

The Pros and Cons of the DAOS Template

A paper by Duane Kritzing, Principal Consultant at Baines Simmons.

Due to a significant re-write of the RA5000 series of regulatory articles, all organisations who fall under the UK MAA's Design Organisation Approval Scheme (DAOS) have until 31 December 2017 to update their Expositions. Although a template Exposition is available for use, the changes are significant enough for each organisation to use this opportunity to look back at how well their Exposition has worked for them in the past and how to compile it to best effect. Most Expositions are compiled to satisfy the regulator (i.e. be compliant). This paper argues that if organisational performance is the objective then compliance will be the result (not the other way around).



1. Background

The European Defence Agency (EDA), via the Military Airworthiness Authorities Forum (MAWA) is pursuing a common approach to type-certification of military aircraft, which could act as a key enabler for future collaborative activities. *“The benefits of developing a full suite of common military airworthiness requirements will offer tangible savings in terms of reduced development time, initial procurement costs and will support more efficient collaborative capability”* [1]

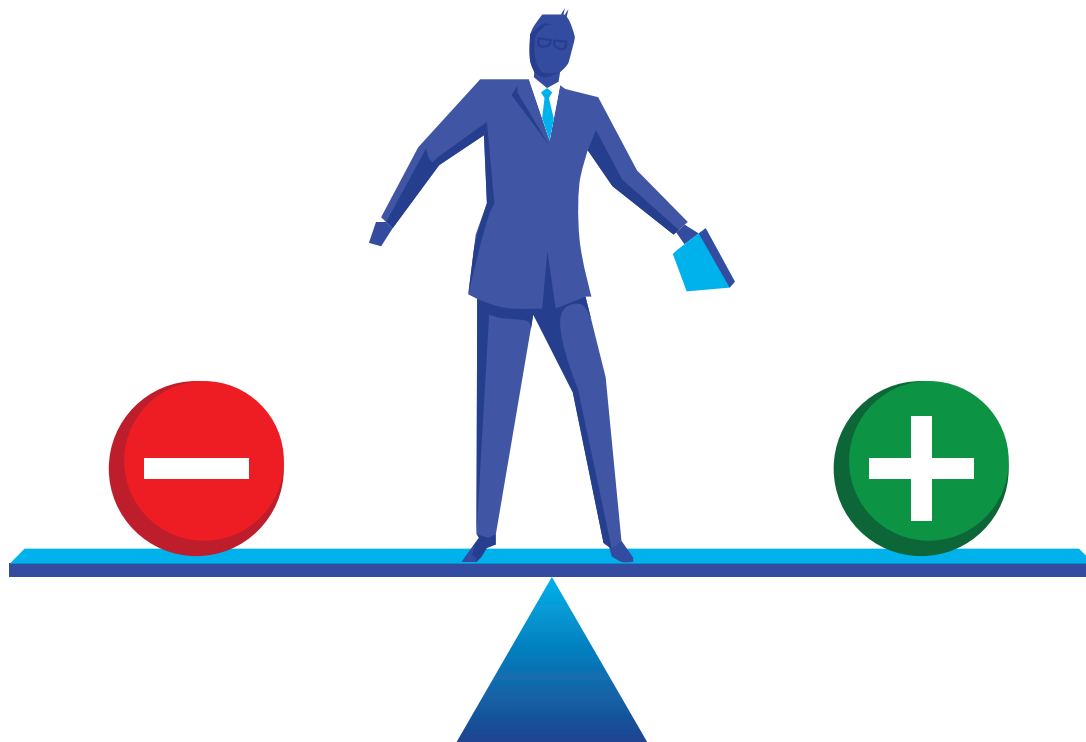
The EDA was launched with a non-binding political agreement (the “Cyprus Agreement”) with each participatory Member State’s (pMS) Ministers of Defence committing their MoDs to work towards a harmonised airworthiness regulatory system to facilitate economies of scale, collaborative procurement and cross border co-operation.

The MAWA Task Force 2 first published EMAR21 in 2014, which is derived from EASA Part 21. Most pMS are now either adapting or adopting the EMAR requirements into their Military Aviation Authority (MAA) regulations (i.e. each pMS reserves the ability to amend the requirements for their own national use). In the UK, the MAA have elected to adopt some of the EMAR 21 requirements and adapt parts of the rest, which are all promulgated under the RA5800 series of regulations.

2. Purpose of this Paper

EMAR21.343 and RA5850(4) requires that each approved Design Organisation (DO) submits an Exposition which, inter alia, describes (directly or by cross-reference) the organisation, the relevant procedures and the products, or changes to products to be designed. To support industry in compiling their Expositions, the UK MAA have referred to the EASA DOA Template [2] and compiled a DAOS Exposition Template [3]. At a RA5000 series symposium on 23 March 2017, the MAA stated that their expectation is that all Expositions will be in MAA format unless agreed differently with the DAOS Head of Branch (HoB).

The purpose of this paper is to stimulate debate on the merits (i.e. advantages and limitations) of using the DAOS Exposition template.



3. Advantages

From the MAA's perspective, the advantages of using the DAOS Exposition Template include:

- ▶ Consistency: Assists inexperienced auditors in finding what they are looking for.
- ▶ Conciseness: Contains only the information the regulator is interested in.
- ▶ Uniformity: It facilitates the management of oversight and audits at various organisations.
- ▶ Satisfaction: The regulator is more confident that each DAOS “ticks the required boxes”.

From industry's perspective, the advantages of using the DAOS Exposition Template include:

- ▶ Efficiency: It saves time as we do not have to create every document from scratch.
- ▶ Professionalism: It helps inexperienced staff produce professional looking documents easily, which should satisfy the regulator.
- ▶ Practical: It is a tried and tested approach.
- ▶ Accord: It avoids the potential for any contention with the regulator.

4. Disadvantages

Any template, no matter how much intelligent and careful thought went into it, has limitations which require careful consideration. These could be:

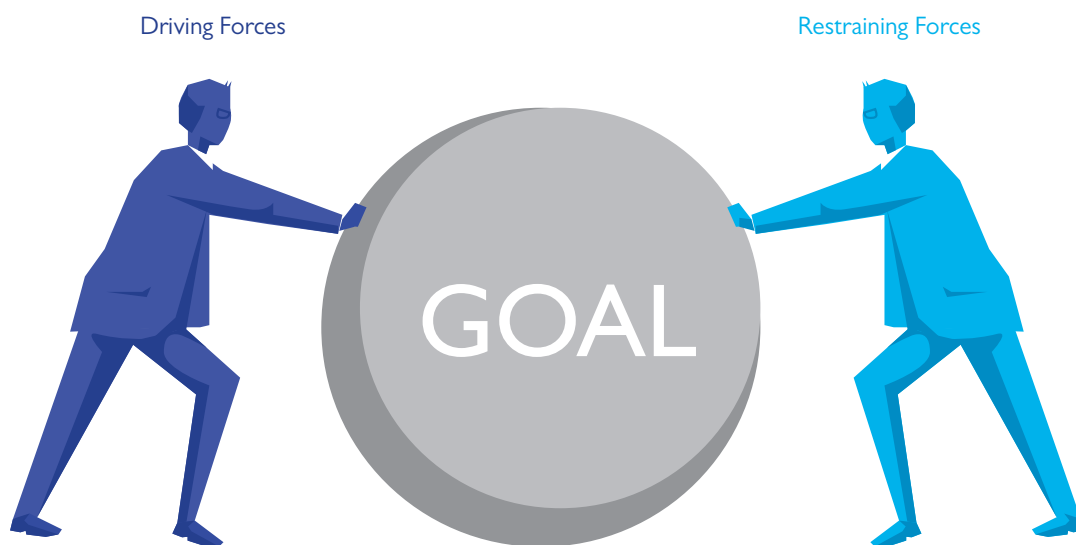
- ▶ Restrictive: Templates are usually designed to help you produce results as quickly and as conveniently as possible, but in many cases the customisation options can be limited thus restricting what you can do in terms of layout and content.
- ▶ Basic: You might find that using a template produces an end result that is less impressive than something you could have put together completely by yourself, and if you're looking to show off your management system then this can count against you.
- ▶ Unoriginal: If you're putting together an Exposition for a unique Design Organization (in terms of the products/services you offer or in the way that you are achieving performance), then you don't want to have to settle for a pre-existing template.
- ▶ Inflexible: The MAA DAOS template is primary focussed on those DOs who modify aircraft. It requires significant tailoring to address those obligations of:
 - ▶ A provider of software, components or sub-systems¹ to a systems integrator
 - ▶ A post-design support services provider (e.g. see RA1014 obligations) to which many DAOS organisations are contracted to support the TAA.
- ▶ Unchallenging: Relying on a template means you don't get the benefits of learning about the intent of the endeavour, which is to create a “*basic working document*” [EMAR21.A.265(b) and RA5850(1)(1)(c)] which enables your staff to get it right first time round (i.e. the first level of defence [4]). The intent of a performing Exposition is to clearly demonstrate that “*there is full and efficient coordination between departments and within departments in respect of airworthiness*” [21.A.245(b) and not replicated in RA5850]. Taking a template-based approach can stop you from learning about the intent exploring all opportunities for process innovation [5].
- ▶ Inward looking: The MAA DAOS template assumes only a single regulator, when many organisations provide design solutions to the international market. This is especially relevant when one considers the fact that the UK MAA do not intend to award STCs under MRP21 Subpart E.

¹ Note, many of these organisations would not meet the eligibility requirements of EMAR21.233, which is intended to place more responsibilities on the system integrators and reduce the level of oversight required by the regulator.

5. Considerations

The DAOS Exposition template is indeed a useful source of reference. It provides a good starting point for those who are compiling an Exposition and it contains much useful data and reminders for even the most mature DAOS organisations in our industry. However:

- ▶ It is based on the EASA DOA template. However, we must note that, at the [2016 DOA Workshop](#), EASA acknowledged that the template is in need of updating [6].
- ▶ It is written from a regulator's perspective, where compliance oversight is the key objective. The Exposition should be written to reflect the way we want to get the best out of our business - it just happens to satisfy the regulator too (and this may therefore require a regulator specific cross reference matrix). The objective of the Exposition should be to provide a "basic working document" which is useful to all DO personnel. If performance is the objective, then compliance will be a natural result.
- ▶ The civil aviation industry is moving towards a performance based environment. A performing military design organisation should consider how this Exposition will drive performance in the business. We need to think how the Exposition captures the enablers to drive performance. For example:
 - ▶ What IT systems are we dependent on for configuration control? (i.e. are we managing our Supportive Capability?)
 - ▶ Are we designing for certification, instead of trying to certify what was designed (i.e. are we fostering a Pro-active Culture?) For instance: The Exposition template is focussed on verification (i.e. the ultimate means of compliance), but where do we documenting our pro-active validation processes?
- ▶ An efficient organisation should consider the fact that the only reason we have procedures in a business is to do things repeatedly. Every time the procedure is executed, we should learn from it and improve it to make it faster, better, slicker. The layout and configuration management of the Exposition should not hinder continuous improvement².



6. Concluding Recommendations

Every DO will need to carefully consider the pros and cons of using the template and tailor their approach appropriately. Our recommendations are to compile your Exposition:

- without losing sight of the international opportunities (both in the civil and military domains).
- for the way your management system [4] runs the business. Performance should be the objective [7] and compliance will be the result, not the other way around. We manage what we measure, and the binary measurement of compliance will not drive organisational performance.

²Continuous improvement is an ongoing effort to improve products, services or processes. These efforts can seek "incremental" improvement over time or "breakthrough" improvement all at once.

7. References and Further Reading

- [1] Harmonisation of Military Airworthiness: https://www.eda.europa.eu/docs/default-source/eda-publications/military-airworthiness_web
- [2] EASA DOH Template: <https://www.easa.europa.eu/easa-and-you/aircraft-products/design-organisations>
- [3] DAOS Exposition Template: <https://www.gov.uk/government/publications/design-approved-organization-scheme-daos>
- [4] The 3 levels of defence: <https://www.bainessimmons.com/wp-content/uploads/The-Benefit-of-Adopting-a-Management-System-Approach-to-Regulatory-Compliance-v4-SPREADS.pdf>
- [5] Process Innovation: <https://www.entrepreneurship.org/articles/2006/05/a-guide-to-druckers-systematic-innovation>
- [6] Summary of EASA DOA Workshop 2016: <https://www.bainessimmons.com/wp-content/uploads/DOA-conference-report-v4-web.pdf>
- [7] Performance: <https://www.bainessimmons.com/wp-content/uploads/performance-based-environment.pdf>

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Duane Kritzinger is an experienced Certification and Safety Engineering specialist. His distinguishing safety expertise lies in the ability to differentiate and integrate the Safety Assessments in the design phase with the Safety Management activities in the operational phase. His certification skills cover both the military and civil aviation domains, where he not only provides expertise in the certification of products/parts/appliance, but also assists with EASA/EMAR Part 21 Design Organisation Approvals (which includes the establishment of organisation processes and structures to move beyond minimum compliance towards organisational performance).

Since the publication of EMAR 21, Duane has been assisting both the military regulators (in their adoption of EMAR 21) and the regulated community (in demonstrating compliance in the most efficient manner with due consideration of other approvals held).