

HVX ‘Pivot’ Statement of Requirement (SOR)

Context

The UK has a potential to be a world leader in high-Mach/hypersonic propulsion and power system technologies research. As such, this SOR seeks to understand and exploit these emerging technologies through an affordable reusable air-breathing high-Mach/hypersonic platform. Potential for these platforms can be articulated by the military utility these capabilities might bring; by combining speed and survivability, hypersonic technology can disrupt an adversary’s decision-making cycle. It has the potential to significantly reduce 'time on target' from launch, thus increasing reactivity giving increased decision space and decisive advantage to our military decision makers. This unprecedented rapid reach enables more effective intelligence and targeting cycles delivering a potent time sensitive targeting capability in contested scenarios. As part of Multi-Domain Integration, hypersonic platforms have the potential to provide information and effects options to the commander at the ‘speed of relevance’. The deployment of a hypersonic platforms could act as a force multiplier for future joint or combined air operations contributing to increased survivability and stand-off range, enhanced intelligence gathering and lethality¹

Background

In light of the recent Royal Air Force (RAF) Autonomous Collaborative Platform (ACP) Strategy², RAF Rapid Capabilities Office (RCO) is seeking a potential path to developing a high-Mach ACP. Critical to this path will be demonstrating a high-Mach propulsion system architecture (Mach 3+). The Requirement will build on HVX Phase 1 to develop a strategy (via a combination of ground and flight-test activities) to provide a route to an Initial Operational Capability (IOC) ‘Y-plane’ high-Mach concept.

The focus of the short (3-6 month) planning phase will be to explore alternative programme-delivery approaches that might lead to a potential airborne IOC flight test demonstrator within the next 4 years and future operational capability by 2030. A significant part of the activity will be directed at laying out options for further series of technology development activities required for the next 4 years to achieve the RCO's ambition of TRL6/first flight by 2028.

STATEMENT OF REQUIREMENT – ALIGNMENT TO HVX OBJECTIVES.

The HVX ‘pivot’ SOR aligns with the overall HVX programme Objectives as initially set out under HVX Phase 1 as shown in Table 1 below.

¹ 20210203 RAF Exploitation of Hypersonics

² 20240327 RAF ACP Strategy

Table 1. SOR Pivot alignment with the original HVX Programme Objectives.

No.	HVX Objective	HVX 'Pivot' Requirement
1	Maximise Military Utility	Deliverable 1: Operations Analysis (OA) and Military Utility: This work-package will explore (at-least 3 different vehicle concept classes): a. Strategic Level Analysis: define capability objectives b. Campaign Level Analysis: select mission profiles c. Engagement Level Analysis: establish tactical ConOps and Use Cases
2	Maximise Operational System Viability	Deliverable 2: Based on the above OA work, define a high-level Operational System Requirement set for an initial operational capability vehicle with associated ROM/timescale.
3	Maximise Demonstration Viability	Deliverable 3: Lay out option sets with Cost and Timeframes associated with each to get to a combination of ground and flight test demonstration to get to TRL 6 by 2028.
4	Maximise UK Capabilities	Deliverable 4: Lay out a robust demonstrator plan (including V&V) based on key UK capabilities with clear links to international collaborations for key tests/tech maturation.
5	Maximise Technology Maturation	As part of the deliverable 3 and 4, Lay out the costed Tech maturation plan for the next four years culminating in a system level ground test (2 years) and first demonstrator flight with in the 4-year timescale.

STATEMENT OF REQUIREMENT – DELIVERABLES.

The following deliverables are defined (T=Contract Award):

Table 2. SOR Deliverables.

No.	Deliverable	Schedule
Del 1	Operational Analysis and Military Utility Assessment Report	T0+2 Month
Del 2	Operational System Requirement Set Report	T0+3 Months
Del 3	Technology Maturation Plan for the IOC Vehicle to TRL6, incorporating Y-plane flight-test strategy	T0+4 Months
Del 4	Costed proposal of Del 3 up to conclusion of Y-plane test phase	T0+5 Months
Del 5	The Delivery of a Monthly Progress Review (MPR)	Monthly
Del 6	Quarterly Progress Review (QPR)	Quarterly