Current Challenges in the Aerospace Industry

Martin Wright, CEO, NWAA
Northwest Aerospace Alliance

- Founded 1992 as a ‘not for profit’ company
- Full time staff, 28
- Associates, 5
- Part time OEM programme support staff, 25
- 2010 Income streams – circa £3 millions
- Active membership of 380
- Out reach to 800 companies
- Largest regional aerospace cluster organisation in Europe
- Awarded the UK Cluster Mark Award for recognised Cluster Excellence
Core Activity

- Develop companies, clusters and help shape aerospace supply chains
  - Developing tools and processes for excellence
  - Representing the supply chain
  - Facilitating supply chain dialogue
  - Define skills needs and support skills development
  - Facilitate opportunities and inward investment
  - Provide a future supply chain view to regional and national bodies
- Provide a signposting service for the industry
  - Industry support
  - Training and education
  - Member capability, promotion, and member events
  - Exhibition services
Aerospace and Defence in the UK

- UK aerospace and defence exports are 2nd to the USA
- In total represent about 2% of GDP
- Equate to 20% of the manufacturing sector of the UK
- Over 500,000 high skilled jobs
- UK has 17% share of the world aerospace market, 6% of the defence market
Aerospace technology is expensive

Pound for Pound by weight
An aero-engine has the same value as silver

Pound for Pound by weight
A motorcar has the same value as hamburger
The Industry Growth Challenge
The aerospace operating environment

20 year demand for 23,385 passenger aircraft worth US$2.6 trillion

Number of new aircraft

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>2006</th>
<th>2026</th>
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</thead>
<tbody>
<tr>
<td>Single-aisle</td>
<td>16,620</td>
<td>28,534</td>
</tr>
<tr>
<td>Small twin-aisle</td>
<td>3,867</td>
<td></td>
</tr>
<tr>
<td>Intermediate twin-aisle</td>
<td>1,615</td>
<td></td>
</tr>
<tr>
<td>Very large aircraft</td>
<td>1,283</td>
<td></td>
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</tbody>
</table>

Fleet size

<table>
<thead>
<tr>
<th>Year</th>
<th>Single-aisle</th>
<th>Twin-aisle</th>
<th>Intermediate twin-aisle</th>
<th>Very large aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>13,284</td>
<td>4,142</td>
<td>1,615</td>
<td>737</td>
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<tr>
<td>2026</td>
<td>28,534</td>
<td>8,135</td>
<td>15,250</td>
<td>737</td>
</tr>
</tbody>
</table>

+3.9% per annum growth

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North West Aerospace Alliance™, North West Aerospace Alliance, NWAA and ASCE are all Trade Marks. Commercial in Confidence.
The aerospace supply chain

- Prime aircraft suppliers such as Airbus or Boeing etc.
- Major systems designers and manufacturers
- Sub assemblies manufacture
- Component level

All supported by multi-tier suppliers of materials, processes etc.

- All tiers have competition issues
- All tiers have global pressures
- All tiers have technology change pressures
- All tiers require significant long term investment
- All tiers require high level skills
UK Aerospace manufacturing priorities

- Low cost, high efficiency, automated component manufacture
- Automation of composite component manufacture
- Growth of manufacturing innovation in small and medium sized companies
- The establishment of National Centres of Excellence e.g.
  - Advanced Manufacturing Research Centre, Sheffield
  - National Manufacturing Technology Centre, Coventry
  - National Composites Centre, Bristol
Key aerospace manufacturing issues

• Technology change
  » Environmental demands
  » Reduced operating costs
  » Improved performance

• Global competition,
  » Need to retain market share

• Skills development
  » Adapting to change
  » Delivering ‘right skills, right time’

• Long term investment funding
  » Funding innovation
  » Funding capital investment
  » Funding product development
Emerging Technologies
The growth in the use of carbon composite materials

North West Aerospace Alliance™, North West Aerospace Alliance, NWAA and ASCE are all Trade Marks. Commercial in Confidence.
The open rotor concept, engine efficiency
Autonomous Air Vehicles
Gamma Business Streams

Customer

Data Generation

System manufacture

System management

Platform integration

Remote sensing technologies

Autonomy Technologies Interface

Data management

New Cos

Existing Cos

New Cos

APPs Provider

APPs Provider

APPs Provider

APPs Provider

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The Automation Challenge

North West Aerospace Alliance™, North West Aerospace Alliance, NWAA and ASCE are all Trade Marks. Commercial in Confidence.
1) **Modular Heads**
   1) **Independent of Machine Design**

2) AFP Controls
   Head Mounted Creel give a 30” tow path
   - No twists
   - No broken splices
   - No tangles
   - Entire tow path reachable by single standing operator.

   Zero spool rewind operation

   Zero failure backing film removal system

   Un-refrigerated Creel operation to eliminate condensation issues.
“High Speed Riveting Machine”
Flexible Panel Assembly System for All Airbus Panels
• The levels of capital investment required for new aircraft/technologies may be unaffordable for the SME base

• Emerging economies will invest at Government level

• Collaboration between companies and clusters will be essential

• Free market economies will compete through technology and manufacturing process development
Thank you for your attention