Product Certification Update

DDH SEMINAR 2018

CIVIL AVIATION AUTHORITY
OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

Jason Ashworth – Team Leader Product Certification

“It isn’t necessary to imagine the world ending in fire or ice.
There are two other possibilities:
one is paperwork,
and the other is nostalgia.”

– Frank Zappa

Agenda

Year in review

Team updates

Procedure/Policy/AC updates

Year ahead

Year in Review

Some stats of note

Competency Matrix

Findings from TAIC Report AO-2015-003 – Operational Use

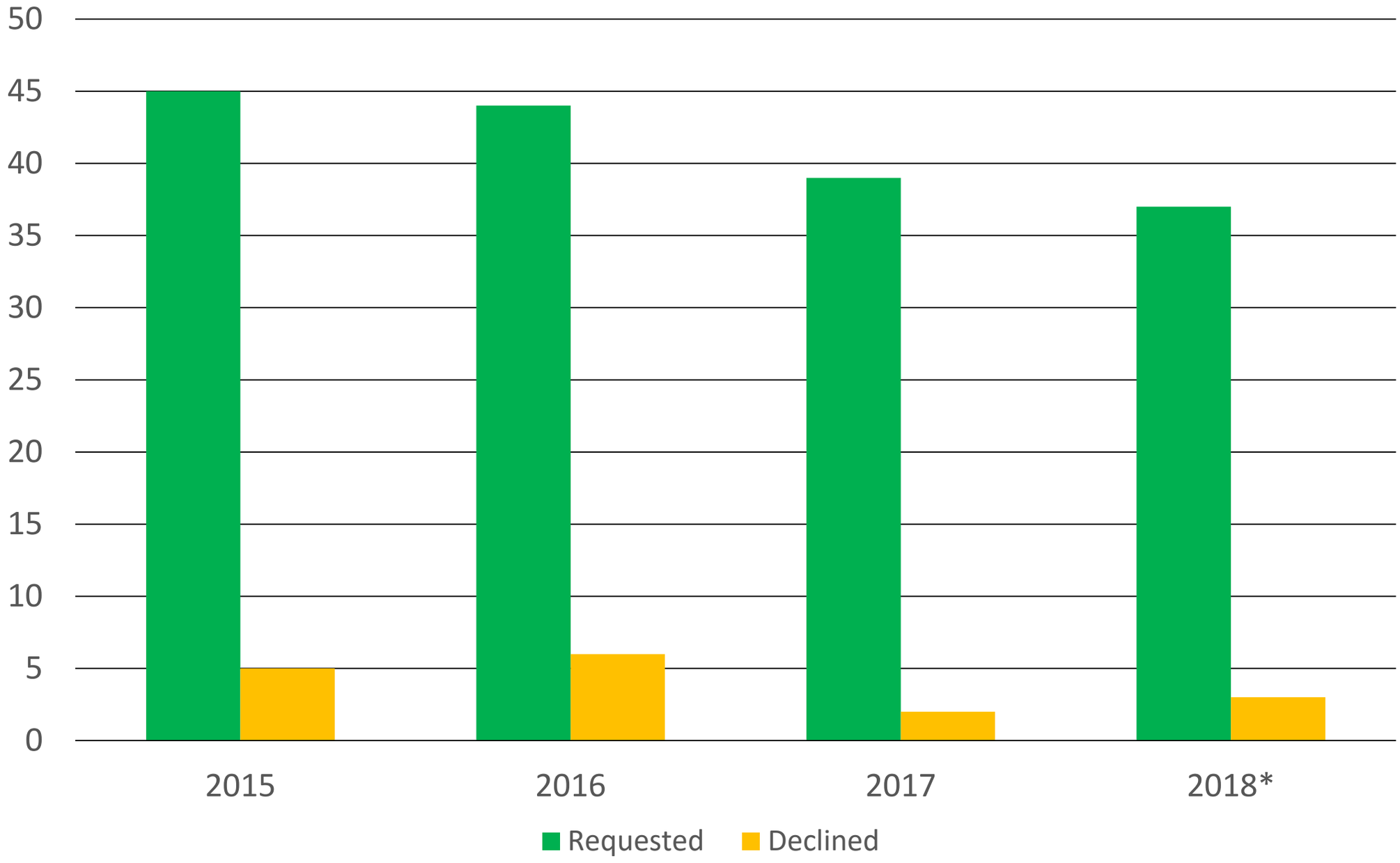
Year in Review

Since the last DDH seminar –

- 41 Major Design Change Authorisations
- 14 CAA337s
- 32 STCs
- 4 TC amendments
- 23 GPS-IFR approvals
- 55 NAV/PBN approvals
- 14 Part 146 certification/amendments/renewals
- 35 Part 148 certification/amendments/renewals
- 10 DDH certification/amendments/renewals

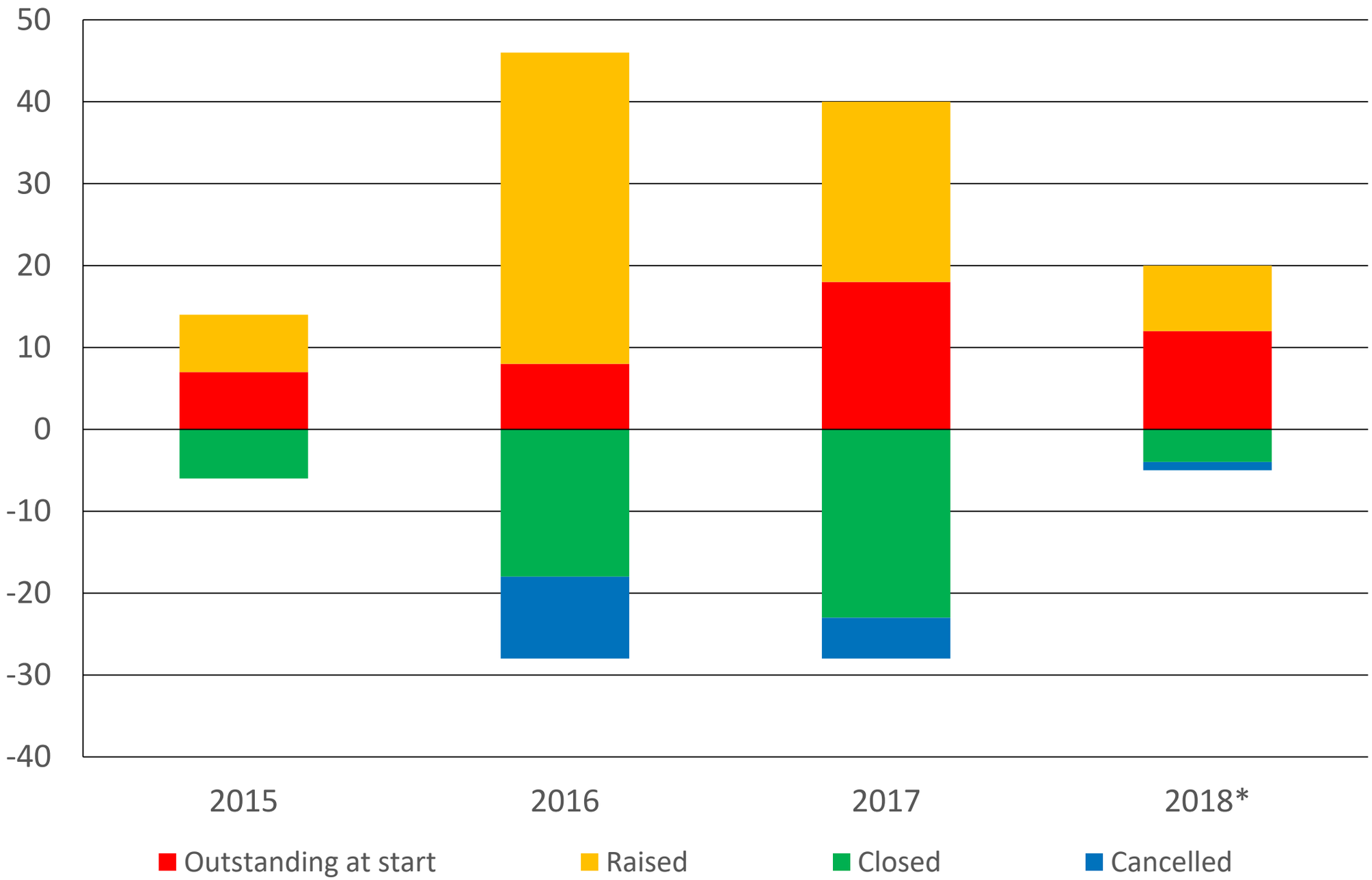
Year in Review

- Major Design Change Authorisations:



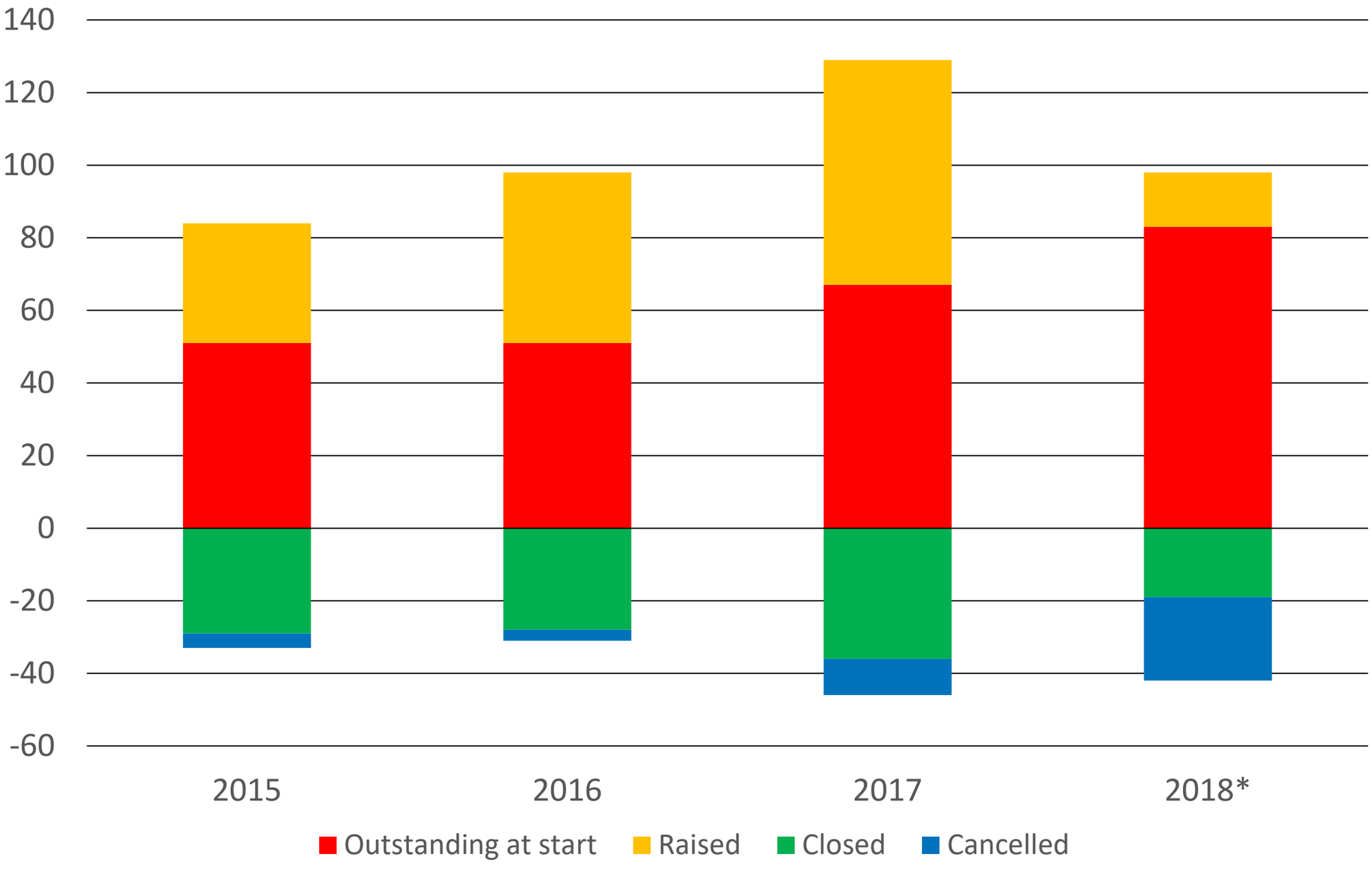
Year in Review

- CAA337 Design Approvals by CAA:



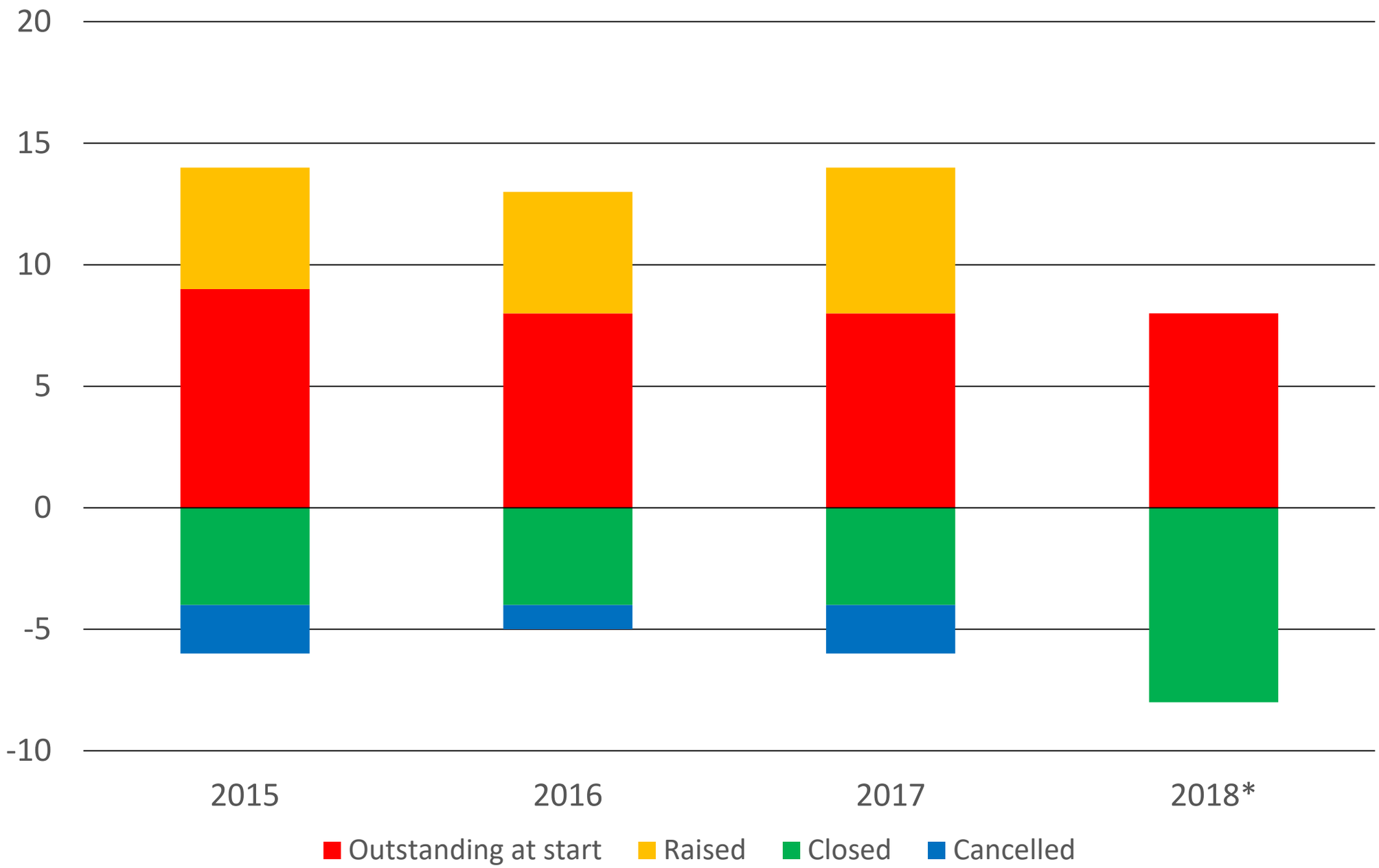
Year in Review

- STC issue and amendments:



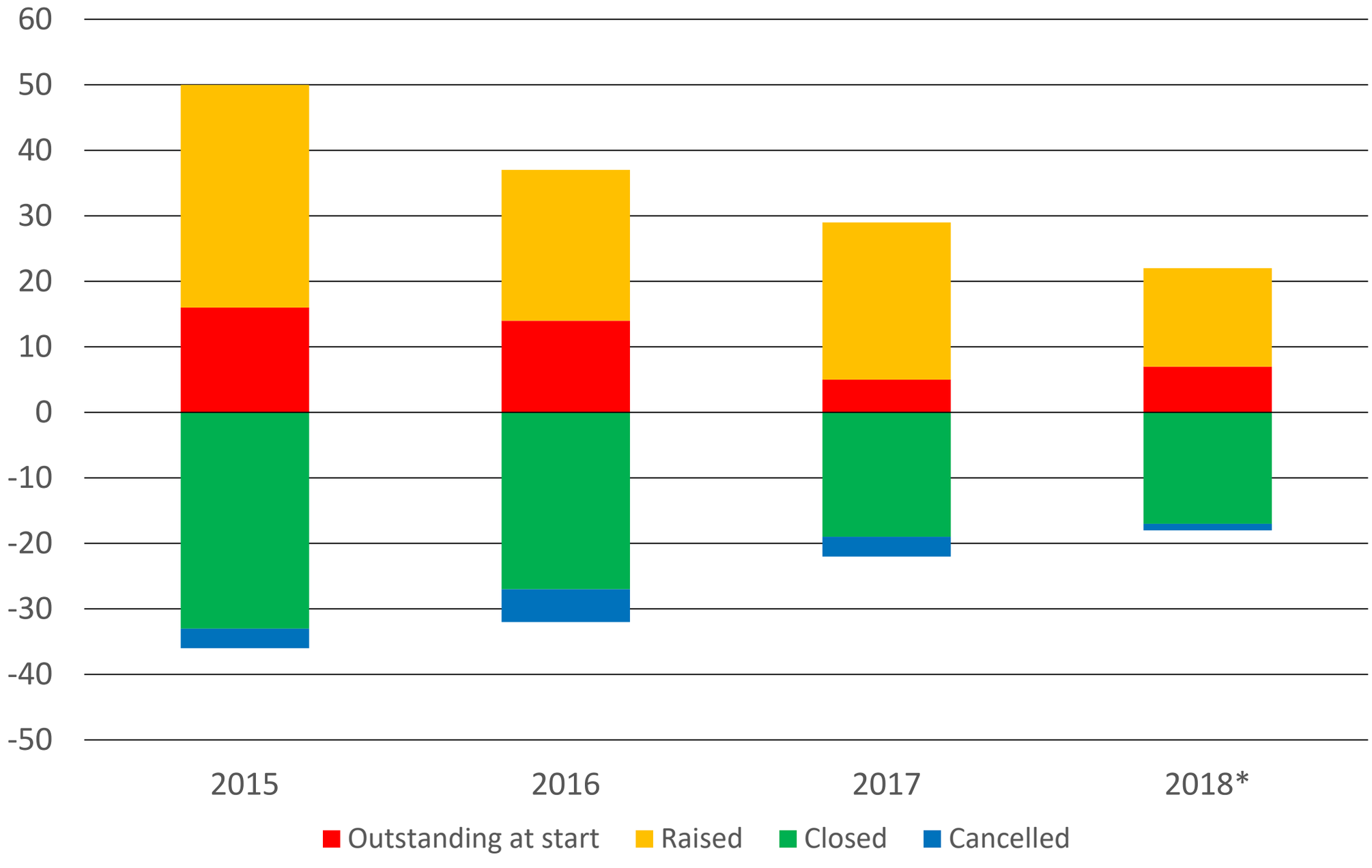
Year in Review

- TC issue and amendments:



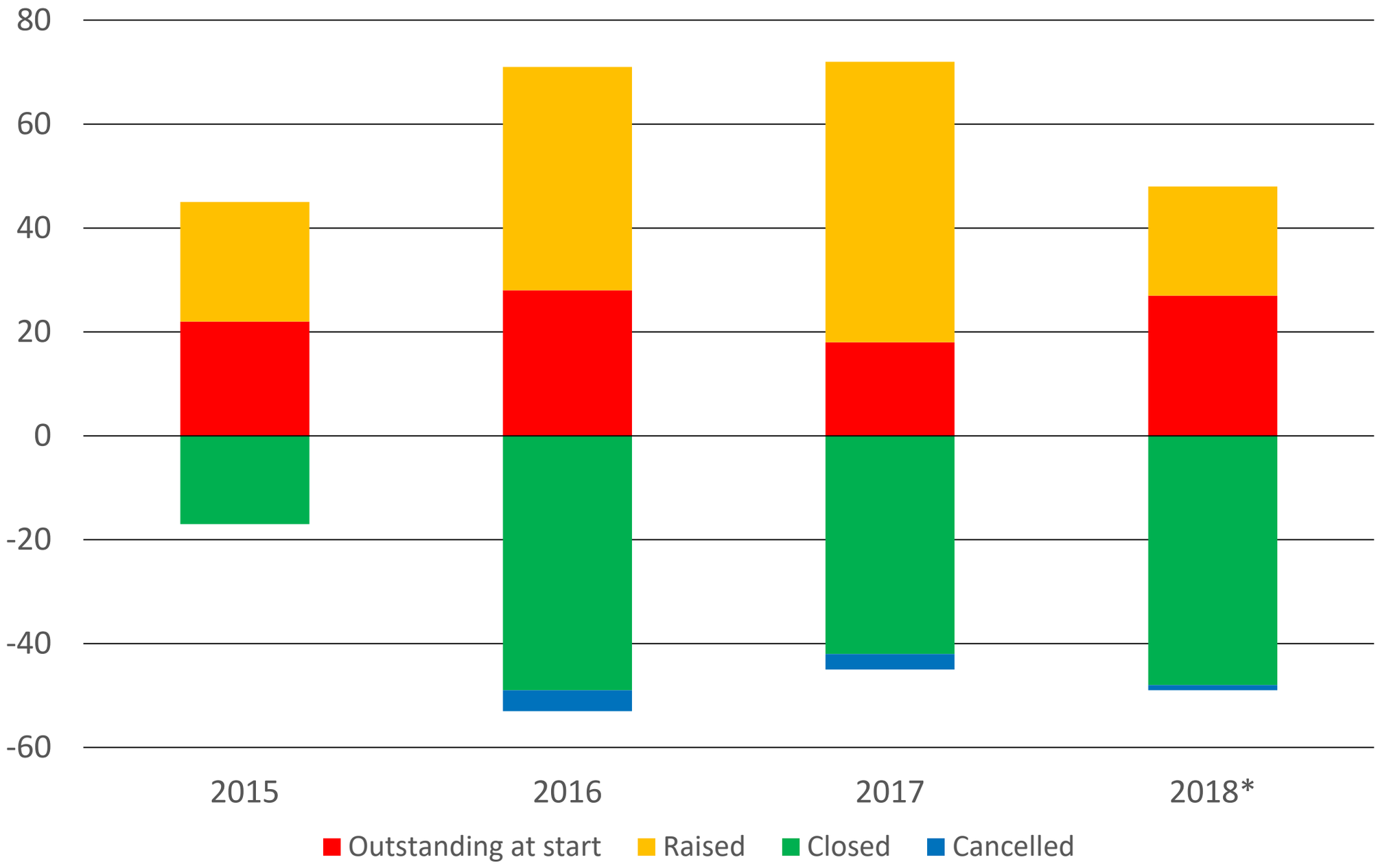
Year in Review

- GPS-IFR approvals:



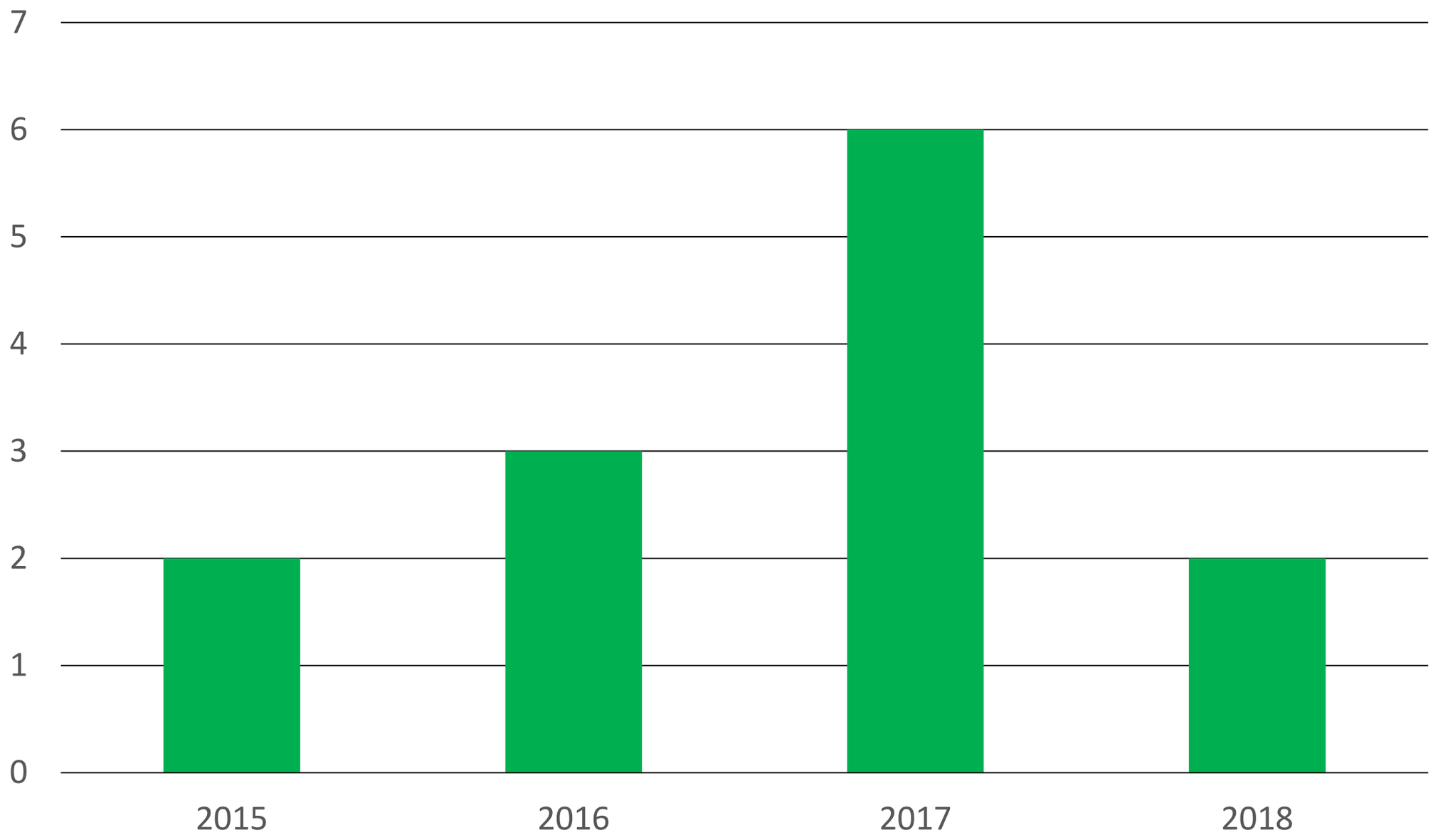
Year in Review

- PBN/NAV approvals:



Year in Review

- CAANZ STC validations by Foreign NAAs:



Year in Review

Margaret Hamilton, lead software engineer of the Apollo Project, stands next to the code she wrote by hand and that was used to take humanity to the moon. [1969]

Year in Review

- Competency Framework:

												Highest Level within the TEAM	Highest Level with redundancy within the TEAM	Identified Training Opportunities (priority area + 1 redundancy)
												PC	PC	PC
Structures														
Wings		2	1	2	1	2	2	1	2	2	2	2	2	
Fuselage		3	1	2	1	3	2	1	2	2	2	3	3	
Empennage		2	1	2	1	3	1	1	2	2	2	3	2	
Landing Gear		2	1	2	1	1	1	1	2	2	2	2	2	
Control Surfaces		1	1	2	1	2	2	1	2	2	2	2	2	
Rotor		1	1	1	2	1	1	1	2	2	2	2	2	
Weight and Balance Manuals		2	1	2	2	1	1	1	2	2	2	2	2	
Metallic Materials		3	2	2	3	3	2		2	2	2	3	3	
Non-metallic Materials		2	2	2	3	3	2		1	2	1	3	3	
Fire Protection		2	2	2	2	1	2	1	2	2	2	2	2	
Door Systems		1	1	1	1	1	1	1	2	2	1	2	2	
HIRF/Lightning		1	1	2	1	1	2	1	2	2	2	2	2	
Mechanical Systems and Equipment														
Hydraulic		1	1	2	1		1	1	2	2	2	2	2	
Ice Protection		1	1	2	1		1		2		1	2	2	
Rain Protection		1		1	1		1		2	1	1	2	1	
Pneumatics		1		2	1		1		2	1	1	2	2	
Wheels, Tires, Brakes		1	1	2	1	1	1		2	1	1	2	2	
Pressurization		2	1	1	1		1		2	1	1	2	2	
Fire Protection		2	2	1	1	1	2		2	1	1	2	2	
Electrical Systems and Equipment														
Electrical/Electronic Systems/Equipment		1		1	1		2		2	1	2	2	2	
Comms Systems/Equipment		1		1	1		1	3	2	1	1	3	1	YES
Automatic Flight Controls/Augmentation		1		1	1		1	1	2	1	1	2	1	YES
Instruments		2		1	1	1	1	2	2	1	2	2	2	
Nav Systems/Antennas		2		1	1	1	1	2	2	1	1	2	2	
Air Data/Pitot Static		2		2	1	1	1	2	2	1	1	2	2	
Warning Systems		1		2	1	1	1	2	2		2	2	2	
Exterior Lighting		2	1	2	2		1	1	2	1	2	2	2	
Flight Data/Voice Recording		1	1	1	1	1	1	1	1		2	2	1	
Passenger Address/Entertainment		2	1	1	1	1	1	1	1		1	2	1	
Fire Protection		2	2	1	1		1	1	2		1	2	2	
Electrical Power Generation		1		1	1		1	2	2		1	2	2	
Weather Radar		1		1	1		1	3	2		1	3	1	
Software		1		1	1		1	1	2		1	2	1	YES
Batteries		1		1	1	1	1	1	2		1	2	1	YES
HIRF/Lightning		1	1	2	1		2	1	2		2	2	2	
EMI/EMC		1		1	1		2	2	2		2	2	2	
Environmentals		1		1	1		1	2	2		1	2	2	

Year in Review

- Competency Framework - DDHs:

Structures																																			Highest Level Among Delegates	
Wings	1	2	3	2	3	1	1	1	3	3	3	3	3	3	3	3	3	3	3	2	1	3	3	2	3			2	2	3				3	
Fuselage	1	2	3	3	3	1	1	1	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3			3	2	3				3	
Empennage	1	2	3	2	3	1	1	1	3	3	3	3	3	3	3	3	3	3	3	2	1	2	3	2	3			2	2	3				3	
Landing Gear	1	2	3	2	3	1	1	1	2	2	2	3	3	3	3	3	2	3	1	2	2	2	3	2	2			1	2	3				3	
Control Surfaces	1	2	3	2	3	1	1	2	3	3	2	3	3	3	3	3	3	3	3	2	1	2	3	2	3			2	2	3				3	
Rotor	1	1	1	1	1	1	1	1	2	1		1	1	1		1	2	1	1	1	1		2	1				1	2	3				3	
Weight and Balance Manuals	1	1	3	3	2	2	2	2	3	2	1	3	3	2	3	2	3	3	2	3	2	3	2	3	3			3	2	3				3	
Metallic Materials	1	2	3	3	3	1	2	2	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3			3	2	3				3	
Non-metallic Materials	1	2	3	3	3	1	2	1	3	3	2	3	3	2	2	3	3	2	1	2	2	3	3	2	2			2	1	2				3	
Fire Protection	1	1	3	2	2	1	1	2	1	1	1	2	2	3	2	3	1	3	1	2	1	2	3	2	2			2	2	3				3	
Door Systems	1	1	2	1	2	1	1	1	2	2	1	1	2	3	3	2	2	3	1	1	2	2	3	1	2			2	1	3				3	
HIRF/Lightning	1	1	2	1	2	2	1	2	1	3	1	2	1	1	1	1	1	2	1	1	1	2	3	2	1			1	2	2				3	
Mechanical Systems and Equipment																																			
Hydraulic	1	1	2	1	2	1	1	1	2	1	2	3	1	2	3	2	2	2	2	2	2	2	3	2	2			1	2	3				3	
Ice Protection	1	1	2	1	2	1	1	1	2	1	1	1	1	2	1	1	2	2	1	1		2	3	1	2			2	1	2				3	
Rain Protection	1	1	2	1	2	1	1	2	1	1	1	1	1	2	1	1	1	2	1	2		2	2	2				2	1	2				2	
Pneumatics	1	1	2	1	2	1	1	1	1	1	2	1	1	3	3	2	2	2	2	2		2	3	2	2			2	2	3				3	
Wheels, Tires, Brakes	1	1	2	1	2	1	1	1	1	1	1	2	1	2	3	2	2	2	1	3	2	2	3	2	2			2	1	3				3	
Pressurization	1	1	3	2	2	1	1	2	2	2	2	1	1	3	1	2	2	3	2	1	1	2	3	2	1			2	2	2				3	
Fire Protection	1	1	2	1	2	1	1	2	2	1	1	1	1	2	1	1	2	3	1	1		2	3	1	1			2	2	2				3	
Software	2	1	1	1	1	1	1	2	1			2	1	1	1		1	1	1	1	1	2	1	1				1	3	2				3	

Year in Review

- TAIC AO-2015-003 – Operational Use:

An example: Installation of agricultural equipment may inadvertently lead to the misconception by operators/pilots that the aircraft can be operated in the same way as a design-for-purpose agricultural aircraft, i.e. a higher ratio of flight (G-A-G) cycles per flight hour accumulated, which is beyond that originally considered for “normal operations” of the type design.

An increase in the number of high load cycles, even within the current flight envelope, changes the load spectrum and potentially reduces the fatigue life of the components subject to cyclic loads.

In both cases, assessment of the changes to the operational usage profile, including load spectrum analysis and amendment of the ICA / Maintenance program would require oversight of the CAA and would therefore require a STC.

Year in Review

- TAIC AO-2015-003 – Operational Use:

1. If the major design change could potentially change the nature of the operation and/or affect the assumptions of the nature of the operation of the product affected, then the applicant must address these changes by involving the OEM to substantiate the new operation, including adjusting the maintenance program or ICAs where necessary.

2. Explicitly limit the operational usage to that already approved under the TC only; or

3. If the applicant chooses to not explicitly placard AND state within the AFMS that the operation usage remains unchanged from the TC data, any change in operational use will require additional CAA approval. A STC would have to be pursued including an operational assessment.

Year in Review

- TAIC AO-2015-003 – Operational Use:

  Will be considered when processing Major Change Authorisation Requests.

  Will be investigated when processing PSCP reviews for STC applications.

Triggered by spray booms on R44 accident, BUT

Applies to any modification that affects/could affect operational use,

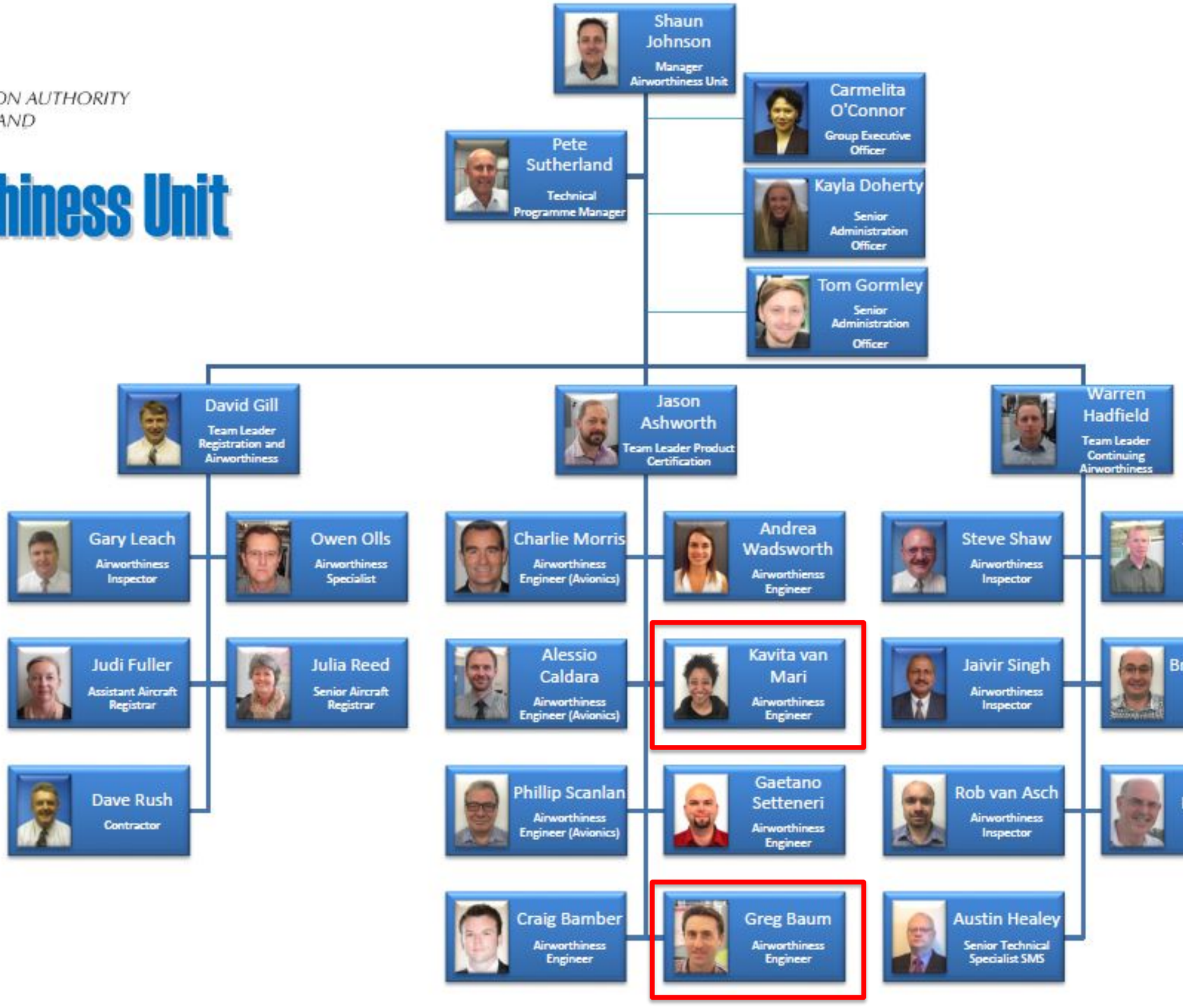
e.g. change in operating envelope, OR

change in loading spectrum.

Team Updates

CIVIL AVIATION AUTHORITY OF NEW ZEALAND

Airworthiness Unit



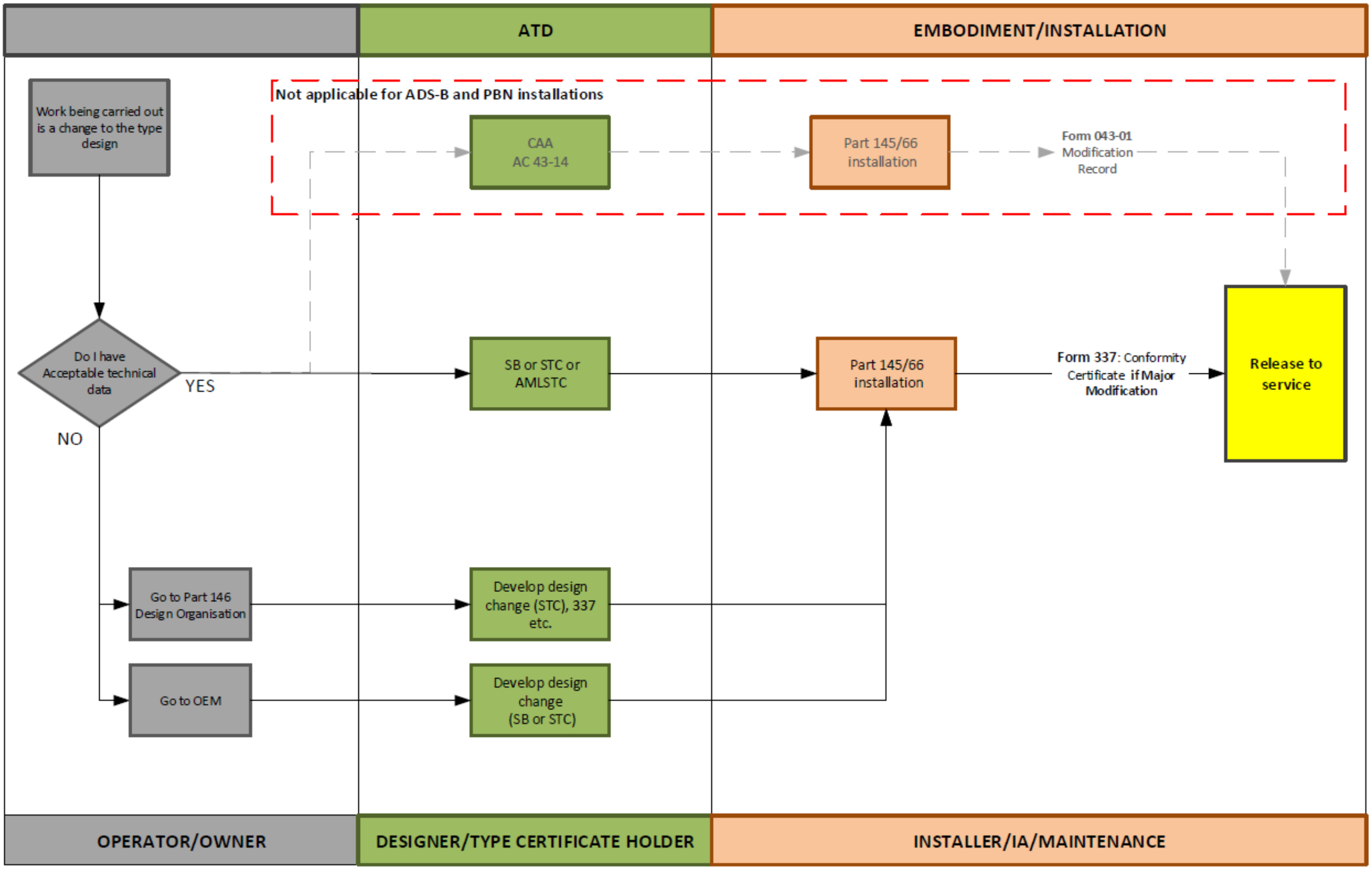
Procedure/Policy/AC Updates

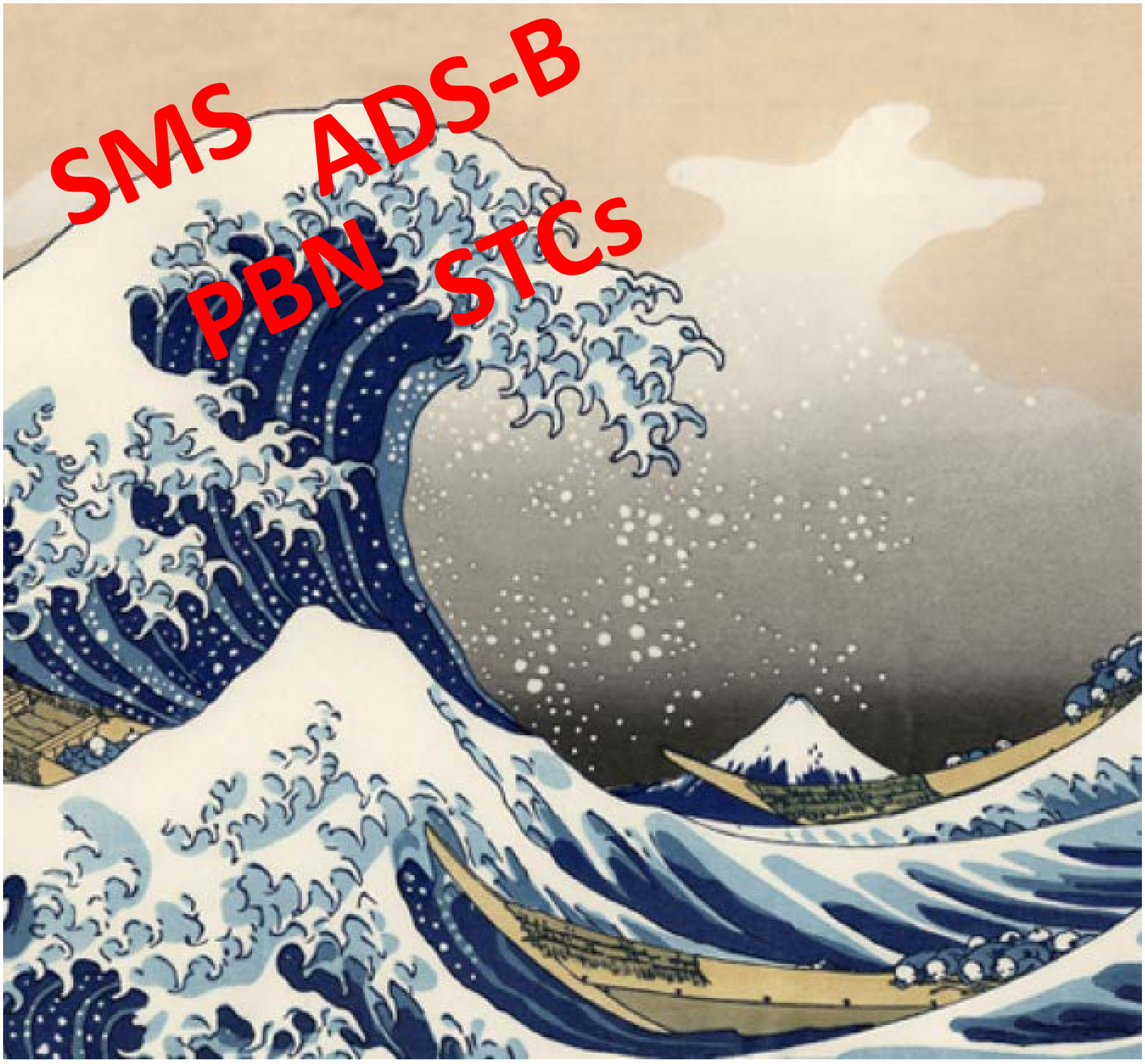
- TAIC Findings forced changes to STC, CAA337 and Modification Authorisation internal procedures

- AC43-14 – 5 projects active for Rev.6 to investigate adding Appendices to cover:
  - ADS-B (w/Integral GPS) Transponder Installations
  - Mode S Transponders
  - LED Lighting Replacements
  - Dual Function Nav/Com Units
  - Non-aeronautical tracking systems

- AC 43-9 Update including further clarity on separation of Part 21 function (ATD) versus Part 43 function (Conformity) of CAA337

Process for use of ATD for ADS-B or PBN equipment installation



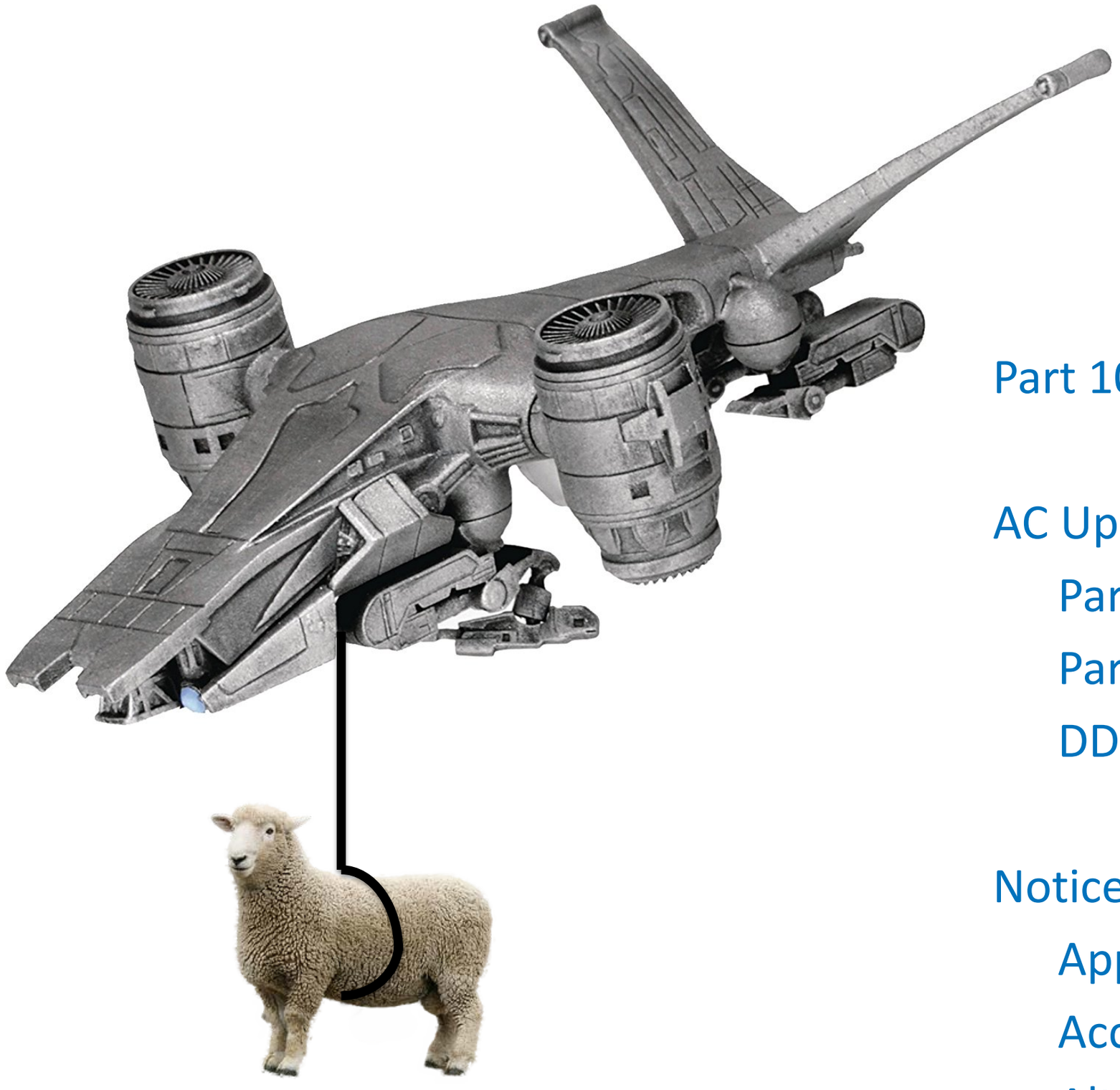


Year Ahead

SMS Group 2

NSS – ADS-B, PBN

NASO – Upgrade STCs



Year Ahead

Part 102 UAV PC Support

AC Updates –

- Part 146
- Part 148
- DDH

Notices –

- Appendix D of Part 21
- Acceptable Technical Data List
- Alternative Technical Standards List

“Without deviation, progress is not possible.”

– Frank Zappa