Assembly and Automation Technology
Agenda

• Background information

• State of the art

• Future development and technology needs
Background information

- Quality/Defects
- Cost
- Flow/Rates/Flexibility
- Safety/Ergonomics
- Capital Investment Costs
Program and Assembly Costs

Typical Cost Structure

Non-Recurring

- Engineering
- Tooling
- Capital

Recurring

Typical Assembly Tasks

- Fasten
- Load/Unload
- Seal/Other
- Shim
- Drill
Flow
State of the Art Assembly and Automation Technology

• Portable Automated Systems
• Robotic Drilling/Fastening
• Confined Space
• Robotic Sealing
• Tool-less Assembly
• Flexible Fixturing
State of the Art Assembly and Automation Technology

- Portable automated systems
State of the Art Assembly and Automation Technology

• Robotic drilling and fastening
State of the art Assembly and Automation Technology

• Robotic cleaning and sealing
Confined Space Automation
State of the Art Assembly and Automation Technology

- Horizontal build pulse lines and toolless assembly
Mobile platforms and flexible fixtures
Wing Build Technologies

Yesterday

Today

Tomorrow
Future Development and Technology Needs

• Localized positioning/sensing
• Synchronous/coordinated robotics
• Swarm robotic navigation/control
• Adaptive control
• Common end effector interface
• Automated Clean/Seal/Paint Systems
• 1 sided portable & robotic fastening
• Crawlers
• Reconfigurable mobile tooling
• Safe man/machine interface
• In process inspection
• Automation mistake proofing
Questions?