Technology Challenges - A Business Jet Manufacturer's Perspective

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Our Business and Our Strategy

Gulfstream sets the World Standard in Business Aviation

Over 44 years of satisfying the world’s most demanding travelers with...

- Performance and Operational Flexibility
- Comfort and In-Flight Productivity
- Safety and Security
- Reliability
- Exceptional Quality

Our Vision

Set the standard for business aviation through excellence in people, product, service and financial return

Appropriate use of technology -- a key strategy to provide value and thereby achieve corporate objectives.
Travel Demands and Business Aviation Growth

- Business aircraft enhance mobility and are tools for economic growth.
- By the end of this decade, it is estimated that more than 1 billion passengers will fly on U.S. airlines annually.
- The business jet fleet... 10,000 aircraft in 35 years (1965-2000).
- Industry forecasters predict the delivery of 10,000+ new business jets during the 11 year period 2001-2011.

Can we continue to provide the market with ever increasing levels of safety, reliability, mobility and efficiency?
Meeting the Market Demand for Value

*Business aviation has a history of embracing new technology*

- Aerodynamic concepts such as winglets and advanced high speed airfoil technology
- Quiet, fuel efficient, and reliable electronically controlled propulsion systems
- Advanced flight decks… flexible displays, integrated controls, and “smart” flight management systems
- Enhanced vision systems
- In-flight SATCOM systems and other productivity tools
- IRCM defensive counter measures
Pushing the Performance Envelope

Today’s Reality

<table>
<thead>
<tr>
<th>G550</th>
<th>Tomorrow’s Vision</th>
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<tbody>
<tr>
<td>Max Weight</td>
<td>90,900 lb</td>
</tr>
<tr>
<td>Typical Payload</td>
<td>8 pax</td>
</tr>
<tr>
<td>TO Field Length</td>
<td>6,000 ft</td>
</tr>
<tr>
<td>Cruise Speed</td>
<td>0.80 M</td>
</tr>
<tr>
<td>Range</td>
<td>6,750 nm</td>
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</tbody>
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(Chart 5)
QSJ Technical Challenges

**Propulsion Integration**
- Engine Fuel Efficiency
- Engine Life
- High Inlet Performance
- Low Inlet Distortion
- Rotor Burst Protection

**Structural Arrangement**
- Structural Stiffness
- Thermal Management
- Advanced Materials
- Low Weight / Flutter Resistant Concepts

**Pilot View**
- Video Vision
- Conformal Vision
- Enhanced Vision
- Synthetic Vision

**Environmental Issues**
- Sonic Boom Suppression
- Engine Exhaust Emissions
- Community Noise

**Advanced Systems**
- FBW / FBL / PBW
- Variable Geometry Systems
- CG Management

**Operational and Regulatory Issues**
- Certification and Safety Standards
- ATC Integration
- High Altitude Operations

**Aerodynamic Performance**
- High Supersonic L/D
- High CLmax
- Handling Qualities
Technology Targets Must Be Achieved

Baseline L/D = 7.5; SFC = 1.2; Mach = 1.8

A Solution

Recent Configurations

Aerodynamics, Propulsion, Structures, & Materials Advancements Are Required
Summary – Business Aircraft View

• Business Aircraft are Valued Tools and the Market Is Continuing to Grow

• Business Aircraft Companies Are Entrepreneurial

• Aeronautical Innovation Often Is Lead By Business Aircraft Companies

• Dramatic Future Advances Are Being Considered