

# Systems Engineering and the NAS Enterprise Architecture

Presented to:

**Enterprise Architecture Conference**

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**Federal Aviation  
Administration**



# From Vision to Blueprint

## **Air Traffic Organization**

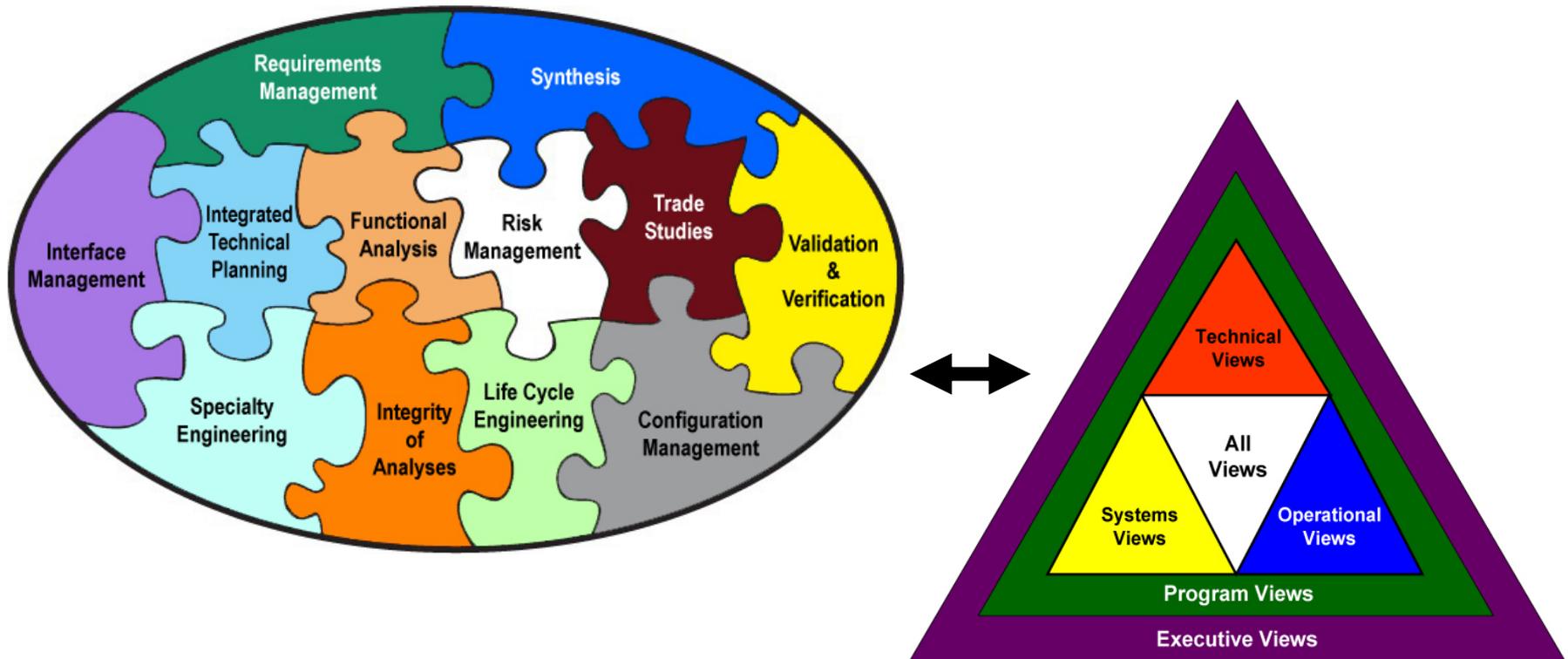
Vision: Give the world new ways to fly through people, technology and innovation

Mission: To provide a safe, efficient, responsive air transportation system that serves the nation and supports the global aviation community

## **NextGen and Operations Planning**

To realize the future vision of aviation by providing integrated strategies and solutions that achieve national and international goals

# Systems Engineering and Safety: Home of the FAA NAS EA



# Systems Engineering in the ATO

## **Systems Engineering and Safety:**

Design and maintain the National Airspace System (NAS) Enterprise Architecture, and provide systems engineering and safety leadership to bridge the gap between today's NAS and the Next Generation Air Transportation System, NextGen



# Systems Engineering and Safety: Home of the FAA NAS EA

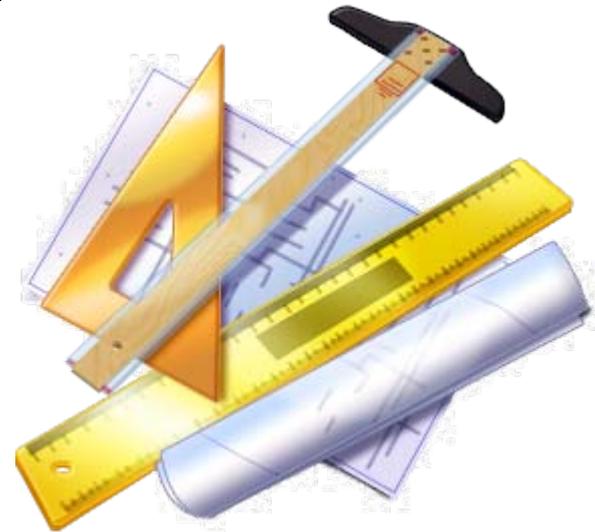
## NAS Enterprise Architecture Group

Manage the evolution of the NAS enterprise architecture to ensure that it provides an effective source of enterprise-wide information on the FAA's NAS portfolio of systems, investments and linkages across technology, budgets and mission.

**Architecture is a core Systems Engineering discipline.**

# The NAS EA is a Decision Tool

We are literally stopped in the hallways by managers and executives who ask us to describe how specific concepts or new technologies relate to the enterprise architecture.



# The NAS EA is Our Blueprint



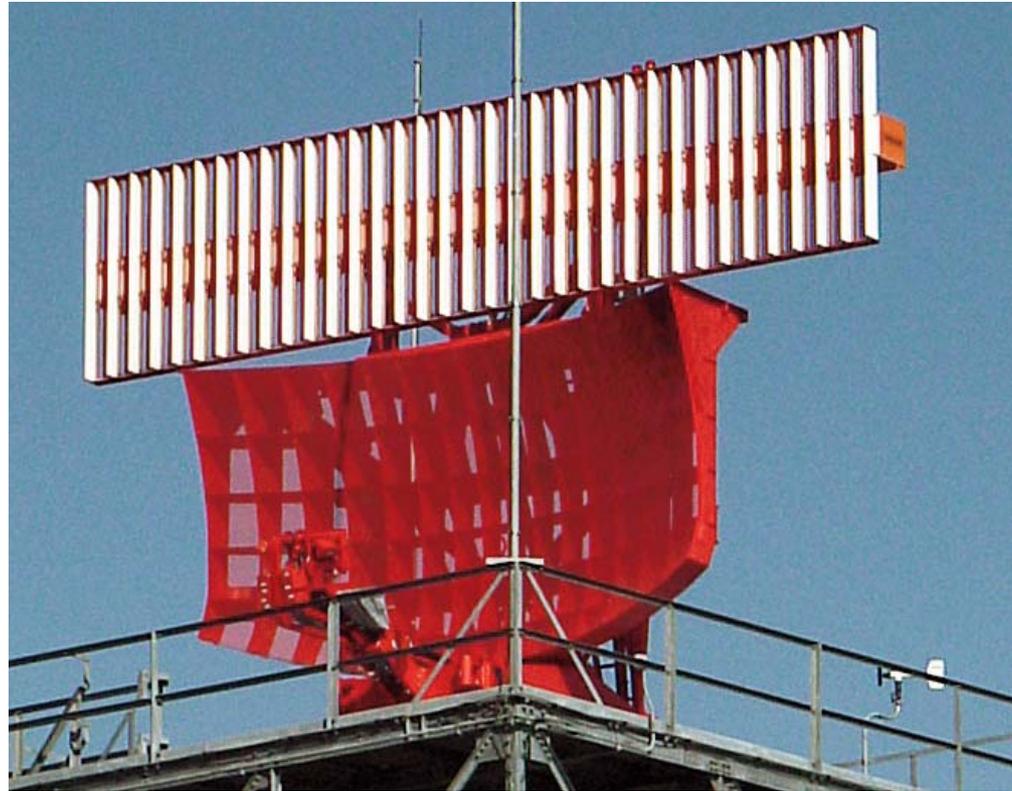


# So What?

## Why Should I Care About EA?



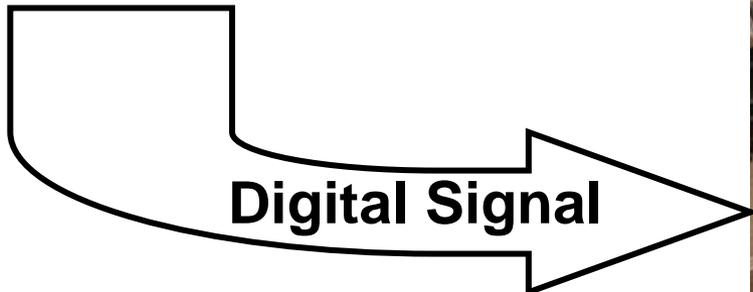
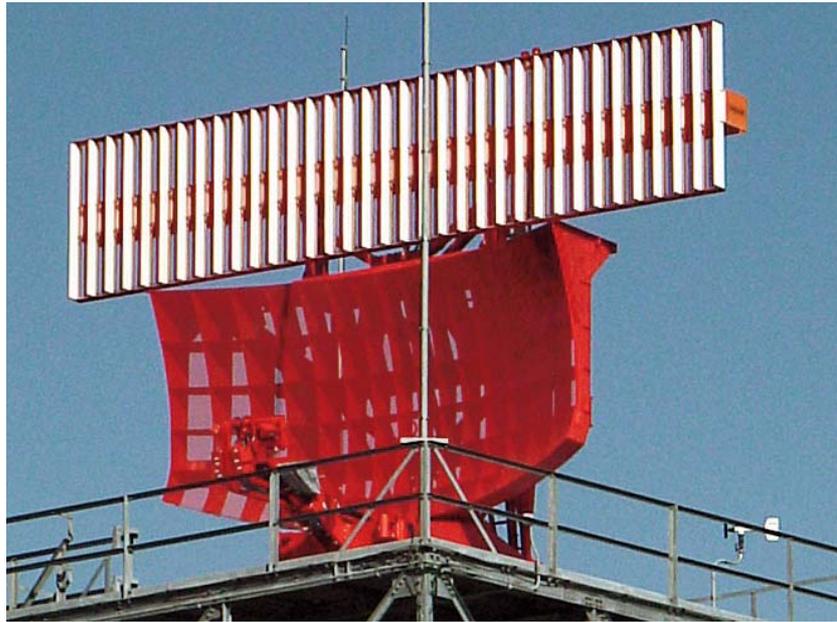
# ASR 11 - Air Surveillance Radar (Terminal)



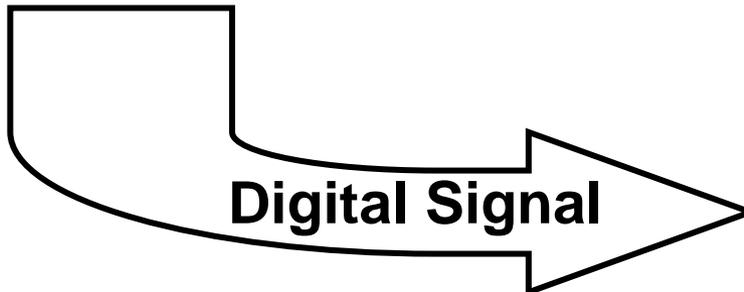
# STARS: Standard Terminal Automation Replacement System



# STARS Designed for Digital Input Only



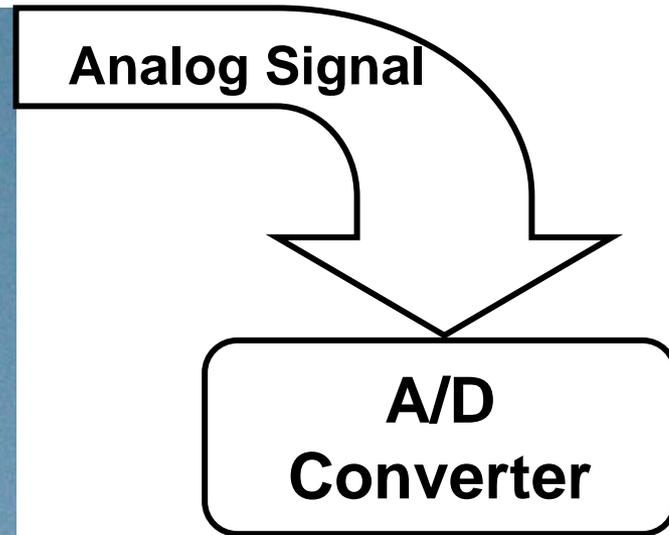
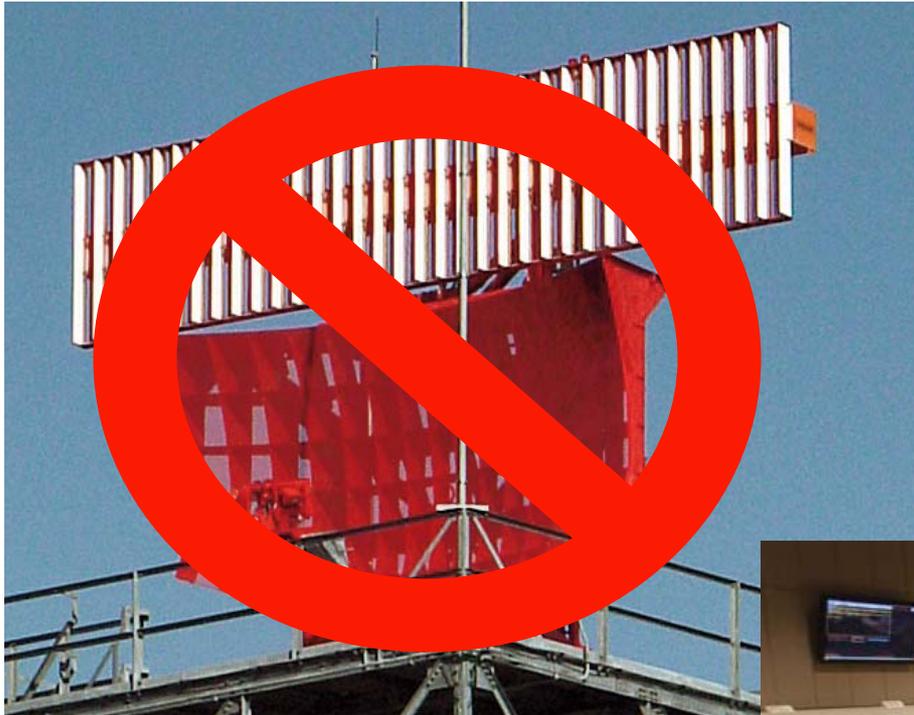
# But... ASR-11 Fell Behind STARS



# So no Digital Signal to STARS



# STARS Required A/D Conversion



# An EA aligns inter-dependent technologies!



# The Need for NextGen



# ECONOMIC IMPACTS

## TOTAL ECONOMY



**821 BILLION  
PASSENGER  
MILES FLOWN  
IN 2008**

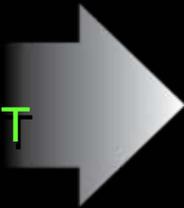


**\$1.2  
TRILLION**

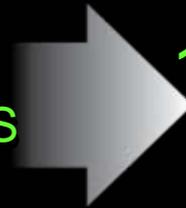


**\$369 BILLION  
EARNINGS**

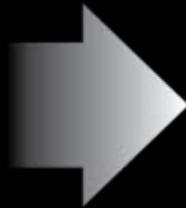
**59,000  
EQUIPMENT**



**7,000  
FAA TECHS**



**15,000  
ATCs**



**590,000  
PILOTS**



**20,000  
AIRPORTS**

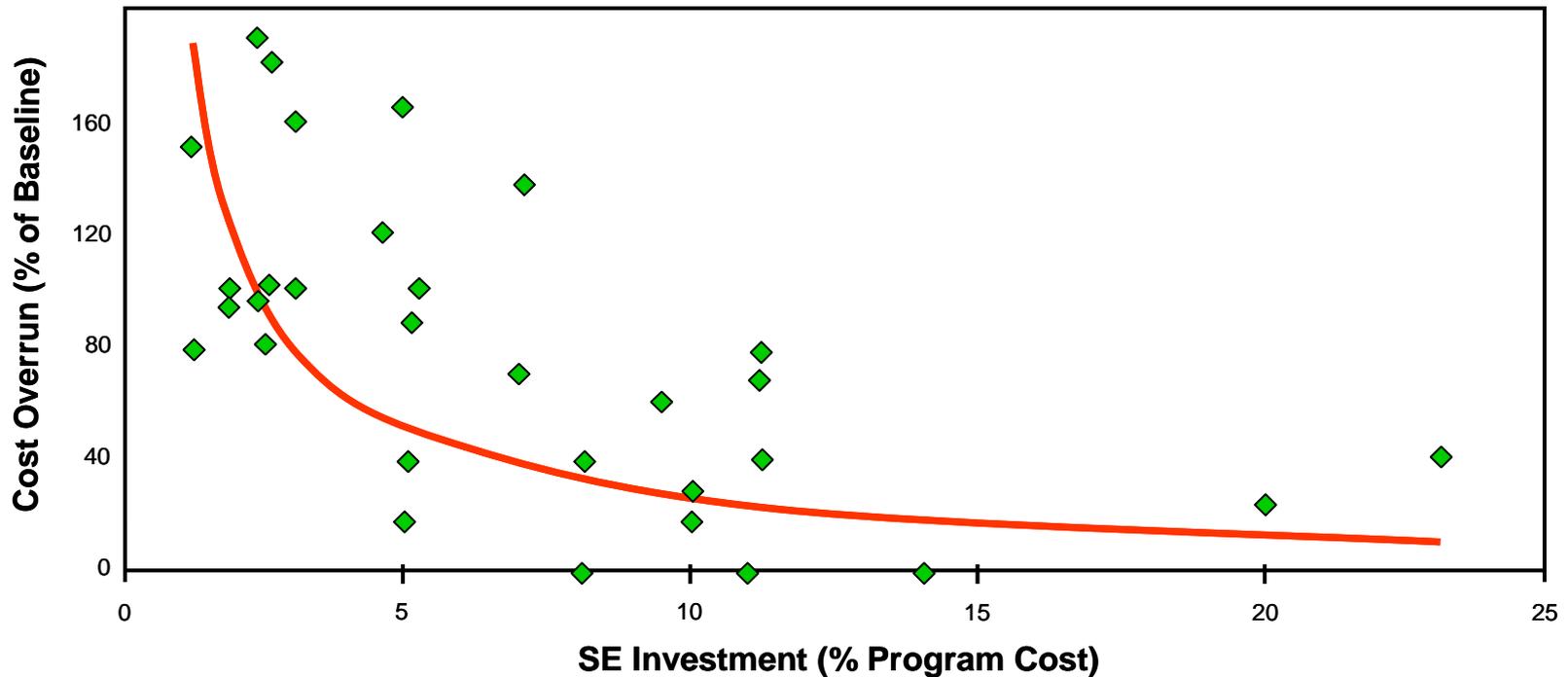
# Why is SE Important?

SE analyses contribute to a safe, effective and efficient NAS by clearly defining problems, requirements, alternatives, integrated solutions and ways to avoid or mitigate obstacles and risks.

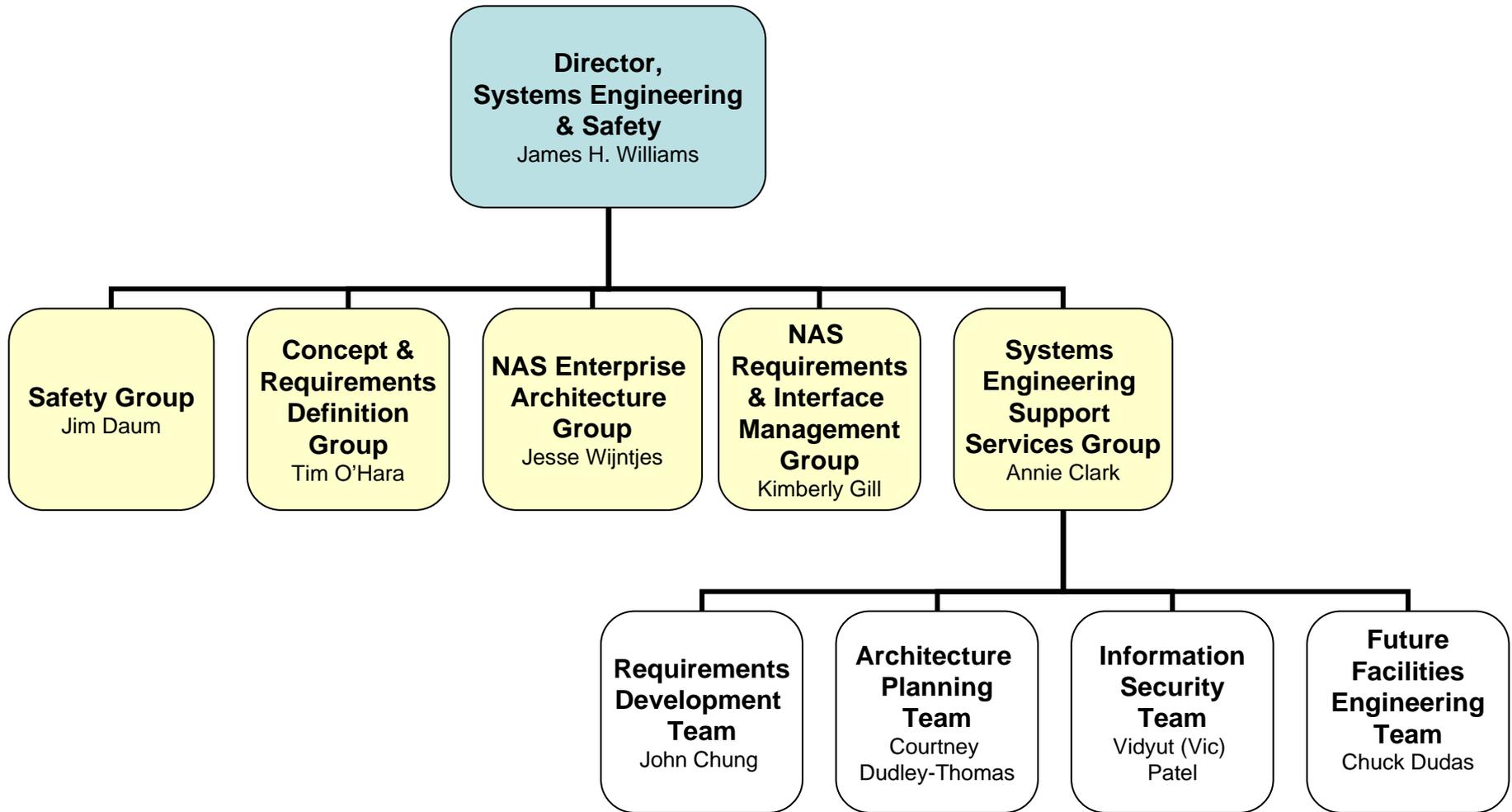
By considering the whole system and its interactions, systems engineering identifies factors that maximize success and minimize risk throughout a program lifecycle.

# The NASA Study

## Up-front Systems Engineering Prevents Downstream Surprises!



# How Teams Fit Together



# Systems Engineering and Safety: Here to Serve You!



- Support your efforts to meet NAS architecture and OMB requirements
- Provide safety analysis and integrated safety strategies
- Develop **security** risk assessments, requirements, architecture, and certification and accreditation planning
- Support your programs as they move through the Concept and Requirements Development (CRD) phase of the Acquisition Management System (AMS)
- Provide NAS-level systems engineering support for concept development, functional analysis, trade studies
- Provide Systems Engineering Training

# For More Information

## FAA NAS Enterprise Architecture

[www.nas-architecture.faa.gov](http://www.nas-architecture.faa.gov)

## FAA NextGen

[www.faa.gov/about/initiatives/nextgen](http://www.faa.gov/about/initiatives/nextgen)

## Joint Planning and Development Office

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

## EA Web Course

[http://elmsstaging.dot.gov/elms/external\\_content/ato/64000003-NAS-EA/launcher.html](http://elmsstaging.dot.gov/elms/external_content/ato/64000003-NAS-EA/launcher.html)

