

UK MOD SOSA¹ Open Systems Strategy

Definition

Current programmes are increasingly becoming unaffordable through high through life costs due to obsolescence compounded by a systems inability to be upgraded and integrated into a System of Systems. By adopting an open systems approach these issues can be mitigated and programme risks reduced.

The SOSA Open Systems Strategy describes the Open Systems vision and the roadmap for achieving the required level of Openness across the Defence Enterprise.

Scope

A system that employs modular design, uses widely supported and consensus based standards for its key interfaces, and has been subjected to successful validation and verification tests to ensure the openness of its key interfaces.

So what does this mean?

- Modular design - the systems must be designed where each module can be easily removed or replaced without adversely affecting the remainder of the system,
- Widely supported/consensus based standards - published interface standards and services which are used by a wide range of users,
- Validation and verification tests - tests to ensure that the systems are open through life and meet performance requirements,
- Key interfaces - these will be the major interfaces between the modules. A system's ability to integrate into a System of Systems is dependent on knowledge of its interactions internally and externally through interfaces.

SOSA Offering

An Open Systems Approach should be adopted for a project to realise the following benefits:

- Have ease of interoperability between systems, sub-systems and components,
- Being able to modify a capability for different operational roles,
- Reuse common Off-The-Shelf (OTS) (and perhaps open-source) based equipment and processing software,
- Improve integration,
- Provide more opportunities for competition and innovation through broader involvement of industry / academia as it will reduce reliance on monopoly supplier and improve access for SMEs throughout the systems lifecycle,

¹ Follow this link for further information on how the MOD aims to achieve the SOSA vision by encouraging a common approach to the acquisition of capability - [System of Systems Approach \(SOSA\)](#).

- Manage Technology Refresh, obsolescence management and capability insertion and ensure that the system can evolve through life.

SOSA Definition

OTS is a term for software or hardware products that are ready-made and available for sale, lease, or license to the general public. Until recently, the performance of OTS technology had not been able to deliver the high performance and specialised needs of defence. The use of OTS technology in defence applications is gaining popularity.

If an open architecture is an enabler for MOD achieving its operational, technical and commercial flexibility, then OTS is an enabler for a successful open architecture. OTS removes the need for expensive, traditional, bespoke, in-house development and allows MOD to instead take advantage of global commercial investment and volume.

For large, software-intensive systems, it is the middleware in the infrastructure that provides the open platform into which application-specific components are plugged. Achieving openness at this layer is fundamental to the success of open systems.

Description

Open source is an approach to the design, development and distribution of software offering practical accessibility to the software's source code alongside either greatly reduced or non-existent copyright. The openness here refers to this accessibility, which permits users to obtain, use, change, and improve the software, and to redistribute it in modified or unmodified forms.

Open systems are independent of, but often supported by, the open source community. One difference is that open systems will often have proprietary components supplied into them.

Comment

Open standards are publicly available documents that contain implementable specifications for interfaces, services, protocols or data formats, which have been established by consensus. The openness refers to the fact that it is not technology, product or vendor specific and its use and exploitation is available to all interested organisations, if not for free, then at least for the payment of some nominal sum or participation licence.

Open standards are the cornerstone of an open architecture. Their use reduces the risks associated with integration and interoperability with new systems and components. In some cases, an interface may be so specialist or niche that no open standards have been created that can be exploited. New, bespoke standards are unavoidable. However, provided these new standards are not allowed to become proprietary, and provided there is willingness to make them available to any interested parties, openness can still be achieved. Furthermore, an endeavour to make these new standards as generic as possible (so they can be exploited across many domains) could mean they become the open standards of the future.