Federal Aviation Administration

Research to Ops

Process Overview

Presented to: **New England Aviation Wx Conf.**

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Outline

- What does “operational” mean?
- What is Research-to-Operations (RTO)?
- Why is an RTO process necessary?
- RTO Challenges
- What’s coming out of the RTO pipeline?

What Does “Operational” Mean?

- **A sustainable solution satisfying a user’s mission needs and requirements[1], produced as required[2], obtained through appropriate communications channels from an appropriate source, and displayed or integrated in an appropriate manner.**

[1] Satisfying user needs and requirements includes human performance factors, safety, and training.

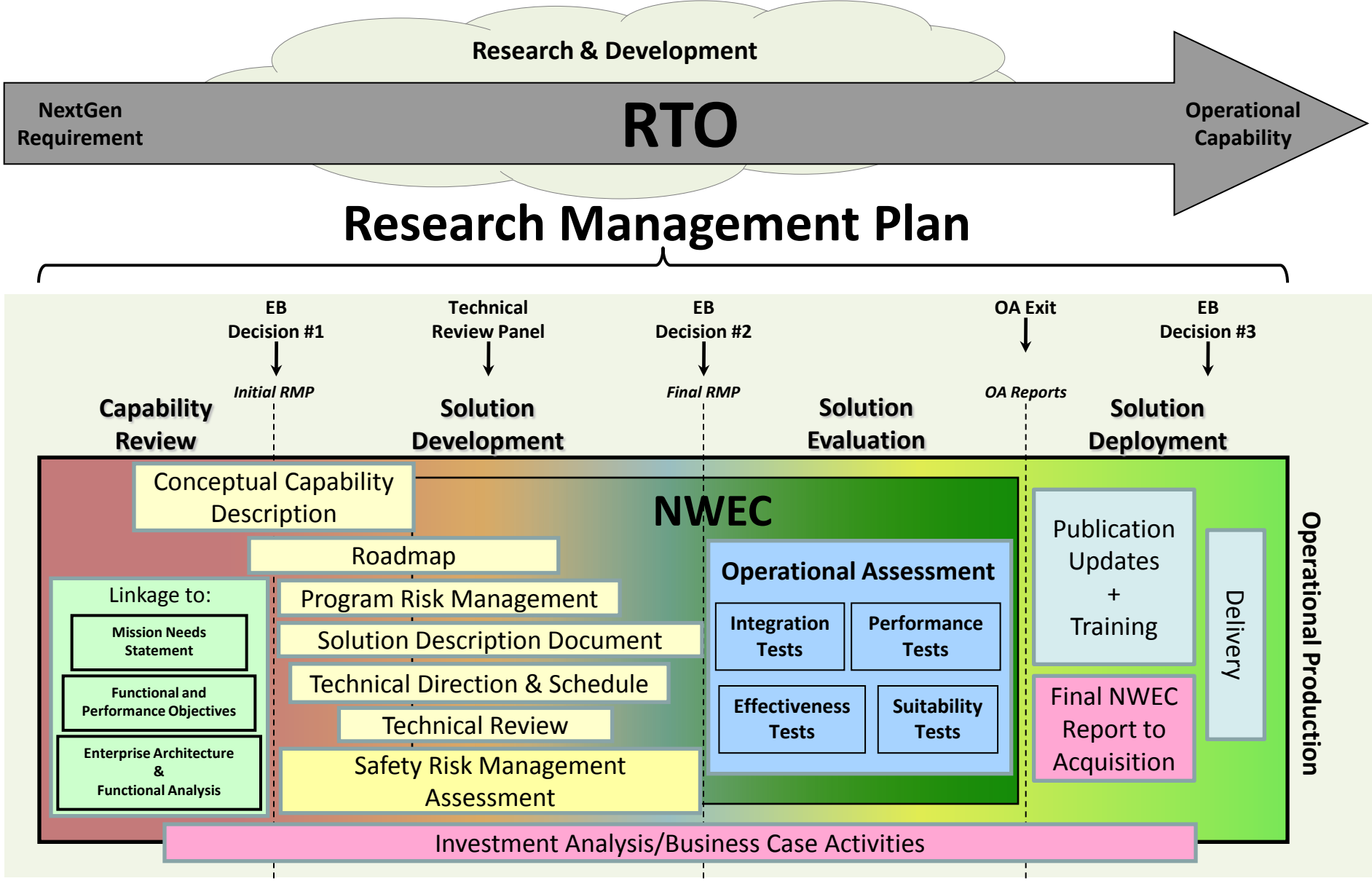
[2] Produced as required includes maintenance and logistics support, reliability, and security to meet functional and performance requirements.

What is RTO?

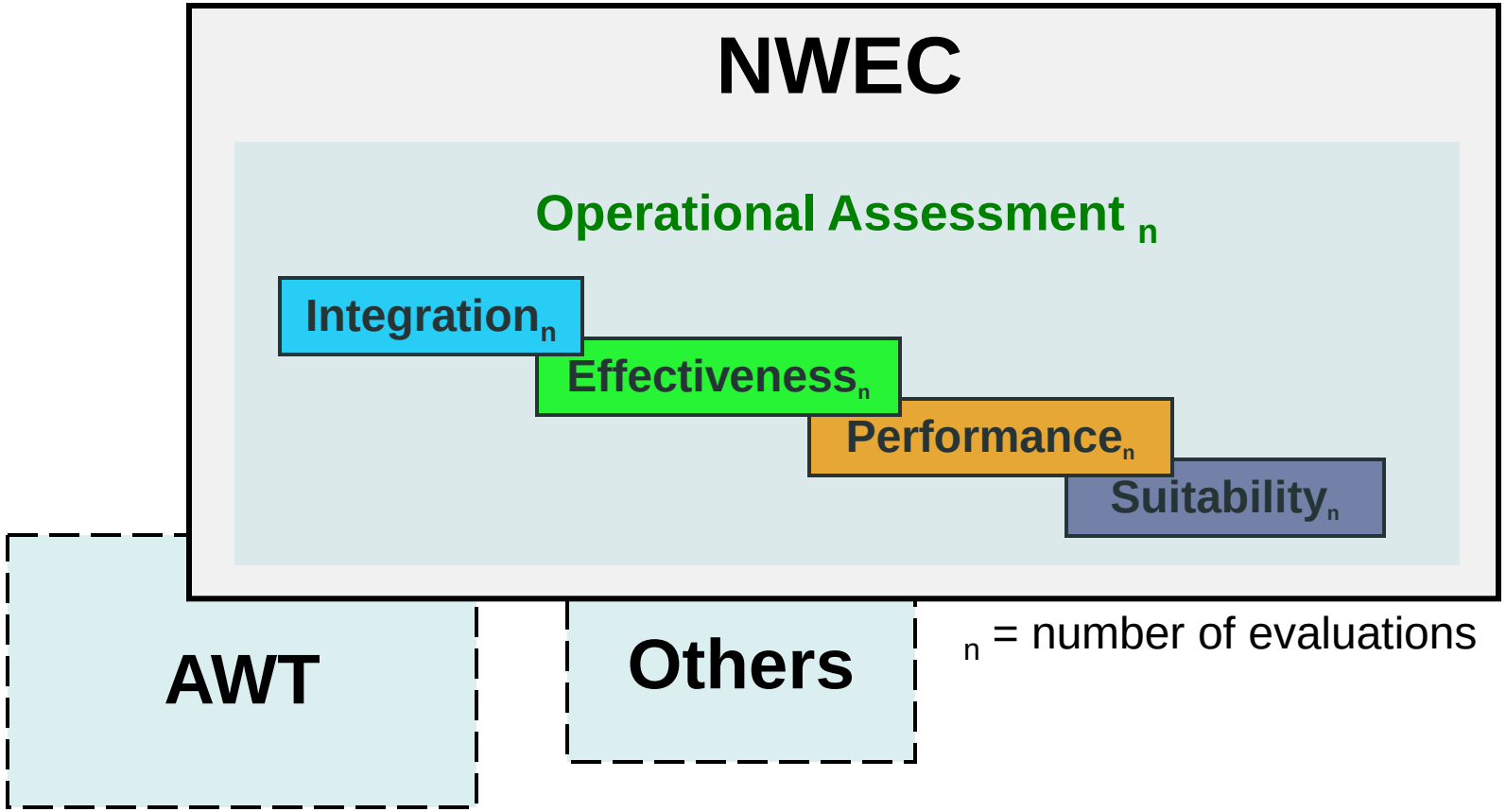
- **A process for managing weather research that facilitates incremental solution delivery to the NAS**
  - Establishes a programmatic pathway that is agreed upon up front by solution users, stakeholders, producers and the R&D community
  - Identifies supporting resource needs and infrastructure so implementation happens without re-engineering/reprogramming
  - Facilitates management involvement at each stage of a solution's development so policy and resource issues are addressed
  - Ensures FAA's Safety Management System assesses and mitigates risks associated with each proposed solution
  - Provides mechanisms for determining the "goodness" of a solution
  - Creates programmatic artifacts needed to support AMS investment decisions

Why RTO?

- R&D pushes technical boundaries and explores new scientific approaches but needs a “nudge” to stop at critical points to deliver an operationally-suitable solution
- Visible, incremental improvement in NAS safety and/or efficiency from the use of AWRP solutions needed to create user “pull”
- The NAS is complex—even a simple change requires massive coordination to account for resource tails, training, infrastructure, communications, safety, security, etc.
- Safety is paramount and any change represents inherent risk. New capabilities introduced conservatively will use RTO to assure operational suitability, maintainability and safety
- RTO provides management focus on R&D deliverables to facilitate more effective and efficient development, evaluation and delivery


Research & Development
NextGen Requirement
RTO
Operational Capability
Research Management Plan
EB Decision #1
Technical Review Panel
EB Decision #2
OA Exit
EB Decision #3
Initial RMP
Final RMP
OA Reports
Capability Review
Solution Development
Solution Evaluation
Solution Deployment
Conceptual Capability Description
Roadmap
Program Risk Management
Solution Description Document
Technical Direction & Schedule
Technical Review
Safety Risk Management Assessment
Linkage to:
Mission Needs Statement
Functional and Performance Objectives
Enterprise Architecture & Functional Analysis
NWEC
Operational Assessment
Integration Tests
Performance Tests
Effectiveness Tests
Suitability Tests
Publication Updates + Training
Final NWEC Report to Acquisition
Delivery
Operational Production
Investment Analysis/Business Case Activities

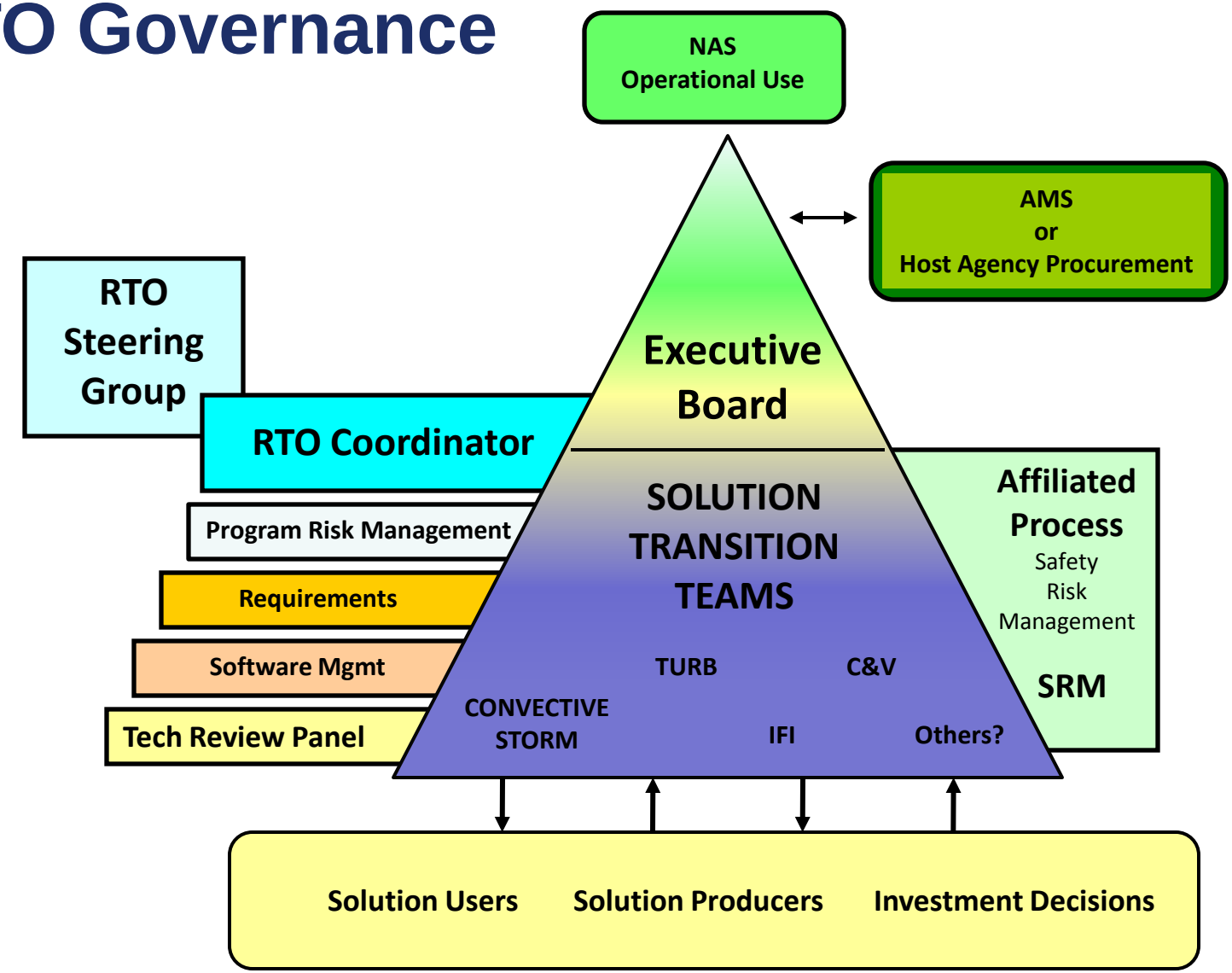
NWEC Operational Assessment Activities



OA Completion

- **Results produce artifacts for technical/performance reporting to the AMS and user agencies**
- **Successful completion validates that a proposed solution meets established performance criteria and is operationally suitable/sustainable**
- **Evaluation reports are used by the RTO Executive Board to support approval for operational deployment within the NAS**

RTO Governance



RTO Challenges

- **Replacing “legacy” products which will likely under-perform new capabilities**
  - Regulatory processes lag behind capabilities
  - Humans have a vested interest in status quo
  - Performance is often hard to define
- **RTO end point; at the delivery of bits to the 4D cube but what about translation and integration issues?**
- **QA tools needed to define “better” in operationally-relevant terms**

RTO Pipeline

- **FIP Severity**
  - Awaiting final SRMD signatures
  - Likely complete by this summer
- **GTG-3**
  - SFC to 60K including MW
  - Some delay due to WRF-RR implementation
- **CoSPA 1.0 and LAMP-CCFP Hybrid Demos**
  - June-September this year
- **NCV working toward late 2011**

QUESTIONS?