

AVoptics/DSTL Showcase Proposal

Summary

A proposal for AVoptics to support a Showcase event organised by DSTL at the [Redacted]. Also detailed is the modifications that are required to run the demonstration system in a static environment and at short range as well as the administration support and setup dates of the [Redacted].

Document No.: AVSR30233-PROPOSAL

Issue: Issue 1

Lead Author [Redacted under FOIA Section 40, Personal Information]

AVoptics Limited

AVoptics Ref: AVSR30233

Customer Ref: N/A

Customer Contact: [Redacted under FOIA Section 40, Personal Information]

[Redacted under FOIA Section 40, Personal Information]

Date: 22/10/21 **Author**

[Redacted under FOIA Section 40, Personal Information]

Date: 22/10/21

AVoptics Approval

[Redacted under FOIA Section 40, Personal Information]

Date: 22/10/2021

Customer Approval



DOCUMENT REVISION TABLE

Issue	Author	Description of Revisions	Date
DRAFT A	Redacted under FOIA Section 40, Personal Information	First Draft	22/10/2021
Issue 1	Redacted under FOIA Section 40, Personal Information	First Issue	22/10/2021

CONTENTS

Document Revision Table.....	2
1. Introduction.....	4
1.1 Summary.....	4
1.2 Customer Statement of Requirements.....	4
2. Technical Proposal – Showcase Event.....	5
2.1 WP1 – Requirements and Scoping (1.6 person weeks).....	5
2.2 WP2 – Risk Assessments and Other Documentation (2 person weeks).....	5
2.3 WP3 – Offsite demonstration/showcase preparation (3 person weeks).....	5
- Modification of prototype system to allow spoofing of drone on static display fixing, manufacture attachment points.....	5
- Adapting power to allow all day running.....	5
- Adding weather proofing to prototype in case of bad weather.....	5
- Adapting optical path to be optimised at short distance (from 100m->1km, to approx.. 30m).....	5
- Providing video link from prototype to showcase event area.....	5
2.4 WP4 – Setup and Support Showcase (3.4 person weeks).....	5
2.5 Personnel Costs.....	5
2.6 Bought Outs and Travel Costs.....	6
2.7 Total Cost.....	6
3. Deliverables and IP.....	6
3.1 Deliverables.....	6
3.2 Intellectual Property.....	6
4. Payment Milestones.....	6
5. Project Schedule and Key Dates.....	6
5.1 Programme Gantt Chart.....	6
5.2 Key Dates for Deliverables and Government/External Furnished Assets.....	6
6. Dependencies, Assumptions, Risks and Exclusions.....	6
6.1 Dependencies and Assumptions.....	6
6.2 Risks.....	7
7. Personnel Particulars Research Worker Forms.....	7

1. INTRODUCTION

1.1 SUMMARY

DSTL are holding a technology showcase on the [Redacted – DEFENCE], which AVOptics have been asked to demonstrate the Modulated Retro Reflector communications system that is currently being developed on programme [Redacted – Commercially Sensitive Information].

This following proposal details the work required to be performed to support this activity:

- A full technical proposal that meets the individual activities that are detailed in Statement of Requirements
- A full breakdown of your hours effort and rates
- Breakdown of Deliverables with associated IP ownership rights
- Breakdown of Milestone Payments with due dates
- A work breakdown structure/project plan with key dates and Deliverables identified including required delivery dates for Government Furnished Assets
- A clear identification of Dependencies, Assumptions, Risks and Exclusions which underpin your Technical Proposal
- Personnel Particulars Research Worker Form and security clearances

1.2 CUSTOMER STATEMENT OF REQUIREMENTS

Dstl's requirements for AV Optic's support to the IS Programme Showcase include:

1. Working with Dstl TP to scope the demonstration plan
2. Working with QinetiQ trials manager to agree the logistics of site access and demonstration set up.
3. Completion of all necessary documentation for QinetiQ's trials process: including but not limited to Risk Assessments, Laser Safety information, other equipment specifications.
4. Set up of the demonstrations the week prior to the event
5. Participation of the Full 'dress rehearsal' and possible filming of the rehearsal
6. Running of the 10 minute demonstration at scheduled intervals during the RDC window each day
7. Rerun of the demo during the 'free to wander sessions' as required
8. The use of AV Optics video of the system in use (to be played on a loop) at the stand.
9. Support from AV Optics to answer questions from audience relating to the system

2. TECHNICAL PROPOSAL – SHOWCASE EVENT

The proposed project is based on a drone-mounted Modulated Retro Reflector (MRR) which provides a lowSWaP optical data transmitter for the drone (e.g. UAV) to transmit onboard data (e.g. from sensors or cameras) to another platform. A portable optical base station transmits an unmodulated laser beam to the drone; the MRR's reflectivity is then modulated by the onboard data source, which encodes the incident beam with the stream of data and retro-reflects it back to the base station (like a cat's eye reflector in the road) without the need for sophisticated active tracking systems on the drone. This is currently being developed under a DASA programme and has been requested to be shown at a DSTL showcase.

The following sections detail the work tasks identified by AVOptics to provide a demonstration of the Modulated Retro Reflector system at a significantly shorter range than originally designed and in the confines of a demonstration area. Also detailed are the administrative activities also required to be completed for this event.

2.1 WP1 – REQUIREMENTS AND SCOPING (1.6 PERSON WEEKS)

A work package to understand the trial site / event and assess practicalities of using it to showcase MRR system. DSTL engagement throughout process and with QinetiQ team.

Define changes required to prototype system to allow it to operate at the showcase. The outputs identify adaptations required for Work Package 5.3.

2.2 WP2 – RISK ASSESSMENTS AND OTHER DOCUMENTATION (2 PERSON WEEKS)

Ensure the demonstration can be conducted safely at the event and manage logistics. Completion of risk assessments, evidenced laser safety calculations assessments. Security forms etc...

2.3 WP3 – OFFSITE DEMONSTRATION/SHOWCASE PREPARATION (3 PERSON WEEKS)

Perform tasks to allow the use of the system in the manner as agreed with QQ and DSTL in WP5.1. This includes:

- Modification of prototype system to allow spoofing of drone on static display fixing, manufacture attachment points.
- Adapting power to allow all day running.
- Adding weather proofing to prototype in case of bad weather
- Adapting optical path to be optimised at short distance (from 100m->1km, to approx.. 30m)
- Providing video link from prototype to showcase event area.

2.4 WP4 – SETUP AND SUPPORT SHOWCASE (3.4 PERSON WEEKS)

Set up at the showcase and support the show case event. Primarily AVO will provide two people for 2-3 days at the setup event as well as the dry run. Three AVO personnel will support the showcase event, one to be stationed with the active demonstration equipment and two to provide demonstrations and support Q and A activities.

2.5 PERSONNEL COSTS

[[Redacted – Commercially Sensitive information]]

BOUGHT OUTS AND TRAVEL COSTS

[[Redacted – Commercially Sensitive information]]

2.6 TOTAL COST

The total proposed cost of this work is **£31,743.25**

3. DELIVERABLES AND IP

3.1 DELIVERABLES

The following table details the deliverables in the programme.

[[Redacted – Commercially Sensitive information]]

3.2 INTELLECTUAL PROPERTY

There is no perceived intellectual property that will be generated in this demonstration activity.

4. PAYMENT MILESTONES

[[Redacted – Commercially Sensitive information]]

5. PROJECT SCHEDULE AND KEY DATES

5.1 PROGRAMME GANTT CHART

The following figure show a Gantt chart for the programme and its inter-actions.



5.2 KEY DATES FOR DELIVERABLES AND GOVERNMENT/EXTERNAL FURNISHED ASSETS

[[Redacted – Commercially Sensitive information]]

6. DEPENDENCIES, ASSUMPTIONS, RISKS AND EXCLUSIONS

6.1 DEPENDENCIES AND ASSUMPTIONS

The key dependencies for this work are identified below:

- Availability of suitable trial space location with sufficient distance and clear line of sight to operate the demonstration
- Availability of facilities to hold drone in static display for the course of the showcase
- Showcase organisation for security and access.
- Provision of laser safety signage around the demonstration areas.
- Provision of a method to send a video feed to the main showcase building.
- Provision of site access for AVoptics staff on the week prior to the showcase to setup and test the demonstration.

6.2 RISKS

[Redacted – Commercially Sensitive information]

7. PERSONNEL PARTICULARS RESEARCH WORKER FORMS

The completed AVoptics Personnel Particulars Research Worker Forms are attached in appendix 1. These are the forms completed for the DASA Modulated Retro Reflector Programme.