1.) Consumer Influence / Life Style Considerations

• Fear of Travel & Large Congregations Drives Marketplace:
  Production: regional production
  Distribution: localized network
  Service Industries

• Identification technology - personal security paramount

• Impacts
  Electronic Access to Everything
  Global Virtual Culture/Regional Physical Culture
  Personal & Family Security Big Industry

• How does consumer utilize Global Transportation System
  Leisure commercial travel down
  Business travel only as necessary
  No Hub System - Point to Point Service
  Small Commercial Airliners - perhaps Tilt Rotor Craft

• Emphasis on Cargo Distribution and Time Delivery - more time critical

• Space
  Communication Satellites will proliferate
  Distributed communication
  Low cost access to LEO
  Remote sensing Satellites
  Intelligence Satellites
2.) Business Activities and Influences

- Distributed regional production
- Emphasis on distribution systems to end user
- Automation of Production
- Perishable goods produced locally
- Cargo Air transportation in growth phase
- Half-Life of a given style will be short (red sneakers)
- Agility in manufacturing
- Electronic/Virtual Service (Financial/Entertainment/Education/
- Education - many small schools directed to specific groups
- Specially designed cargo airplanes
- Technology for safety and security
3.) Role of local, national, regional, and/or global governmental and regulatory authorities

- Share Security and Safety Technology Globally
- Control other Technology for National Competitiveness
- No Trade-Off of Safety for Security
- Conflicts of trade and safety considerations
- Aircraft noise - now more local, but not relaxed (Noise is more important than emissions)
- Increased Security Costs Passed onto Traveler
- Economic Regulations to Insure Minimal Route Structure
- Trend to privatization
- Private Airport Security Force complying with Federal Specifications
4.) Global Civilian Aeronautics Products and Service Industry Operations

- Pull Production of Large Cargo Aircraft back to USA
- International Competition for Production of Small Aircraft
- Products Designed for this Environment (For our specific needs), i.e. specialized cargo airplanes
- Export products designed for their specific needs and environments
- More Private and Corporate Airlines
- Current Major Scheduled Airlines will be in Trouble, perhaps just operations ( schedulers)
- Demand Scheduling will Prevail
- Free flight will be the air traffic control paradigm
- World Leaders in Avionics
  - Flight Control
  - Navigation
  - Communications
“Grounded”

5.) Military Security Environment,
   Impact of International or Domestic Terrorism,
   U.S. Role - Security / Military (Aeronautics components)
   Importance to Access to Space

- Small Policing Actions: i.e. infiltration
- Security of Military Facilities Critical
- Intelligence on Terrorist Operations
- Surveillance of potential Terrorist Operation
- Rapid Deployment Products
- Impact of Terrorism is a major driver
- U.S. Leader of World Security Organization, U.S. supplier of High Technology,
  specialized rapid deployment Aircraft, Unloader and Supply Handling
- No Expanded role for Strategic Bombers
6. System Level Needs

- Specialized Cargo Aircraft
  - Dedicated Cargo Service
  - Time Critical Cargo
  - Large Payload
  - Dual Use - Civ/Mil
  - Fast Distribution System Interface
  - Lower Survivability Hardening Requirements

- Special Operations Forces (SOF) Operations
  - Small, Fast, Stealthy, Long Range
  - Short Unimproved Field Operations; VTOL/STOL

- Survivable Aircraft Technology
  - Retrofit Market and New Designs
  - Threat Detection, Mitigation
  - Survivable Aircraft
  - Threat Avoidance Operations
  - EMI/Laser Aircraft Hardening
  - Affordability of the Above Issues
“Grounded”

- Efficient, Lower Capacity Long Range Airplanes
  - High End Premium Service
  - Smaller Commercial Transports (50 - 200)
    - High Speed for Long Range Routes, Dual Use
    - Low Noise
    - High Volume/Lean Manufacturing
    - Agile Customer Customization
  - Advanced Business Jets (15-30)
  - Advanced General Aviation (Fixed Wing or Rotor Craft)
    - User Friendly Operations, “Like a Car”
    - Adverse Weather Operations
    - Low Cost
    - Recovery Systems
    - Reliable Propulsion systems
    - Low Noise
    - Training @ Home

- Low Cost LEO Launch Capabilities
  - Establish/Maintain Many Communication Satellites
  - Rapid Response
    - < 1000 lbs. payloads
  - Not Man Rated
  - Order of Magnitude Cost Reduction
    - Smaller Requirement for Intelligence/Recon
  - Lower weight Satellites
“Grounded”

- Distributed Airspace System
  - Support Point to Point Operations
  - Geographically distributed populations
  - Avoid risk of terrorist targets
  - Automated Distributed Decision Making (including Air Traffic Management)
    - User Friendly
    - Secure/Reliable Computing, Data Link
    - Decision Aids, Situation Awareness

- Security System, More Convenient and Affordable
  - Opportunity:
    - Airport Security: Perimeter, Personnel/Patients, Cargo/Baggage
    - Intelligence: Personal Profile
“Grounded”

7.)

- New Energy Source (Energy Rich)
  - Low Cost
  - Less Polluting

- New Propulsion Concept
  - High Performance Batteries
  - Gravity System
  - Extremely Low Friction Technology

- Identification of High Risk Potential Terrorist

- Detection of Dangerous Bio-Agents

- Improve Individual Freedom Without Reduction in Security
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ELEMENTS ADDED: (to system level needs for Grounded)

- Health Monitoring, fault tolerant, reconfigurable controls
- Distributed Training (Networked -Gnet- to users)
- Modelling & Simulation
  - Real Time Simulation
  - Physics-based models
  - Process models
  - Human modeling