



Federal Aviation
Administration

NextGen

Next Generation Air Transportation System



NextGen Weather - An FAA Overview

Presented by: Mary M. Cairns

NextGen Reduce Weather Impact Solution
Set Coordinator

Date: July 21, 2010



NextGen is More than FAA

Congress:

NextGen is

“a systems engineering, management, and regulatory challenge as complex as any the nation has ever faced.”

- Multi-agency partnership
- FAA has the implementation lead
- For weather, working with DOC, DoD, industry & academia



NextGen: Improving Service Delivery

Today's NAS

Ground-based Navigation
and Surveillance



Air Traffic Control Communications
By Voice



Disconnected Information
Systems



Air Traffic
"Control"



Fragmented Weather
Forecasting



Airport Operations Limited By
Visibility Conditions



Forensic Safety
Systems



NextGen

Satellite-based Navigation and
Surveillance

Clearance Trajectories and
Routine Information
Sent Digitally

Information More Readily
Accessible

Air Traffic
"Management"

Forecasts Embedded
into Decisions

Operations Continue Into
Lower Visibility Conditions

Prognostic Safety
Systems

“Solution Sets” & NextGen Programs

Solution Set Portfolios

- **Initiate Trajectory Based Operations**
- **Increase Flexibility in the Terminal Environment**
- **Increase Arrivals/Departures at High Density Airports**
- **Improve Collaborative ATM**
- **Reduce Weather Impact (RWI)**
- **Increase Safety, Security, and Environmental Performance**
- **Transform Facilities**

Transformational Programs

- **Automatic Dependent Surveillance – Broadcast (ADS-B)**
- **Collaborative Air Traffic Management Technologies (CATM-T)**
- **System-Wide Information Management (SWIM)**
- **Data Communications (Data Comm)**
- **NAS Voice System (NVS)**
- **NextGen Network-Enabled Weather (NNEW)**

Solution Sets provide portfolios of NextGen capabilities...



Solution Set Managers Team

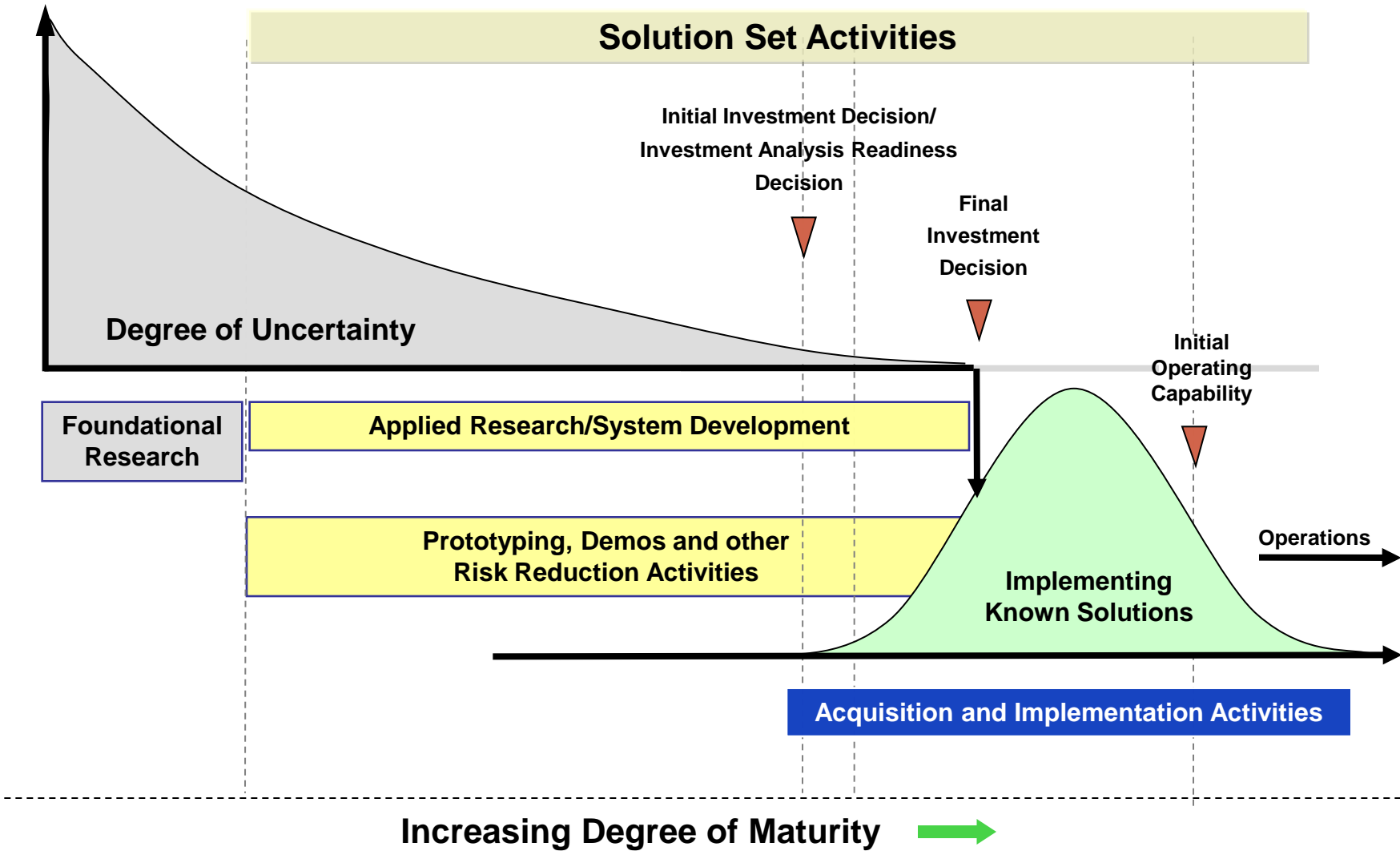
Roles and Responsibilities

Solution Set Managers Team (AJP-31)

- Develop NextGen Portfolio Work Plan
- Develop NextGen Portfolio Performance Report (Technical, and Capability Level)
- Coordination of Project Level Agreements (PLA) (Technical Content)
- Coordination of Resource Planning Documents (RPDs) (Technical Content)
- Support NAS Engineering Architecture Roadmap Update Activities
- Lead NextGen Budget Planning and Optimization
- Participate on Working Groups and Special Committees
 - *FAA/NASA Research Technology Transition Teams (RTT's)*
 - *JPDO Weather Working Group*
 - *ICAO Working Group*
- Provide information to, e.g., OMB, GAO, IG
- Outreach activities (i.e., REDAC, RTCA, Technical Women's Organization, etc.)



NextGen Integration and Implementation Spans the Full Life Cycle



NextGen Weather

The Challenge

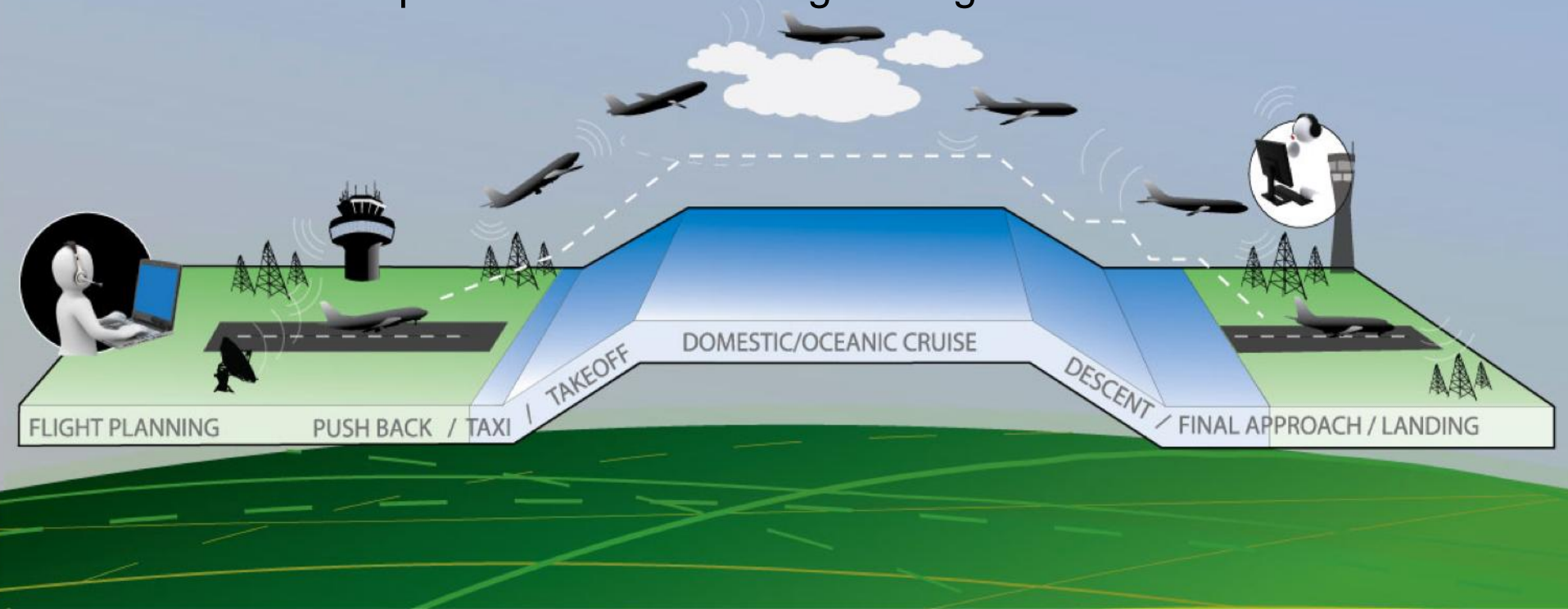


- **Weather accounts for:**
 - 70% of delays*
 - 21% of accidents**
 - **Demand exceeds capacity in weather**
 - **Weather information is not well integrated into NAS operational decision making**
 - Lack of common weather information decision makers
 - Inconsistent and efficient access and formats for weather data
 - Insufficient accuracy and resolution of weather information
 - Weather information not currently usable by decision support tools
 - **Support transition from legacy systems to NextGen**
- *OpsNet 2007
 - **AIA data (1994-2003)

NextGen: Improvements in All Phases of Flight

Weather Goal

To provide advanced weather information (e.g., 0-8h convective forecasts) to enable improved collaborative planning and efficient utilization of resources (e.g., airspace, airports) to optimize operations & reduce the impact of weather from gate to gate.



NextGen Weather

Contributions to Solutions Sets

Air Traffic
Operations

Trajectory Based
Operations

- Improved forecast accuracy and access provide better flow management, assessment of alternative flows
- Access to weather information indexed to aircraft and weather type

High Density Arr/Dep
Terminals and Airports

- Improved forecast of airport/runway weather impacts
- Improved situational awareness for dynamic separation management (e.g. wake vortex information)

Flexible Terminals and
Airports

- Provide weather indexed to aircraft and weather type
- Improved forecast accuracy and access provide better flow management, assessment of alternative airport flows

Collaborative ATM

- Provide authoritative source of weather information with improved forecasts and current conditions to plan individual flights or flows
- Identifies flight specific reroutes for weather related congestion and assess the impact of those planned re-routes

Reduce Weather
Impacts

- Increase timeliness and accuracy of tailored weather information to facilitate proactive Air Traffic Management and air carrier avoidance actions.

Safety, Security and
Environment

Transform Facilities

- Provide weather indexed to aircraft and weather type
- Improved forecast of airport/runway weather impacts

Aircraft &
Operator
Requirements

Airport
Development



NextGen Weather Portfolio And Coordination

NNEW



**Aviation Weather Group
(AJP-68)**

**RWI-Weather
Forecast
Improvements**



**Aviation Weather Services
(AJW-47)**

**RWI- Weather
Observation
Improvements**



**Systems Operations Services
(AJR)**

NextGen Solution Sets