Commercial/off-the-shelf products (COTS)
What is COTS?

- Common interpretation is a product that has not been made in accordance with the civil aviation regulations.
  - Product design not approved under Part 21
  - Production system not approved under Part 21
Existing product legislation

- **Aeronautical product** (Act – CASR Part 42)
  - any part or material that is, or is intended by its manufacturer to be, a part of or used in an aircraft
  - *unless* not mentioned in the approved design and not approved under r. 21.305 or 21.305A

- **Aircraft component** (CAR 2)
  - any part or equipment for an aircraft that if it is not sound or functioning correctly may affect the safety of the aircraft
  - emergency equipment
Existing methods of approval

- The regulations currently provide various mechanisms for approval of products:
  - TC + production certificate
  - STC + production certificate
  - Modification/repair design + production certificate
  - Product design + production certificate
  - APMA
  - ATSOA
  - Foreign airworthiness approvals
Approval of required operational instruments and equipment

- Required operational instruments and equipment must be approved by CASA under regulation 21.305
  - Navigation instruments and equipment
  - Communication equipment
Product design and conformity

- A product design must:
  - meet the applicable airworthiness standards
  - consist of drawings, specifications and other information that fully describe the product

- Product design must also cover conformity:
  - information that shows the dimensions and appearance of the product
  - materials used to manufacture
  - processes used to manufacture
  - methods used to test or measure the product
Production requirements

- CASA approval
- Documented production inspection system to ensure each completed part conforms to its design and is safe for installation
  - incoming materials
  - processes accomplished in accordance with acceptable specifications
  - conformity inspections
  - design changes are controlled and approved
  - records are maintained and retained
Installation requirements

- Two basic requirements for maintainer to install a part on an aircraft:
  - the part must be eligible to be fitted – design
  - the part must be serviceable – production

- The part is eligible to be fitted
  - mentioned in the approved design
  - PMA/APMA

- The part is serviceable
  - authorised release certificate (ARC / Form 1)
Maintenance requirements

- Maintenance may only be carried out in accordance with the instructions for continuing airworthiness (ICA) and maintenance data
- Maintenance certification that the product is serviceable – ARC
- Airworthiness standards require ICA as part of the product design
Defect reporting and investigation requirements

- Regulation 21.003 captures all the standard product approval methods.
- Who would be responsible for COTS?
Classification of parts

- Class I products:
  - engines and propellers

- Required parts and equipment:
  - Parts required for type certification
  - Class II and Class III products

- Non-required parts and equipment:
  - Parts not required for type certification

- Required operational instruments and equipment
Potential applications for COTS (1)

- Non-required parts and equipment is the primary application for COTS
  - Aerial work equipment
  - Medical equipment
  - Electrical/electronic devices
- Certain kinds of Class III products
Potential applications for COTS (2)

- Parts that are not aeronautical products or aircraft components
  - Must be used in accordance with approved design
  - Production approval and ARC not required
Subpart 21.M

- Subpart 21.M does not preclude the use of COTS in a modification/repair design
- However, compliance with the applicable airworthiness standards must be shown
- Limiting applications to products that are not aeronautical products or aircraft components provides for simplification
- Design needs to cover conformity to the appropriate level
Future developments

- There are some products from other sectors or industries that do not fit into the current standard civil aviation product design and conformity model, but for which there may be a case to develop a mechanism for installation and use on type certificated aircraft
  - recreational aviation parts
  - automotive industry parts
Policy considerations (1)

- Are the existing requirements no longer appropriate in certain situations?
  - Modern commercial realities – profit:risk ratio too low
- Unavailability of aviation products
  - Replacement parts no longer available
  - Potential modification parts whose manufacturers are unwilling to comply with existing requirements
Policy considerations (2)

- **Cost reduction**
  - How to lower costs but maintain appropriate level of safety?
  - What about those who have complied with existing requirements?
- **International harmonisation**
Summary

- Subpart 21.M does not preclude the use of COTS, but there are many issues to be considered, including continuing airworthiness and installation.
- Limiting COTS to applications that are not aeronautical products or aircraft components provides simplification.
- CASA is developing the wider policy and the associated guidance material.
Questions?

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