# PUMA HC 2

# MISSION SUPPORT SYSTEM

## USER AND SYSTEM

## REQUIREMENTS DOCUMENT

## Version 1.0

**Authorised by:**

| Post | JHC-CI-AD | DES P2G-TL |
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| **Date** | 21 Mar 2014 | 25 Mar 2014 |

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## PART 1 – GENERAL DESCRIPTION

### Introduction

1.      This System Requirements Document (SRD) captures and expresses the requirements for a Mission Support System (MSS) to support the Puma HC Mk2.

### Single Statement of User Need

2.      The Single Statement of User Need (SSON) for the Puma HC Mk2 MSS is:

"The Puma HC Mk2 fleet requires a MSS to support the ac until OSD, this encompasses a ground based Mission Planning System (MPS) and an in-flight Mission Management System (MMS)."

3.      For clarity the definitions of these systems are reproduced below:

a.      **Mission Support Systems (MSS).** Encompasses the planning, tasking, re-planning and re-tasking activities that are needed before, during and after-flight to adapt to changing strategic, operational or tactical goals. MSS encompasses Mission Planning Systems and Mission Management Systems.

b.      **Mission Planning Systems (MPS).** The elements of MSS which occur before flight. The tasking, planning, briefing and ultimately transfer of mission data into the air platform.

c.      **Mission Management Systems (MMS).** The elements of MSS which occur following the transfer of data into the air platform. They cover the re-planning and re-tasking elements required during flight and the ability to review data after-flight.

### Background

4.      MSSs allow aircrew the ability to plan rapidly before or after they have departed on task, they allow rapid changes to missions/plans while airborne or at locations away from base such as austere Forward Arming and Refuelling Point (FARP) locations, thus further increasing operational tempo as the situation changes.

5.      The ability for aircrew to import/export and merge mission files for complex deployed aviation operations and with and other coalition partners provides the following:

a.      Reduced planning time (proven by the introduction of the Attack Helicopter (AH) MPS and Rotary Wing Advanced Mission Planning Aid (RW AMPA) and employment of MSS during s.26.

b.      Increased Situational Awareness (SA).

c.      Improved Threat and intelligence data exchange.

d.      Route and timing de-confliction.

e.      Reduced flight safety risk.

6.      s.26.

7.      Once competed, the MSS project will deliver an MSS which will provide an efficient planning tool while maximising interoperability with other planning systems. The winning Contractor will also

provide a support package that will maintain operational effectiveness until 31 March 2020 or, if the Authority exercises its option to extend the contract, through to Puma OSD of 31 March 25.

## Operational context

8. The Puma HC Mk2 Concept of Use (CONUSE) describes the generic use of the Puma HC Mk2 within a joint operations context.

9. Joint Helicopter Command (JHC) are currently developing a Concept of Employment (CONEMP) for the use of MSS across JHC. In the absence of a mature CONEMP the MSS requirement has been developed in close consultation with JHC and using other available guidance on the use and interoperability of MSS. To ensure it is coherent with other systems across defence it has also been developed using the guidance provided by Air Capability (Air Cap) as the Core Capability owner for MSS; in this function they own the MSS strategy but not the individual systems. This is summarised in their Strategy for Mission Support Systems to 2030[1].

10. The MSS boundary is portrayed in the diagram below:



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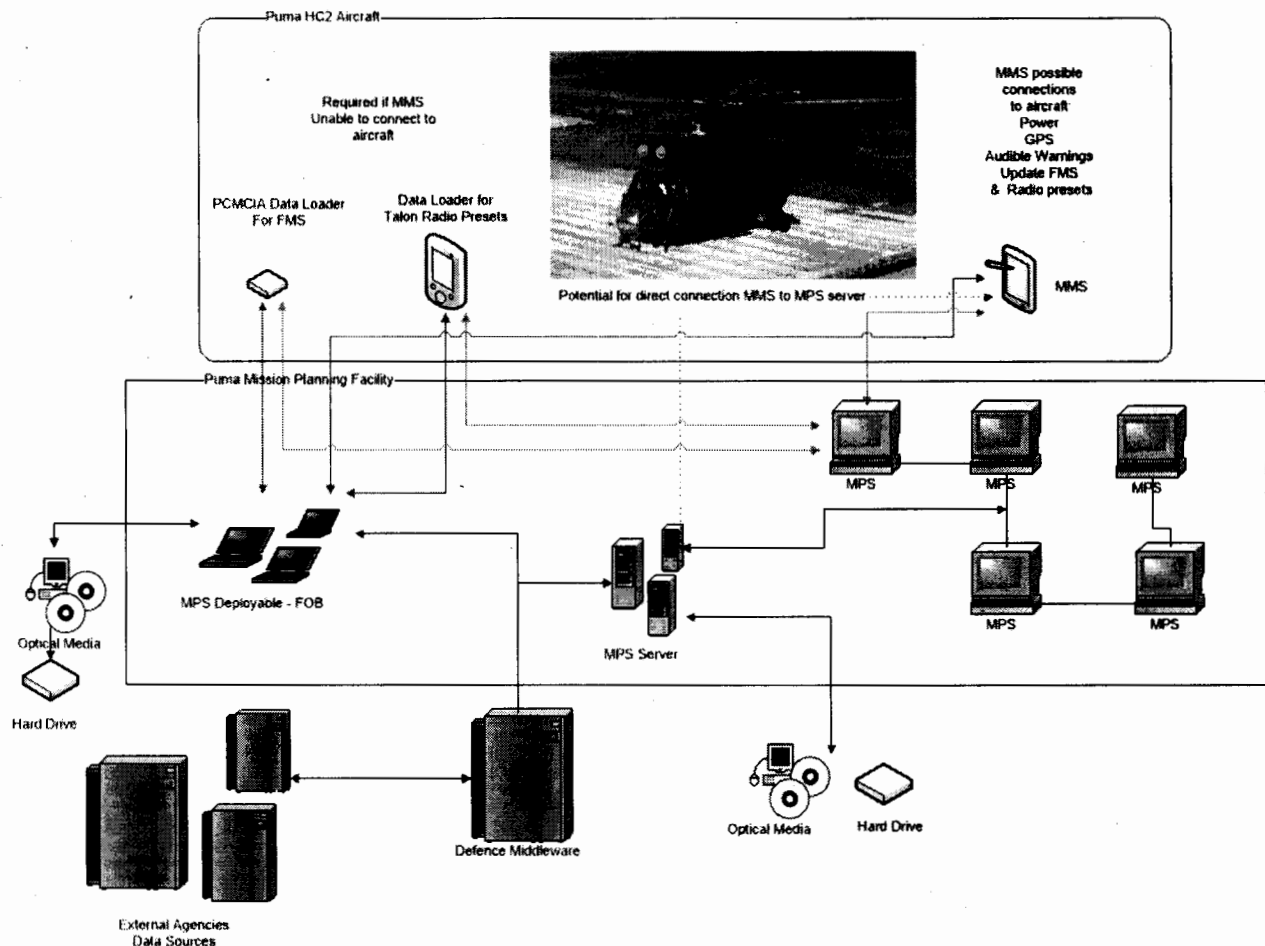
[1] AirCapMsnEnablers/MSS/Doctrine and Concepts/Policy and Strategy/201205015 Version 3.1

## Operating Environment

11.    The Puma HC Mk2 MSS must be able to support Puma HC Mk2 operations across the likely range of climatic and operating conditions stated in the  Combined User & System Requirements Table at Part 2.

## Operating process

12.    **MSS roles.** The MSS supports the following roles:

a.    **Mission planning.** The MSS supports aircrew in planning the mission.  The MSS facilitates the preparation of the mission plan, on the basis of the received tasking data, ATO and according to the ACO and taking into account aircraft limitations, weapons performance (where applicable) and available mission support data.  The MSS operator is able to plan the overall mission route.  The mission planning functionality supports the route planning (manual or automatic), including dynamic representations of the mission to optimize the mission plan.  Geographical, Cartographic, Intelligence, Aeronautical and Meteorological data in conjunction with aircraft limitations are used by the Mission Planner to perform the necessary mission calculations and simulations required to optimize the final mission plan.

b.    **Mission briefing.** The MSS provides a mission briefing capability for the crews intending to execute a specific mission.  The mission briefing capability provides graphical representations of meteorological and aeronautical data, flight plan, attack plan, threats, maps, other mission related data and other relevant data.  The mission briefing capability includes dynamic simulations of the mission.

c.    **Mission execution.** The MSS provides the capability to provide navigational information and situational awareness to the crew throughout the mission.  The MSS also facilitates re-planning and re-tasking if required during flight.

d.    **Mission debriefing.** The MSS provides the capability to perform a comprehensive mission debriefing, based on the data recorded by the MSS.

## Acquisition strategy

13.    The Puma HC Mk2 MSS will be procured through a competitive tender exercise conducted under the DSPCR Competitive Negotiated Procedure. This will allow negotiation with potential Contractors to ensure the Authority receives an acceptable product which offers best value for money.  The MSS will be supported by industry through to 31 March 2020 or, if the Authority exercises its option to extend the contract, until 31 March 2025 .

## Required Operationally Available Date

14.    The In Service Date (ISD) was intended to be inline with the Initial Operating Capability (IOC) of the Puma HC Mk2 (in March 2015).  This is likely to be unachievable but the operating window when the Puma HC Mk2 fleet will be operating without a MSS will be minimised.

## Planned OSD

15.    The Puma HC Mk2 MSS is currently aligned with the platform OSD of 2025.

## Interoperability

16.    Interoperability is vital to employment of MSS across Defence and systems must have the ability to exchange information between future Coalition partners systems.  A lack of

Interoperability will have a negative impact on rapid planning and may exempt assets from involvement in specific Composite Air Operations (COMAO), where it is essential for participating assets to rapidly access and amend their missions.

17.    The Puma HC Mk2 MSS shall be interoperable with other MSSs in order to provide the ability for Puma assets to plan/import/export and merge with other UK assets and NATO, US and coalition partners more effectively as NATO and US forces predominately use electronic mission planners.

## User and System Requirements

18.    The Individual User and System Requirements in Part 2 are structured in the following way:

   a.    **ID.** Unique identifier for each requirement (currently blank – will be used when endorsed requirements entered into DOORS).

   b.    **SR#.** Defines the position of the requirement in the SRD hierarchy.

   c.    **Requirement.** The requirement statement  - defines the required outcome or constraint; it only gains its full meaning when read with the other attributes described below.

   d.    **Applicability.** This defines whether the requirement applies to the MPS or the MMS or both.  X indicates it is applicable; O indicates the requirement is an objective for this part of the MSS.

   e.    **Threshold Measure of Performance (MoP).** Measure which defines the essential minimum required level of performance.

   f.    **Objective Measure of Performance.** Indicates additional performance which would benefit the User but which is subject to trade-off. By definition it is in addition to the Threshold MoP.

   g.    **Justification.** The reason behind the requirement; this may include a source document if applicable.

   h.    **Owner.** Identifies the authority for changes for queries to a requirement.

   i.    **Verification criteria.** The satisfaction arguments of each individual candidate system requirement must be verifiable.  Verification asks the question "did we build the system right?"; it confirms that the characteristics and behaviour of an equipment or system comply with the requirements specified in the SRD and it generates the evidence that informs and enables authorisation of Contract Acceptance and System Acceptance.  However, the information in this section is only for guidance in order to help plan the entire test, evaluation and acceptance process which will be the subject of a separate document - the Integrated Test, Evaluation and Acceptance Plan (ITEAP).  This SRD uses 7 verification criteria:

      1)    **Analysis.** Use of analytical data, simulations or relevant factory test data under defined conditions to show theoretical compliance to the requirement (used where testing to realistic conditions cannot be achieved or is not cost effective).

      2)    **Inspection.** An examination of the item against applicable documentation to confirm compliance with the requirement. (Inspection is used to verify properties best determined by examination and observation (e.g. paint colour, weight, etc.).

      3)    **Demonstration.** A qualitative exhibition of functional performance, usually accomplished with no or minimal instrumentation. (A set of test activities with system stimuli selected by the system developer may be used to show that system or subsystem response to stimuli is acceptable).

4)   **Test.** An action by which the operability, supportability or performance capability of an item is verified when subjected to controlled conditions that are real or simulated. These verifications often use special test equipment or instrumentation to obtain very accurate quantitative data for analysis. The system stimuli may be selected by the system developer and the customer.

5)   **EQD (Read Across).** Equivalent qualification data, e.g. already covered by another standard that has been worked to for another project - means that the information for verification already exists elsewhere and can be read across.

6)   **In-service demonstration.** A continuous assessment of the performance and availability of the system once in service.

7)   **Operational Evaluation.** An assessment of the performance of the system by the User in an operationally representative environment.

j.   **Priority.** Identifies the potential for trading, relative to other statements in the same SRD. The following criteria will be used to indicate the importance of the individual system requirements:

1)   **Mandatory.** Requirements that must be met and represent legal obligations.

2)   **Key.** A System Requirement that is driven by a Key User Requirement . A Key System Requirement may not be traded below the threshold without implications for capability/project feasibility.

3)   **Priority 1.** A high priority requirement reflecting a primary System Requirement which may have design and/or cost implications and which may tolerate acceptable levels of risk to achieve the aim.

4)   **Priority 2.** A medium priority requirement reflecting a secondary System Requirement which may have design and/or cost implications, but will not tolerate project risks to achieve the aim.

5)   **Priority 3.** A low priority requirement reflecting a tertiary System Requirement which may have design implications but will not have cost implications and which will not tolerate project risk to achieve the aim.

k.   Status – Indicates status of each requirement.

l.   Remarks – Notes which amplify or give context to the requirement.

## Stakeholders

19.   The identified users and stakeholders interested in this URD are:

20.   Users:
Puma Force/RAF Benson

21.   Capability Stakeholders:

| | |
|---|---|
| JHC | Air Cap |
| Cap C4ISR | NTA |
| P2G PT | APS PT |
| FsAST PT | AIDU |
| UKHO | Han Sqn |
| DGS Project | JOMOC |
| MAA | DSAS |

DGC

## Dependencies and Related Projects

22.    MSSs interact with a number of other systems and hence have a number of dependencies on other projects.  Wide stakeholder engagement and adherence to applicable policies across defence has been applied to ensure that coherence is maintained.  Of particular note is the Cap Air specified Middleware requirement the solution to which will have impacts on the Puma HC Mk2 MSS.  Development of the Middleware IERs, along with any future development of the Joint Electronic Data Dissemination Interface (JEDDI) protocols, will have to be accounted for within the TLMP for the Puma HC Mk2 MSS.  The development of the Defence Geospatial Services Project will also have to be monitored as this may affect the future development of this capability.