

# INTRODUCTION



- **Definition of Airworthiness – Related to Aircrew Clothing and Equipment**
- **An introduction to the Regulatory Requirements – DAOS**
- **The importance of being a DAOS Approved Design Organisation**
- **How does compliance with DAOS benefit the customer and end user?**
- **Key Messages**

# **DEFINITION OF AIRWORTHINESS – RELATED TO AIRCREW CLOTHING AND EQUIPMENT**

# DEFINITION OF AIRWORTHINESS – RELATED TO AIRCREW CLOTHING AND EQUIPMENT

- **Airworthiness** is the measure of an item of clothing or equipment's suitability for use by Pilots and Aircrew to enable safe operation and flight of an aircraft.



- **Certificate of Airworthiness** from a recognised Authority
- Is achieved and maintained by meeting strict, defined criteria and robust processes and procedures for the design, development, qualification and integration of equipment.
- Ensures that the equipment is compliant with both safety legislation and UK MOD safety policy.



# **DEFINITION OF AIRWORTHINESS – RELATED TO AIRCREW CLOTHING AND EQUIPMENT**

- **Airworthiness provides evidence that the clothing or equipment is safe for its intended use throughout its life, in that it:**
  - Defines the design of the clothing or equipment
  - Designed and developed with engineering rigor including Hazard Analysis and Risk Management disciplines
  - Manufactured to stringent manufacturing disciplines using proven processes and qualified materials and components.
  - Tested, Qualified and validated iaw the specified operational envelopes

# DEFINITION OF AIRWORTHINESS – RELATED TO AIRCREW CLOTHING AND EQUIPMENT

- Integration evidence for the aircraft platforms across the size range of potential users
- Through life configuration control and change effect on Airworthiness - controlled and managed by the OEM. – particularly for UORs
- Through life maintenance, spares and servicing provision when carried out by qualified and competent individuals

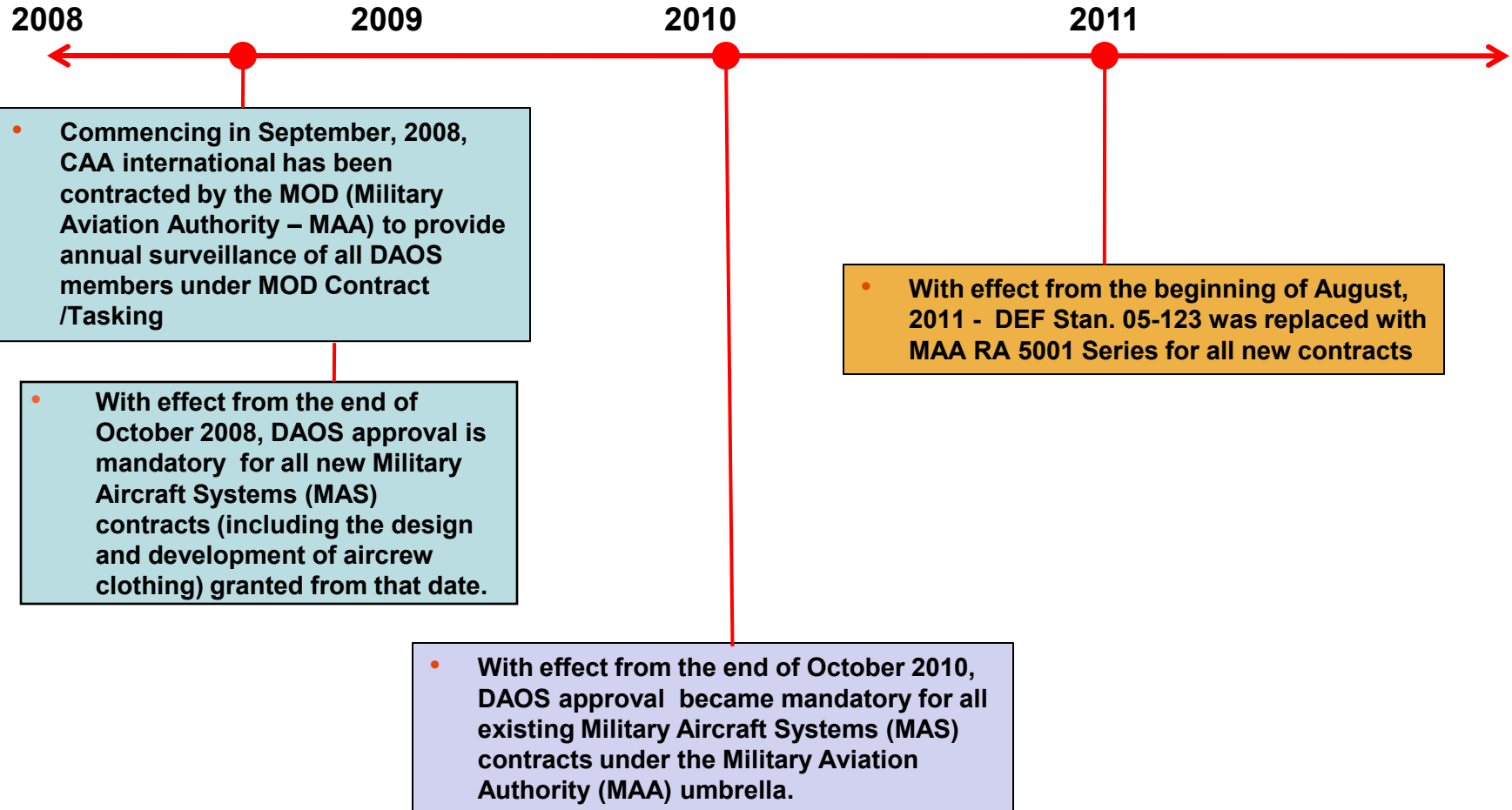
# DEFINITION OF AIRWORTHINESS – RELATED TO AIRCREW CLOTHING AND EQUIPMENT

- Regulatory body - DAOS

**D**esign **A**pproved **O**rganisation **S**cheme

# **AN INTRODUCTION TO THE REGULATORY REQUIREMENTS - DAOS**

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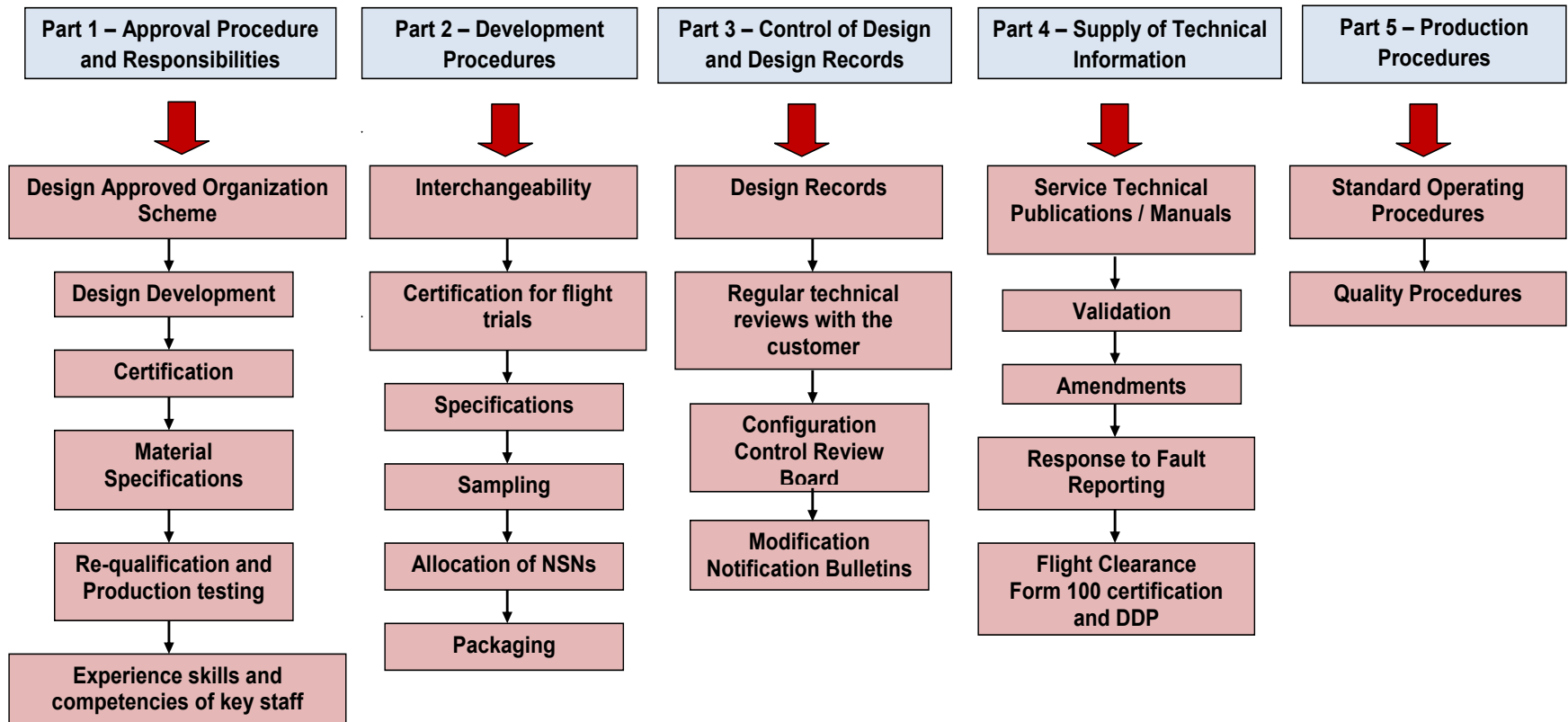
- A DAOS Approved Signatory is required where the contractor is conducting design activities and is producing an MOD Certificate of Design for presentation to the MOD.
- At present, the CAA are contracted to provide DAOS surveillance for around 50 organizations in the UK, 1 in France and 1 in Germany.
- Survitec are one of the organizations with DAOS approval since 2008 and has been a UK Design Authority for over 80 years.
- DAOS requires that Survitec hold a BS/EN/ISO9000 (AS9100) approval (Quality Management System) or equivalent and embeds the process approach of that standard.

# AN INTRODUCTION TO REGULATORY REQUIREMENTS - DAOS

- The DAOS surveillance is intended to review compliance with :
  - BS/EN/ISO9000 (AS9100) approval (Quality Management System)
  - **Defence Standard 05-123 (replaced by MAA RA 5001 series)**  
- Technical Procedures for Procurement
  - **Defence Standard 00-56** – Safety Management Systems
  - **Defence Standard 05-57** – Configuration Management
- Evidence of continuing design competence and capability

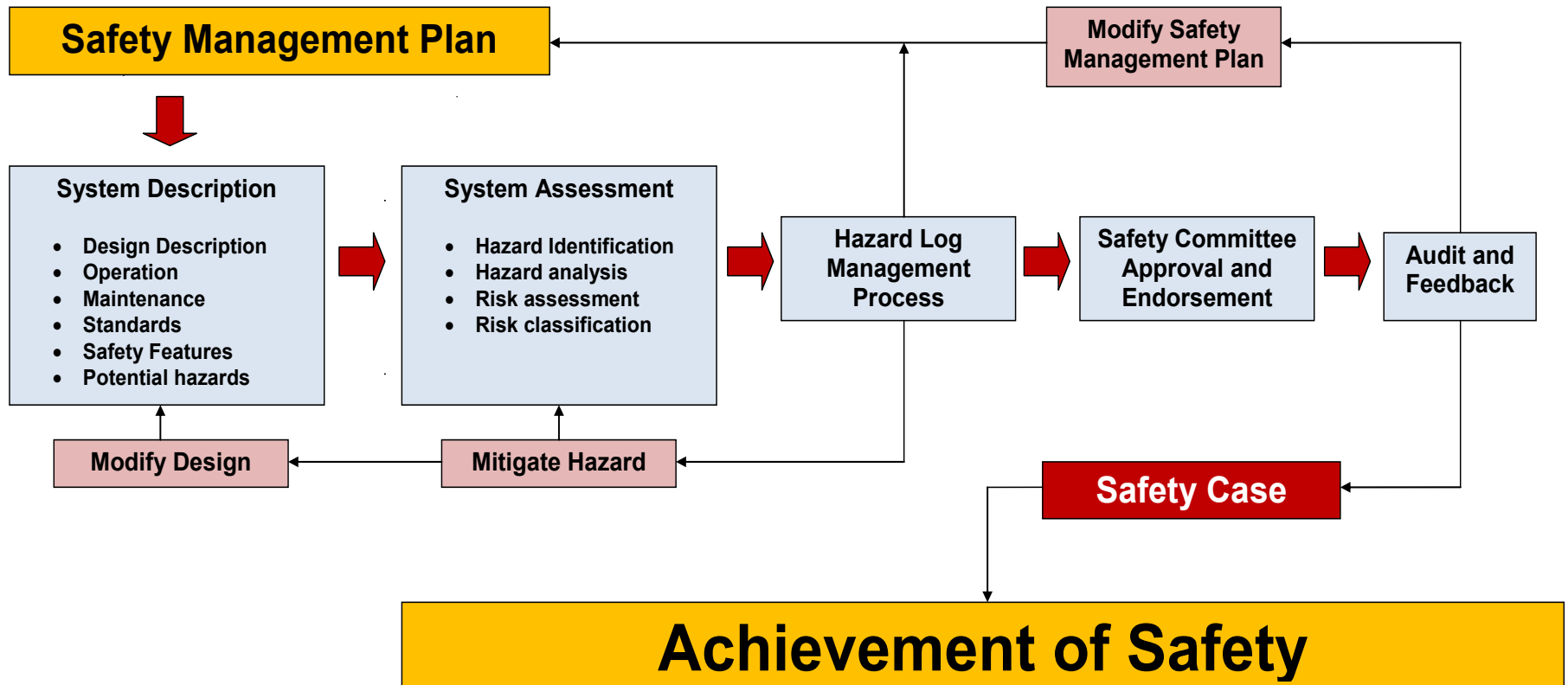
# AN INTRODUCTION TO REGULATORY REQUIREMENTS - DAOS

- **MAA RA 5001 series– Technical Procedures for Procurement of Aircraft, Weapons and Electronic systems**



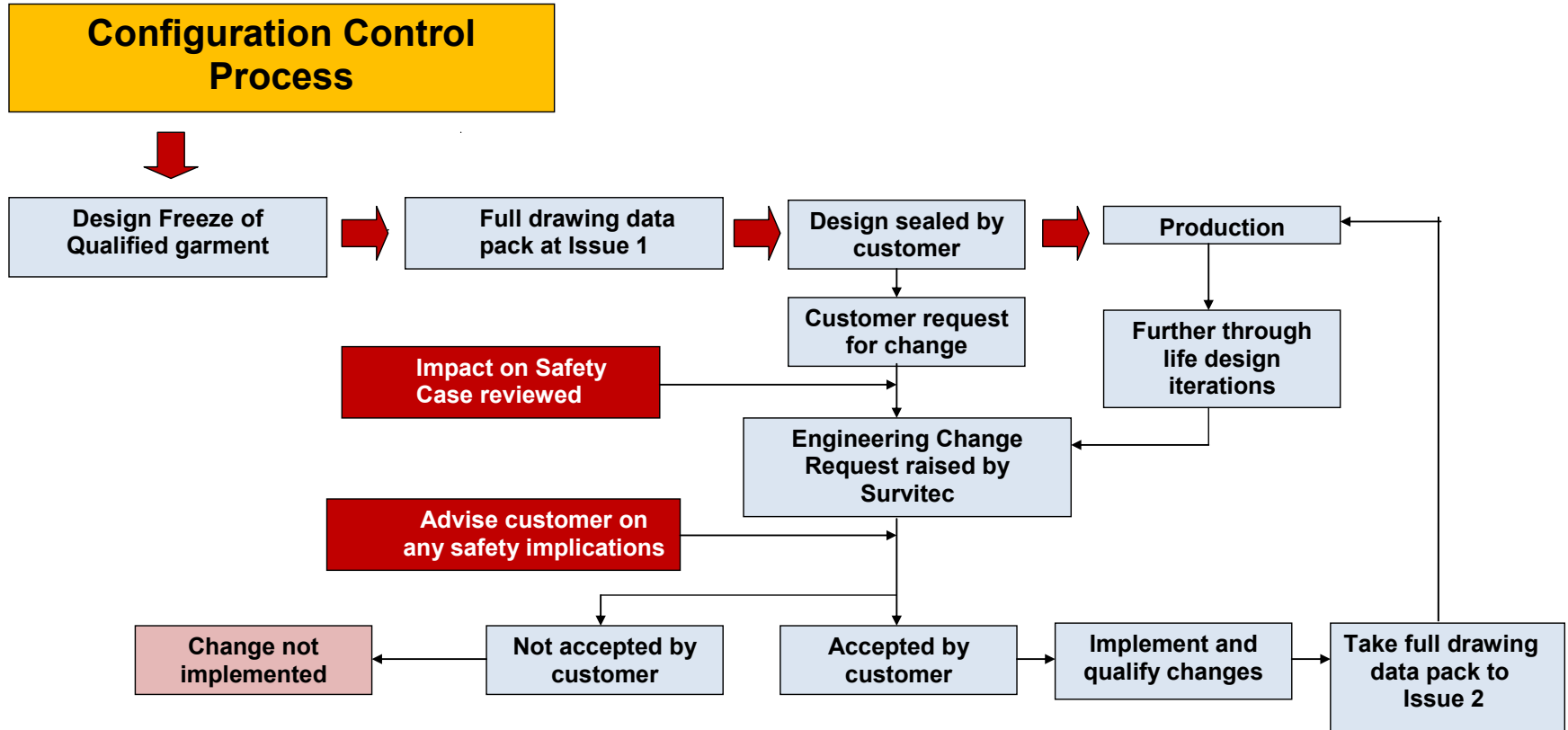
# AN INTRODUCTION TO REGULATORY REQUIREMENTS - DAOS

- Defence Standard 00-56 – Safety Management requirements for Defence systems



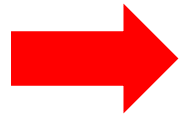
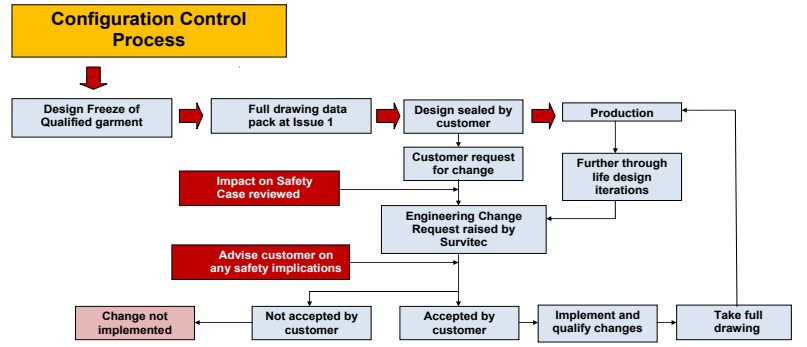
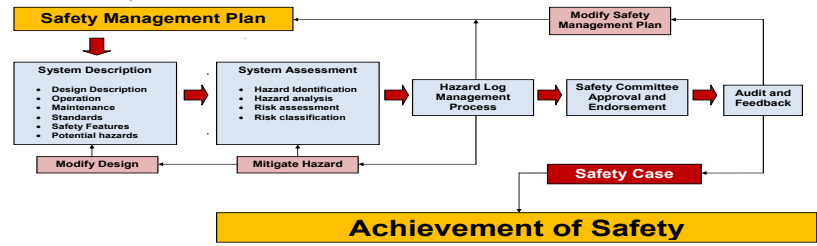
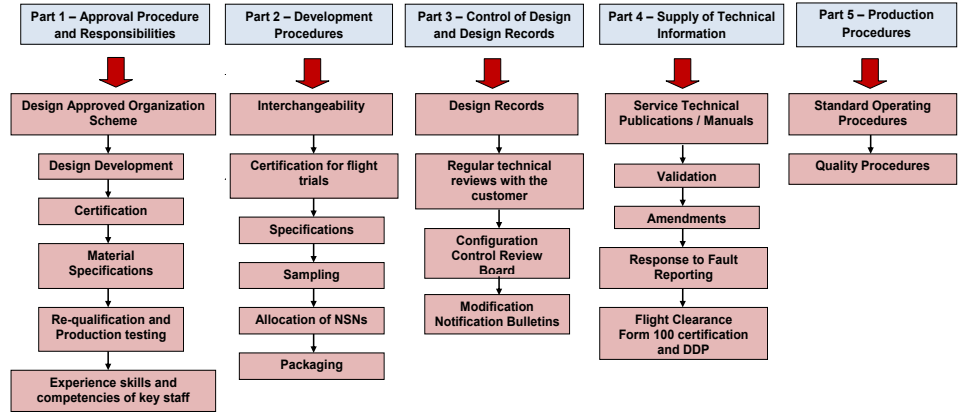
# AN INTRODUCTION TO REGULATORY REQUIREMENTS - DAOS

- Defence Standard 05-57 – Configuration Management of Defence Materials



# AN INTRODUCTION TO REGULATORY REQUIREMENTS - DAOS

Quality Management System Assurance - BS/EN/ISO9000 (AS9100) approval



**FULLY  
CERTIFIED  
AND  
AIRWORTHY  
FLIGHT  
EQUIPMENT**

# THE IMPORTANCE OF BEING A DAOS APPROVED DESIGN ORGANISATION

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- A **documented Quality Management System** in accordance with the requirements of BS/EN/ISO9000
- **Configuration Control / ECR process** - design and build standard control system, particularly the method of controlling and recording design changes to the established production build standard.
- **Testing facilities** appropriate to the class of work to be undertaken.
- Methodology and responsibility for **independent Airworthiness and scrutiny of design**.
- Evidence that tasks within their control influencing safety are carried out by individuals and organisations that are **demonstrably competent to perform those tasks**.
- A **Safety Case has been developed and maintained** that demonstrates how safety will be, is being and has been, achieved and maintained.
- Implementation of a **Hazard Log** and managed as part of the **Safety Management System**. Hazard Log updated through the life of the contract to ensure that it accurately reflects risk management activities.



# THE IMPORTANCE OF BEING A DAOS APPROVED DESIGN ORGANISATION

- **Hazard Identification and Hazard Analysis** reviewed, and revised with the agreement of the Duty Holder, through the life of the contract as the system changes or as relevant information becomes available that has a bearing on safety.
- **All identified safety risks reduced** to levels that are As Low As Reasonably Practicable (ALARP) and broadly acceptable or, when this is not possible, tolerable and ALARP, unless legislation, regulations or MOD Policy imposes a more stringent standard
- Process implemented for **identifying defects or failures**, including human errors, and assessing their **impact on safety**.
- Process implemented for **analysing incident, accident and near-miss reports** arising from use of the system and similar systems within the Contractor's, or MOD's experience, assessing the impact on safety.
- Process implemented for **recording and analysing relevant data from the use of the system** in order to validate, and strengthen where appropriate, the argument and evidence in the Safety Case. Where this data may refute the argument or evidence in the Safety Case the Contractor will carry out an analysis to determine the true situation.

# THE IMPORTANCE OF BEING A DAOS APPROVED DESIGN ORGANISATION

- If it is confirmed that the data refutes the Safety Case, **remedial action** will be taken to ensure the safety of the system.
- The Contractor will carry out remedial action in accordance with the **Risk Management** requirements of this Standard.
- Review and update of the **Safety Case** to ensure that it remains valid and reflects the latest design configurations.

# HOW DOES COMPLIANCE WITH DAOS BENEFIT THE CUSTOMER AND END USER?

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- Provides indisputable evidence that the selected design has been subjected to a controlled progressive development, comprehensive testing, Qualification and in-service trials.
- The design is sound, based on established design and development processes and the results of development and qualification testing.
- There has been a comprehensive programme to identify potential risks, and the identified risks have been managed and mitigated to a level where the residual risks to safety are acceptable and as low as reasonably practicable (ALARP).

# HOW DOES COMPLIANCE WITH DAOS BENEFIT THE CUSTOMER AND END USER?

- That a Safety Management System (SMS) is in place to support the service users to ensure the ongoing safety of the system is actively managed.
- A structured programme of Servicing and Maintenance has been considered and adopted to ensure the through life safety of the equipment.
- Confidence that any design iterations or modifications will satisfy the operational requirements of the equipment with minimal risk or impact to flight safety.

# KEY MESSAGES

## Key messages

- Will a high level of Airworthiness be guaranteed without DAOS scrutiny ?
- The DAOS audit process ensures that consistent Airworthiness compliance is being met on an annual basis – how do none DAOS approved companies ensure ongoing compliance?
- The introduction of the new MAA Regulatory Articles have introduced some ambiguity and seem at odds with MOD policy to attempt to instil more rigorous Airworthiness disciplines.
- Any dilution of the requirements could compromise Airworthiness requirements and Flight Safety.
- Zero compromises to the establishment and on going application of Airworthiness to Aircrew Clothing and Equipment.

**AIRWORTHINESS: WHOSE RISK IS IT?**

**QUESTIONS?**

