



DASR 21 IMPLEMENTATION PERFORMANCE REVIEW

Baines Simmons was recently privileged to conduct a performance review of selected DASR 21 (Defence Aviation Safety Regulation Part 21) application & certification functions.

The review found a number of findings against an extremely impressive Regulatory Authority, and altogether 79 recommendations (strategic and tactical) were made for improvement. The details of the finding and recommendations are client specific, but this case study provides a flavour of the issues most MAA's struggle with. Most importantly, this case study includes a S-Curve showing a suggestion for an Authority's journey in EMAR adoption and exploitation by moving industry oversight from a compliance-based approach towards one which is based on performance.

BACKGROUND

The Defence Aviation Safety Authority (DASA) in Australia was one of the early adopters of the EMAR regulatory framework in 2016. The decision to evolve was a radical one (not evolutionary) and was therefore well planned and quickly executed. Baines Simmons was proud to be a small part of that early journey which resulted in DASA setting the benchmark in our industry.

After seven years of practical lessons learned and continuous improvement initiatives, Baines Simmons was requested to do a Performance Review of selected DASR 21 (Defence Aviation Safety Regulation) application & certification functions. The task was initially approached with some trepidation (*"what happens if we cannot make any recommendations on what is already so impressive?"*) but this was soon allayed: There is always something we can do better, faster, slicker, cleverer ...and it is the performing organisations who are open to such ideas and initiatives.

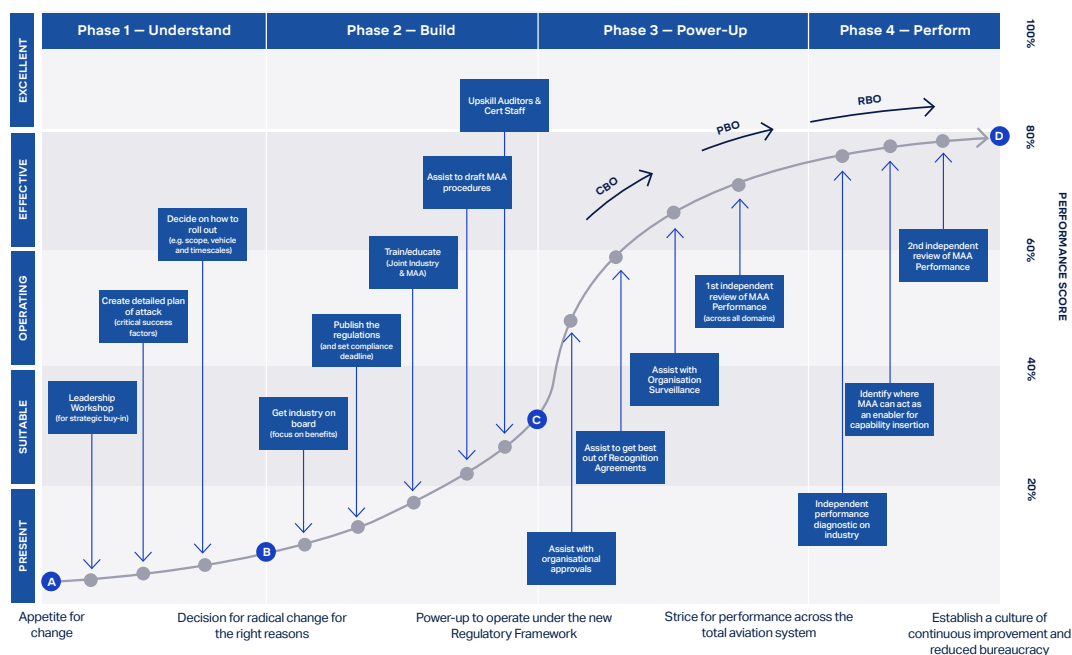


CLIENT PROFILE

Despite being a European initiative, it is the Australians who, to date, have been most pro-active in adopting the purest form of the EMARs into their [Defence Aviation Safety Regulations \(DASRs\)](#), and readers are invited to see their [Regulations webpage here](#) and the article "[Ahead of the pack - Defence Aviation Safety Regulations.](#)"

The Australian Military Aviation Authority (now called DASA, find out more [here](#)) has always set the benchmark for military airworthiness. In the late 1990's they had a "[Technical Airworthiness Management Manual](#)" (TAMM) which was often used as a source of reference by other authorities across the world. However, they realised that they did need to evolve and get even better, see "[DASR: the need for change from concept to implementation](#)". In the Baines Simmons illustration below, we speculate that this was Milestone A:

Progress of MAA Regulatory Performance (the S-curve)





Baines Simmons Ltd are proud to have become intimately involved with this adoption at Milestone B ([see our case study](#)) as well as offering training session and workshops (in person and virtual) every year. These workshops and training sessions were often sponsored by DASA for local industry, which meant we had both the Regulator and the Regulated going on the implementation journey together with a common understanding of the challenges, pitfalls and opportunities.

THE TASK

At the end of 2022, Baines Simmons was contracted to evaluate relevant DASA processes and capability in order to identify potential areas of improvement (arguably, illustrated as somewhere between Phase 2 and Phase 3 above). This task was undertaken by (a) a desk-top review of documents provided by DASA at the commencement of the project, and (b) in-country interview/discussions with key DASA subject matter experts.

As DASR 21 is based on EMAR 21, and the latter is derived from EASA Part 21, which in turn is based on the Chicago Convention (particularly Annexes 8 and 19 thereto), reference was made to the EASA approach as international best practice, with due cognisance of military specific needs and constraints.

FINDINGS

The review found a number of findings, and altogether 79 recommendations (strategic and tactical) were made for improvements, which were then prioritised for implementation against eight (8) topics.

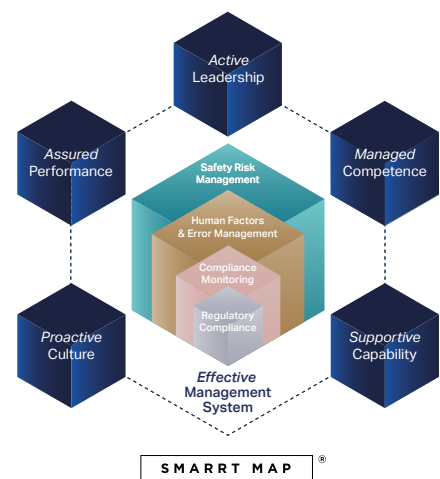
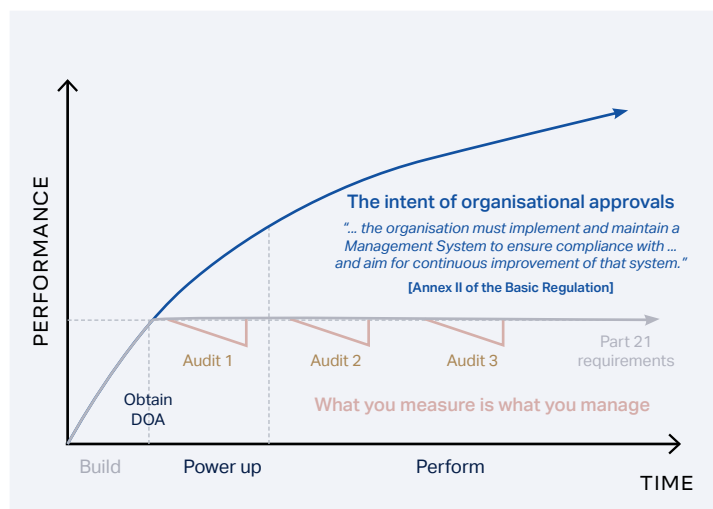


The details of the finding and recommendations are client specific, but the following topics provide a flavour of the issues most MAA's struggle with:

Topic 1: Organisational Approvals.

The sub-topics requiring further work/optimising included:

- + The intent of DOA/AP-DOA/ POA, the importance of Privileges and the approval/surveillance implications on their sub-contractors.
- + The key roles of the Form 4 holders and Certifying Staff/CVEs.
- + The competence and capability needed by the Authority to optimise organisational approvals and surveillance. The importance of distinguishing between **Compliance** and **Performance** (see illustration below).



Topic 2: Continued Airworthiness.

The role of the Type Certificate Holder and the practical execution of their 21.A.44 obligations on different products. For more information, see the article "[Who should be the Military Type Certificate Holder](#)". Some MAA's delegate the type certification function to another office, but this complicates the matter as it introduces another Organisational



entity which does not easily fit in the EASA/EMAR framework of approved organisations. This is further complicated by the fact that they are often awarded the status of Type Certificate Holder (when the EASA/FAA/ICAO Annex 8 intent was that it should be the owner of the design data, its intellectual property rights and liabilities).

Topic 3: International Programmes.

EMAR 21 is based on EASA Part 21, which is fundamentally scoped to address a community (i.e. all stakeholders) who have adopted that framework. As soon as we work with another "*State of Design*" or "*State of Production*" (who operates to another framework), then the Authority needs to provide specific additional guidance / requirements relating to cross border transactions / relationships (as EASA have via their bilateral agreements with other Authorities in accordance with Article 2 of the Basic Regulation). This is specifically relevant to Foreign Military Sales (FMS) contracts, where the US military do not often use Type Certificates (or any widely recognisable Type Certification Basis).

Topic 4: Review of Certification Artifacts.

The sub-topics requiring further investigation included:

- + The journey from Compliance Based Oversight (CBO) to Performance Based Oversight (PBO) to Risk Based Oversight (RBO), see S-curve above.
- + The intent of Level of Involvement (LOI) and the processes and competence needed in the MAA.
- + The burden of proof in the Mean of Compliance and the impact on the applicant.

Topic 5: Relationship with Industry.

The purpose of an MAA is not just to regulate. An MAA also needs to provide the enablers (and an experienced Regulator is an enabler) for project success. See also the article "*EMARs – the role of the Regulator*" (especially Force 5).



Topic 6: The adoption of SMS into EMAR 21.

Many MAAs have promulgated some sort of SMS (Safety Management System). However, this is often very Health & Safety centric (as evident by the risk criteria utilised). In EASA Part 21, the focus is on organisational risk (which therefore directly impacts the LOI in the review of Certification Artifacts) see intent below:

Why SMS?

- Current Part-21 focusses on
 - product safety and failure conditions associated with the systems (CS25.1309)
 - supported by a quality / design assurance system
- A complementary safety management system will ultimately improve overall safety
 - with a continuous improvement mechanism through safety assurance
 - providing the basis to aim at maintaining and improving the level of safety despite growing aviation market and increasing complexity

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How will SMS be implemented in Part-21?

RMT.0251 Introduction of SMS

Gap Analysis

= we can build up on existing product requirements ...

VS.

... but we need to complement it, e.g. covering the organisational risks

DOA risk POA

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Topic 7: MAA Processes.

Many MAA processes/procedures are internally focussed only and neglect the interfaces/dependencies/handshakes/milestones of the regulated community. They also often do not efficiently integrate with acquisition programmes/offices, which may then result in contracts being placed without cognisance of the regulatory implications, deliverable and milestones.



Topic 8: MAA Competencies.

Baines Simmons has adopted the EASA acronym SKATE to evaluate competence (Skill, Knowledge, Attitude, Training and Experience). Due to staff rotation policies, many MAAs struggle with maintaining the latter – especially in the assessment of Means of Compliance to specific design code requirements. If these policies cannot be changed, competence gaps can often be filled by engaging sub-contractors, Qualified Entities, bilaterals or working arrangements, etc – all enabled by harmonised adoption of the EMARs.

DASA'S RESPONSE TO THE FINDINGS

DASA gratefully received the suite of recommendations, which are consistent with enduring efforts to improve performance and to align to international good practice, stating:

"The proposed changes are wide-reaching, and carry a range of benefits versus the resource costs to implement. Changes with the greatest potential safety benefit and efficiencies are prioritised for immediate implementation, while the remainder are being packaged into longer-term projects, or investigated further. While DASA aspires to the philosophy of being as civilian as possible, and military where necessary, the civilian Type Certificate Holder ideal does not fully align to the majority of purely military platforms that are operated by the Australian Defence Force. In the absence of an International Military Aviation Organisation / standardisation construct, and military flexibilities that exceed civil constructs, there will always be a need for a sovereign Type Certificate constructs".



CONCLUSIONS

The Baines Simmons project team would like to thank all staff at DASA for their time and generous contribution to analysis resulting in the final report. Their willingness, openness and candour have enabled us to build a strong understanding and offer an evaluation of the current Initial Airworthiness oversight function within DASA. We look forward to seeing DASA continuing on their well-established performance journey as a world class military regulator.

Following our in-depth critical independent review, a detailed report was presented to the DASA ("*Review of selected DASR 21 application & certification functions*"), containing prioritised findings, conclusions and recommendations to support further organisation development. The objectives of verifying compliance with the rules for regulators and identifying opportunities to improve processes and performance, based on industry best-practice to achieve the intent of the rules were met.

As a result of our work, the customer generated a plan to address our recommendations, extending the contract to provide further assistance on specific challenging topics, and is working towards full adoption of EMAR 21 to underpin the safe certification of aircraft, underpinning their safe operation, through-life. Full alignment with the roles, responsibilities and interfaces with the other elements of the system has been ensured, which will reap benefits in terms of efficiency and clarity of responsibilities.