

CRASHWORTHINES

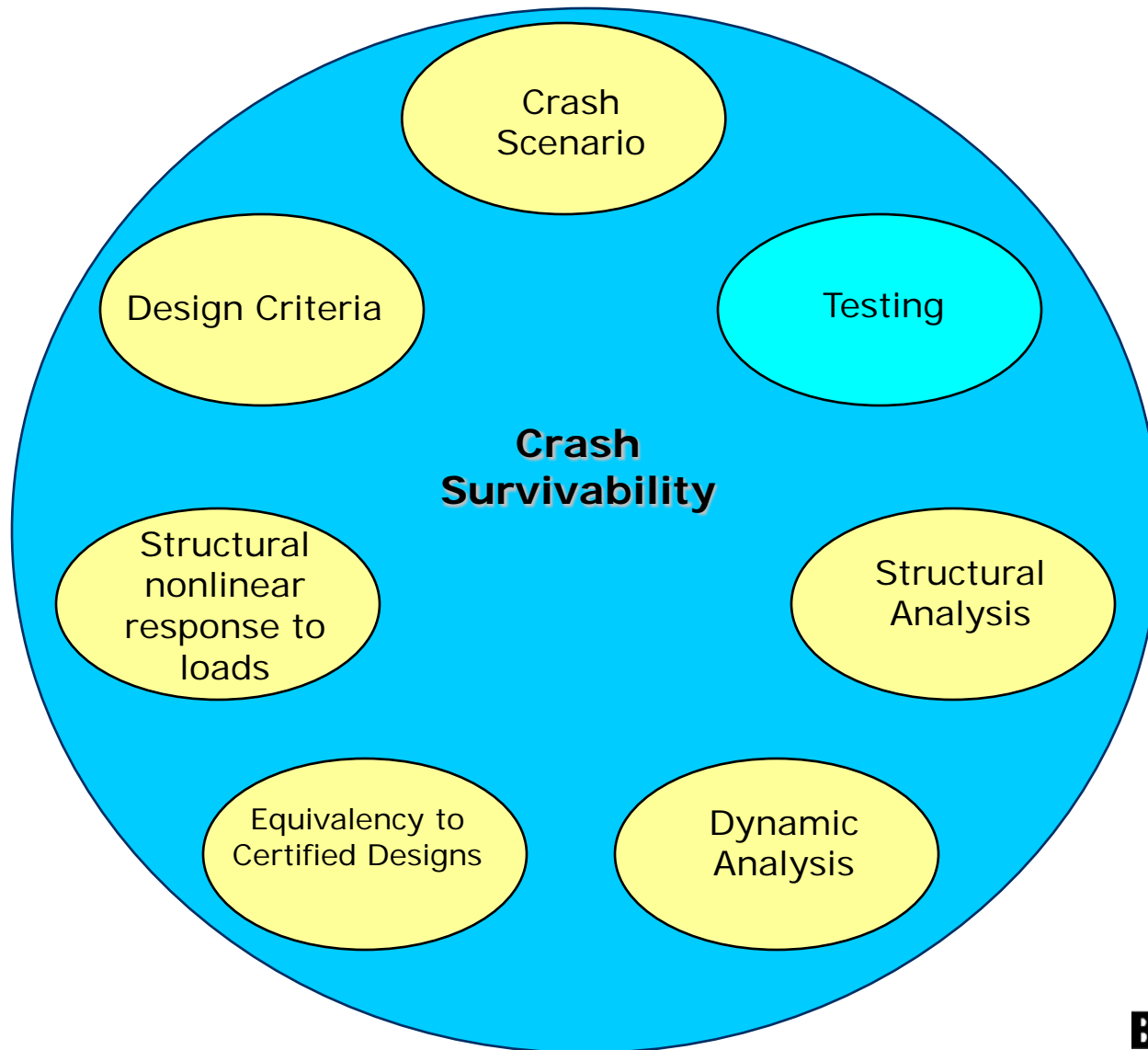


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CRASHWORTHINESS – MINOR CRASH SCENARIO



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ANALYSIS:

▪ Establish Crash Scenario

- Aircraft attitude at crash landing
- Speed & Sink Speed
- Primary and secondary contact with ground
- Contact locations.....

▪ Establish Design Criteria

- Floor “Collapse” limitations
- “Crushable” depth for clearance of system components (APU Fuel Line)
- Floor Plastic Deformation Allowance
- Fuselage Cut-out plastic deformation limits (ensure door opening following the event)
- Application of 25.561 inertia factors – Analysis assumptions
- Fuel Tank considerations
- Interiors (loose parts).....

• Establish Equivalency to Certified Designs

- Materials & Design Concepts - construction
- Define analysis and testing effort

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- **Establish Structural nonlinear response to loads**
 - Input to the a/c dynamic model
 - At anticipated contact points for impact load recovery
 - Non-linear Load/deformation relationships
- **Aircraft Dynamic Analysis**
 - Recover transient response (typically few seconds after impact are sufficient)
 - Inertia loads & Loads at contact points
 - Recover loads at locations and for components away from contact points (fuel tank integrity)
- **Structural Analysis under impact**
 - Strength (Full plasticity taken)
 - Plastic deformation (Floor, Door Surround structure etc.)
 - Strength (specifically related to fuel tank integrity)
 - Interior components

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TESTING:

- Full material Characterization in case of novel material systems (Coupon)
- Cabin Seat Dynamic Tests (25.562)
- Testing of Interior key features
- Floor Panel Testing (inserts.....)
- Other tests at element and sub-component level subject to the level of novelty of design features & materials
 - Equivalency testing