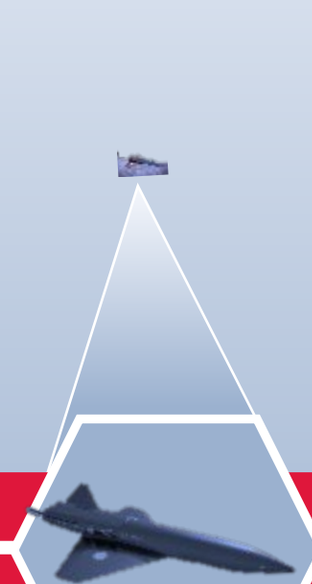
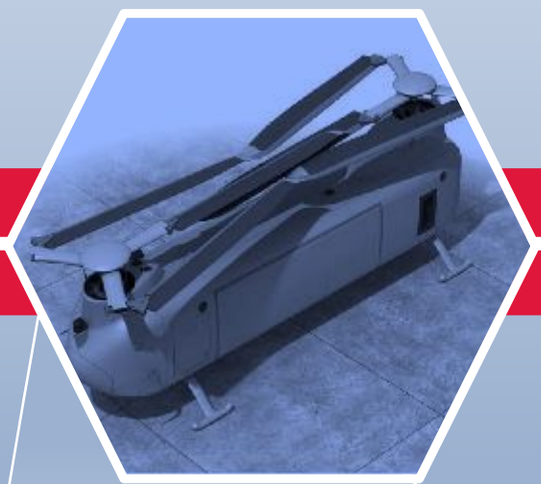
FUTURE MARITIME AVIATION

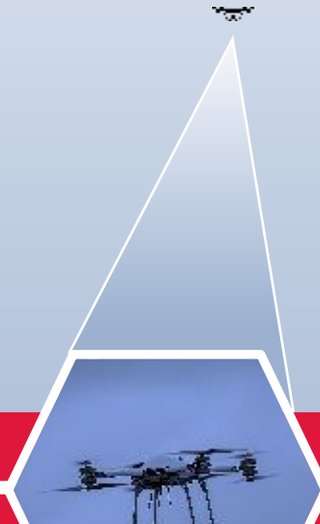
FORCE

Maritime Uncrewed Air Systems Development

ROYAL NAVY







THE CHALLENGE

- **Lack of Mass -** F35 mass will not reach level required to resource both QEC with full Combat Air potential. Me2 overcommitted elsewhere.
- **Developing Un-crewed Platforms -** The question is not “if” the Naval force will prioritize and leverage un-crewed platforms and systems, but how quickly and efficiently, in resource constrained environments.
- **Increased capacity through automation -** We must free up warfighter capabilities for critical operations, by automating routine/repetitive tasks.
- **Environmental Complexities -** We must operate in complex and contested areas all the while reducing the risk to life, force and mission.
- **Vast Scale -** We must increase our range, endurance and persistence in order to build advantage. This is scalable beyond human operator limitations
- **Ability to Command -** We must enable faster, scalable, and distributed decision-making, putting PWOs at the apex of command

THE VISION

MUAS WILL:

Unlock the full potential of QEC

Extract maximum **operational agility** in a coherent and integrated way.

Improve **persistence and scalability;** enhancing effectiveness from sub-threshold to major warfighting.

PROGRAMME INTENT:

Gather evidence to inform **choices available** to Defence at the next Integrated Review (IR25).

Present **options** for early introduction to Service of air systems and Aircraft Launch/Recovery Equipment.

Deliver concept demonstration **to ‘open up’ QEC deck** (2024).

‘Sweat the metal’ of QEC by **adding mass** o the Carrier Air Wings.

Demonstrating the potential to
INCREASE MASS AND ENHANCE LETHALITY
with complimentary uncrewed capabilities and enablers.

Gather Evidence

Setup required enablers

MUAS Concept Demonstrator

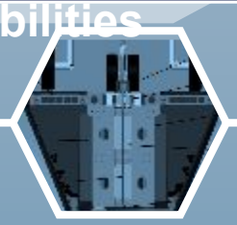
Coherence with DEV and FGEN

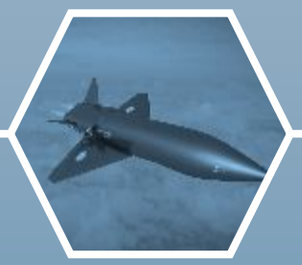
Understand full Potential

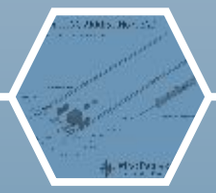
Study Capabilities

IR 25

FMA F







HOW DO WE GET THERE?

Complimentary Capabilities

VIXEN

- QEC-based multi-role capability
- AEW contribution to PWAS, or
- c500kg modular payloads including cargo and communications.

VAMPIRE

- QEC based Decoy and adversary emulator
- Light strike fighter performance
- Potential for spiral development to include payloads such as CEMA, ISR & Comms

PROTEUS

- Complements current crewed RW systems in the delivery of ASW, ISR, AEW and cargo transportation
- c500 kg modular payload (common with VIXEN)

PANTHER

- Provides a low cost, agile, light lift capability to CS
- Significant decrease to cost and RTL associated with transfer of low weight low volume stores between units

Flexible Tactical Uncrewed Air System (FTUAS)

- FTUAS UCR will provide an ISR capability in the KIPION JOA with required persistence to meet current threats from 2023-2025.
- Ability to find, fix, track and assess maritime surface entities. Complements crewed RW assets in the provision of situational awareness

Enablers

Payloads - Common payloads across air vehicles and standards setting for payloads

Commercial advantage: Multiple payload providers to 'plug in' to the MUAS FMAF air system architecture. Eg, VIXEN programme requires an AEW radar

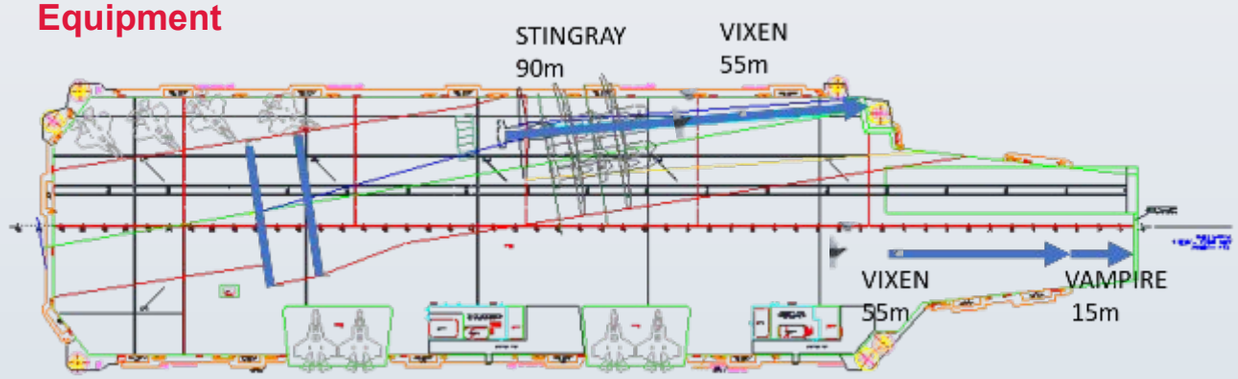
Digital - Open digital infrastructure that integrates and adopts uncrewed capabilities at speed and scale. Crewed-Uncrewed Teaming (CUC-T) to enable transition of uncrewed support to crewed operations to independent uncrewed operations as capabilities mature.

STRATCOM
Multi-Domain Integration (MDI)

Crewed-Uncrewed Teaming (CUC-T)

Royal Navy
Naval Strike Network (NSN)

ARK ROYAL - QEC Aircraft Launch & Recovery Equipment



Requirement

- Enables operation of high performance Uncrewed strike and support systems. Potential to enable operation of FW crewed aircraft (e.g. F/A-18E, F-35C, Rafale)
- Ramp launch to be demonstrated initially, with subsequent assessment once recovery systems are in place to enable full integration can be evidenced.

Launch

- Enables rapid deployment of FW assets held at Alert in order to conduct a range of missions.
- Weight and cost implications of MUAS minimised, reducing through-life capability cost.

Recovery

- Necessary for the operation of a wider range of crewed and uncrewed aircraft
- Enables closer operation with allies and partners including alignment with the UK/US SOI on carrier cooperation. VIXEN will depend this for recovery to QEC.

PROTEUS

Technical Demonstrator Programme

Provenance

- SofS endorsed MOD RW Strategy
- Defence Innovation ASW Spearhead Mandate
- Leonardo Strategic Partnering Arrangement
  - Future Programmes Hub

Evidence

- FMAF Vision & Maritime UAS Strategy
  - Evidence Gathering
- Dstl Operational Analysis
  - ASW
  - AEW
  - multi-role application

PROTEUS

- Complements current crewed RW systems in the delivery of ASW, ISR, AEW and cargo transportation
- c1100 kg modular payload (common with VIXEN)

Spiral Development

- Phase 3 ASW
- Phase 4 ISR, MiTL, Weaponisation
- Enables future opportunity to develop RN Medium RWUAS expertise – to act as an informed customer in Defence

Advantages

- Cheaper than retrospective conversion of crewed aviation (eg Firescout)
- Ability to find, fix, track and assess maritime surface entities.
- Significant decrease to Risk to Life (RTL)

FMAF

Enablers

Modularity - Common payloads across air vehicles and standards setting for payloads

Commercial advantage: Multiple payload providers to 'plug in' to the FMAF maritime UAS air system architecture across PROTEUS as RW and VIXEN as FW UAS.

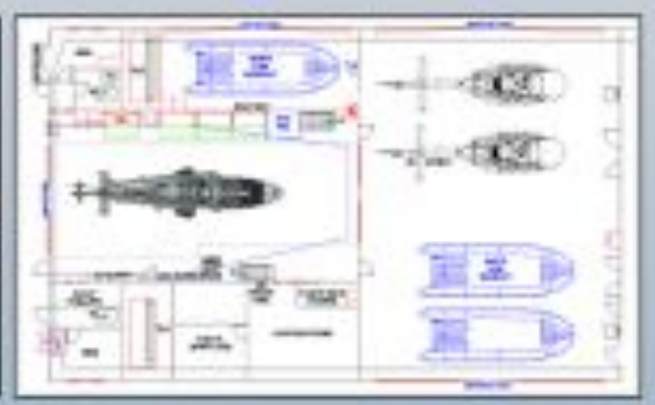
Digital - Open digital infrastructure that integrates and adopts uncrewed capabilities at speed and scale. Crewed-Uncrewed Teaming (CUC-T) to enable transition of uncrewed support to crewed operations to independent uncrewed operations as capabilities mature.

STRATCOM
Multi-Domain Integration (MDI)

Crewed-Uncrewed Teaming (CUC-T)

Royal Navy
Naval Strike Network (NSN)

Ship-Air Integration



Launch and Recovery

- Potential to enable concurrent operation with crewed aircraft including stowage in hangar with crewed aircraft allowing maintenance. B2OPV capable.
- Organic to maritime force, embarked alongside Wt and within QEC to enhance mass and augment 2nd Carrier Air Wing, assuring freedom of manoeuvre.

Capability

- Enables rapid deployment of RW assets held at Alert in order to conduct a range of missions.
- Weight and cost implications of RWUAS minimised, reducing through-life capability cost.

Opportunities

- Inform future USN/USMC requirements eg US Future Vertical Lift (Maritime)
- Enables closer operation with allies and partners including alignment with the UK/US SOI on carrier cooperation.

PROJECT VAMPIRE

Project Vampire is a low cost fixed wing fast jet uncrewed air system which is part of a spiral development project within the Maritime Uncrewed Air Systems programme (MUASP). It is developing a deployable threat simulator for air defence training, and to provide a trial platform to practically deliver sensors and effectors, integration for the Naval Strike Network (NSN) and build evidence for Integrated Review (IR25).

Next Steps:

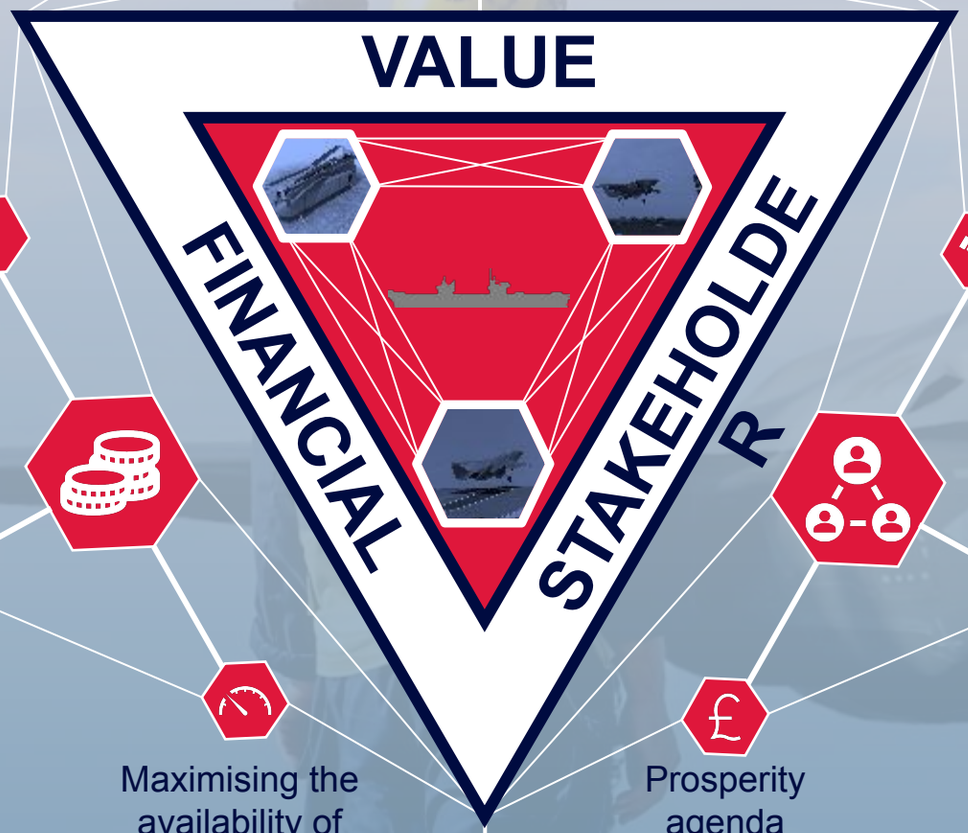
- Scale capability
- Integrate new payloads
- Align with S&T Research Pg activities

WHAT DO WE STAND TO GAIN?

The ability for NC to assess the performance of MUAS to deliver defence strategic outcomes and allow the decision space to inform future investment opportunities.

Fully appreciate the impact of Ark Royal capability to enable optimised UAS and coalition FW operations.

An understanding of how to optimise critical on- board spaces to deliver effect efficiently.



An opportunity to yield UK prosperity as part of the Defence Industrial Strategy.

Confirming the RN commitment to Emerging and Disruptive Technologies, demonstrating leadership, innovation and collaboration amongst Allies in the field of maritime UAS.

Understand the potential of MUAS to enhance Carrier Air Wing (CVW) mass and provide Defence with choices for investment through future spending rounds.

Widening our military options for enhancing our National Security and potentially providing flexibility and offering greater sovereign choice in the delivery of Operational Effect .

Maximising the availability of crewed assets for Defence core outputs.

Prosperity agenda benefits for UK Industry.