

# Development of NAS Operational Concepts for Year 2010 and Beyond

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MSR

The logo for the MITRE Technology Program, featuring a stylized graphic of stacked blocks in yellow, orange, and blue to the left of the text.

**MITRE**  
Technology  
Program

# Problems

- **No plan to structure other than hub airports to increase capacity**
- **Mixed aircraft equipage and ad hoc traffic affect operational safety, efficiency and capacity**
- **Poor departure schedule predictability limits use of airport resources**
- **Fragmented and localized flight information affects timeliness and accuracy**
- **Limited protection of CNS infrastructure from jamming, spoofing and interference to assure aviation security**

# Background

## System Trends

- 4.8% growth / year
- Crippling delays

- 8.5% growth/year 1990-99
- Air traffic challenges

- 30% growth over 8 years in corporate flight departments (8,778 in 1999)

- Pent-up demand in dormant market

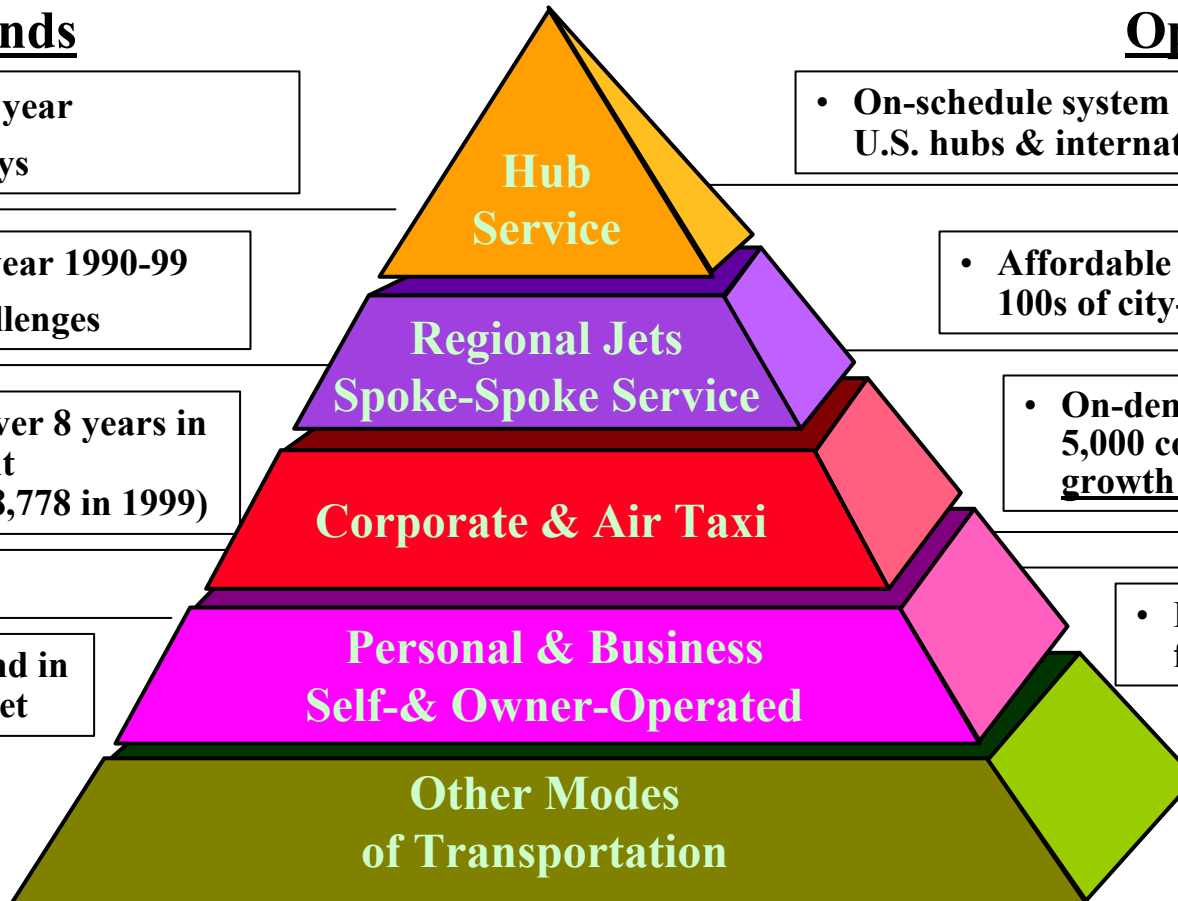
## Opportunities

- On-schedule system between 30 U.S. hubs & international

- Affordable access between 100s of city-pairs

- On-demand access for 5,000 communities with growth in jet taxi

- Infrastructure for future innovation



Source: White House Office of Science and Technology

# Goal and Objectives

## ■ Goal

- Provide flying public alternatives to select the best option that offers: desired schedule, easy access to airports, affordable price and hassle free flight

## ■ Objectives

- Develop a vision of NAS operational concept for year 2020+
- Identify key issues and establish research areas for development of operational concepts to realize future vision

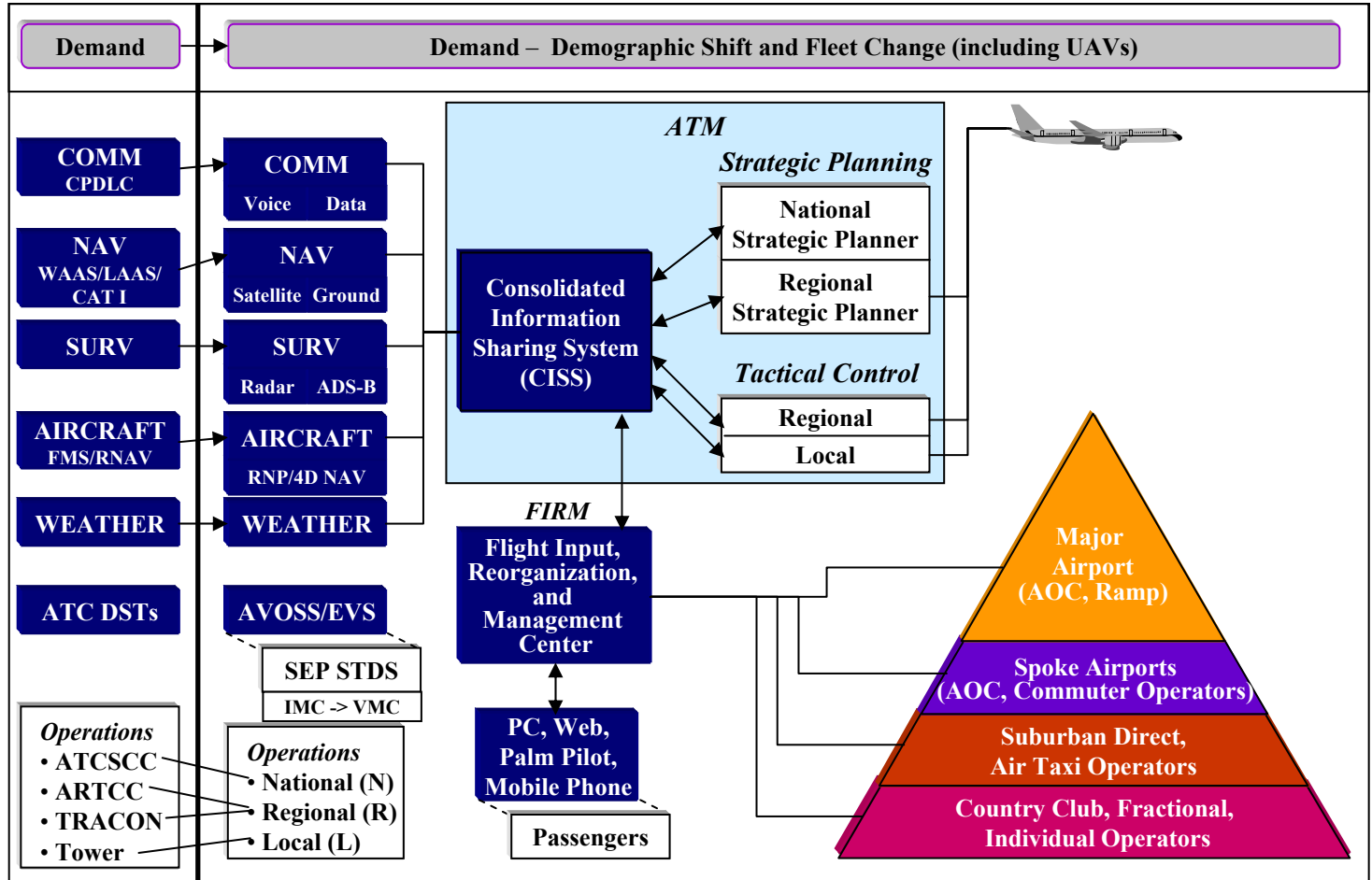
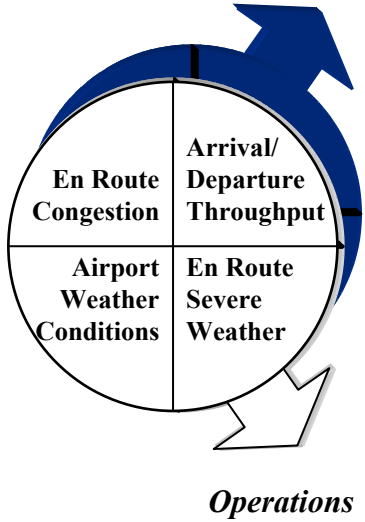
# Activities

- Reviewed available documents on future NAS operational concepts and defined paradigm shifts for future vision
- Analyzed towered airports and their runway characteristics to determine airports that could be used for multi-faceted operations
- Defined an overall structure of future CNS/ATM operational concept
- Developed a concept for a centralized Flight Operations Center and a Consolidated Information Sharing System

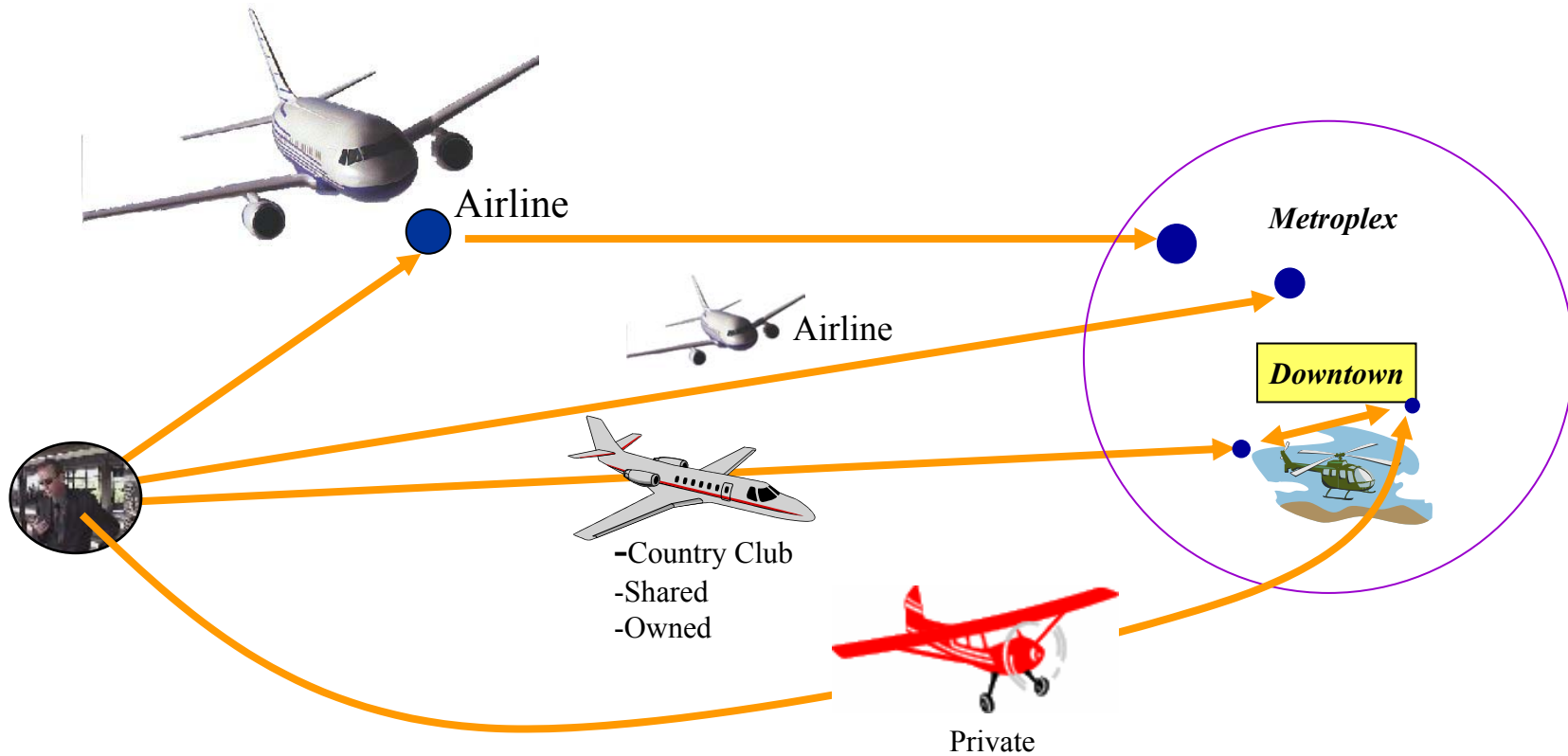
# Highlight

OEP Implementation Year 2010

Year 2020+



# Highlight



- Hub airports (30)
- Spoke airports (317)\*
- Satellite airports \*\* (194)\*

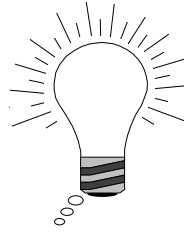
\* with lighted runways longer than 5500 ft.; most with a tower

\*\* within 50 nmi off a hub airport

# Impacts

- **Identified opportunities for expanding NAS capacity by considering qualified underutilized airports to deal with future demand, including diverse categories of aircraft**
- **Established specific areas of research that are being considered in developing the strategy for CAASD FY03 research projects**
- **Future vision based on this MSR will help guide the direction and priorities of the aviation community around the paradigm shifts for developing future air transportation services.**

# Future Plans



*Revolutionary Approach:* Think beyond the box and shift paradigms



*Building Block Approach:*  
Implement more of the same or enhance existing systems

CAASD/FAA research strategy to consider following paradigms:

- Demographic changes in traffic demand: country club and bus-like flight operations
- Multi-faceted airport structure: satellite and smaller airports for suburban direct and VSTOL operations
- Sector-less environment for strategic traffic planning to maximize airspace use and reduce response time to deal with complex operations
- CNS/ATM architecture to support user access to a universal database that provides multiple redundancies to assure system/information security