

PRIIA 305 Technical Subcommittee

Systems Engineering Processes for Passenger Equipment Acquisition and Life Cycle Support

Presented at:
NGEC Executive Board Meeting
Washington, DC

February 15, 2011



The Need

- NGEC charged with establishing a nationwide passenger equipment pool
- Requirements and Specifications developed
- Further documentation will be developed to support equipment acquisition and maintenance
- Systems Engineering processes needed to assure the documentation meets stakeholder needs and is kept current
 - Conventionally, these processes are considered on a individual procurement basis
 - With PRIIA, a single specification is intended to apply to and evolve through multiple procurements
 - Integrated approach for controlling evolving requirements, specifications, and other documents, in a PRIIA relevant manner, becomes critical
- Benefits:
 - Common approach to equipment acquisition
 - Adoption of industry lessons-learned to avoid known pitfalls
 - Improved ability to promote standardization

Goals

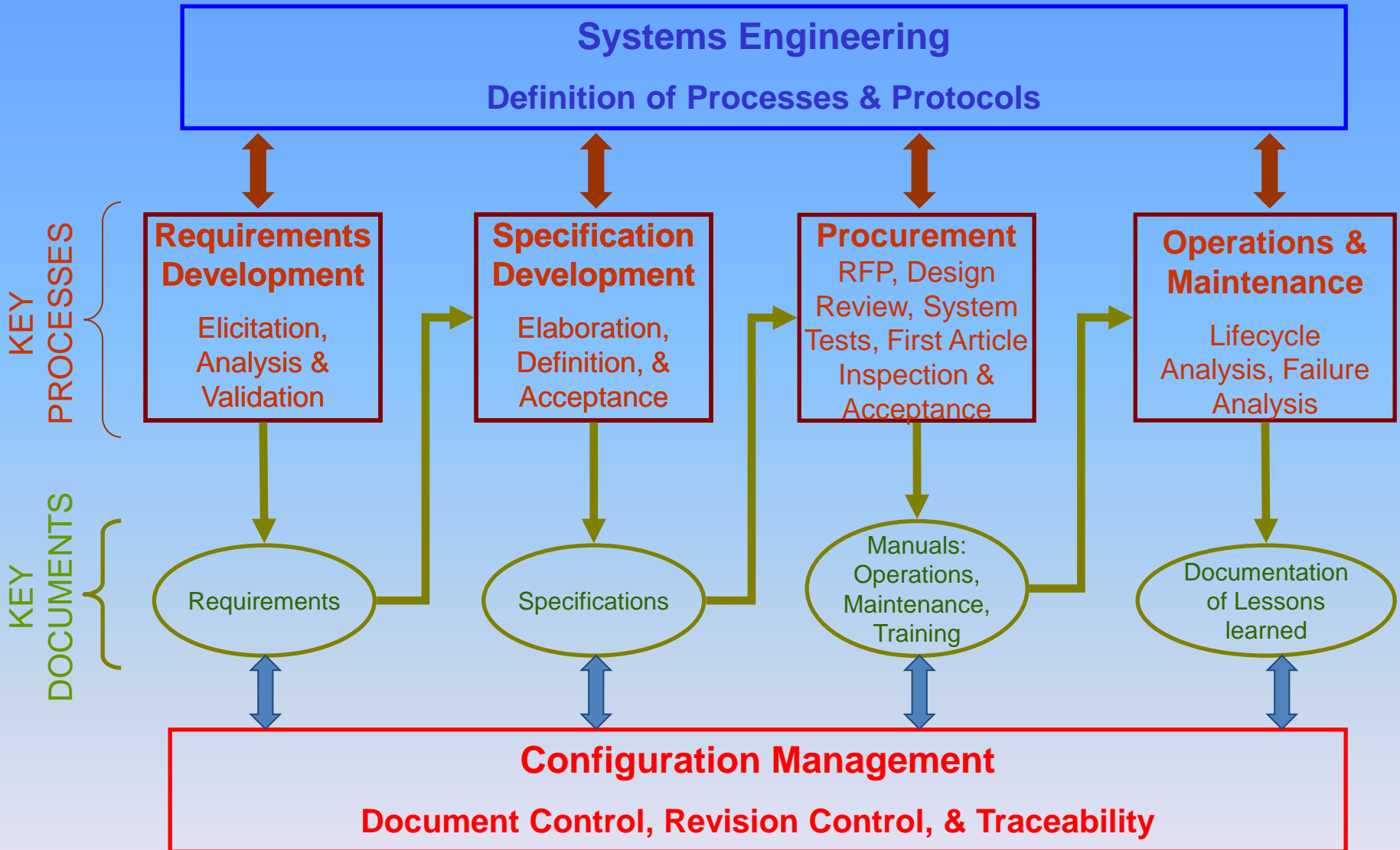
- Long Term:
 - Develop, implement & maintain a Systems Engineering process that meets the needs of the Corridor Equipment Pool and the NGEC Stakeholders
- Immediate Term:
 - Assemble working group to define desired documents and procedures
 - Estimate level of effort, budget and schedule needed to develop documents and procedures
 - Estimate annual level of effort and budget to support NGEC Systems Engineering functions
 - Recommend a NGEC Systems Engineering organization and responsibilities of stakeholders and participants
 - Secure Funding and support for the Systems Engineering Process

Work Plan, Schedule & Team

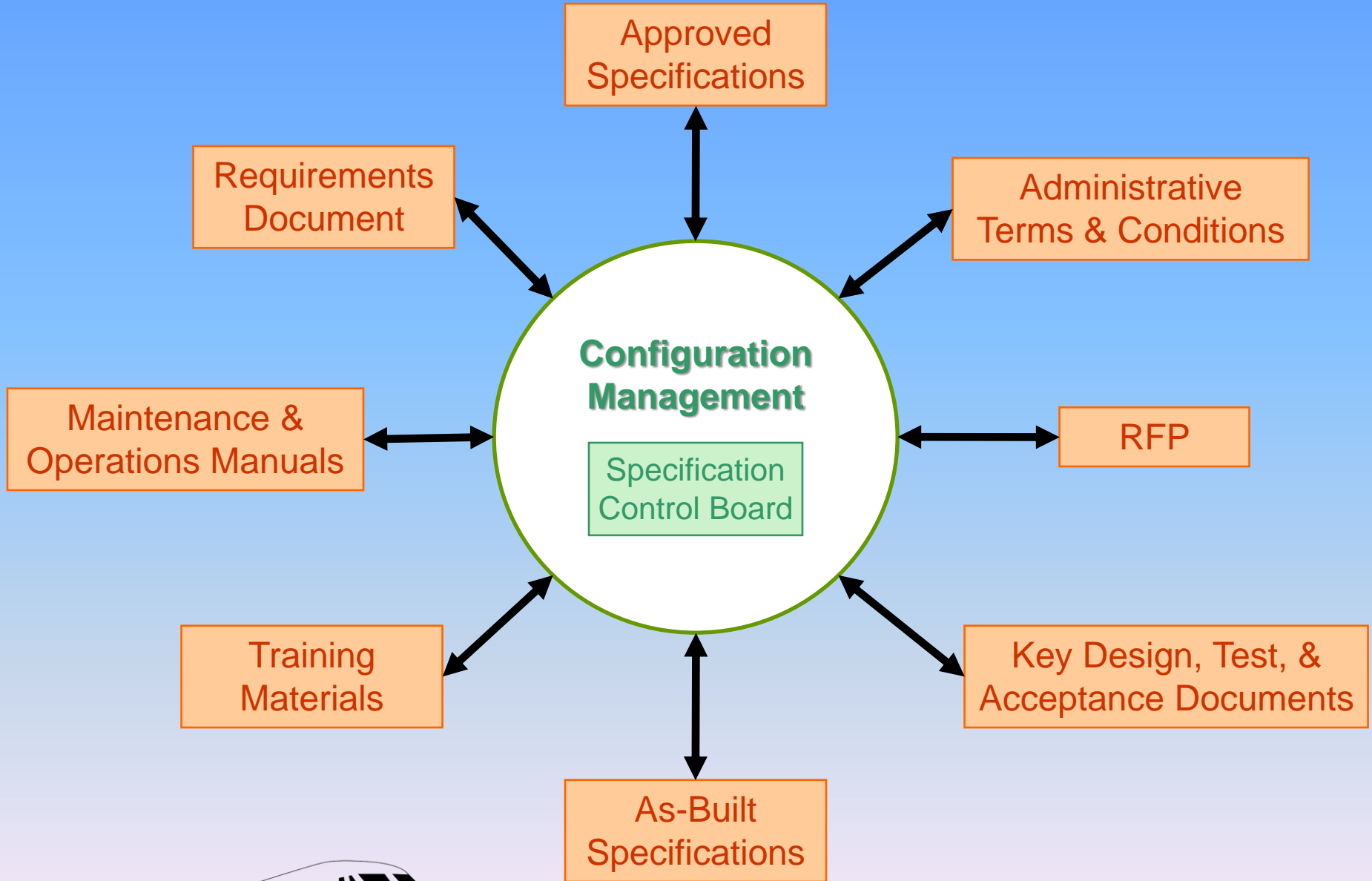
- Activities of the core group have been initiated
 - FRA lead, Amtrak, NY DOT, and CalTrans act as advisors
 - 31 industry participants, including APTA
- Periodic conference calls to achieve short term goals (through February)
 - December 21, 2010
 - January 4, 2011
 - January 13, 2011
 - February 7, 2011
- Key Accomplishments
 - Development of Preliminary Framework
 - Identification of key concepts, processes, documents, and management needs
 - Identification of resource documents for various elements
- Simplified version of Initial concept presented today



Key Processes & Key Documents - Simplified



Documents Handled Through Configuration Management



Work scope

	Key Documents/Processes	Ownership	Availability
Requirements	Methodology/standardized process for elicitation of stakeholder needs	TBD	TBD
	Methodology/standardized process for validation/verification of stakeholder needs	TBD	TBD
	Methodology/standardized process for developing specification acceptance criteria	TBD	TBD
	Methodology/standardized process for revision of requirements documents based on evolving stakeholder needs	TBD	To be developed as part of independent CONFIGURATION MANAGEMENT process
	Methodology/standardized process for revision of specification acceptance criteria based on evolving stakeholder needs	TBD	To be developed as part of independent CONFIGURATION MANAGEMENT process
Specifications	Methodology/standardized process for specification development	TBD	Currently managed by NGEN using subject matter-knowledgeable technical subgroups
	Creation of "Specification Control Board"	TBD	TBD. SCB will promote standardization and develop process for accommodating the introduction of new technology. SCB will also define performance parameters to be monitored for LCC (see Operations & Maintenance).
	Methodology/process for revision of specifications based on evolving stakeholder needs	TBD	To be developed as part of independent CONFIGURATION MANAGEMENT process
	Methodology/process for revision of specifications based on as-built equipment	TBD	To be developed as part of independent CONFIGURATION MANAGEMENT process
Procurement	Development of RFP	TBD	APTA LRV guidance can be adapted for PRIIA
	Definition of Procurement Process	TBD	Existing FTA requirements for negotiated procurement
	Procurement documentation:		
	Program Management Plan	TBD	Existing FTA requirements
	Design Review	TBD	APTA LRV guidance can be adapted for PRIIA
	Q.A. Process	TBD	APTA LRV guidance can be adapted for PRIIA
	FAI Process	TBD	APTA LRV guidance can be adapted for PRIIA
	Compliance Testing	TBD	APTA LRV guidance can be adapted for PRIIA
	Manuals	TBD	APTA LRV guidance can be adapted for PRIIA
	Training	TBD	APTA LRV guidance can be adapted for PRIIA
	Acceptance/Commissioning	TBD	APTA LRV guidance can be adapted for PRIIA
	Safety Certification	TBD	Existing FTA requirements; local PUCs
	DBE/MBE goals	TBD	APTA LRV guidance can be adapted for PRIIA
	Buy America requirements	TBD	APTA LRV guidance can be adapted for PRIIA
Methodology/process for revision of standardized procurement documentation based on lessons learned	TBD	To be developed as part of independent CONFIGURATION MANAGEMENT process	
Operations & Maintenance*	Methodology/process for development of standardized maintenance plan(s)	TBD	TBD
	Methodology/process for collection of maintenance information to inform revisions to requirements, specifications, RFPs	TBD	TBD
	Methodology/process for collection of service experience to inform revisions to requirements, specifications, RFPs	TBD	TBD
	Recommended practice for lifecycle cost analysis	TBD	TBD
	Recommended practice for failure analysis	TBD	TBD



* Industry partners advise that this may be the most challenging aspect of this effort due to the timescales involved.

Ownership

- Key Ownership Questions:
 - Who owns the processes?
 - NGEC, Amtrak, States/AASHTO, other entities, ?
 - Who owns the documents?
 - NGEC, AASHTO, ?
 - Who owns the standards?
 - NGEC, APTA, AASHTO, ?

Level of effort required/anticipated

- Develop preliminary framework for process
 - 2-3 persons
 - 2-3 months
 - Full time
- Work through initial PRIIA procurement (CalTrans/Amtrak bi-levels)
 - 2-3 persons
 - 18 months
 - 20% of time (1 day/week)
- Revise and finalize documents/processes
 - 2-3 persons
 - 2-3 months
 - Full time
- Overall, a 2-year effort

Next Steps

- Executive Board approval of scope & effort
- Continuation of effort by the Technical Working Group to develop the frame-work, identify source documents, and adaptation, appropriate to PRIIA
- Co-ordination with the first procurement effort
- Preliminary study and review of incorporating the 'maintenance' element into the Systems Engineering Process