



**NASA RTO-2: NAS2-98005**  
**“Global Gap Analysis of Operational Requirements Derived from  
Future Operational Concepts for the National Airspace”**

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**by**

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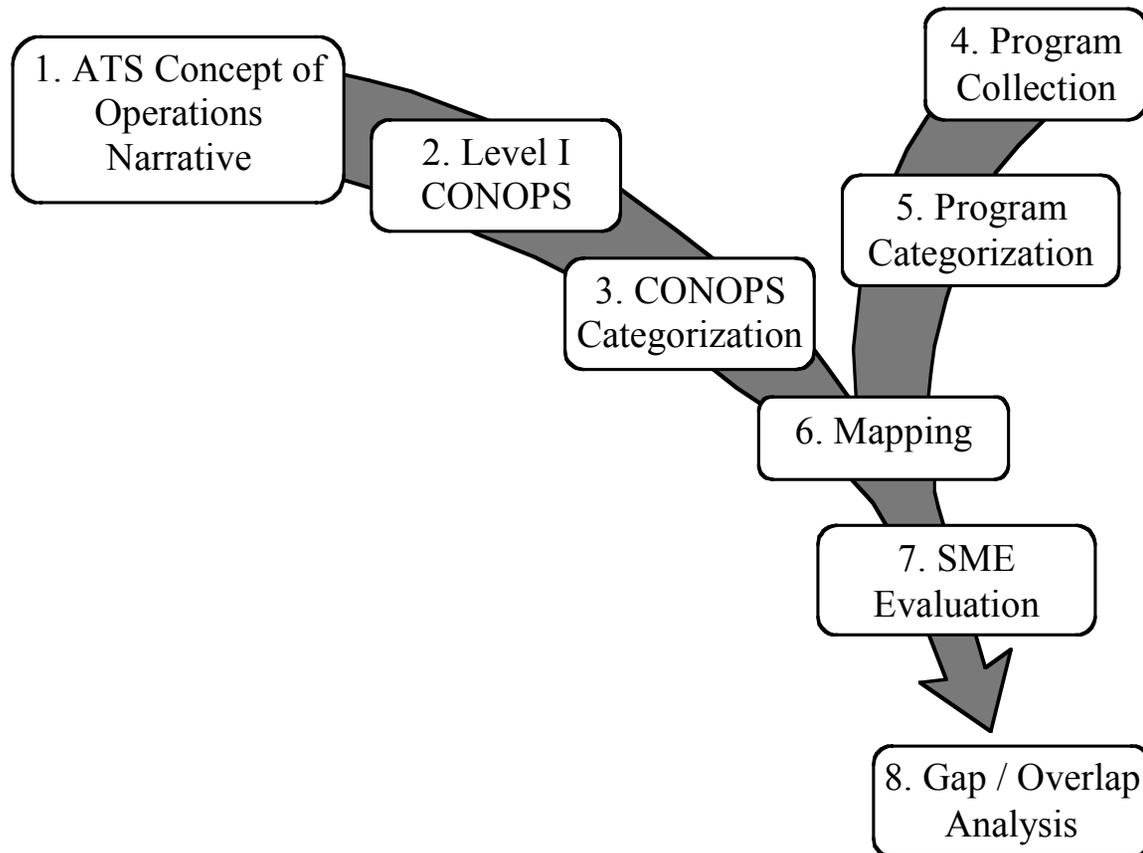
# Agenda

- **Objective**
- **Task**
- **Results**
- **Conclusions**

# Objective

- What Research Is Being Done to Support That *Narrative Vision*?
- Are There Gaps in Work That Is Planned?
- Are there Redundancies or Overlaps?

# Task - Analysis Methodology





# Results – Analysis

## Steps 1, 2, and 3

1. The *Narrative* is a 30 page, 8 section FAA document describing a vision for 2005
2. The Level I CONOPS (Concept of Operation) is a hierarchy extracted directly from the *Narrative* (390 CONOPS extracted)
3. The Categorization relates each Level I CONOP to
  - Communications
  - Surveillance
  - Weather
  - Navigation
  - Automation
  - Facilities and Maintenance



# Results – Analysis

## Step 4 – Program Collection

- **FAA:** Research Program Descriptions (RPD)
  - Fiscal year 1999 (30 programs)
  - Fiscal year 2000 (39 programs)
- **MITRE:** Program Descriptions
  - Fiscal year 1998 (49 programs)
  - Fiscal year 1999 (77 programs)
- **NASA:** AATT (11 programs)
- **Eurocontrol:** (222 programs)



# Results – Analysis

## Step 4 Continued

**Table 1: Industry and Academia Contact Summary**

Industry Contacts			Academic Contacts		
Contact Type	Total Distribution	Total Response	Contact Type	Total Distribution	Total Response
U.S. Mail	27	0	U.S. Mail	5	0
Electronic Mail	50	5	Electronic Mail	50	6

**See Appendix H CONTACT LIST**



# Results – Analysis

## 5. Program Categorization

Table 1: Categorization of C S and Programs is a Basis or a in

Functions (CONOPS and Programs )	Domains (CONOPS and Programs)	Systems (Programs only)	Areas (Programs only)
< Communication	< Introduction and Overall	< Ground	< Human Factors
< Navigation	< Flight Planning	< Airborne	< Performance
< Surveillance	< Airport Surface	< Space	< Economic Impact
< Weather	< Departure and Arrival		< Other
< Automation	< En Route / Cruise		
< Maintenance and Facilities	< Oceanic Operations		
	< NAS Management		
	< Management		

**See Appendix B DEFINITIONS**

# Results – Analysis

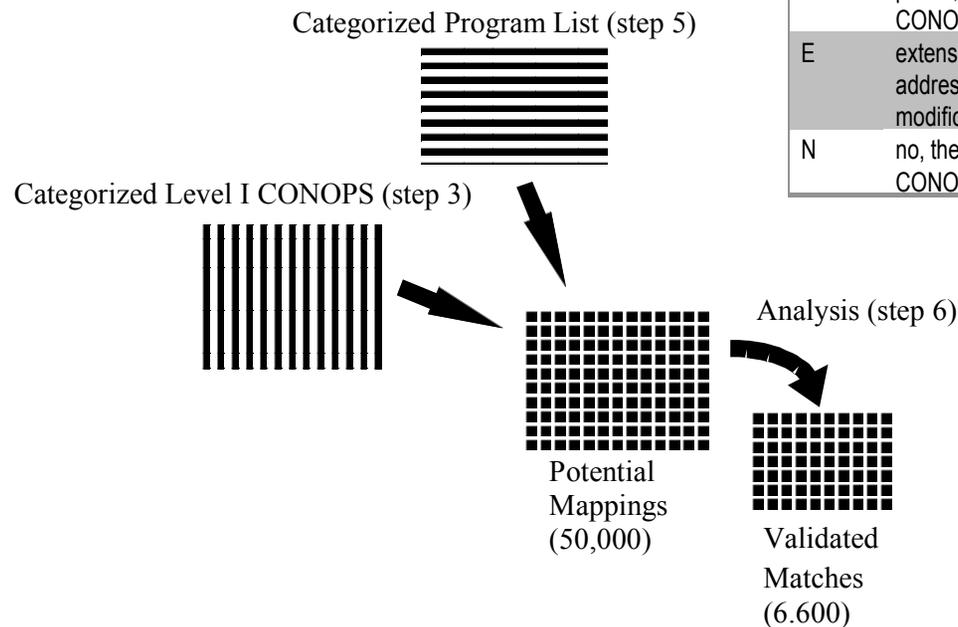
## 6. Mapping

Table : Cate ori ation atin e initions

Rating	Definition
Y#	very significant impact on category
Y+	significant impact on category
Y	impacts category
Y-	insignificant impact on category
Y=	very insignificant impact on category
N	not related

Table : C s to ro rams atin e initions

Rating	Definition
Y	yes, the program addresses the CONOP
P	partial, the program supports the CONOP
E	extensible, the program could address the CONOP, with modifications
N	no, the program does not fulfill the CONOP





# Results – Analysis

## 7. Subject Matter Experts

- **Review Material**
  - **By Domain (*Narrative* Paragraph)**
  - **By Program Source (e.g., FAA)**
  - **By Source Breakdown (E.G., FAA ‘99 RPD, ATS)**
- **Make Judgements Based on Expert Domain Knowledge**



# Results – Analysis

## 8. Gap and Overlap Analysis

- **Plot Hits Per CONOP**
  - **By Source (E.G., FAA ‘99RPD)**
  - **By Score (Yes, Partial, Extensible)**
- **Charts and Mappings Identify Coverage**
- **Add Comments to the Mappings**
- **Identify Key Overlaps and Gaps**

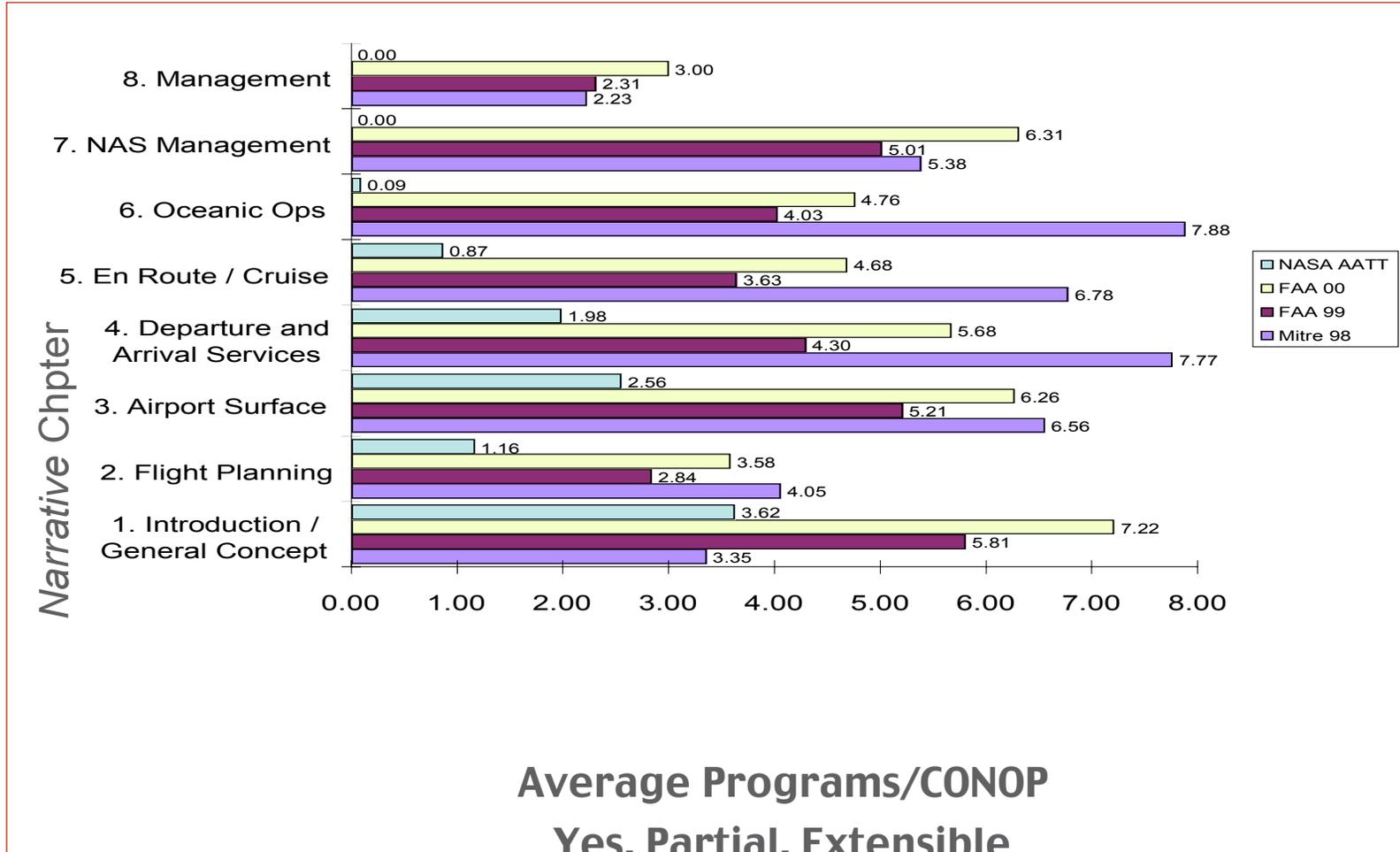


# Analysis Results General

- **The Analysis Methodology is efficient in establishing Mappings**
  - **Program Categorization briefly summarizes a program**
  - **The categorization narrows the mapping search**
  - **Scoring of a potential mapping entails expert judgements of the relationships**



# Results - Analysis Programs/CONOP Summary



# Conclusions

- **60% of mappings are (P)artial or (E)xtensible**
  - Partial indicates weak support
  - Extensible means not supported without change
- **10% CONOPS Map Only P or E**
  - 45% when only FAA '00 RPDs & NASA Used
- **75% of Management & NAS Management CONOPS are P or E**
- **No System Integration R&D Emphasis**



# T0-23 Awarded

## **T0 -23:**

- **Extends R&D programs to include additionally**
  - Lincoln Laboratory and NCAR
  - NOAA and DOD
  - NEXTOR
  - NASA TAP and Safety Programs
- **Increased Emphasis on Subject Matter Experts**
- **Increased Coordination With FAA and FFRDCs**