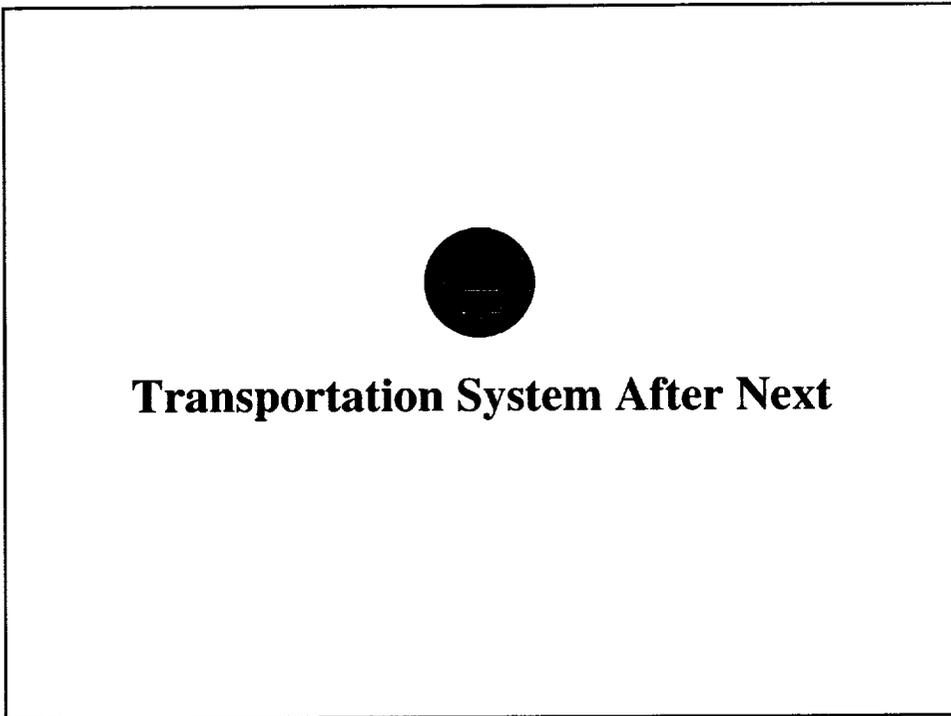
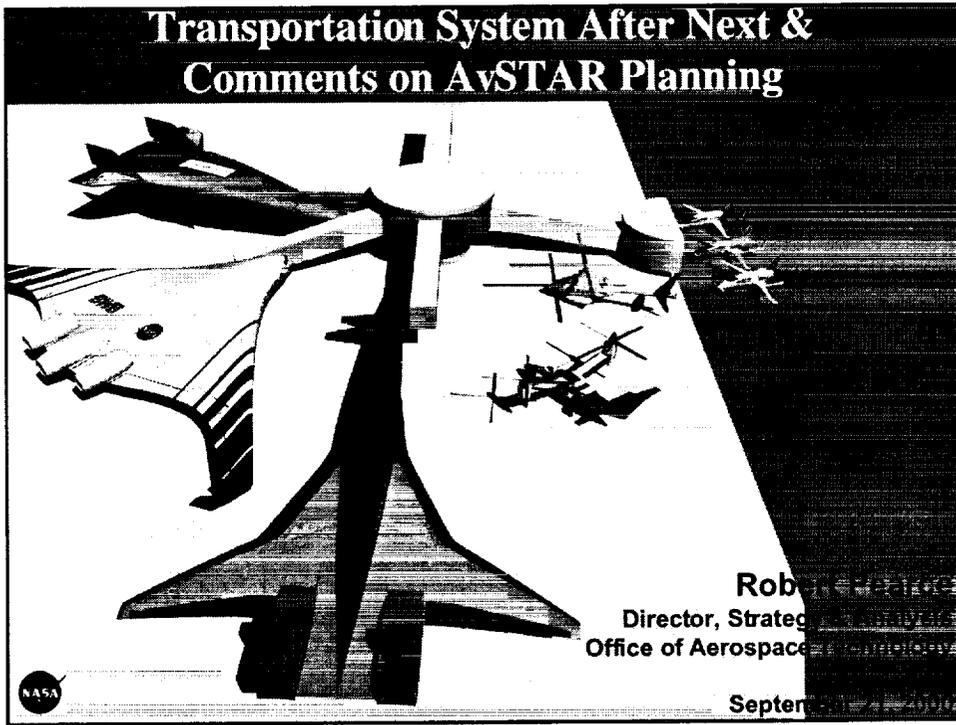


CONF PAPER 15, 11N/03





## Mission

Define how transportation will meet the requirements of mobility in the future so that we can initiate R&D programs today that will allow us to achieve that future state.

*The future IS mobility - - moving people, goods, and ideas*



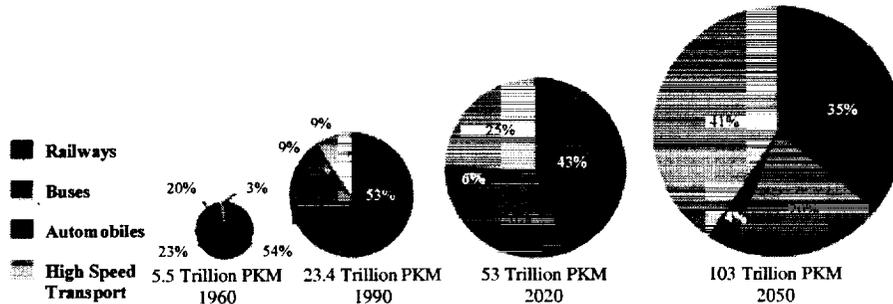
## Purpose

### To define and identify:

- Role of transportation in supporting future US needs
  - economic
  - security
  - quality of life of its people
- Trends
  - What is the problem?
  - Where are we going and growing?
- System *after next*
  - a vision of
  - requirements for New concepts and technologies
- Supporting research and education
- Priority investments
  - Government
  - Industry
  - Academia
- Barriers
  - Institutional
  - Cultural
  - Political
  - Global

# Forecasts

## World Traffic Volume



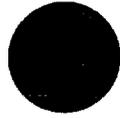
WORLD TRAFFIC VOLUME, measured in passenger-kilometers (PKM), will continue to balloon, with higher-speed transport gaining market share. By 2050, automobiles will supply less than two fifths of global volume.

Scientific American, The Past and Future of Global Mobility; October 1997  
<http://www.sciam.com/1097issue/1097schaferbox1.html>

# Challenges

## *To deal with:*

- Aging population
- Population pattern shifts (e.g. mega-cities)
- Increasing trade
- Increasing tourism
- Globalization
- Environmental concerns
- Explosion of new technology  
(IT, Bio, nano, physics, chemistry, genetics, robotics, tele-communication ...)



# White Paper

- **Content**

- Description of transportation trends, and definition of problem -nature of constraints to growth and demand verses supply mismatch
- Identify solution space (technical/operational leverage) and barriers/issues to unlocking leverage for issues outlined above
- Matrix of options for consideration, major uncertainties, questions, future requirements or constraints. “Hooks” to expand discussion to other modes for complete systemic view

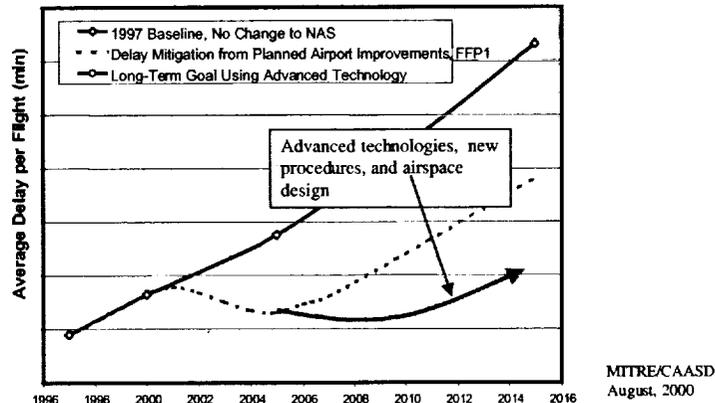
- **Status**

- In preparation
- First draft for review and comment by October 2000
- NASA-FAA draft can be used by other mode’s as a model for their white papers

## AvSTAR Planning

## Urgency

- All analyses indicate that with continued growth, delay within the system will remain at unacceptable levels - *even when we implement everything that is in the pipeline*



## Complexity

- At the same time, the air transportation system is extremely complex
  - The operational system displays the behavior of a non-linear, dynamic system
  - A large number of stakeholders within the system

### *From the Washington Post -- September 13, 2000*

Hundreds of travelers who thought they were just passing through O'Hare International Airport were forced to spend Monday night on cots and on the floor after storms canceled dozens of flights.

### *From the Washington Post -- September 10, 2000*

The airlines blame the FAA for not having improved the system for 20 years ago as promised; the FAA blames the airlines for overscheduling; and the same local citizens who, as passengers, may complain about poor airline service also oppose expanding airports. As a result, at a time when we most need airport expansion, we are left with an institutional gridlock that weakens our ability to get anything accomplished.

Darryl Jenkins, Director of the Aviation Institute, George Washington University

## **Dealing with an urgent & complex problem**

- Many potential outcomes in trying to solve an urgent and complex problem, *most of them are not good*
- Need to continue evolutionary technology development and implementation in the near-term while working more fundamental research and advanced concepts for the long-term
- Requires high fidelity testing to prove out concepts and technology
- All key stakeholders must buy-in
- For advanced concepts, need to protect the effort from tendency to pull back to nearer-term, incremental solutions

## **Strategies for Moving Forward**

- Continue to support Free Flight implementation and the development of automation aides
- Aggressively pursue system concept studies to develop overall system architecture options that can operate at higher capacities
- Develop a large-scale, non-linear simulation capability for the air transportation system to better understand and perform trade-offs for technology and advanced concepts
- Pursue a partnership model that integrally includes all key stakeholders

## **Conclusion**

- Growing recognition for the need for renewal of transportation to meet the mobility needs of the Nation
- Air transportation is the key for the growing demand for high speed transportation
- Advanced aviation system concepts and supporting technology is the cornerstone for continuing to advanced air transportation

