologies**

- **The Operational Baseline is supported by:**
    - **Analysis performed in conjunction with mission capability development, IB evolution and network topologies**
    - **PaaS providers that stand up IB products and configurations**
    - **Monitoring capability to ensure SLAs are being met**

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Operations Baseline

Target Baseline

Implementation Baseline

Requirements (AFSPC/A5)

Service Operations (AFSPC/A3, 24th AF)

Service Strategy (SAF, AFSPC, AFNIC, ESC)

Continual Service Improvement

Service Transition (AFSPC/A4/7, AFNIC, ESC, 24th AF)

Service Design (AFNIC, ESC, 38 CEG)

On-Boarding

Operational Baseline
As of 30 Aug 11

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Prioritize System Restoration
Perform Trend Analysis
Detect & Remediate System Vulnerabilities
Conduct Modeling & Simulation

BLUE=In place; Green=In place; change needed; Yellow=Partial/in work; Red=Not yet addressed

- **Different governance structure for systems development and fielding**

- **Separating the building of mission capability from the building of infrastructure**

- **Selecting infrastructure and its provisioning that will meet or exceed the application's mission needs but in a standardized commoditized manner**

- **Work continues on defining the Consolidated Enterprise IT Baselines**