

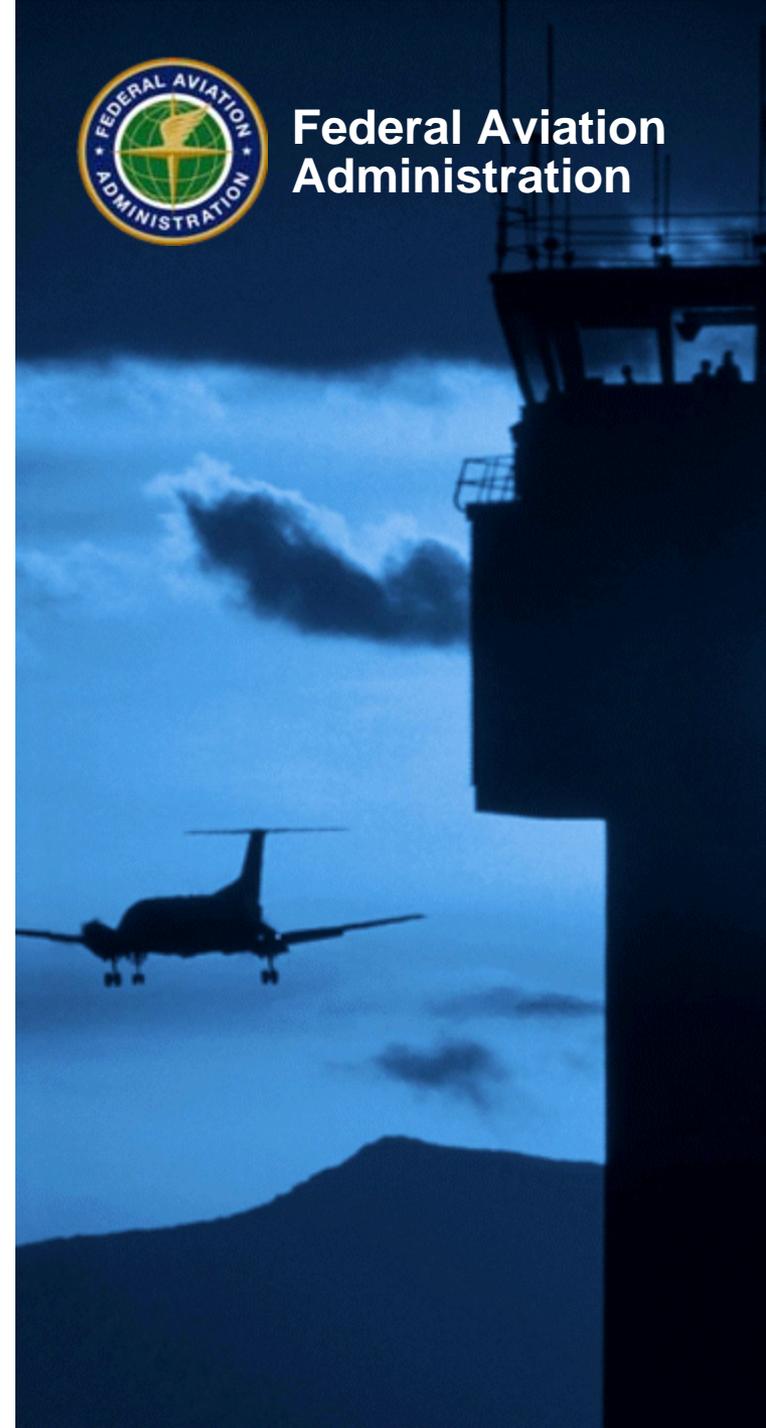
Introduction to FAA Configuration Management

National CM Workshop
Atlantic City, NJ
September 2008

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Jane Austin



Federal Aviation
Administration



Overview

- What is CM?
- What are the Benefits?
- CM in the FAA
- CM Requirements
 - FAA Acquisition Management System (AMS)
 - FAA Order 1800.66, CM Policy
- CM Responsibilities
- Decision Authority
- NCP Process
- CM Automation
- Back-up Information
 - Definitions (Managing the NAS - CM Tenets)



What Is CM?

- Configuration management is a management process for establishing and maintaining consistency of a product's
 - Performance
 - Functional and physical attributes with its requirements
 - Design and operational information throughout its life. *(as defined in MIL-HDBK-61)*
- There are 5 basic CM principles
 - CM Planning and Management
 - Configuration Identification
 - Configuration Control
 - Configuration Status Accounting
 - Configuration Audits and Assessments
- These principles also apply to
 - Information/data management

Configuration Management Tenets

FAA CM

CM Planning & Management

- CM Policy & Procedures
- Enterprise CM CMPP
- CCB Charters & Operating Procedures
- CM Plans

Configuration Identification

- Identify Items to be Managed
- Establish Baselines
 - Developmental
 - Functional
 - Allocated
 - Product
 - Operational

Configuration Control

- Identify Need
- Describe Change
- Coordinate and Review
- Disposition Change
- Implement Change
- Monitor Implementation
- Capture Change Data

Configuration Status Accounting

- Capture Vendor Change Vehicle (PTR/HDR/ECP) Status
- Capture CF/NCP/CCD Status
- Capture Change Release (SSD, STB) Status
- Capture Associated Baseline Status

Configuration Audits

- Monitoring and Oversight
 - Agency CM Operations
 - Contractor CM
- Manage & Verify
 - Internal Audits
 - FCA/PCA
 - Baselines

Information/Data Management

Secure Storage of and Accessibility to Digital Data. Includes Configuration Data and Related Program Information such as:

- Documents
- Drawings
- SW Code
- Change Data
- Plans

What are the Benefits?

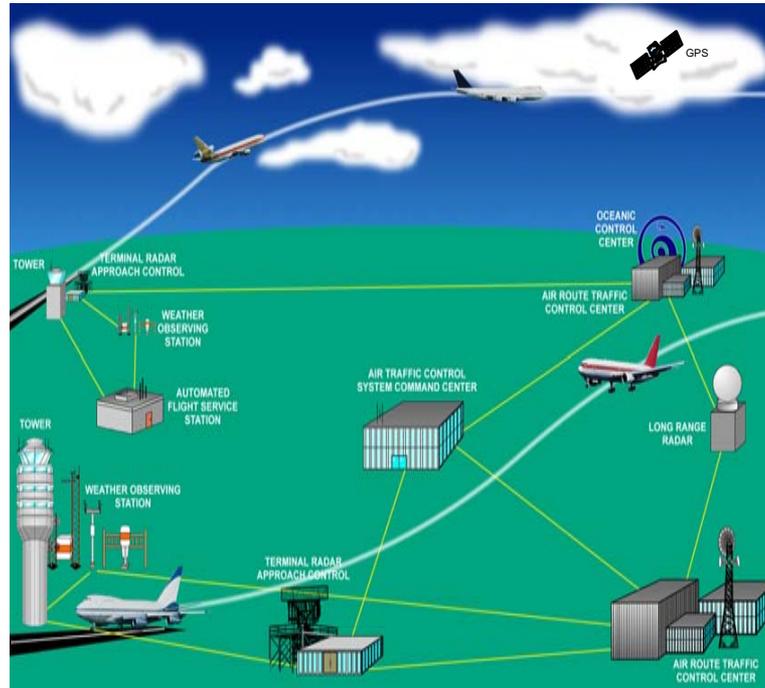
- **CM enables**
 - safety
 - information security
 - greater cost control
 - better decision-making
 - data accessibility and integrity
 - product supportability
 - process improvement
 - performance metrics
- **CM supports key objectives of the FAA enterprise architecture**
- **CM supports application of consistent best practices across the agency**



CM in the FAA

Configuration Management

- Essential for effective evolution and operation of the NAS and overall IT infrastructure of the FAA
- Cornerstone of good programs
- Process to maintain traceability from requirements through acquisition to operational systems



Enterprise CM

- Provides overall infrastructure
- Works with the Service Areas/Regions to support their ability to build and deliver systems and services
- Works with the FAA EA personnel so that systems can be effectively integrated, operated and maintained.

CM Requirements

- **AMS requires the conduct of CM throughout the lifecycle of a system or service – AMS Section 4.1**
- **FAA Order 1800.66 CM Policy, details CM requirements and national level procedures**
- **CCB Charters provide the governance and shows decision-making responsibility for configuration items assigned to them**
- **CM Plans document how organizations will manage their CIs...in accordance with Policy, of course**



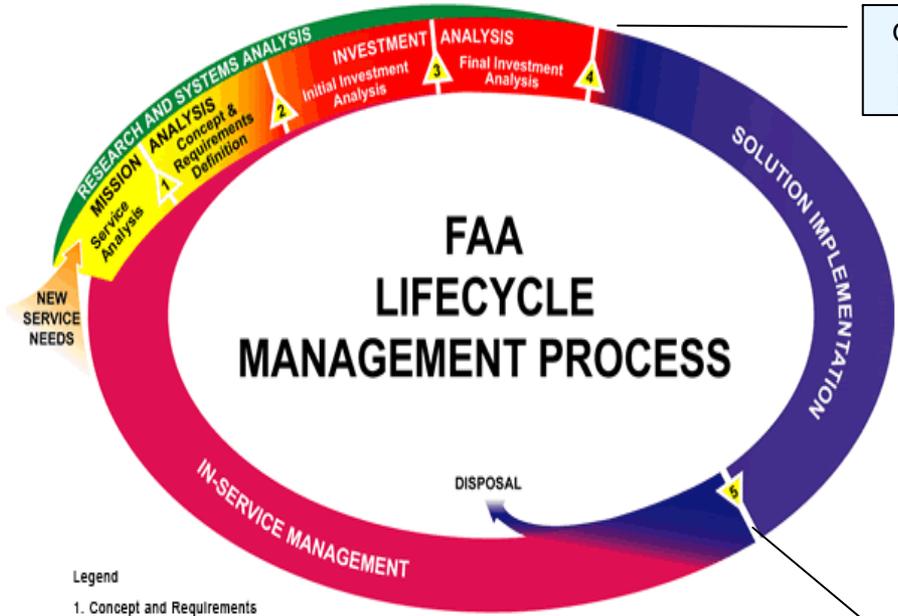
Acquisition Management System (AMS)

- Establishes policy and guidance for all aspects of lifecycle acquisition management for the FAA
- Defines how the FAA manages its resources - money / people / assets to fulfill its mission
- The FAA Acquisition Executive, currently the Vice President of Acquisition and Business Services, is the decision authority
- The Joint Resources Council is the governing decision body
 - Convenes to make corporate decisions on mission need, acquisition investments, and acquisition program baseline changes – approves Exhibit 300 submissions (Final Program Requirements, Implementation Strategy and Plan, Business Case Analysis Report)
 - Reviews and recommends approval of agency's budget submissions
 - Approves the FAA Enterprise Architecture baseline
 - Charters top-level Configuration Control Boards

AMS and Configuration Management

- Ensure CM requirements and resources for the life cycle are allocated

- Provide trend analysis data
- Facilitate discussions on new capabilities with current configurations



OMB 300 Program Baseline

Manage Program Requirements via the NCP process

- Build on initial configuration identification performed during IA
- Implement CM Planning and Management
- Initiate Change Management and Status Accounting activities
- Conduct FCA/PCA to support system acceptance

- Legend
1. Concept and Requirements Definition Readiness Decision
 2. Investment Analysis Readiness Decision
 3. Initial Investment Decision
 4. Final Investment Decision
 5. In-Service Decision

- Track cost of NAS changes
- Manage fielded systems
- Modification Tracking
- Facility and other audits

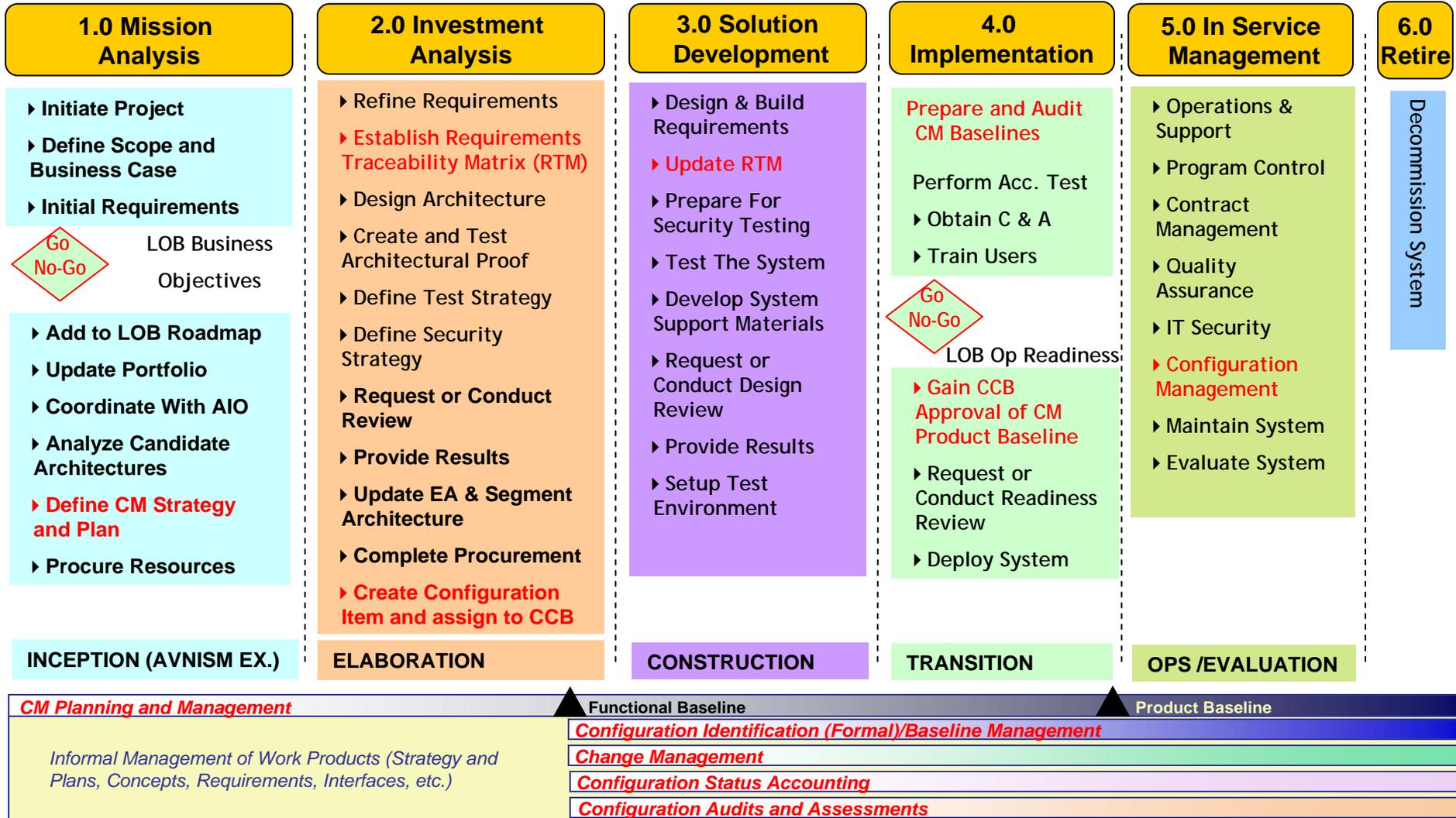
In-Service Review and Decision (ISR/ISD)

Baseline Product Configuration



AMS and Configuration Management Another View

CM has a key role to play throughout the AMS process as depicted below.



Configuration Management Policy

- **FAA Order 1800.66 prescribes configuration management policy and practices for the Agency**
- **AMS also requires application of CM and includes links to the order**
- **Applies to the NAS and to Non-NAS IT**
 - Requirements
 - Interfaces
 - HW and SW
 - Facility Configurations
 - Technical Documentation
- **Provides Full Life Cycle Policy, Procedures, and Processes**
- **Was developed using government and industry best practices and lessons learned**



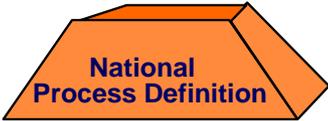
FAA Order 1800.66 Revision A



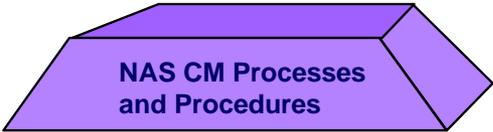
Part One: Statements of Policy

Specific policy elements that establish an association to the FAA Enterprise Architecture activities in the FAA.

- General CM Policy
- NAS CM Policy
- Non-NAS IT CM Policy



National Process Definition



NAS CM Processes and Procedures



Non-NAS IT CM Processes and Procedures



CM Standards and Standardization



Acronyms and Definitions

Part Two: NAS CM Processes and Procedures

NAS life cycle CM process that integrates CM information and activities across organizations and functions. Corporate and standard operating plans and procedures that describe how to implement the Policy Statements in Part One

Part Three: Non-NAS IT CM Processes and Procedures

Non-NAS IT life cycle CM process that integrates CM information and activities across organizations and functions. Corporate and standard operating plans and procedures that describe how to implement the Policy Statements in Part One

Part Four: CM Standards and Standardization

Significant industry-wide and FAA documents that establish engineering and technical requirements for the FAA CM process, procedures methods and information management

Part Five: Acronyms and Definitions

List of acronyms and clarification of terms



Roles and Responsibilities

The roles and responsibilities for implementing Configuration Management in the FAA are:

- **Joint Resources Council (JRC)**
 - Charter NAS and Non-NAS IT CCBs. This responsibility is delegated to the ATO Executive Council for the NAS and Information Technology Executive Board for Non-NAS IT
- **VP of Technical Operations. Serves as the FAA Configuration Management Authority**
 - Oversee CM activities for the Agency
 - Track and report the state of agency CM to executive management
 - Support integration of the configuration management requirements into related processes (e.g., AMS, SMS...)
 - Provide CM training and guidance

Roles and Responsibilities *(continued)*

- **All FAA lines of business and staff offices:**
 - Perform configuration management in accordance with 1800.66
 - Ensure configuration management traceability of their assets and investments to the FAA EA
 - Submit change proposals to baseline JRC approved final program requirements (FPR) to the NAS or Non-NAS IT CCBs, as appropriate
 - Ensure that operational assets, systems and programs not identified in the FAA EA are captured in the appropriate CM baselines and the FAA EA

Enterprise CM Responsibilities

- **Agency Configuration Management Planning and Implementation**
- **Agency CM Policy, Procedures, and Guidance**
- **Agency CM Monitoring and Oversight**
- **NAS Configuration Control Board (CCB) Operations**
- **CM Information Management (Automation)**
- **Documentation Control Center (DCC)**
- **Executive and Practitioner Sponsorship**
- **CM Training, Awareness, Outreach, and Communication**
- **CM Related Agency Support**
 - JRC, ATO EC, ITEB Advisory role
 - Safety Management System
 - Agency Information System Security
 - Agency System Engineering Manual
 - NAS Data Release Request Process Implementation and Operations
 - Non-NAS IT CM Program

Agency Governance Structure

Baseline View

Programmatic Baselines

Baseline Responsibility:

- OMB Exhibits 300 and 53
- Enterprise Architecture
- F&E Budget
- Data Standards
- Technology Standards

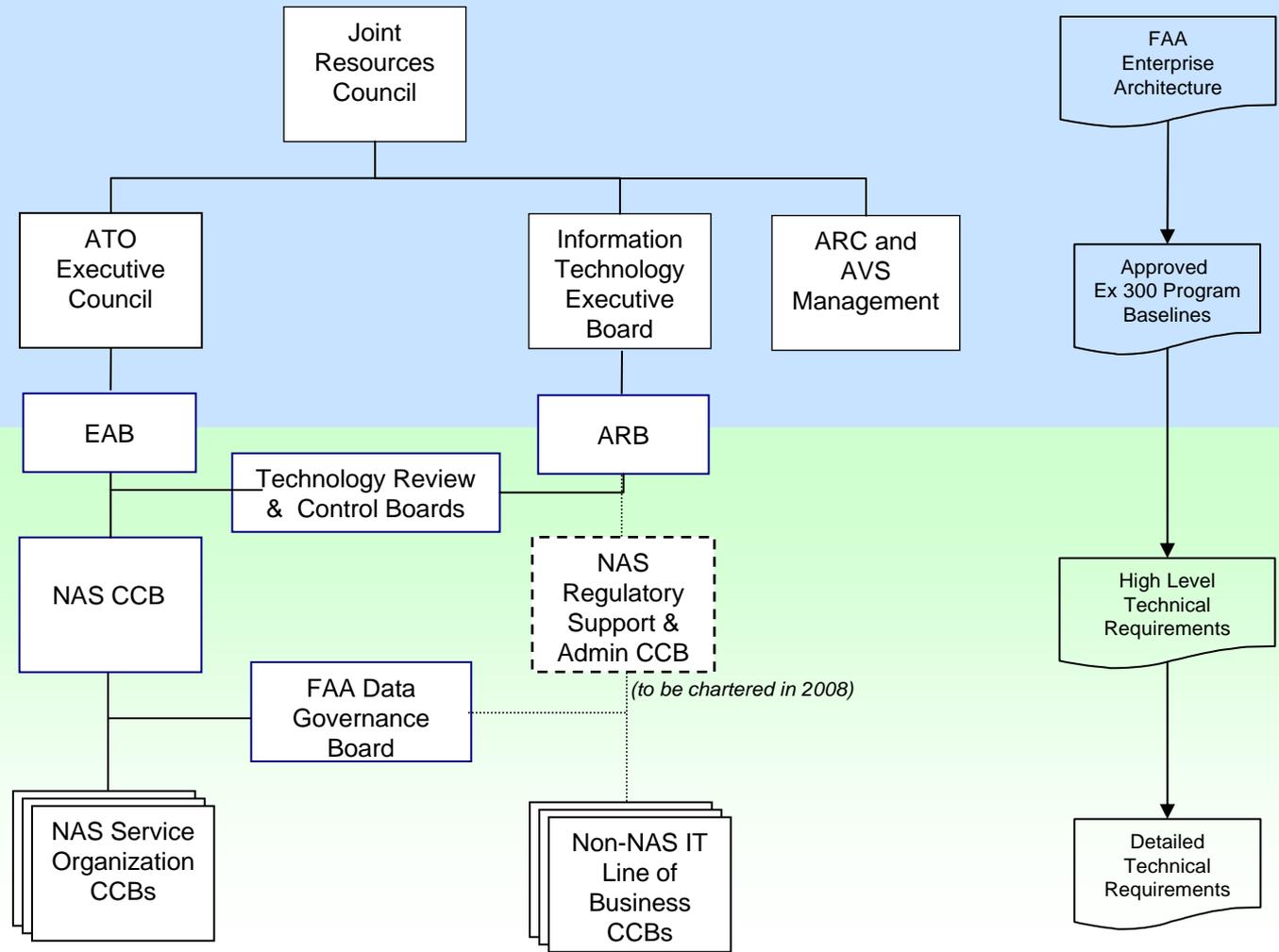
Technical Baselines

Baseline Responsibility:

- Top Level Requirements
- CCB Charters
- Master Configuration Index
- Final Requirements Documents
- External Interfaces
- Region Unique Equipment
- Interface Requirements
- FAA Standards

Baseline Responsibility:

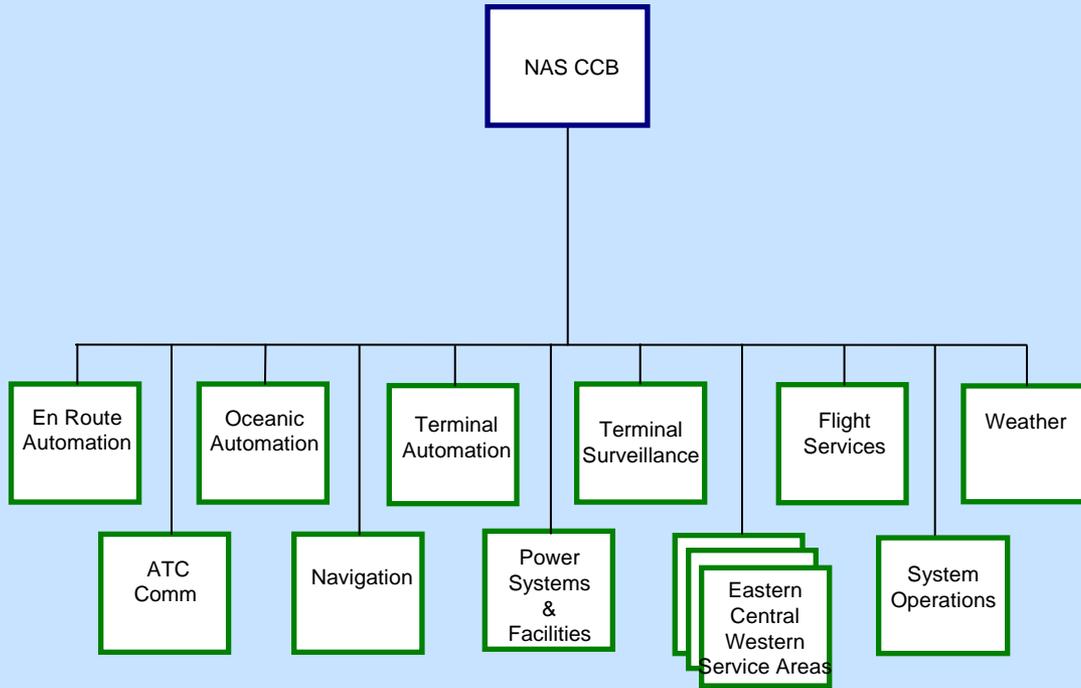
- Programs
- Interfaces
- Facilities



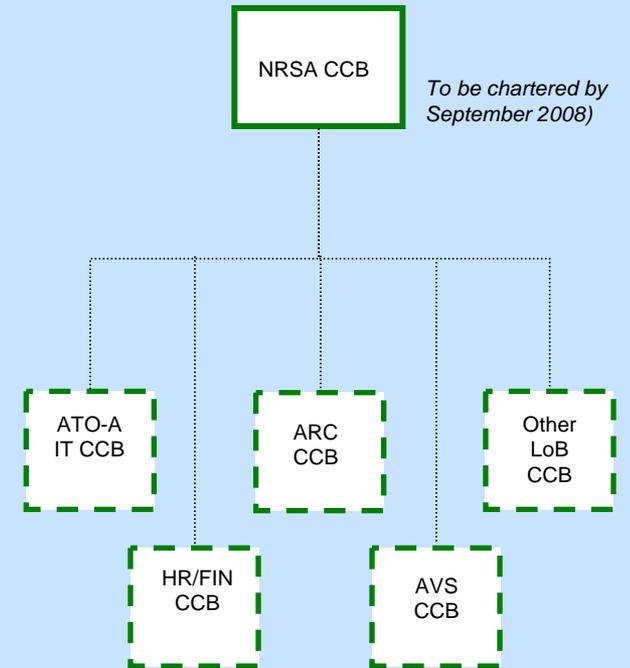
CM Program Drivers: • Acquisition Management System • FAA Order 1800.66 • Enterprise Architecture • FAA iCMM • CM Plans • Charters & Operating Procedures



FAA Configuration Control Board Structure



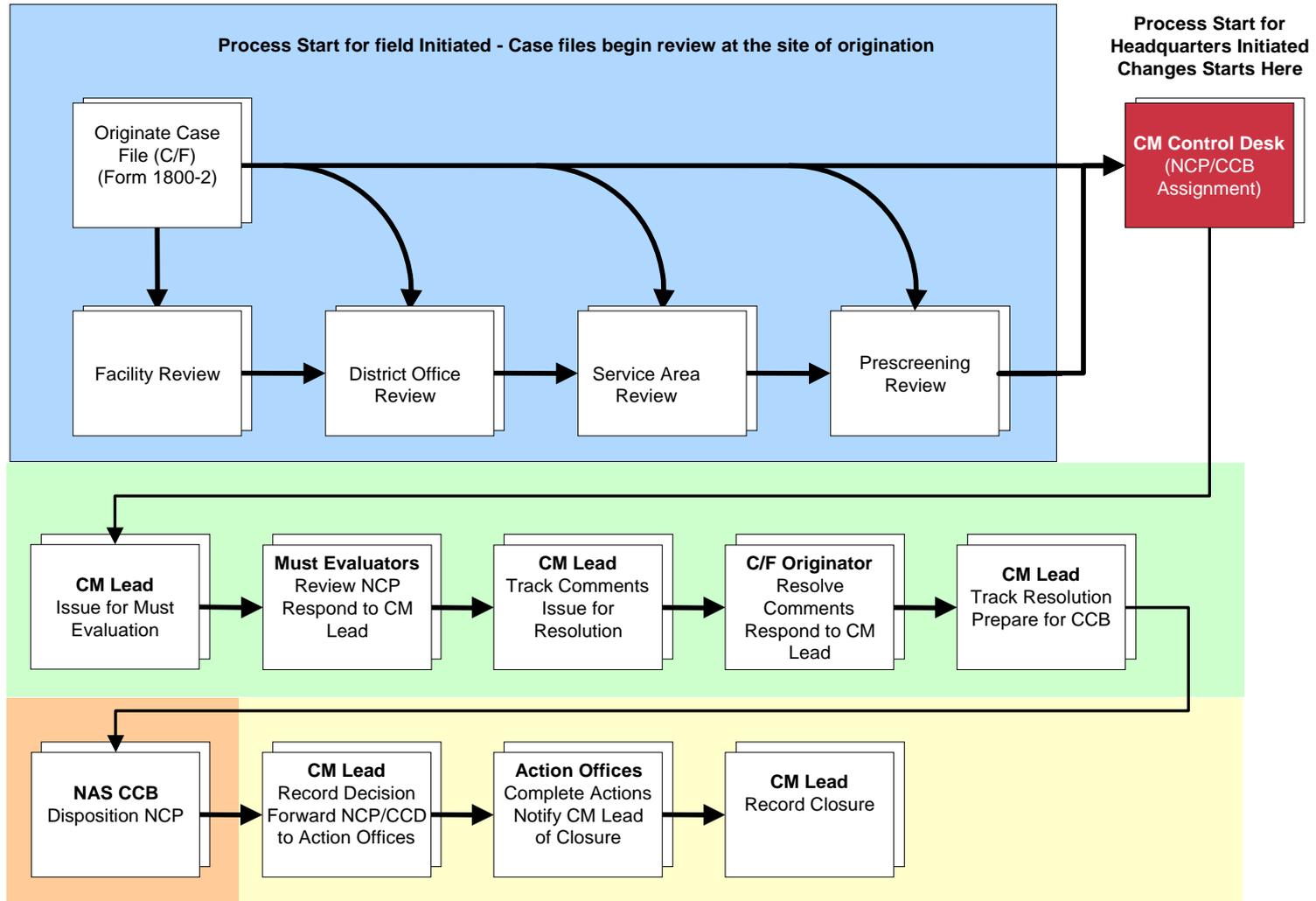
NAS CCB Structure Revised August 10, 2006



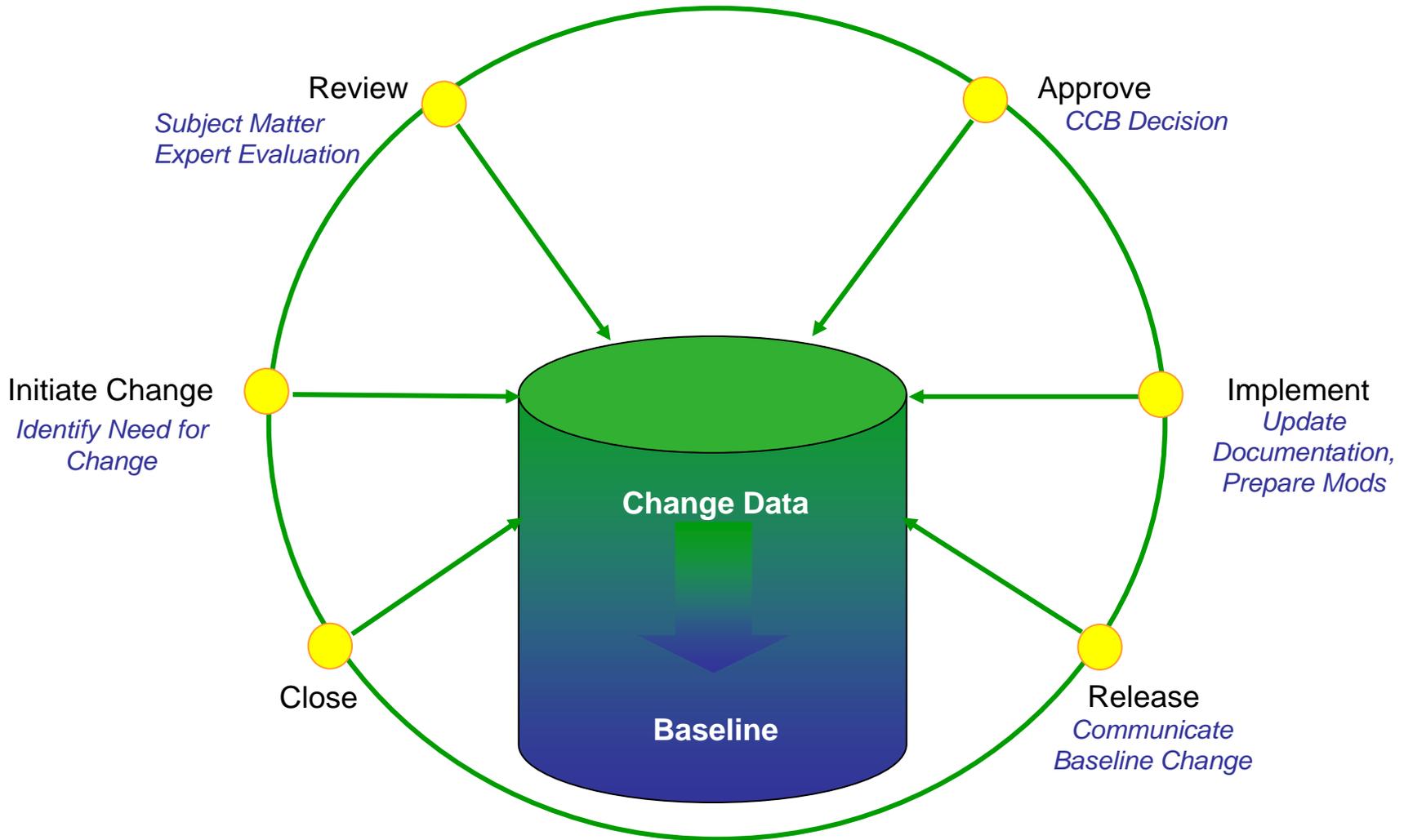
(Potential FAA IT CCB Structure)

DRAFT NAS Regulatory Support and Administrative CCB Structure as of August 2008

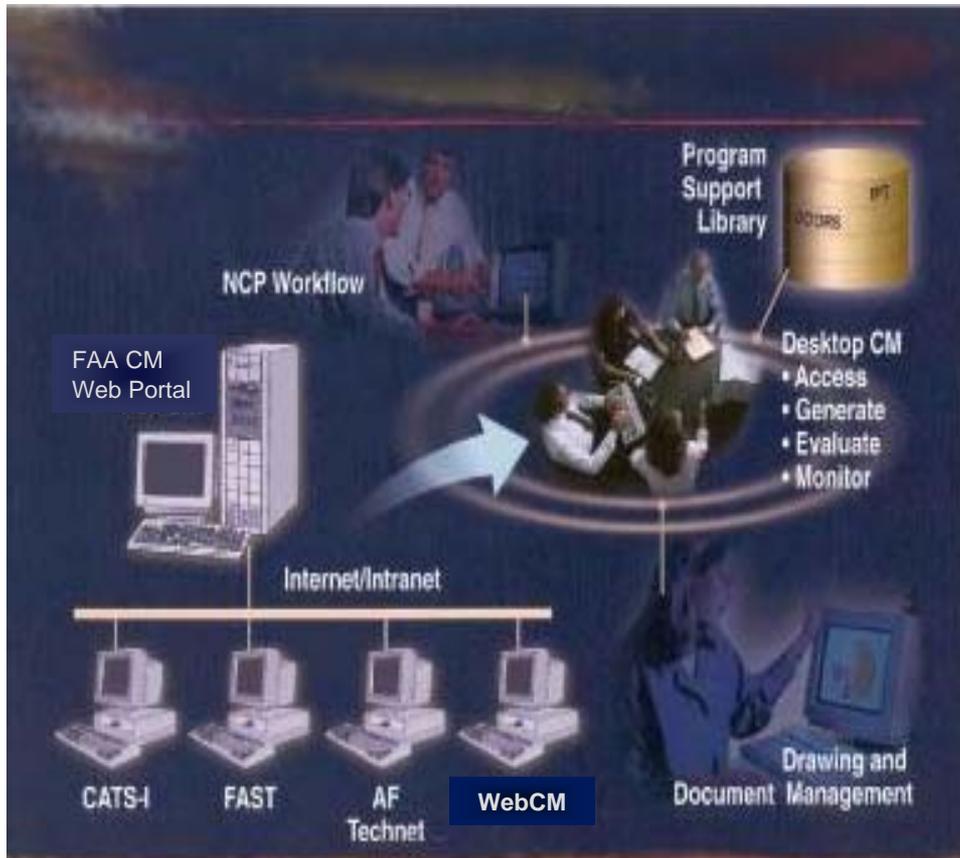
NAS Change Process



Closed Loop Process



CM Automation – Concept of Operations



Core Components

- Case File/NCP/CCD Processing - WebCM
- CM Data Repository & WebDOCCON Replacement
- Virtual Document Control Center & PSLs
- CM Web Portal

Features/Benefits

- Secured, reliable access to CM information
- Reduced redundancy
- More integrated resources
- Gain information management efficiencies
- Union/ISS Certification, Section 508 Compliant
- Web-based application

More accurate and reliable information to support operations and decision-making

WebCM

- **WebCM is the national automated CM support tool**
 - Automates the NAS change process
 - Interfaces with WebDOCCON, where Master Configuration Index resides
- **WebCM is the official vehicle for initiating changes to the NAS**

MCI

- **The Master Configuration Index (MCI) reflects the “as is” detail for the NAS**
- **It provides a snapshot of the current NAS baseline, allowing the FAA to assess progress towards the future NAS**
- **The future NAS is captured in the NAS Enterprise Architecture**
- **The MCI is maintained by the Enterprise CM organization (Documentation Control Center – DCC)**
- **MCI captures data output from the change process:**
 - Configuration items
 - Approved, baseline documents
 - Relationships between CIs, documents, change decisions and change releases

Contacts

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 - Help Desk 1-877-248-HELP (4357)
- **WebDOCCON**
 - Bob Payne, Application Manager (202) 548-5596
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Useful Web Pages

- Agency CM Website: http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/cm/
- Agency CM Policy: http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/cm/cm_documentation/policy_180066/
- FAST Toolset: <http://fast.faa.gov>
- AMS CM Requirements: http://fasteditapp.faa.gov/ams/do_action?do_action=LinkSection&contentUID=4§ionNumber=4.1
- NAS-MD-001: <http://172.27.70.66/md001/mdmenu2.asp>
- CCB Charters: <http://www.faa.gov/cm/charters.htm>
- FAA System Engineering Manual: <http://www.faa.gov/asd/SystemEngineering/index.htm>
- WebCM Portal: <http://webcm.faa.gov>
- WebCM Step-By-Step Instructions: <http://webcm.faa.gov/webCMPortal/index.jsp?zaction=stepByStep>
- WebDOCCON: <http://172.27.70.90/>
- CM Point of Contact List: <http://caeg.faa.gov/Cm/index.cfm?current=10>

Supplemental Information



Definitions

- **Configuration Management and Planning** *(as defined in MIL-HDBK-61)*
 - Management activities including planning for and selecting key actions to implement and measure the effectiveness of configuration identification, control, status accounting and audit, throughout the program lifecycle. Configuration Identification.
- **Activities**
 - Preparing for each life-cycle phase (resources, personnel, tools, facilities, systems compatibility, etc.)
 - Implementing Government CM process
 - Measuring/evaluating Government and vendor CM processes and performance
 - Effecting process improvements
 - Documenting lessons learned
 - Interface management
 - Vendor selection/control: COTS/equipment

Definitions *(continued)*

- **Configuration Identification** *(as defined in MIL-HDBK-61)*
 - (1) The systematic process of selecting the product attributes, organizing associated information about the attributes, and stating the attributes.
 - (2) Unique identifiers for a product and its configuration documents.
 - (3) The configuration management activity that encompasses the selection of CIs; the determination of the types of configuration documentation required for each CI; the issuance of numbers and other identifiers affixed to the CIs and to the technical documentation that defines the CI's configuration; the release of CIs and their associated configuration documentation; and the establishment of configuration baselines for CIs.
- **Activities**
 - Selecting/defining configuration items
 - Configuration item: an aggregate of hardware or software that satisfies an end-use function
 - Generating parts/items identifiers
 - Consistent nomenclature
 - Reflects relative arrangement of parts
 - Generating releases
 - Release: a designating activity that verifies that documents, hardware, drawings, and/or code is complete and suitable for use
 - Providing media identification
 - Establishing baselines
 - Baseline: a collection of formal configuration documentation
 - Typical baselines include: Functional, Allocated, Developmental, and Product Baselines

Definitions *(continued)*

- **Configuration Control** *(as defined in MIL-HDBK-61)*
 - (1) A systematic process that ensures that changes to released configuration documentation are properly identified, documented, evaluated for impact, approved by an appropriate level of authority, incorporated, and verified.
 - (2) The configuration management activity concerning: the systematic proposal, justification, evaluation, coordination, and disposition of proposed changes; and the implementation of all approved and released changes into (a) the applicable configurations of a product, (b) associated product information, and (c) supporting and interfacing products and their associated product information.
- **Activities**
 - Processing changes to baselines/releases
 - Change classification
 - Change approval/disapproval
 - Change prioritization
 - Mechanisms for initiating changes include NAS Change Proposals (NCPs), Engineering Change Proposals (ECPs), Notices of Revision (NORs), variances, etc.
 - Organizing/managing configuration control boards (CCBs)
 - Authority
 - Membership
 - Charter
 - Operating Procedures

Definitions *(continued)*

- **Configuration Status Accounting** *(as defined in MIL-HDBK-61)*
 - The configuration management activity concerning capture and storage of, and access to, configuration information needed to manage products and product information effectively.
- **Activities**
 - Information recording
 - Approved configuration documentation
 - Proposed changes: NAS Change Proposals (NCPs)
 - Deviations
 - Results of configuration audits
 - Status of authorized changes
 - Meeting minutes (CCBs, etc.)
 - Other documents
 - Information maintenance
 - Data dissemination
 - Metrics

Definitions *(continued)*

- **Configuration Audits and Verification**

- A product's requirements have been met through conduct of formal functional and physical configuration audits.
- The product design meeting those requirements are accurately documented before a product configuration is baselined.
- Operational systems are periodically validated to ensure consistency between a product and its current baseline documentation. Verification of the incorporation of modifications is a critical function of this activity. This validation includes verification of facility baselines and conduct of system audits after commissioning.

- **Activities**

- Audit planning
- In-process (internal) audits
- Functional Configuration Audit (FCA): verifies that a configuration item has achieved the requirements specified in its functional and allocated configuration documentation
- Physical Configuration Audit (PCA): verifies the "as-built" configuration of a configuration item against its technical documentation; establishes the configuration item's product baseline
- Re-baselining audits
- Audit reporting

Definitions *(concluded)*

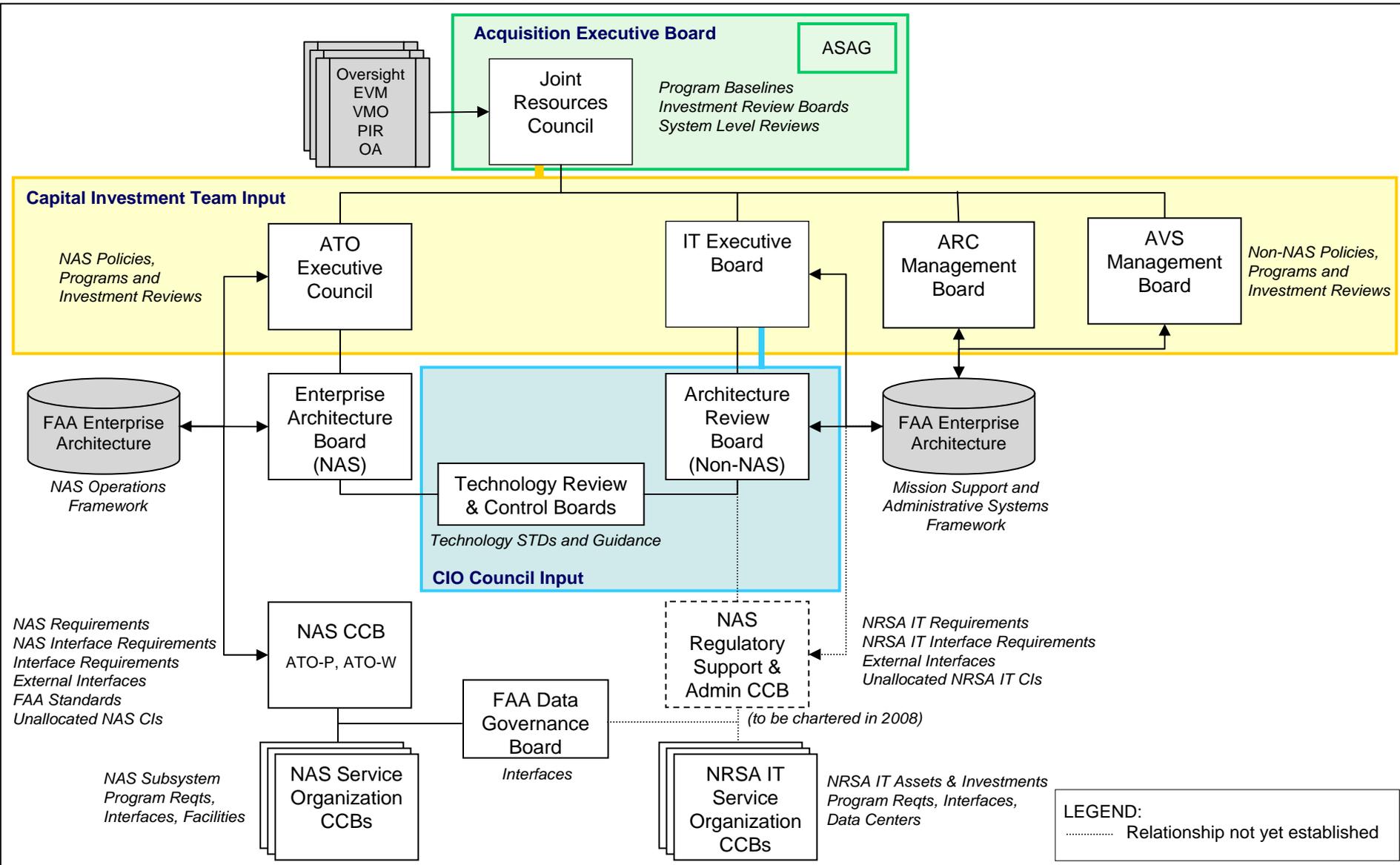
- **Information/Data Management**

- Application of configuration management principles to ensure the integrity of digital representations of product information and other data.
- Management of data relative to all shareable FAA information used to perform the FAA mission. (Reference FAA Order 1375.1, Information/Data Management Policy).

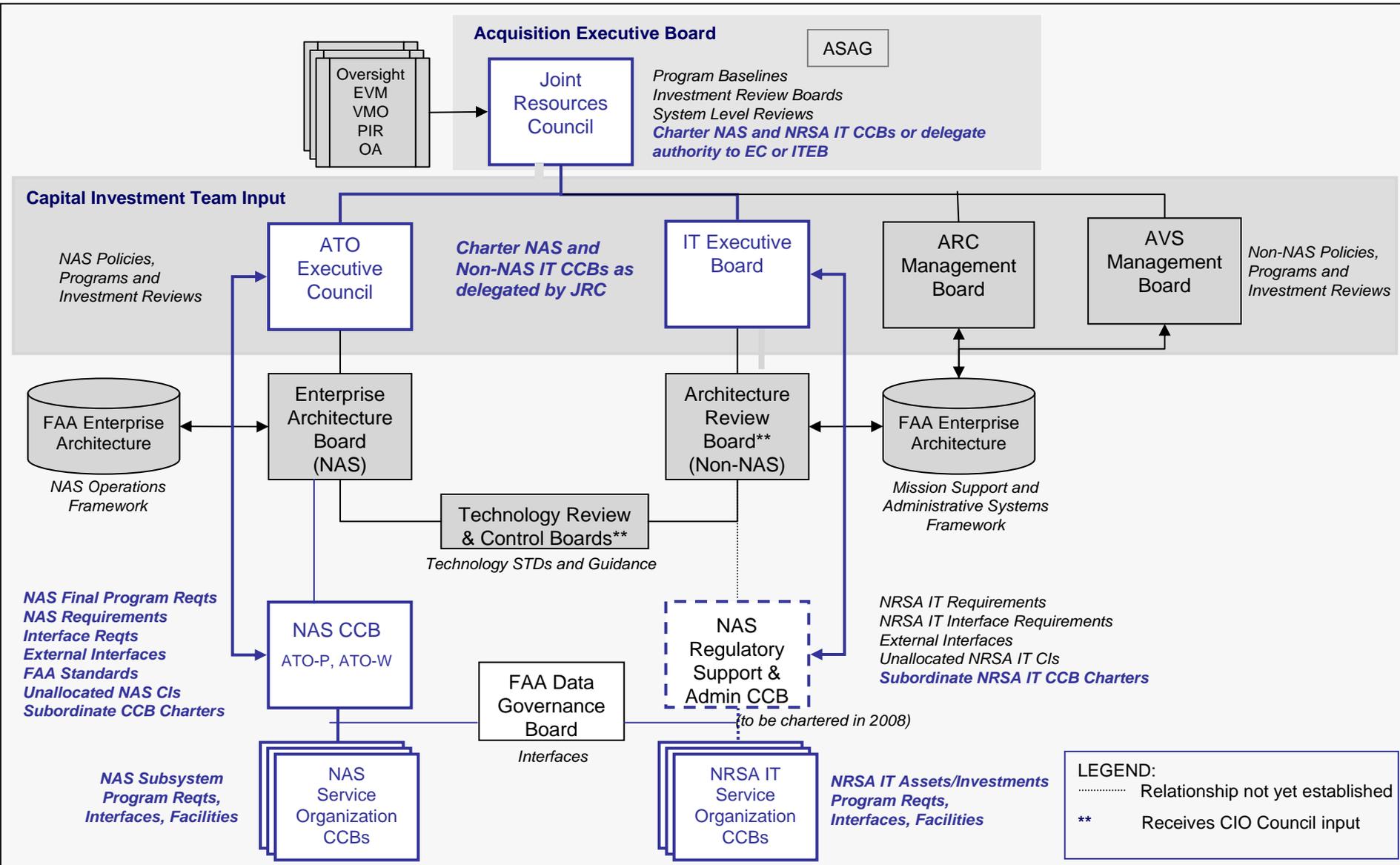
- **Activities**

- Standard data formats
- File identification
- Disks/tapes
 - Identification/labeling
 - Information validation
 - Backups
- Version control
- Data transmittal
- Access control
- Platform control
- Data retention/archival

Agency Governance Structure



FAA Decision Structure Detail for CM



Product Lifecycle Phases and Baselines

