Back To The Future: The Aviation Noise & Air Quality Symposium

Integrating Airspace Redesign and Airport Planning: A Vital Step Towards Sustainability

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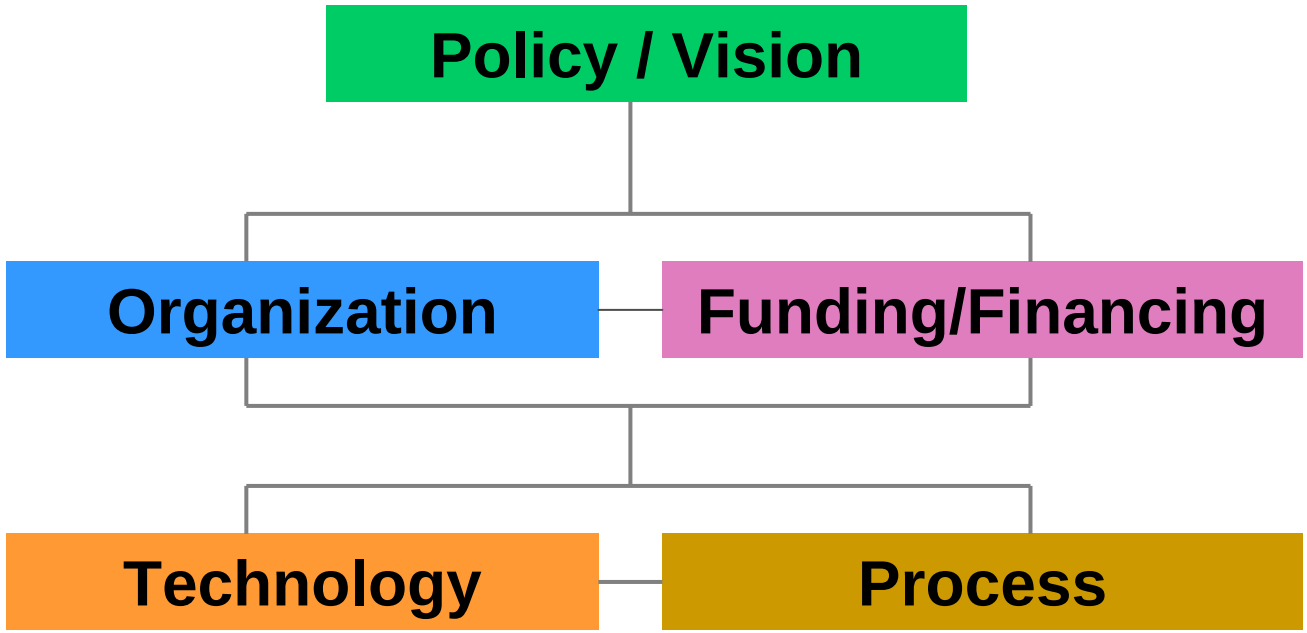
Program	**Airspace Redesign**		**Airport Improvement Program** **Airport Noise Compatibility**
Organization	**ATO**		**ARP**
Funding	**FAA Operating Budget**		**AIP**
Process	**Airspace Management**		**Master Plan** **Part 150**
Technology	**RAMS, TARGETS,** **SDAT, NIRS**	**TAAM** **SIMMOD**	**INM**
Priorities	**Capacity, Efficiency, Safety**		**Capacity, development** **Noise Compatibility/abatement/mitigation**

Problem Statement

- Disconnected planning processes driven by competing priorities and goals create large inefficiencies and missed opportunities
- Large complex systems are locked in a path dependence cycle both in terms of technology and process.
- Industry innovation & Experimentation provided great benefits but also resulted in confused plans & increased uncertainty
- Needs & requirements of airspace v. airport stakeholders are on different time scales (tactical v. strategic)
- Plenty of Conflict in system but not enough system-wide conflict resolution mechanisms

The Hierarchy Of Change



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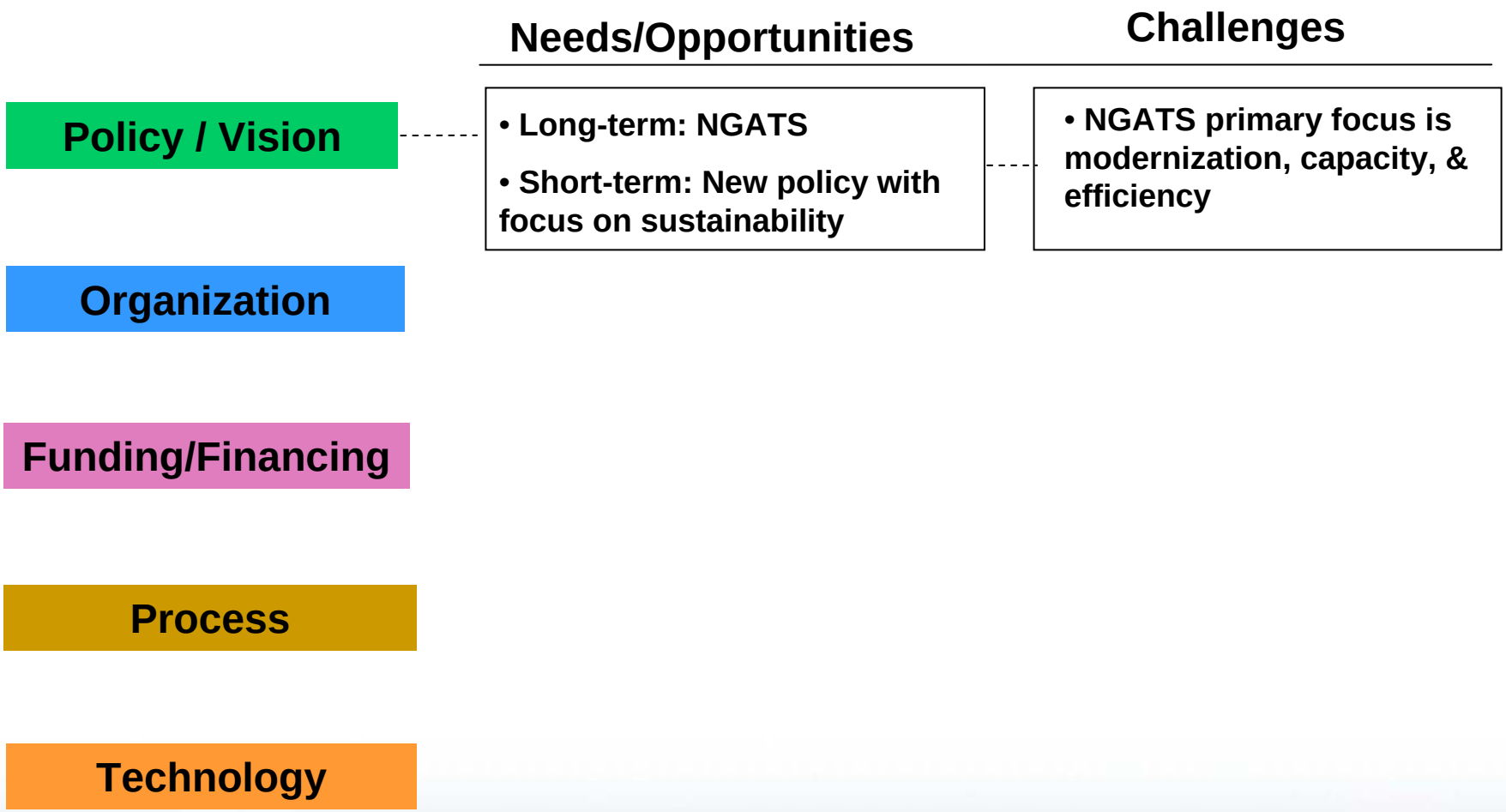

Vision 100 - Century of Aviation Reauthorization Act

Public Law 108-176

The Next Generation Air Transportation System shall:

1. Improve safety, security, efficiency, quality, and affordability of the NAS and aviation services;

2. Take advantage of data from emerging CNS technologies;

3. Integrate data streams from multiple agencies and sources to enable situational awareness and seamless global operations;

4. Leverage investments and build upon current ATM and infrastructure initiatives to meet system performance requirements;

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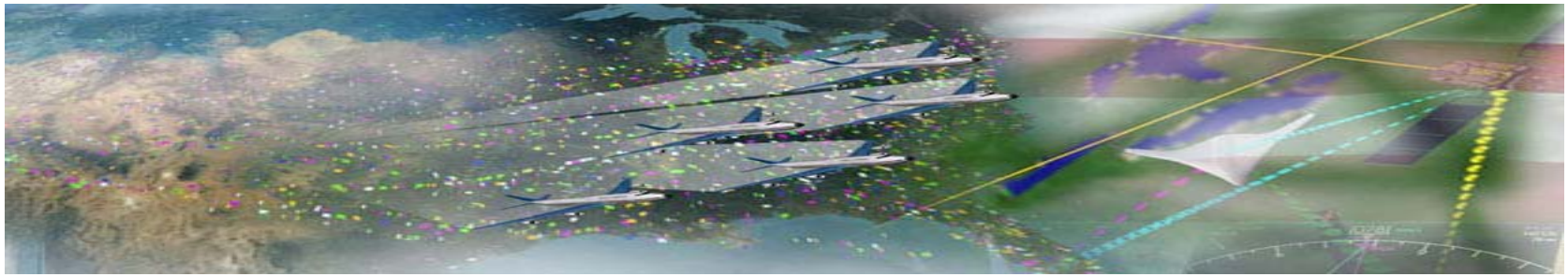


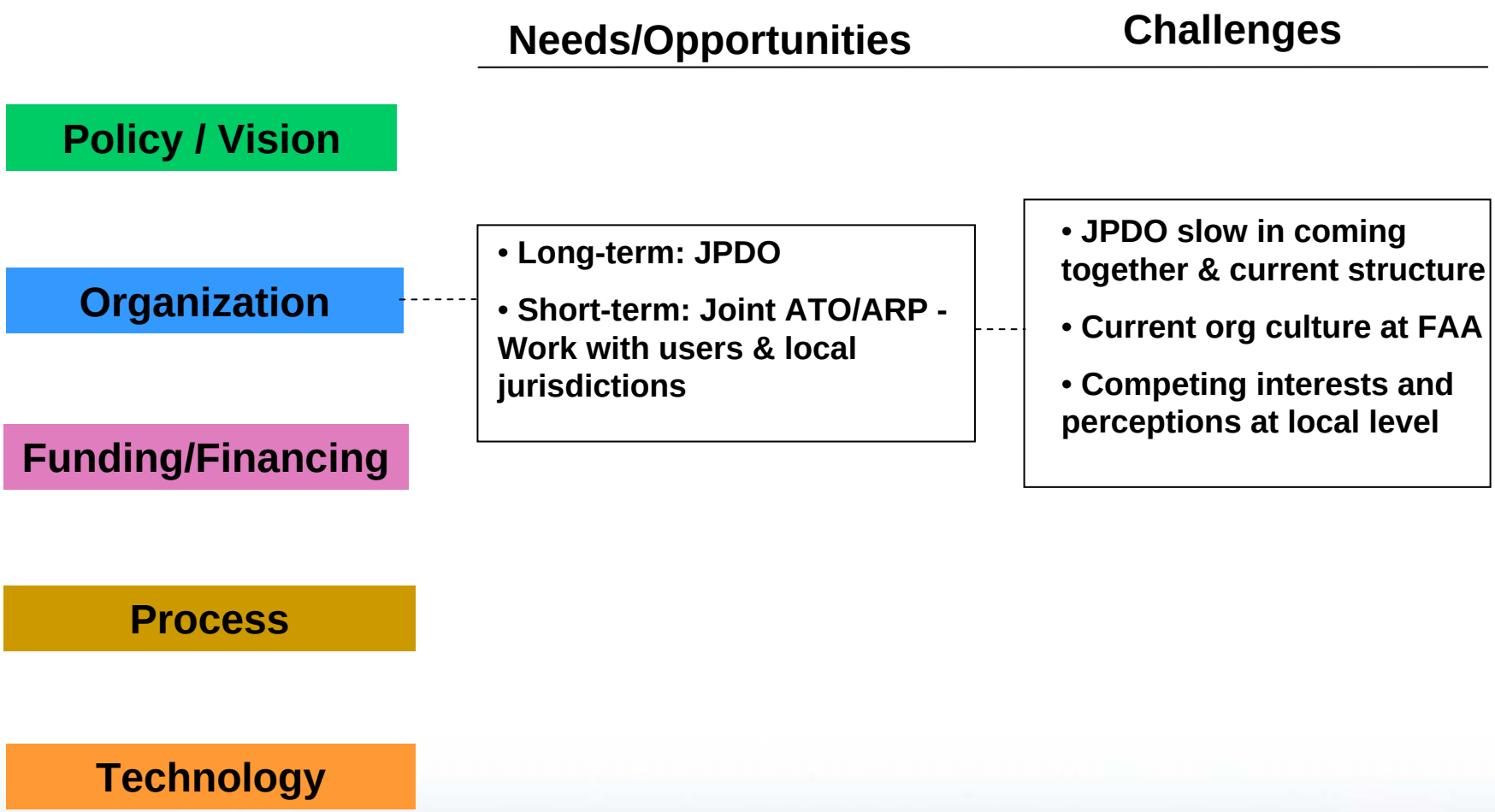
The Next Generation Air Transportation System shall:

5. Be scalable to accommodate/encourage substantial growth in domestic and international transportation and anticipate/accommodate new technology;

6. Accommodate a wide range of aircraft operations, including airlines, air taxis, helicopters, general aviation, and unmanned aerial vehicles;

7. To the greatest extent practicable, reduce exposure of noise and emissions pollution on affected residents.

The Hierarchy Of Change



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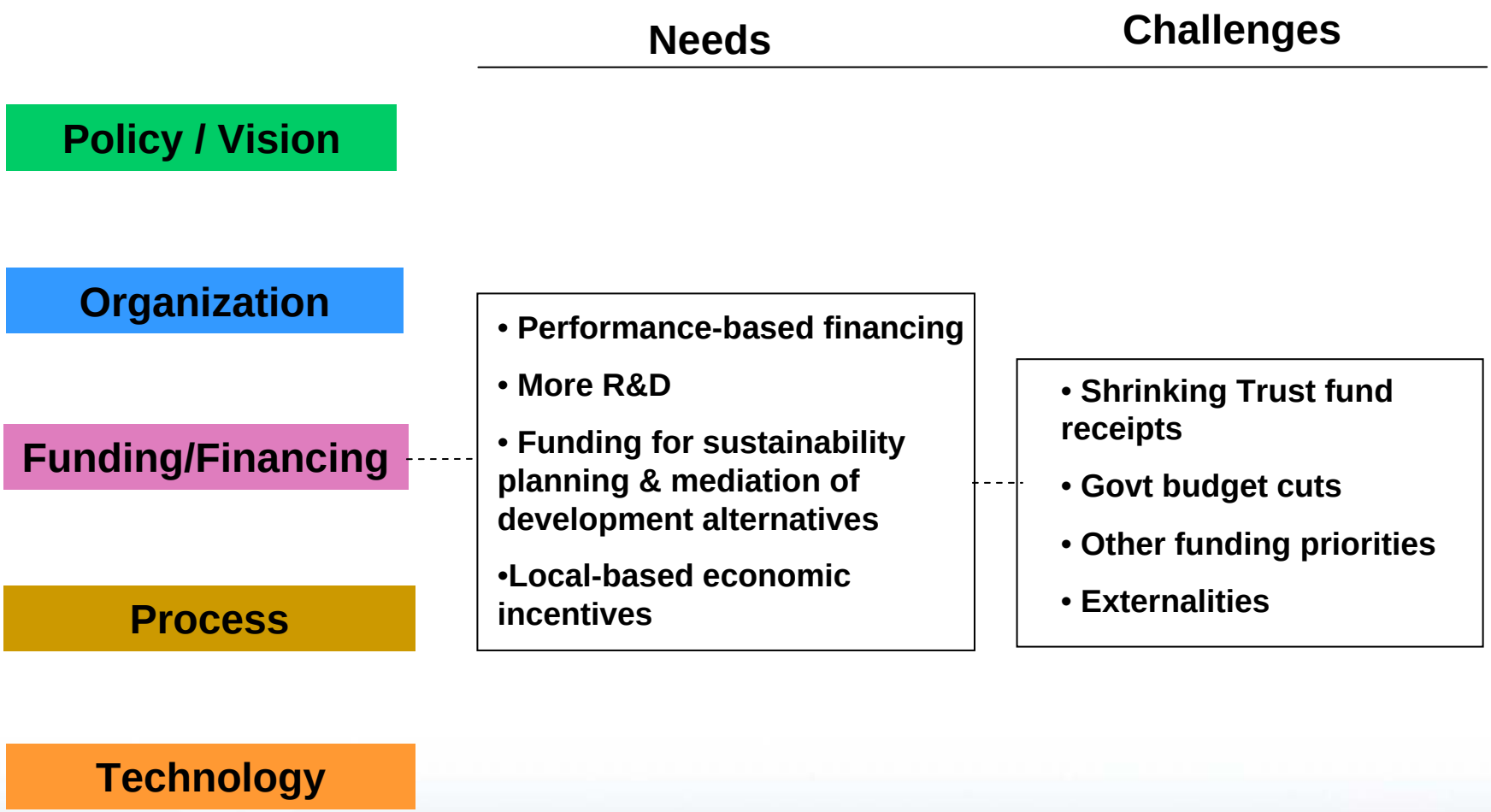

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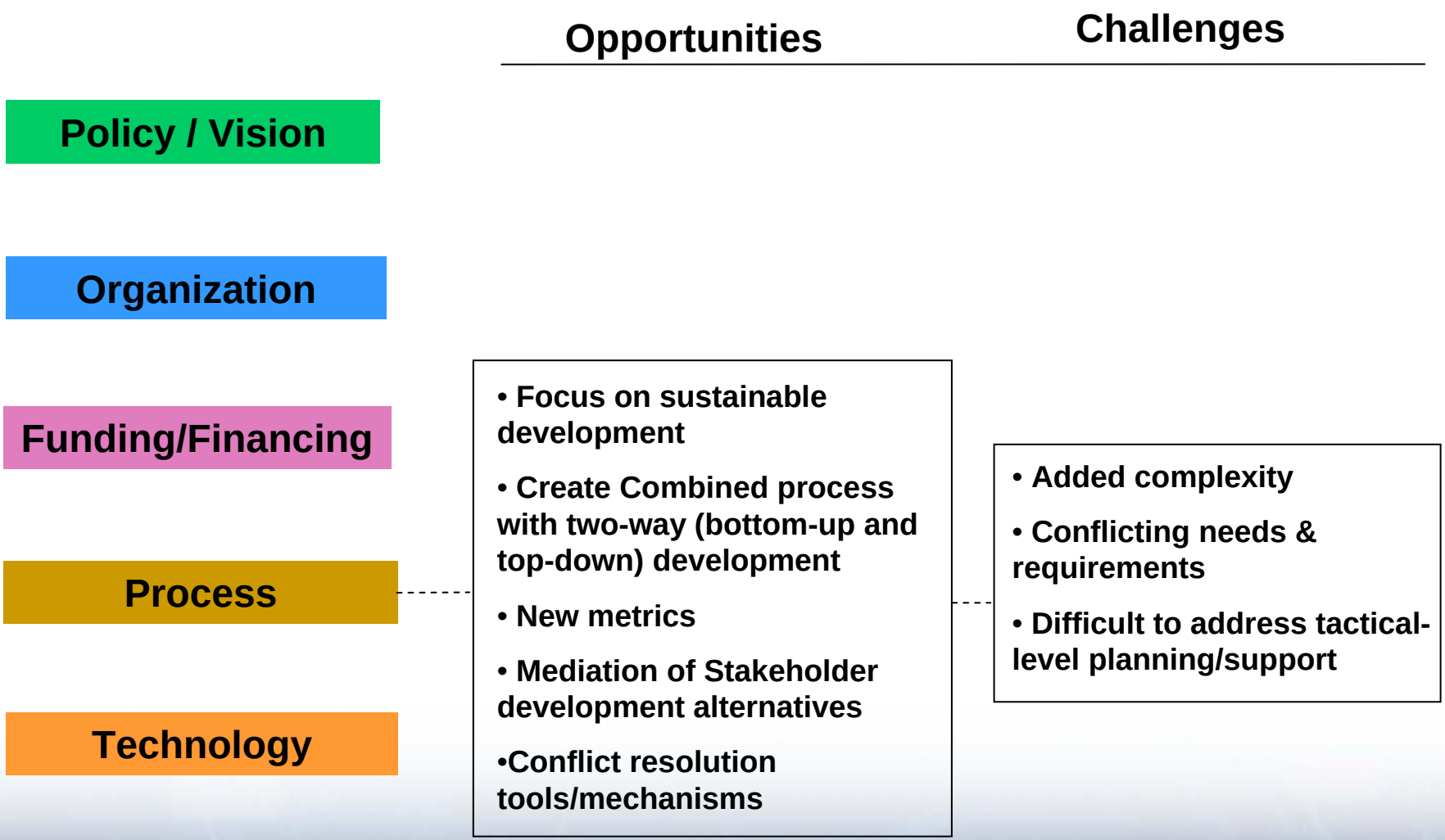

The Hierarchy Of Change

Policy / Vision

Organization

Funding/Financing

Process

Technology

Opportunities

- Integrate Airspace and airport/ noise planning tools
- Create Inter-operable Decision Support Tools
- Inclusive & accurate modeling
- Mapping Cost/Benefit Influences for sustainable land-use

Challenges

- Path dependence
- Investment on Supply Side
- Funding from Demand Side

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Current Challenges

Airport Planning

- Capacity Constraints
- Modernization & Competitiveness
- Adaptive security
- Introduction of new vehicles
- Environmental Compatibility
- Community & Land-use planning
- Regional planning

Airspace Redesign

- New vehicles (UAVs, microjets,etc)
- Information-sharing & Collaborative Decision-Making
- Capacity Constraints
- Security
- System Delay
- Military/Civilian coordination
- Manage environment-connected actions
- Regional airspace harmonization

Competing Priorities

Competing Interests

Competing Perceptions

Competing Trends

Competing Goals

Competing Requirements

+

Increased Complexity

Increased Mobility

Increased Information

Increased QOL Expect.

...in the short term

Priorities

"The changes occurring in our skies and coming down our runways combined with the security challenges of a post-9/11 world are so significant and so fundamental that temporary adjustments and band-aid solutions just won't do. " ***Secretary Mineta - January 24, 2006***

DOT Priorities:

- A new cost-based financing system for the FAA - Create a more direct relationship between revenue collected and services rendered
- Negotiating a new labor agreement with NATCA
- Modernizing the system through NGATS

FAA ATO

- Cost Controls:
  - Means support for new runway airspace redesign but no new redesign/optimization
  - Ops budget cut 20%
  - Unfunded programs (POET, RAPT)
- Staffing Challenges:
  - NATCA Labor Agreement
  - ATC Retirement vs. Staffing
  - Limited internal environmental resources
- Re-organization & performance-based service

…In the medium & long terms

FAA (ATO) Flight Plan

- **Increase safety**

  Achieve the lowest possible accident rate and constantly improve safety.

- **Greater Capacity**

  Work with local governments and airspace users to provide capacity in the US airspace system that meets projected demand in an environmentally sound manner.

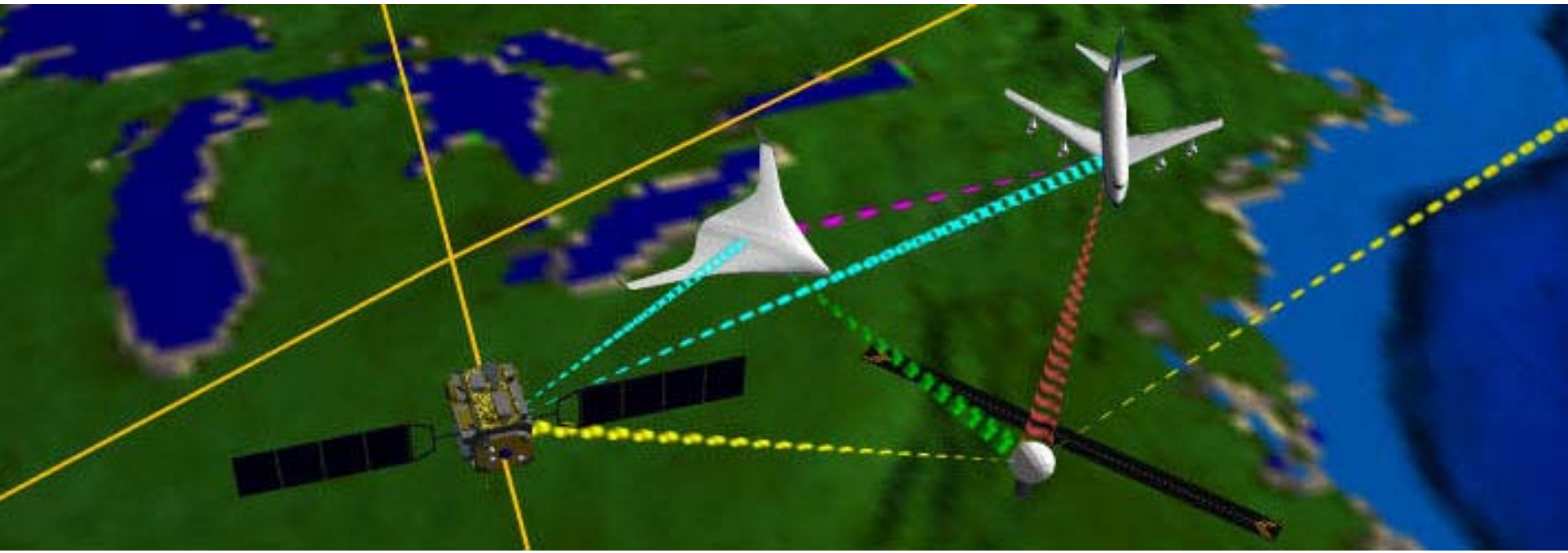
- **International Leadership**

  Increase the safety and capacity of the global civil aerospace system in an environmentally sound manner

- **Organizational Excellence**

  Ensure the success of the FAA's mission through stronger leadership, a better trained workforce, enhanced cost-control measures, and improved decision-making based on reliable data.

Broad Area Precision Navigation

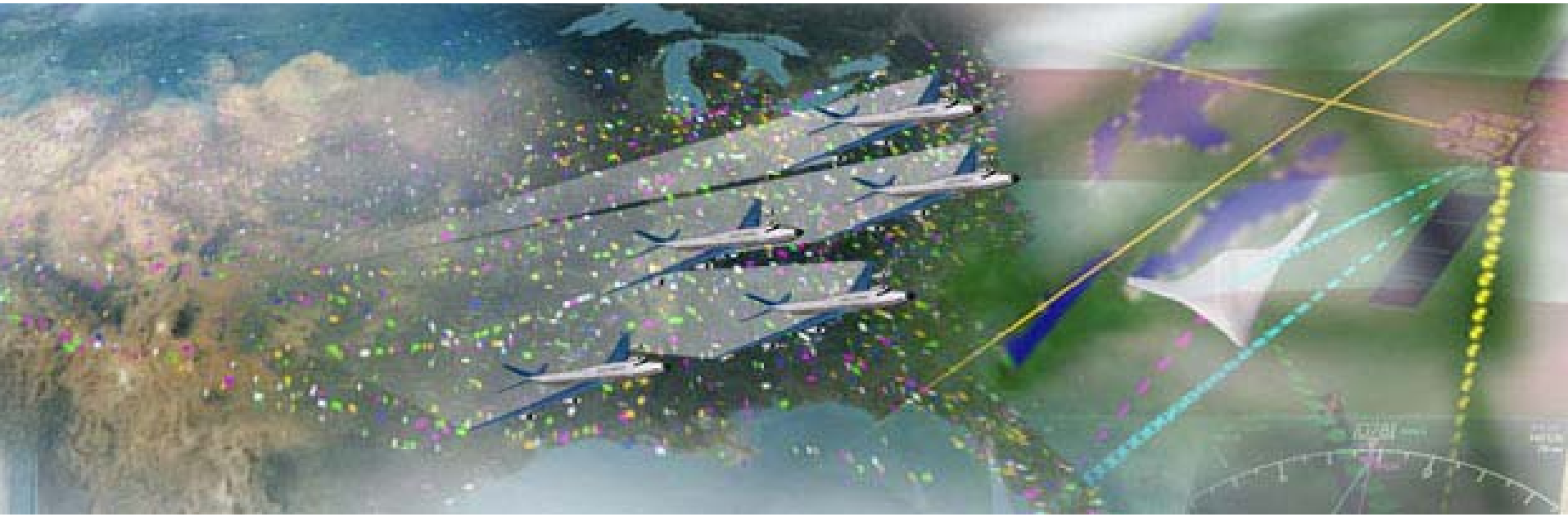


- Navigation precision sufficient to perform landings without ground-based aids at any “air portal.”
- Reliable service available over large areas (almost global).
- Reduction / elimination of legacy systems

Management-by-Trajectory

- Users have 4D trajectories which are the basis for planning and execution
- 4D trajectories exchanged and conflicts resolved among users and ATM service providers – “The Evaluator”
- Strategic traffic management and separation assurance

National Dynamic Airspace

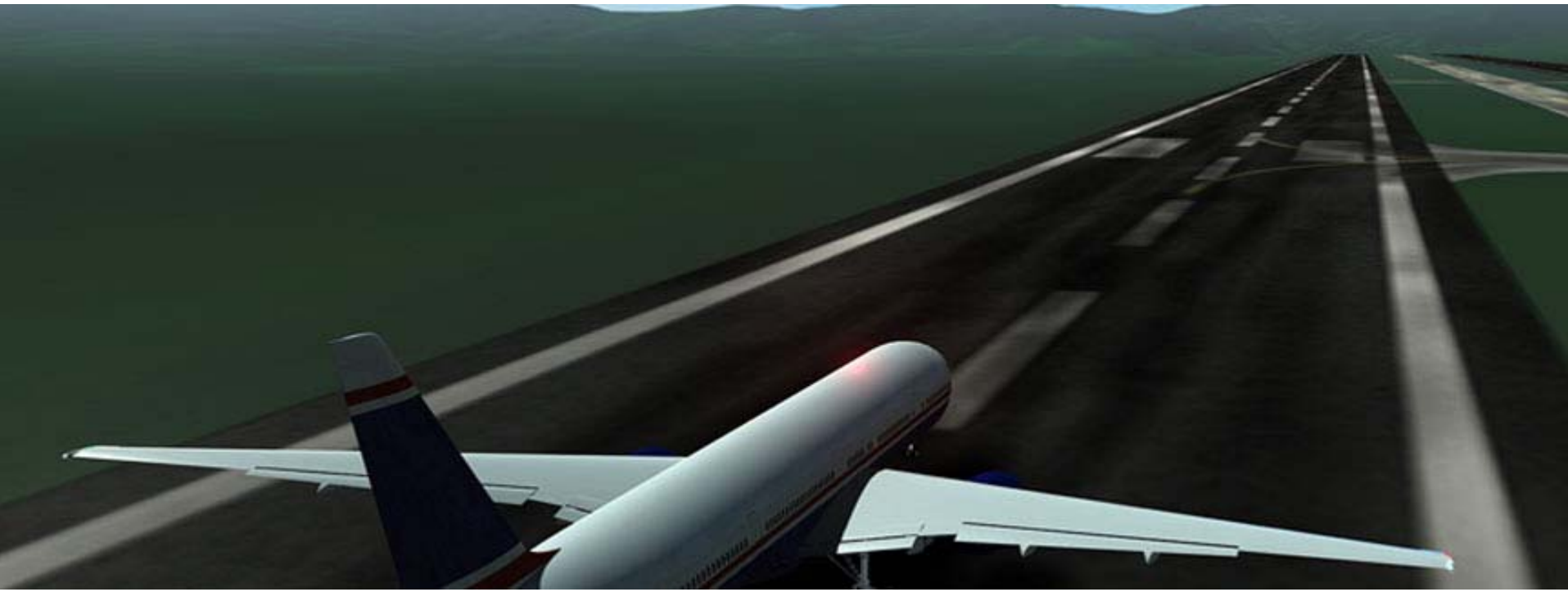


- Airspace configuration driven by User needs, National Security requirements, Safety, Overall efficiency of operations
- Reconfigurable hourly
- Single mechanism for implementing SUA, TFR's, etc.
- Temporal implementation of high-density, high-demand corridors, etc.

Weather Information in ATM System

- Stable fusion of weather observations and forecasts from multiple sensors and prediction models into one national database
- Dynamic updating and support for all push/pull operations
- Seamless assimilation of weather information in ATM system “decision loops.”

“Super density” Airport Operations



- Maximize runway capacity by minimizing arrival/departure spacing for single or parallel runways due to wake vortex constraints.
- Reduce runway occupancy time.
- Simultaneous operations on single runway.

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Thank You

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