

Major Project proposal

OME Professional Engineering – School of Applied Computing

# An Eye on Safety: The Production of an Intelligent Defence Legislation Compliance Tool for Safety Assurance for use by UK Safety Engineers in the Acquisition of OME Systems



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05/07/2024

## Background Information

The MOD acquisition process for OME systems is a highly regulated and lengthy process, both due to the inherently dangerous nature of these systems, as well as the overriding need to ensure the safety of the personnel responsible for operating and maintaining these systems over their life-cycle. This is made even more complex by the fact that these systems are produced by international companies for use by militaries worldwide, and are therefore designed to be compliant with any of a multitude of recognised international regulations governing Safety, which may or may not be directly comparable with each other in terms of the technical requirements for compliance, or to the degree to which compliance is required by UK regulators. The process for assuring the safety of these systems must therefore be tailored to each system depending on the type of system, the regulatory framework to which it has been designed and potentially qualified, and the nature of the agreements by which the system is acquired.

UK Ministry of Defence (MOD) requirements for assuring Safety remain largely the same depending on the nature of the OME system, across all acquisition projects, however there are still multiple routes to assurance which may be taken. These routes may depend on the quality of assurance provided by the main contractor, the regulations to which the system has been designed to be compliant, and more broadly to the method of acquisition selected by the MOD, be that under an Urgent Operational Requirement framework, a standard Prime-contractor and Purchaser relationship, or in recent years, under a Risk-Based approach. These are discussed in terms of evidentiary requirements later in this proposal.

## Aim

This project aims to produce a tool for use by Safety Engineers in the acquisition process which can simplify decision making and provide a clear route to qualification and assuring Safety, based on the input of information on the nature of the system to be acquired, the approach by which qualification and assurance is to be achieved, and general specifics of the agreements by which the system is being acquired.

In order to achieve this, the tool should provide a clear reference to engineers from the outset of acquisition projects, and throughout, on the regulations to which a system must be qualified, and the Safety Artifacts to be produced, along with the approximate order and timescales to which these artifacts must be generated.

The tool will aim to provide a quick reference to Safety responsible personnel on the current progress of the project for which it has been employed, and to generate internal artifacts, such as a Safety Assurance register, legislation compliance matrix, and could provide broad templates for the generation of a Safety Management Plan, Safety and Environmental Case Reports, and other tailored standard Safety artifacts.

Some functionality to provide a comparison between international Safety regulations should be provided by the tool, with a potential to provide useful direction for Safety professionals on the route to full compliance with UK regulations.

## Objectives of the Project

The objectives of this project are therefore as follows:

1. To produce a replacement to current versions of the Safety Assurance Register (SAR) with an intelligent tool that requires less manual adaptation, and that will provide more functional direction on the steps to be taken to achieve full compliance with UK requirements.
2. To provide a useful and easy to understand comparison for Engineers on the requirements of various international regulations, concerning highly technical requirements on aspects such as the Hazards of Electromagnetic Radiation on OME systems (HERO), in order to allow them to employ Subject Matter Experts (SMEs) in a more efficient and precise manner.
  - a. As a stretch objective, this project will aim to provide some calculative abilities that will aid SMEs in their assessments of the system being acquired, through the use of previous test results under various international regulations to which they may be designed, wherever possible. This may include the generation of separation distances for active transmitters and OME systems and general susceptibility to HERO, and the vulnerability of the system to various environmental stimuli, such as vibration and shock.
3. To generate a roadmap for future qualification and surveillance activities for UK Safety Responsible personnel (SRs), along with up-to date quick reference data to demonstrate the current level of compliance demonstrated.
4. As a stretch objective, to provide a method for maintenance, review and uplift of UK regulations through use of a standard format by which data on UK regulations are recorded for use by the tool. It is hoped that endorsement of the tool may be obtained from UK regulators, which will enable its use externally in providing evidence in support of certification.

## Method

The project will aim to achieve these objectives through the following methods:

1. This tool should take the functionality of the SAR and supplement it with the computational ability to automatically adapt itself to the specific system and method of acquisition in use, removing the need for some of the complex planning and review that would otherwise be required at the outset of the project, and providing comprehensive information on the Safety Artifacts that will be required in order to demonstrate Safety.
  - a. This should be accomplished using easy to understand input forms, from which a future plan to assurance, a current view of progress made, and a tailored SAR should be automatically produced for completion by SRs
2. To provide an automated comparison between technical requirements of various international regulations, which can enable UK Safety personnel to assure systems tested under other nations regulatory frameworks
3. To work with SMEs and UK regulators to generate a more standardised method of recording requirements listed under UK regulations, in terms of level of compliance required, the technical measurement of data in testing, and the format in which regulations should be recorded.

## Resources

Resources that will be employed in the production of this tool include the following:

1. Microsoft Office, in particular Excel and Word, with which it is expected the majority of the tool will be constructed.
2. Access to MOD and other international regulations through Stanmis [1], and other online regulatory repositories, such as the DSA OME regulations and DLA quicksearch [2] for US Mil-Standards in order to obtain data for use by the system, plus others as required.
3. Existing tools available to MOD staff such as the Defence Legislation Support Tool, the SAR Tool, as well as other tools such as GEAR and other compliance tools.
4. Access to and advice from SMEs from WESCOE, WTS, and the various UK regulators responsible for the generation of and interpretation of UK regulations.

## Planned Activities and Timescales

Planned activities and timescales can be seen overleaf in Table 1.

## References

- [1] Defence Standardisation Engineering Group - UK Ministry of Defence, "StanMis," 2023. [Online]. Available: <http://stanmis.gateway.isg-r.r.mil.uk/>.
- [2] Defence Standardisation Program Automation Office (DSPAO) United States Department of Defence, "Quick Assist Search," [Online]. Available: <https://quicksearch.dla.mil/qsSearch.aspx>.

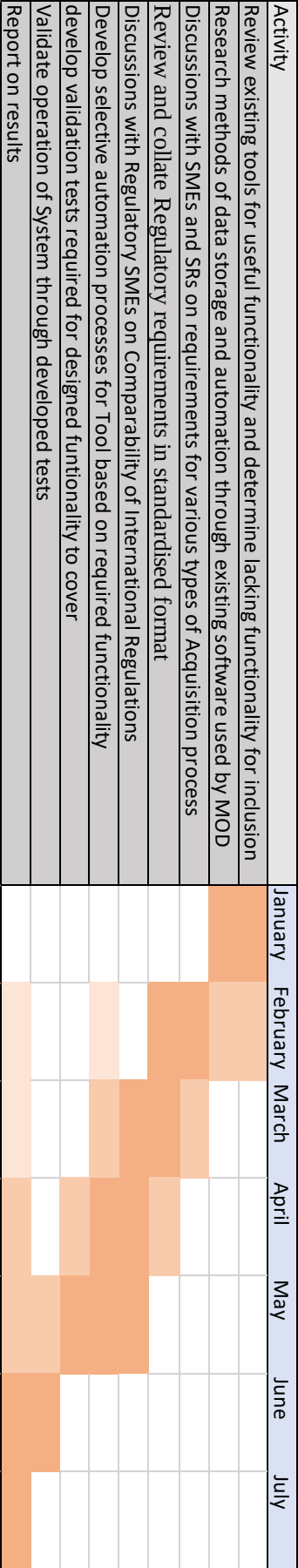


Figure 1: Gantt Chart of planned Activities