

Tying It Together-- The Enterprise Architecture

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Federal Aviation
Administration



What Is Enterprise Architecture?

- **Enterprise Architecture lays out the “form” of the enterprise**
 - Form must align with the business strategy
- **Similar to how a city planner lays out the form of a city**
 - Form aligns with the development strategy as defined by the civic leaders and community (e.g., towncenters, no sprawl, bike paths, etc.)
- **Output of EA includes artifacts that**
 - Describe the enterprise from various viewpoints
 - Constrain degrees of freedom so implementations align (and stay consistent) with strategic intent of the “management”

Source – MITRE, C Bashioum



Example of EA

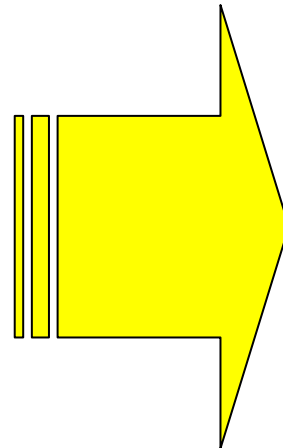
- Reston, VA has an enterprise architecture
 - Form laying out where types of business and residential buildings can be (*zoning*)
 - Design patterns guiding what residences and yards “look like” (*neighborhood covenants*)
 - Rules about bike paths, roads, lighting, etc.
 - Within the above constraints, *building* architects are free to design and builders/engineers are free to implement specific buildings (*system architecture*)



Source – MITRE, C Bashioum

Reston, VA EA vs. FAA EA

- *Zoning*
- *Neighborhood covenants*
- *Infrastructure Rules*
- *Building Architecture*

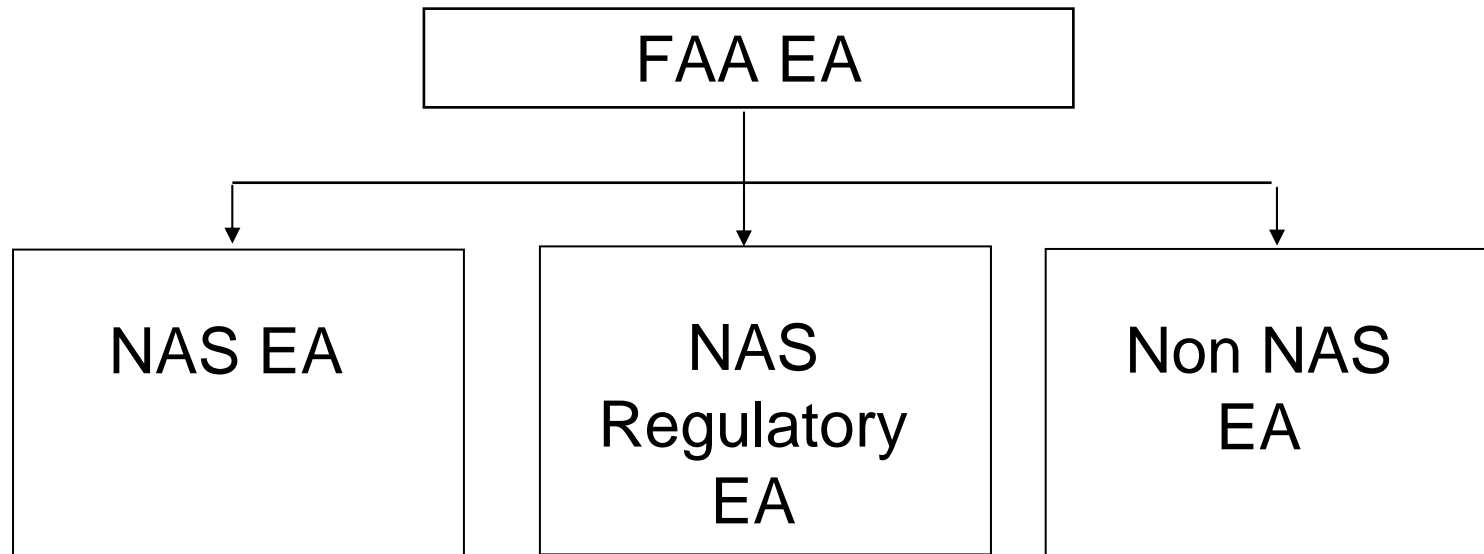


- *Governance*
- *Domain Specific COI's (e.g. CNS)*
- *Architecture Framework*
- *System Architecture*



Source – MITRE, C Bashioum

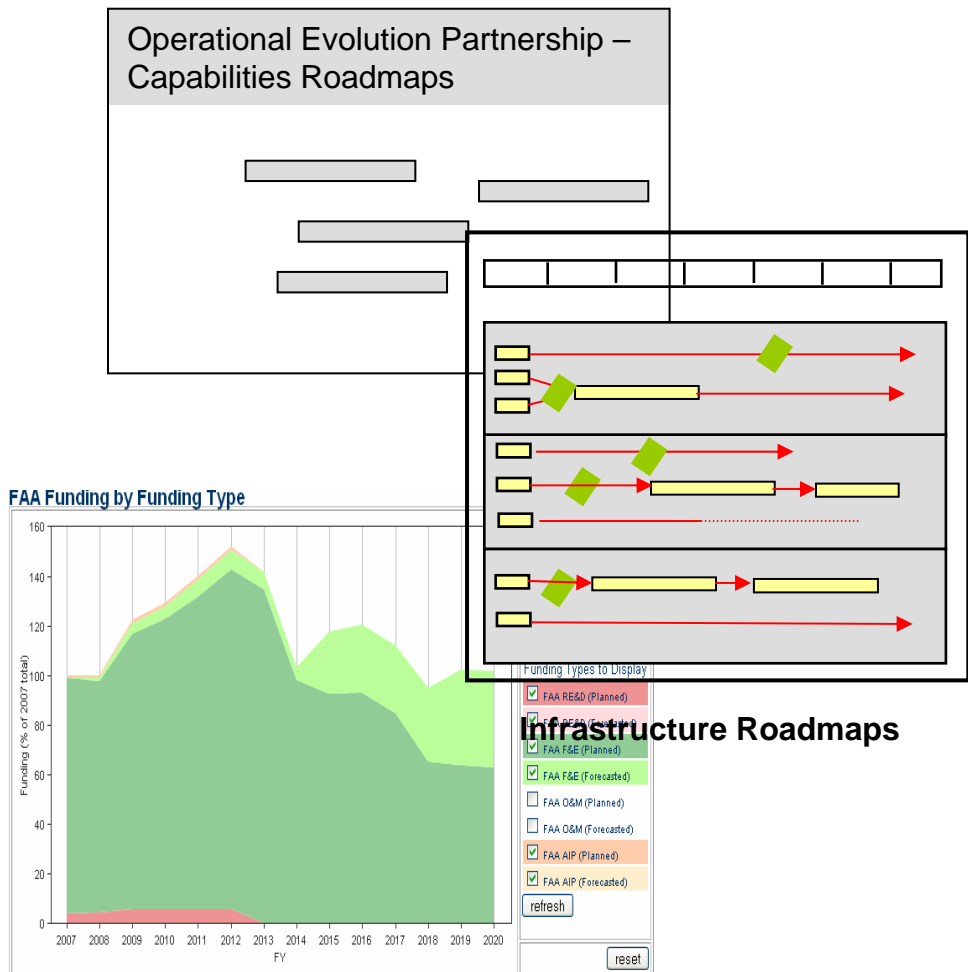
FAA Enterprise Architecture Construct



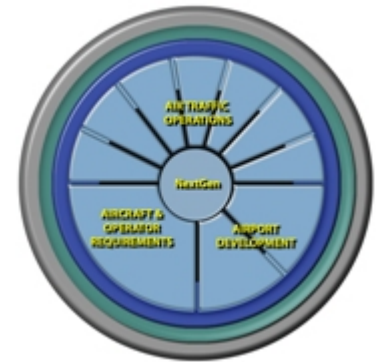
- FAA Enterprise Architecture (EA) has 3 primary domains
 - NAS - Activities that support Operational Air Traffic Services
 - Regulatory - Activities that support the FAA Mission (system safety, environment, airport grant, etc.)
 - Administrative - Activities that support operation of the FAA
- FAA CIO has responsibility for entire FAA EA - Delegates responsibility to develop and implement NAS EA to ATO COO

NAS Enterprise Architecture

- Describe how NAS will evolve to deliver NextGen
- High level artifacts
 - Service Roadmaps: identify the evolution of air traffic services. It drives technology requirements.
 - Infrastructure Roadmaps: identify dependencies (e.g., technologies and schedules)
 - Programmatic: budget

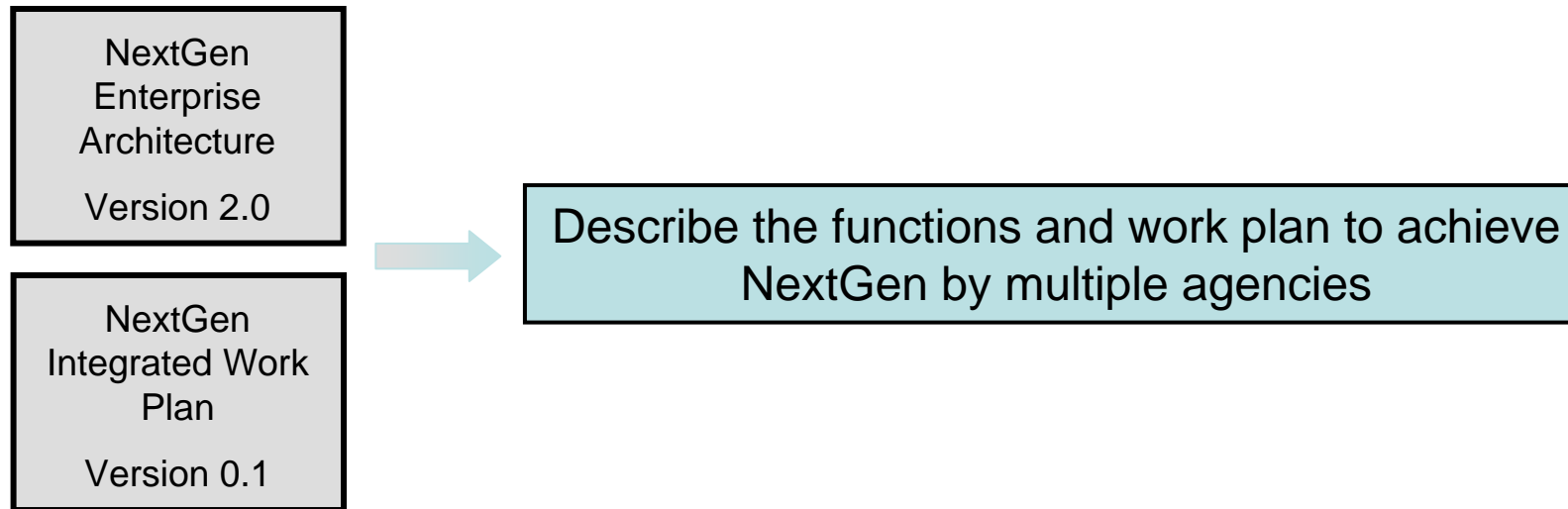
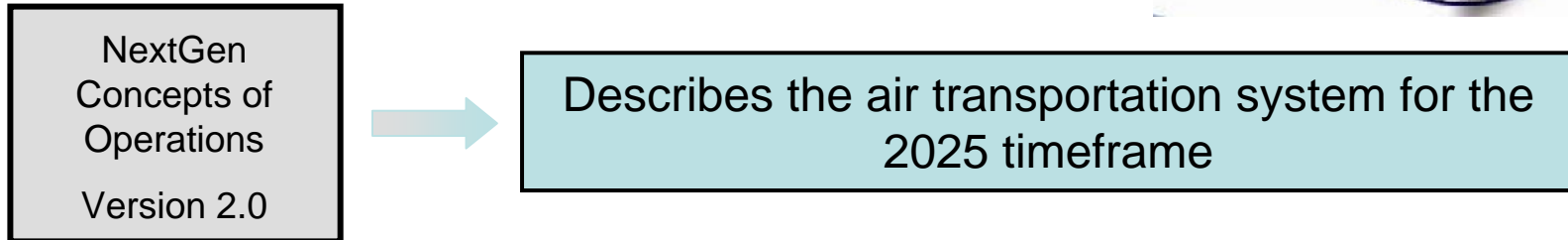


Operational Evolution Partnership

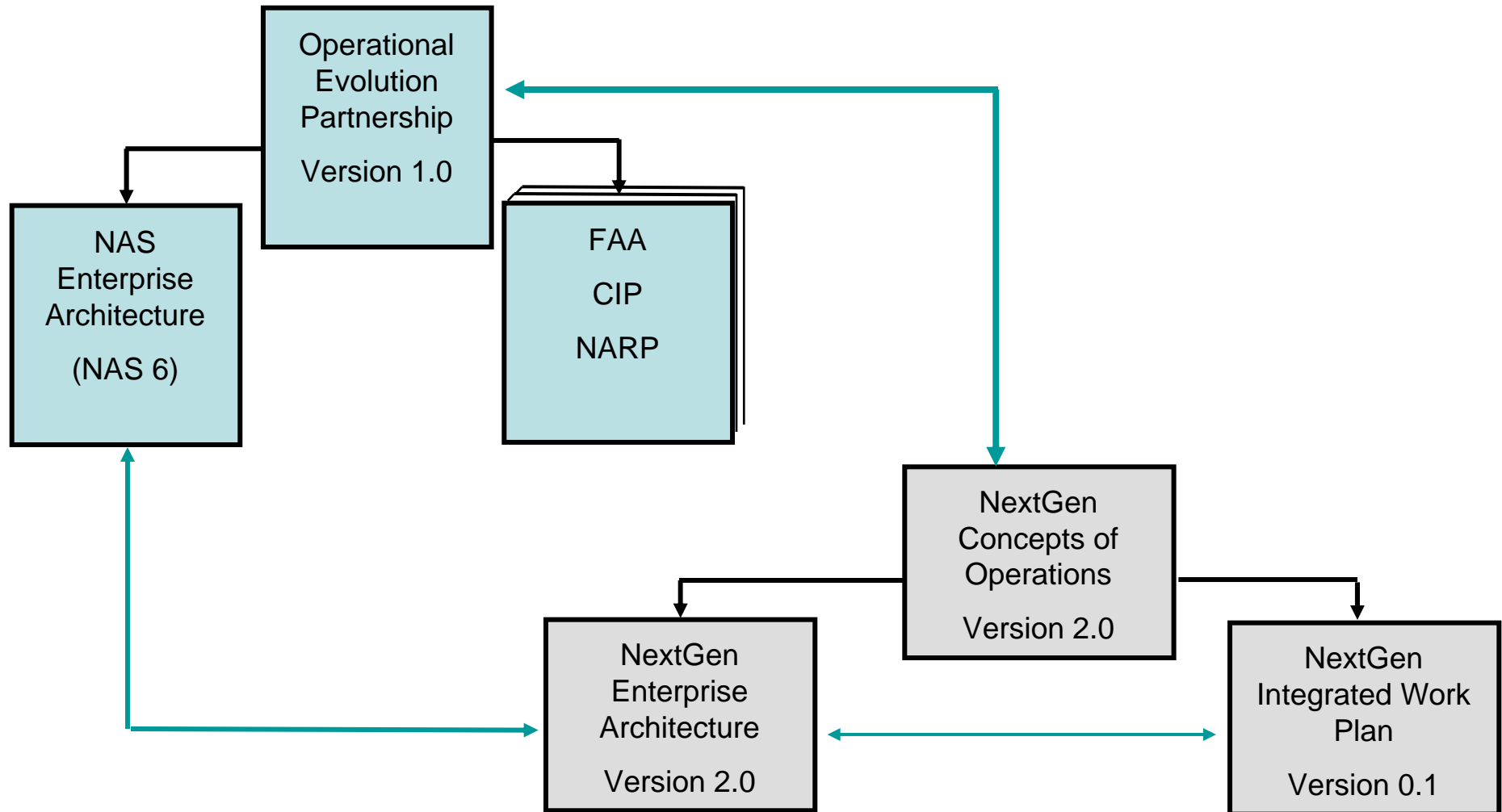


- **The Operational Evolution Partnership (OEP), provides the FAA’s integrated “big picture” perspective of how we get to NextGen.**
- **OEP V1.0 took guidance from JPDO (i.e. Ops Concepts) and decomposed this into a series of manageable solution sets and capabilities.**
- **OEP V2.0 will further refine the solution sets**

JPDO Role and Products



Relationship of products



For More Information:

FAA NAS Enterprise Architecture Website:

www.nas-architecture.faa.gov

FAA Operational Evolution Partnership site:

www.faa.gov/about/office%5Forg/headquarters%5Foffices/ato/publications/oep/

Joint Planning and Development Office site:

<http://www.jpdo.gov/>



BACKUP



Role of Architecture

Because It's the Law!

- Clinger-Cohen Act **says all Departments must have an architecture**
- Office of Management and Budget (OMB) Circular A-130 **says**
 - you must use a Framework to guide your description of your architecture
 - you must include specific items in your architecture description
- OMB Criteria: **a self-assessment**
- OMB Circular A-11 **says your capital planning must be related to your architecture**
- Government Accountability Office (GAO) **will get you (withhold \$\$) if you don't have an adequate architecture**
- Some agency policies **require architecture products**

Because It's the Right Thing to Do!

- Communication: **Provides a clear documentation of your enterprise so that it can be understood by all concerned**
- Analysis of problem areas: **Helps you uncover and flag problems before it's too late**
- Budget: **Helps you make reasonable investment decisions**
- Efficiency: **Helps you ensure that your business processes are working optimally**
- Use of Technology: **Helps you ensure that your systems are actually the right ones**
- Training: **Helps indoctrinate new players**



FAA Roadmaps

- **A realistic blueprint of the FAA and customer investment in the NAS.**
- **In particular, it provides the integrated decisions and synchronized investments needed to deliver NextGen.**
 - Describes changes in NAS operations
 - Describes the technology/infrastructure to support the changes
 - Projects the agency and customer investments in new technologies, training, procedures
 - Identifies transitions from now to the mid-term and beyond
 - Constrained in transition by current FAA and customer infrastructure
 - Constrained by the agency budget
 - Constrained by projection of user equipage



Role of Architecture

Architecture: The fundamental organization of a system embodied in its components, their relationships to each other and to the environment and the principles guiding its design and evolution. (*IEEE1471-2000*)

An architecture specification should be well-formed, complete, and consistent enough to allow an engineer to select and describe an underlying implementation and to create a specification for production of the system.

