The collaboration between Civil and Military Aiworthiness Authorities in Europe.

A field in continuous evolution.

Juan M.Román
Head of Product Integrity
Airbus DS-Engineering (Military Aircraft)

Brisbane 25-07-19

Table of Contents

- Introduction
- Military Airworthiness in the EU countries.
- Some examples.
  - Example 1 A400M.
  - Example 2 A330 MRTT
  - Example 3 A330 FSTA.
- The civil model and its extrapolation to the military world.
- Convergence between civil and military regulations. Current Status. The EDA-MAWA initiative.
- Collaboration with EASA.
  - Status before July 2018.
  - The Basic Regulation change of 2018.
  - Collaboration with EASA. Implementation process for the new Basic Regulation.
  - Potential benefits of the new Regulatory frame.
- Can EDA-MAWA take benefit from the new Basic Regulation?
- Can the industrial activity be simplified?
- How the products can benefit from the regulatory change.
  - Back to example 1 A400M.
  - Back to example 2 A330 MRTT
  - Back to example 3 A330 FSTA.
- Conclusions

Introduction.

- The Aviation system in the EU is regulated at two different levels:
  - The standard civil aviation is regulated at the EU level (common rules for all Member States) following the ICAO principles and under the Authority of the EASA (European Union Aviation Safety Agency).
  - The State Aviation (including Military) and the corresponding operations that are regulated at national level by the different Member states, under the oversight of the corresponding National Authorities (civil or military).
- Defence topics are excluded from the EU regulatory capability, and therefore, Military aviation is managed by the Member States, outside the common regulatory frame.
- The common regulatory frame in the civil Aviation system has brought significant benefits for all main actors:
  - Industrial sector: working under a common set of rules and standards.
  - Member States: relying on a single entity (the EASA) for regulatory and main oversight tasks.
- In the Military sector, however, the existing legal framework has been difficult to manage, and the collaboration has been triggered on a case by case basis.
- Management of the military airworthiness is deeply affected by the main regulatory frame.

Military Airworthiness in the EU countries.

- Every EU country holds its own Military Airworthiness regulatory system.
- Such different systems, although evolved along the years, exhibit no convergence among nations.
- Some large military aviation projects in the EU (like the A330MRTT/FSTA and A400M) have forced some collaboration level between military authorities and with the civil ones). Such programmes have also suffered from the lack of regulatory convergence.
- Caused by the separated evolution in each individual country, and the lack of empowerment of the EU to harmonise the regulatory frame, the current situation has been achieved.

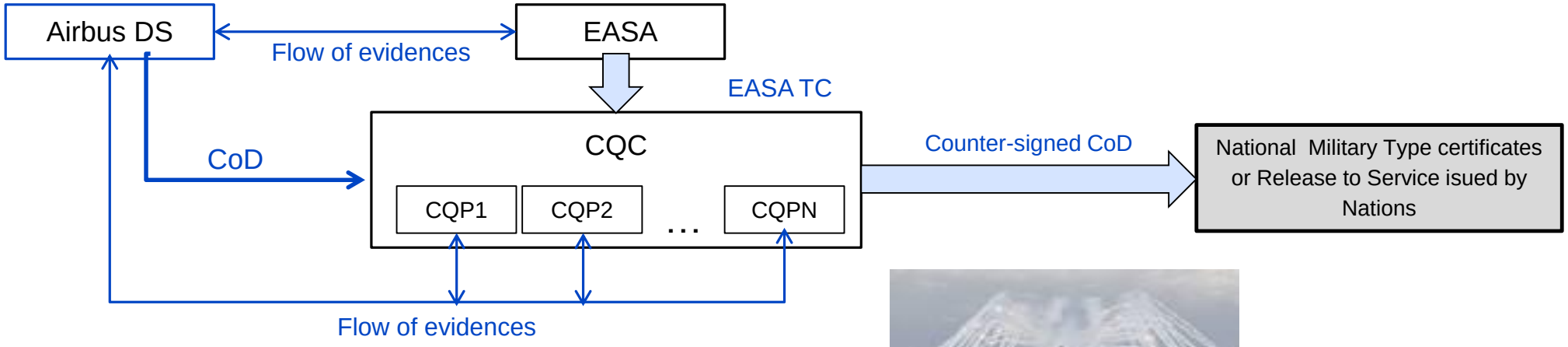
- Consequences:
  - ❑ Difficulties in establishing the collaborative frame for new programmes
  - ❑ Interoperability impacted.
  - ❑ Unnecessary costs overruns.
  - ❑ Industrial activity impacted.

- Next pages show examples of how things are currently running in the certification of products. The complexity can be observed.

Some Examples.

Example 1. A400M

- A400M Is designed and built under the leadership of Airbus DS (initial development by Airbus commercial) as single industrial responsible.
- A400M has a dual certification process.
- First with the EASA that issues a civil Type Certificate for a configuration not including military items or operation.
- For the military part, the CQC (Certification Qualification Committee) that is structured into different CQPs (Certification and Qualification Panels following EASA model) is in charge of the process.
- For the military approval each multinational CQP reviews the documents and interact with Airbus DS and finally recommends approval or not.
- Airbus DS issues a certificate of design (CoD).
- Finally the CQC countersigns the Airbus DS (CoD) after approval of all National members of the CQC.
- National Authorities can issue the corresponding national military Type Certificates or equivalent.

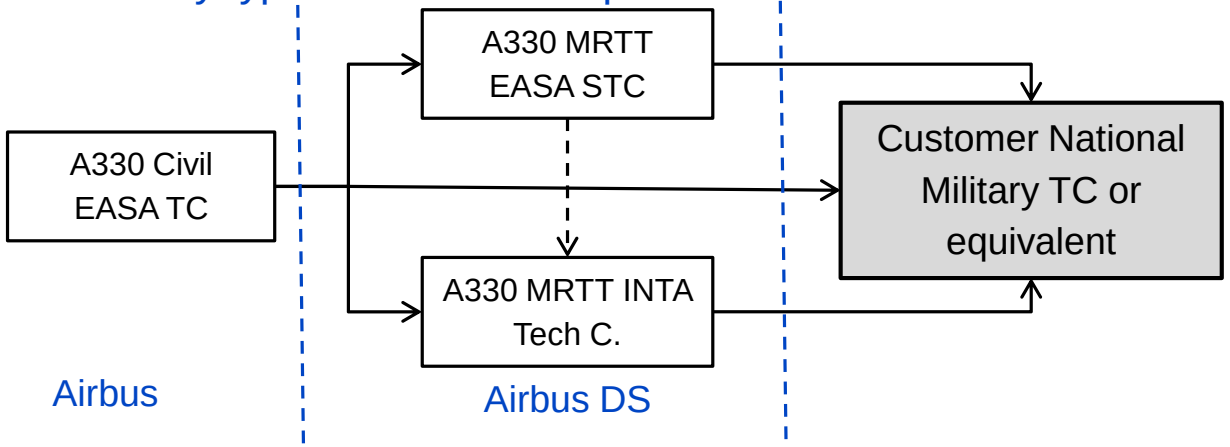


AIRBUS

Some Examples.

Example 2. A330 MRTT

- A330 MRTT was launched to cover the needs of worldwide fleets for tanker aircraft. It combines a FbW boom system with two underwing refueling pods plus other specific military equipment.
- The aircraft has been acquired by several countries (Australia, Saudi Arabia, UAE, Singapore, France, South Korea and some European countries under the MMF project led by Nederland).
- The certification model used for the launcher country Australia, has been applied, with small variations, to all versions.
- The product starts with a Civil Certified A330 by Airbus with the EASA.
- The first step is a STC by Airbus DS with the EASA to cover safe carriage of military items inoperative.
- The second step was the recognition of the Spanish authority DGAM/INTA by the Customer Authority.
- The third step was the issuance by INTA of a technical certificate that cover the military functionalities, and equipment, on top of the EASA TC plus STC.
- Finally the Customer Authority Accepts the EASA TC supplemented with the STC plus the INTA technical certificate to issue their National Military type certificate or equivalent release to service.

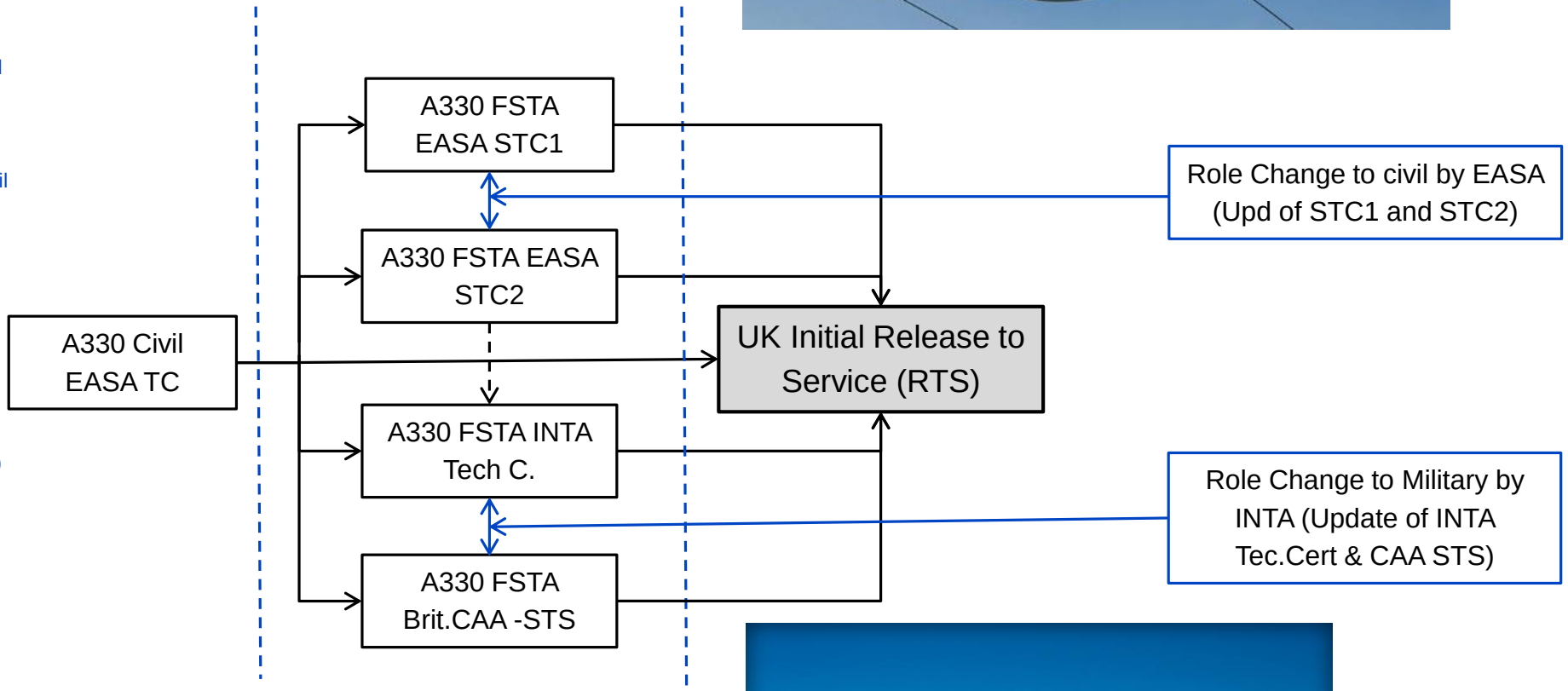


AIRBUS

Some Examples.

Example 3. A330 FSTA.

- A330 FSTA Is the UK version for a strategic tanker aircraft. Main difference with respect to MRTT is that it carries a Fuselage Refueling Unit (FRU) instead of the boom system.
- It is operated by a commercial company (Air Tanker) and it is able to move from military to civil register and vice-versa, making the certification process one of the most complex ever.
- As the MRTT, the process starting point is the EASA civil type certificate of A330,
- A first STC1 approved by the EASA endorses the future civil reverted configuration (provisions only).
- A second STC2 (equivalent to the one of MRTT) approves safe carriage of military equipment.
- The Spanish Military Authority INTA is recognised by the British.
- As in the MRTT, INTA certifies the Military operation of the aircraft and equipment.
- Additionally, A Statement of Technical Satisfaction (STS) issued by the British CAA in accordance with British regulation for MRCOA (Military Registered Civil Owned Aircraft) allows a commercial company (Air Tanker) to operate the Aircraft.
- With the above, plus the completion of qualification process the British MAA is in situation of providing Release to Service.
- Additionally, an evaluation of the military usage by the EASA allows to obtain the “role change” from military to civil register after removal of military equipment reverting to configuration approved under STC1
- Finally, after evaluation of civil usage by INTA, the inverse “role change” from civil to military register is approved to operate again under the configuration approved by INTA.



AIRBUS

The civil model and its extrapolation to the military world.

- The civil aviation regulatory system in place in Europe since the assumption by the EU of aviation responsibility and the creation of the EASA has proven really efficient.
- From the point of view of airworthiness, the system addresses in a simple and logical manner the main aspects affecting airworthiness through the corresponding implementing rules:
  - ❑ Initial airworthiness: Part 21
    - Design and production of products, parts and appliances
    - Design and production organisation approvals.
  - ❑ Continuing Airworthiness.
    - Maintenance centers Part 145
    - Training organisations of maintenance personnel Part 147
    - Maintenance licences Part 66
    - Continuing Airworthiness Management organisations (CAMOs) Part-M

- The system includes provisions for granting privileges to the industry and to ensure such privileges are properly executed via reinforcement of organisations oversight.
- The same approach can be followed in the military taking due regard of the specificities of military aviation.
- This approach, as we will see later, is being followed by the EDA (European Defence Agency) with the aim to promote the harmonisation of military airworthiness across Europe.
- The European industry is fully aligned with such philosophy.

Convergence between civil and military regulations. Current Status. The EDA-MAWA initiative.

- The first real attempt to harmonise the Military Airworthiness Regulations in Europe is currently being conducted by the EDA (European Defence Agency), under the acronym MAWA (Military AirWorthiness Authorities). It is based upon the EU civil regulatory frame. The reasons behind such initiative are:
  - ❑ The problems of time and cost overruns in major transnational programmes (i.e. EF2000, A400M, etc)
  - ❑ The need of standardisation of the maintenance system
  - ❑ Improve the interoperability issues between allied forces.
- Based on this, the road-map for the EDA contains seven main targets :
  1. Common regulatory framework.
  2. Common certification processes.
  3. Common approach to organisational approvals.
  4. Common certification/design codes.
  5. Common approach to preservation of airworthiness.
  6. Arrangements for mutual recognition.
  7. Formation of a European Military Joint Airworthiness Authorities Organisation (EMJAAO).

EUROPEAN DEFENCE AGENCY

MAWA

AIRBUS

Convergence between civil and military regulations. Current Status. The MAWA initiative (2).

- Current Status:
  - ❑ In October 2015 the first 5 points have been enabled after the issuance of the overall regulatory package known as EMARs (European Military Airworthiness Requirements).
  - ❑ The requirements have been derived from the civil equivalents and today there are available:
    - EMAR 21 as equivalent to civil Part 21
    - EMAR 145 as equivalent to civil Part 145
    - EMAR 147 as equivalent to civil Part 147
    - EMAR 66 as equivalent to civil Part 66
    - EMAR M as equivalent to civil Part M
  - ❑ In addition to those requirements, some supplementary documents have been issued
    - EMAD-1 for definitions
    - EMAD-R for Mutual recognition arrangements
    - EMACC for certification codes as equivalent to the US MIL-HDBK-516

- However……

AIRBUS

Convergence between civil and military regulations. Current Status. The MAWA initiative(3).

- .....some problems arise at the very moment of the implementation of EMARs into the different National regulatory frames:
  - ❑ Lack of co-ordination among nations (EDA not empowered) to implement the rules in a consistent manner.
  - ❑ Different interpretations among the Nations.
  - ❑ Some National overarching regulations prevent appropriate levels of delegation to Industrial organisations (as happens in civil world).
  - ❑ Only a few nations like France, and with some minor restrictions Italy hold a regulatory frame that endorses the EMARs spirit.
- Therefore, although the basic idea is well sound, there are several problem to overcome.
  - ❑ Appropriate mutual recognition mechanisms.
  - ❑ A clear acceptance of of the EDA-MAWA road-map by the Member States

- In addition, the second big pillar that is the collaboration with the EASA has been poorly regulated, and only agreements have been achieved for specific programmes due to the real need of collaboration.

Collaboration with EASA.

Status before July 2018

- All above examples show the complexity of mixing civil and military products and highlight the real need for collaboration between the NMAAs and the EASA in some relevant projects.
- In all cases, the collaboration has been strongly promoted by the Industry (Airbus in particular).
- Main reasons are that:
  - ❑ In A400M many systems and equipments were shared with the commercial products of Airbus.
  - ❑ In A330 MRTT and FSTA, the final product is a derivative of the commercial A300-200 certified by the EASA.
  - ❑ Other products like the Light and Medium transport aircraft line C212, C295, hold type certificates by civil and military authorities.
- However, the definition of the accountabilities among authorities participating in such programmes is not easy.
- EU regulation (EC 216/2008) available till July 2018 stated (article 1 paragraph 2, Subparagraphs (a), (b) and (c) :

> 2. This Regulation shall not apply to:
>
> (a) products, parts, appliances, personnel and organisations referred to in paragraph 1(a) and (b) while carrying out military, customs, police, search and rescue, firefighting, coastguard or similar activities or services. The Member States shall undertake to ensure that such activities or services have due regard as far as practicable to the objectives of this Regulation;
>
> (b) aerodromes or part thereof, as well as equipment, personnel and organisations, referred to in paragraph 1(c) and (d), that are controlled and operated by the military;
>
> (c) ATM/ANS, including systems and constituents, personnel and organisations, referred to in paragraph 1(e) and (f), that are provided or made available by the military. The Member States shall undertake to ensure that aircraft referred to in point (a) of this paragraph are separated, where appropriate, from other aircraft.

- **The Member States are fully responsible for the Military aviation.**
- **In general, no delegation mechanisms from military to civil authorities in the EU regulation are available.**
- **Therefore EASA cannot act as Authority, although can provide support.**

Collaboration with EASA.

The Basic Regulation change of 2018.

- In July 2018, A new regulatory frame has been published buy the EU concerning aviation topics.
- This new regulation EU 2018/1139, among other changes, opens the door to the possibility for the EASA to manage airworthiness of “state aircraft” under the so called “**Opt-In**” possibility. Military aircraft can access to this possibility.
- Consideration number 10 (formalised in Article 2 (6)) of such regulation states :

> (10) Where Member States consider it preferable, in particular with a view to achieving safety, interoperability or efficiency gains, to apply, instead of their national law, this Regulation to aircraft carrying out military, customs, police, search and rescue, firefighting, border control and coastguard or similar activities and services undertaken in the public interest, they should be allowed to do so. Member States making use of this possibility should cooperate with the Agency, in particular by providing all the information necessary for confirming that the aircraft and activities concerned comply with the relevant provisions of this Regulation.

- **The Member States are still fully responsible for the Military aviation.**
- **However, the new EU regulation allows them to rely in the EASA for “State Aircraft” when they judge it appropriate.**
- **This possibility enables the EASA to act as Authority in such cases.**
- **Facilitates a co-operative mechanism between NAAs and EASA.**
- **Enables the possibility of dual EU and national certifications if necessary.**

Collaboration with EASA.

The Basic Regulation change of 2018 (Ctd).

- Article 2 (6) specifies the possibilities for the Member States to choose applicability of the regulation for any individual section or combination of sections I, II, III or VII of the Chapter III of regulation:
  - ❑ Section I: Airworthiness and Environmental Protection
  - ❑ Section II: Aircrew
  - ❑ Section III: Air Operations
  - ❑ Section VII: Unmanned Aircraft

- ….and for which activities (“a-priori” excluded by the new article 2 (3) (a))
  - ❑ Military
  - ❑ Customs
  - ❑ Police
  - ❑ Search and rescue
  - ❑ Firefighting
  - ❑ Border control
  - ❑ Coast Guard
  - ❑ Similar activities or services under control and responsibility of a Member State.

- The regulation requires that the Member States that will opt-in, to provide the the formal declaration and the definition of which sections of Chapter III and which activitie(s) under article 2 (3) (a).

Collaboration with EASA.

Implementation process for the new Basic Regulation.

- The top level regulatory changes require updating the implemmenting rules:
  - ❑ For Initial airworthiness: Part 21
  - ❑ For Continuing Airworthiness: Parts 145, 147, 66 and M.

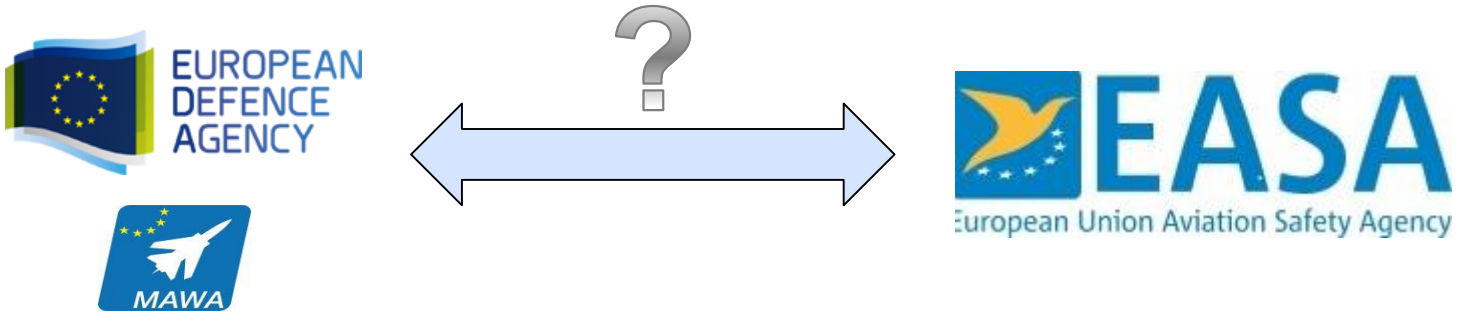
- …and/or the corresponding guidance material.

- This rulemaking process would take 3 to 4 years to the EASA.

- Additionally, the Member States, could eventually, need to adapt their regulations.

- In the interim, any activity should be managed on a case-by-case basis, in deep collaboration with the EASA.

- For export products (outside the EU), the manufacturers expect that the EASA could facilitate the application of the regulation in case the customer country could accept the EASA certificates and related requirements.

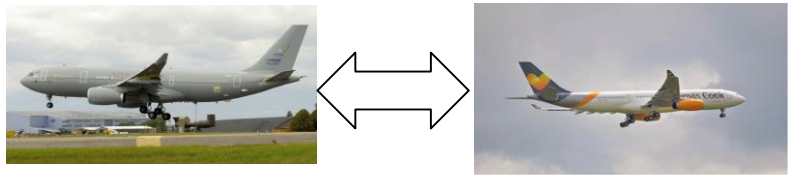


AIRBUS

Collaboration with EASA.

Potential benefits of the new Regulatory frame.

- The new regulatory material concerning the participation of the Agency in State Aircraft Aviation has the potential to trigger some topics:
  - ❑ Simplification of certification routes/processes in the complex European military collaborative programmes. Good examples could be:
    - Programmes like A400M.
      - A high proportion of the airworthiness activity has/is being managed by the EASA
    - Military programmes derivatives from commercial products, like tankers, mission aircraft, etc.
      - Being the basic platform civil certified it could be easier to complet the “militarisation process” with the original authority.
    - Optimization of the resources by the EASA and the Nations.
      - Sharing specialists could facilitate the activity.
  - ❑ Potential development of new business:
    - Services to the Military provided by commercial operators (i.e.):
      - AAR services provided in “fee-for-service” mode.
      - Air logistics operations.
      - Training (i.e parachutists training services).
    - Development of other State, non-military, aviation operations:
      - Humanitarian support in catastrophic areas (frequently requested by UN).
      - Support to border control.
      - Firefighting services.
    - Dual usage (civil/military) of the same platform.
      - This topic developed in the UK at national level for FSTA (MRCOA rules), could be generalised at European level.



AIRBUS

Can EDA-MAWA take benefit from the new Basic Regulation?

- The change in the basic regulation (concerning the possibility of EASA participation in State Aviation) is independent of the MAWA initiative.
- However it can have an impact in the future MAWA evolution, since it brings the legal possibility of triggering collaboration between civil and military authorities.
- As commented in previous slides, the MAWA initiative success is strongly depending on the real will of the Member States.
- The potential benefits from the basic regulation can be applied if the Member States elect to “opt-In”
- The appropriate implementation of EMAR regulations accross the Member States since they are derived from civil rules will facilitate the collaboration with the EASA, since civil and military rules are very similar.
- In the EASA side, the recognition that, for State aviation products (in particular military ones) the certification basis, in many cases, cannot be based on civil certification specs.

Can the industrial activity be simplified?

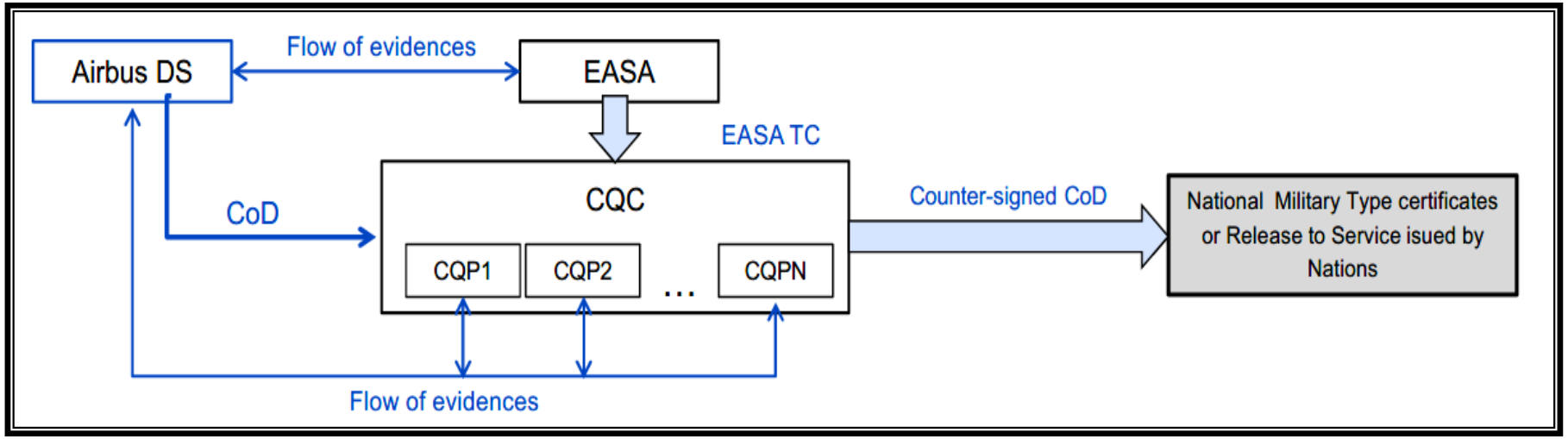
- The answer to this question is simple: The new regulation brings new possibilities that the industry will explore:
  - ❑ For European collaborative programmes, where the participation of the EASA clearly ads value.
  - ❑ For export products when the Customer Country accepts the EASA management of the Airworthiness.
- Next pages analyse how things coud have been in case of the possibilities of the new regulation become available. We use the three examples explored at the begining to illustrate the complexity of certification processes.

AIRBUS

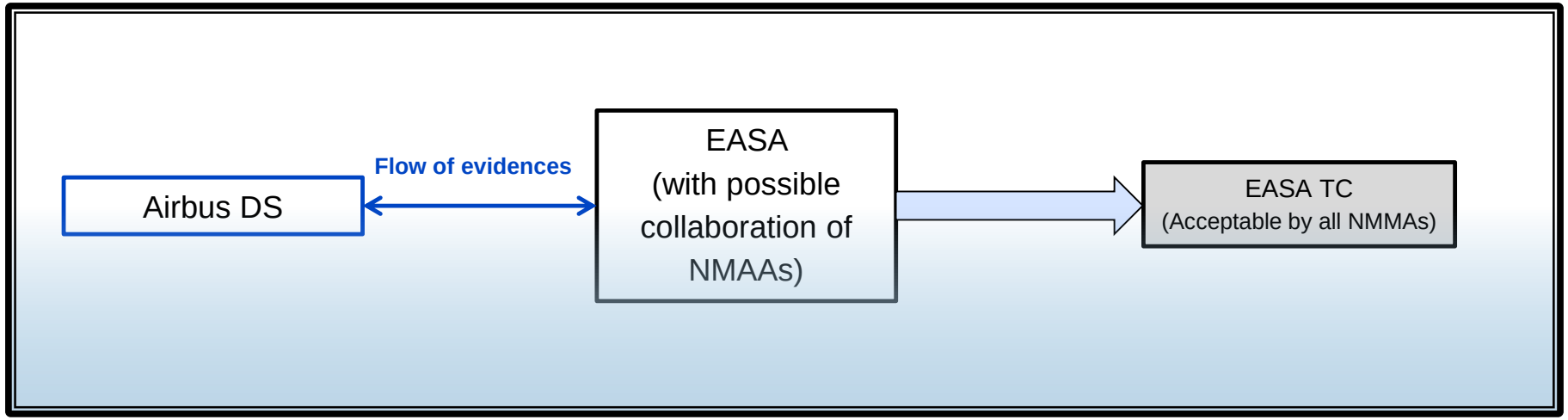
How the products could benefit from the regulatory change.

Back to Example 1. A400M

A400M current set-up



A400M (potential simplification)

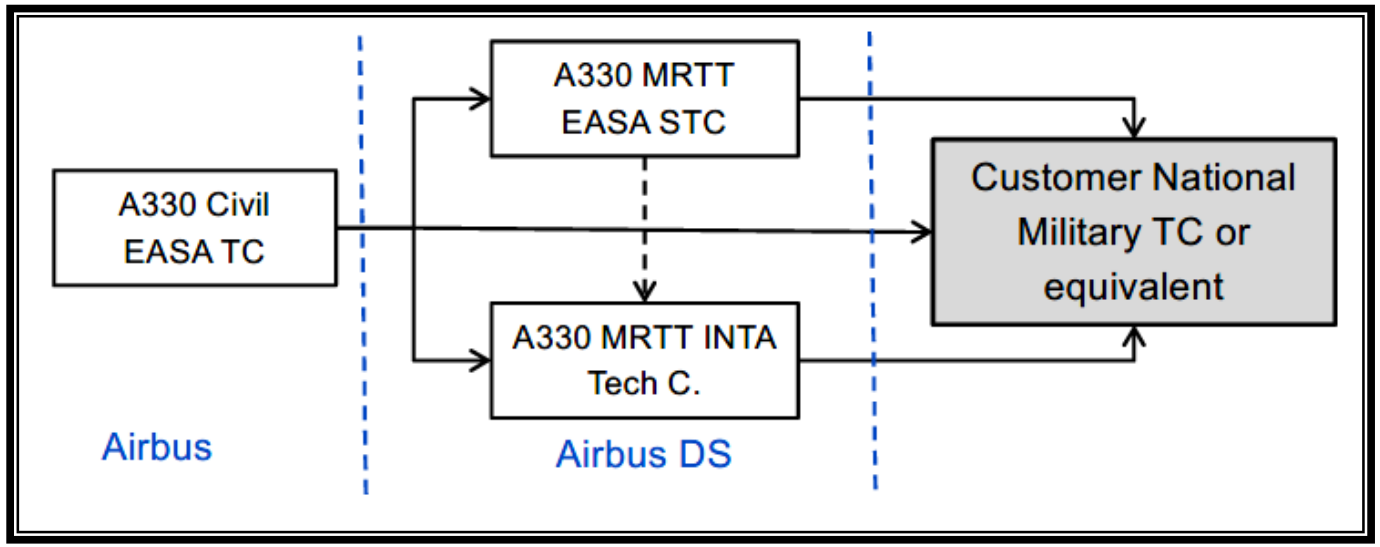


AIRBUS

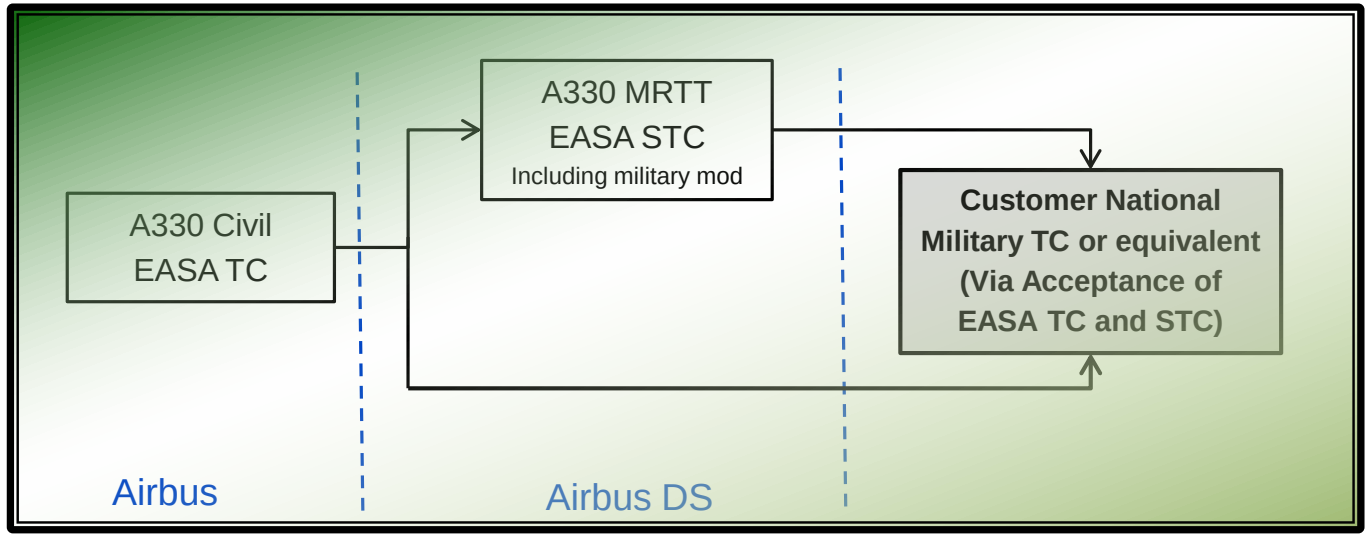
How the products could benefit from the regulatory change.

Back to example 2. A330 MRTT

A330 MRTT current set-up



A330 MRTT potential simplification

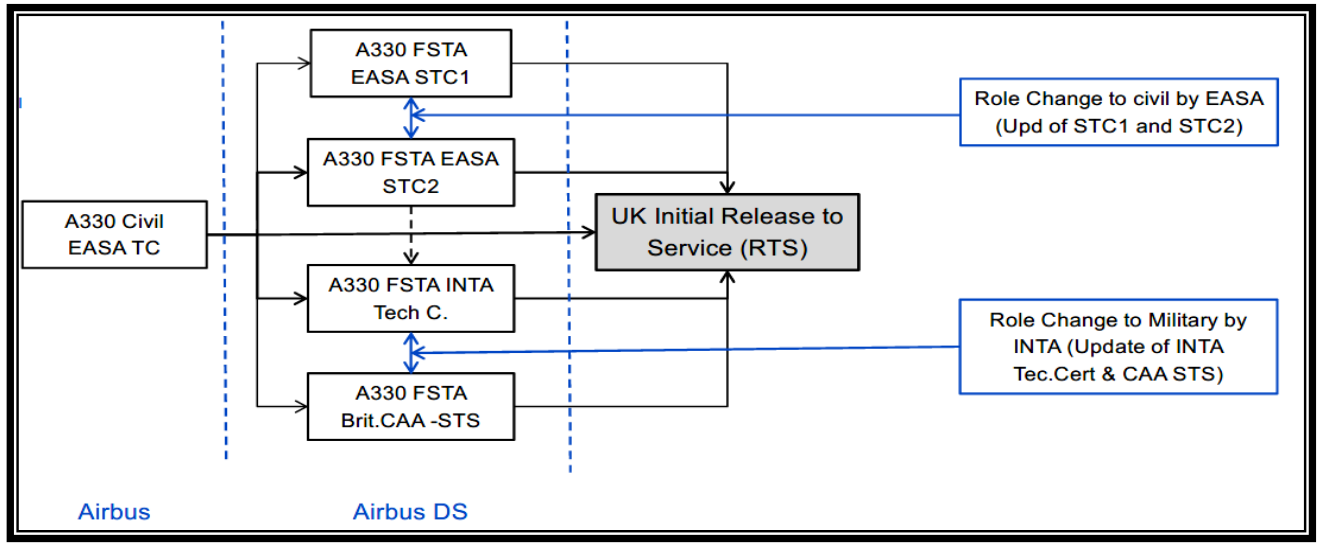


AIRBUS

How the products could benefit from the regulatory change.

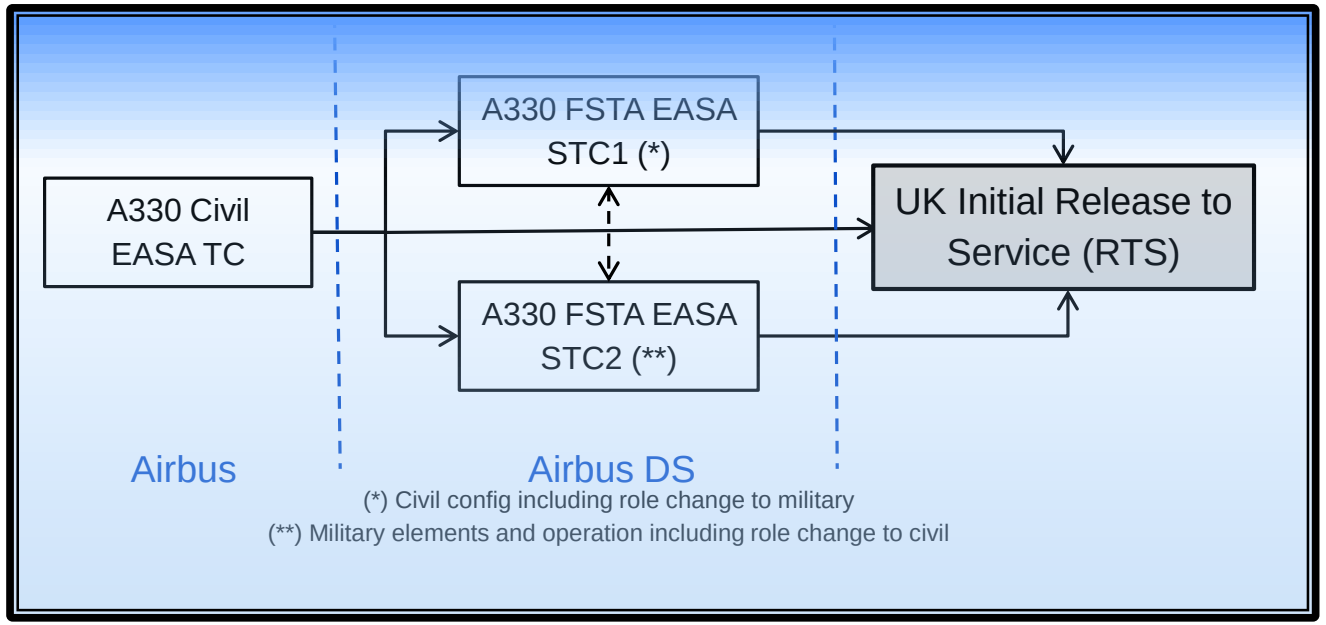
Back to example 3. A330 FSTA

Current FSTA set-up



FSTA set-up (Potential simplification)

(Brexit impact not considered)



AIRBUS

Conclusions.

- The evolutive process of collaboration between the military and civil airworthiness in Europe has been reviewed.
- Some examples on the complex processes of certification under the existing frame have been reviewed.
- The difficulties experienced under the current environment with artificial cost/timescale overruns and interoperability issues have led to launch the MAWA harmonisation process under co-ordination of EDA.
- The progress with such initiative has been presented together with the challenges to successfully conclude the process.
- The recent (2018) EU regulatory changes puts the seed to formally trigger appropriate collaboration between the EASA and NMAA, including the possibility that the EASA could manage Airworthiness of military aircraft.
- Decisions are in the hands of the Nations. Evolution will continue, but some consolidation is needed at least for multi-national collaboration programmes.
- In general the EU industry strongly supports all initiatives that remove unnecessary complexity from industrial processes.
- Finally, beyond European borders, some countries have taken advantage of the civil EU regulatory structure in their military scheme:
  - ❑ In October 2015, Australia announced that they will implement not only the full EMAR package but the complete structure of the EU civil regulatory system into the Australian Military legal frame. Today the process has progressed significantly in Australia through the implementation of DASRs
  - ❑ Other non-EU nations are considering this scheme as acceptable (i.e. Canada Military accepts the EASA determinations).
  - ❑ **In general, younger countries are more flexible and practical than the European ones at the time of affording regulatory challenges and new ways of working !!!**

AIRBUS

Questions

Aircraft Airworthiness
& Sustainment Conference

AIRBUS

Thank you !!

AIRBUS