Integration of advanced materials, manufacturing processes, tooling and fixturing will facilitate reduction in life-cycle costs, empty-weight/gross-weight ratio, vibration and interior noise. These efforts will also facilitate increases in payload/gross weight ratio, mission range, survivability, and operational availability. All improvements are made more affordable due to significant reductions in labor and in operating and support (O&S) costs.

**Powertrain Technologies**
- Advanced gear and bearing steels
- Laser fabricated housings
- Laser probe workpiece positioning
- Ausform finished gears and bearings
- Intelligent noncontact measurement of spiral bevel and face gears
- Spray-formed HT aluminum alloys
- Localized laser HT and cladding for wear and corrosion resistance
- Wear-resistant coatings via cold gas dynamic spraying and EB–PVD
- Drive shaft laser balancing
- Condition monitoring
- Condition-based maintenance
- Distributed diagnostic system architectures
- Embedded engine predictive diagnostics
- MMI for troubleshooting and diagnostics
- Gear noise control
- Design for power density

**Drive System Technologies**
- Rotor blade NDI (finds delamination)
- Control of radiated sound power

**Health Usage Monitoring System Technologies**
- Composite thermal tiles
- Radar cross-section reduction
- Acoustics

**Health Usage Monitoring System Technologies**
- NDI technologies (shearography)
- Coating application and removal
- Component repair methods

**Signature Reduction Technologies**
- Photon-based cleaning of CBR agents
- Laser-based cleaning of CBR agents

**Landing Gear System Technologies**
- Laser cladding
- Spray formed HS aluminum alloys

**Airframe System Technologies**
- Protective armor
- Laser fabricated flooring
- Composite sandwich panels for noise control
- Spray formed HS aluminum alloys