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SACC DT

Link 16 Sustainment Combined Operational Effectiveness & Investment Appraisal

Statement of Work for Technical Contractor Support

Annex A to FATS D&E Tasking Order Form FTS/DE/SACC/13

October 2016

Version v1.0

Defence Equipment & Support

[redacted]

Authorisation

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Amendments

Version	Date	Change	Changed by
0.1	01/06/16	Initial Draft	
0.2	08/06/16	Second Draft	
0.3	13/06/16	Third Draft	
0.4	03/08/16	Fourth Draft	
1.0	10/10/16	Issue 1	

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SCOPE

1. This Statement of Work (SoW) details the requirements for the supply of Technical Contractor Support to technically assist DES SACC SM in the production of a Combined Operational Effectiveness and Investment Appraisal (COEIA) for Link 16 sustainment up to 2036. This document also states the requirements regarding the Contractor's responsibilities during the period of the contract.

2. The Technical Support Contractor's undertaking includes all technical activities necessary to assist in the production of a Link 16 Sustainment COEIA.

3. Each member of the COEIA technical contractor team shall, at a minimum, hold Security Check clearance.

BACKGROUND

4. Link 16 capability provides Situational Awareness to UK Armed Forces. Land, Sea and Air platforms are fitted with terminals capable of exchanging messages across a secure RF network, providing a common picture of the air battlespace, necessary for effective mission success. Link 16 is in use with 48 countries and provides unparalleled interoperability with coalition allies at both the operational and tactical layers.

5. The US programme office has notified the UK that Link 16 hardware is required to be updated for necessary operational reasons, and therefore the UK needs to sustain its capability through this modernization and into the future. MIDS uses cryptovariables in order to secure both the information (MSEC) and the waveform (TRANSEC). The current crypto algorithm is planned to be decertified for UKS communications and the replacement algorithm will require new crypto devices. This activity, known as the Crypto Modernization Programme (CMP), will impact all L16 terminal equipments, necessitating either hardware modifications, retirement from service, or equipment replacement.

6. Many options exist to meet these requirements across the plethora of platforms currently and planned to be fitted with a Link 16 capability. The means by which the continued employment of this capability by UK forces is realised is termed the Link 16 sustainment programme. It will require the production of a Combined Operational Effectiveness and Investment Appraisal (COEIA) which provides an evidence-based comparison of the investment options, summarised as a Measure of Effectiveness versus Whole Life Cost (WLC). The options and scope of the COEIA are described in this SOW.

WORK PACKAGES

7. The Contractor shall complete the following work packages:

Work Package 1 - Project Management

8. Work Package 1 covers all the day to day Project Management tasks inclusive of the Monthly Progress Meetings and additional meetings which the Contractor attends on behalf of the SACC DT in the delivery of this technical support contract.

Task No	Input Description	Output / Deliverable	Interim Milestone	Final Milestone
1.1	**Project Management Services**			
1.1.1	The Technical Support Contractor shall provide all dedicated Project Management Services required for: a. The execution of the technical support work packages outlined in this statement of work; b. the co-ordination and Project Management of activities and resources allocated to this technical support contract; c. inter-group liaison between all stakeholders in the production of the Link 16 COEIA; d. general project administration relating to this technical support contract;	The Technical Support Contractor shall appoint a suitable qualified experienced person to act as the Project Manager for all communications between the Authority and the Contractor.	For the duration of the Contract	
1.2	**Project Management Plan**			

Task No	Input Description	Output / Deliverable	Interim Milestone	Final Milestone
1.2.1	The Technical Support Contractor shall provide and maintain a Project Management Plan (PMP) for the work to be undertaken for this Link 16 COEIA technical support contract. The PMP shall include, but may not be limited to: a. Assumptions, Dependencies and Constraints b. Strategies/plans for acceptance; assurance; risk management; issue resolution; assumptions management; stakeholder engagement and communications; project monitoring and control, including change control; project reporting; information management. Project Team organisational structure and responsibilities, including any sub-contractors; c. Project Milestones; d. High level project plan, including key products, activities and resources including funding.	Project Management Plan in Microsoft Word 2007	Within 10 business days of Contract Award and updated on a monthly basis thereafter	
1.2.2	The Contractor shall provide a detailed schedule for the execution of all its obligations under this Statement of Work. At a minimum, the schedule shall include all the tasks and activities it is required to perform under this contract, with clear durations and resources associated with each task or activity. Those tasks and activities shall be structured in a logical fashion in a Gantt Chart, identifying the predecessors and successors, and the critical path associated with achieving the required outputs / deliverables. The detailed schedule shall demonstrate how the Contractor will deliver the key outputs / deliverables to meet the dates specified for those outputs / deliverables in this Statement of Work.	Detailed Schedule in MS Project 2010	Within 10 business days of Contract Award and updated on a monthly basis thereafter.	
1.3	**Preparation for and Attendance at Meetings**			

Task No	Input Description	Output / Deliverable	Interim Milestone	Final Milestone
1.3.1	The Technical Support Contractor shall: a. Provide facilities, secretarial and support services required for all meetings specified in this Statement of Work. b. In addition to the other meetings specified elsewhere in this Statement of Work, the Contractor shall attend monthly Contract progress meetings with the Authority. The first project meeting will be held with the Authority within 10 business days of the commencement of the Contract. c. For all the meetings set out in this Statement of Work, the process and timings associated with the production and acceptance of the minutes of such meetings shall be in accordance with task 1.3.4.	Secretarial Support to Monthly Meetings in Microsoft Word format	For the duration of the Contract	
1.3.2	The attendees at the Contract progress meetings shall be agreed between the Technical Support Contractor and Authority on a case by case basis. At a minimum, however, the Technical Support Contractor's representative at all Contract progress meeting shall include the Technical Support Contractor's Project Manager and their lead subject matter experts for work packages 2 to 8.	Part of Secretarial Support	For the duration of the Contract	
1.3.3	The Technical Support Contractor shall prepare and issue, as directed by the Authority, a Contract Progress Report (CPR). The report shall be issued to arrive no later than 10 (ten) business days prior to the Contract Progress Meeting. The CPR shall include, but not be limited to: a. Progress of current tasking; b. Proposals for future tasks; c. Configuration Management issues; d. Risk Register e. MDAL f. Issues g. AOB	Monthly Contract Progress Report Microsoft Word Format	Monthly Contract Progress Reports for the duration of the Contract.	

Task No	Input Description	Output / Deliverable	Interim Milestone	Final Milestone
1.3.4	The Technical Support Contractor shall prepare and issue Contract progress meeting minutes for each Contract Progress Meeting. Acceptance will be subject to the following single review cycle: The Contractor shall issue draft minutes to the Authority within 5 business days of the meeting. The Authority shall provide a single set of consolidated comments within 5 business days of receipt of the draft minutes. The Contractor shall incorporate the comments into the minutes and distribute them within 5 business days of receipt of the consolidated comments. If the Authority do not provide comments within 5 business days of receiving the draft minutes, the Contractor shall distribute the draft minutes as final minutes.	Contract Progress Minutes Microsoft Word Format	For the duration of the Contract.	
1.3.5	The Technical Support Contractor shall complete and return a Work in Progress Validation Certificate	Work in Progress Validation Certificate (See Annex D to FATS D&E Tasking Order Form FTS/DE/SACC/13)	Monthly for the duration of the Contract	

Work Package 2 – Operational Analysis

9. Work Package 2 covers the production of an Operational Analysis, across a range of scenarios, to determine the effectiveness across a range of Link 16 Sustainment options. It permits an assessment of which solution provides the required effectiveness for the least cost.

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
2.1	**OA Modelling**			
2.1.1	The Technical Support Contractor shall generate and input parameters into a Contractor supplied Operational Analysis model. The Contractor shall engage with the Authority to determine the scope of parameters, the model functions, its outputs and how results should be interpreted.	Operational Analysis Model compatible with Microsoft Office. The parameters will be validated and agreed by RM, PM and User Stakeholders prior to acceptance by the Authority.	✓	-
2.1.2	The Technical Support Contractor shall consider all Air, Land and Maritime Areas of Responsibility and associated relationships with achieving their respective Military Tasks and associated Information Exchange Requirements.	Part of model	✓	-

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
2.1.3	The Technical Support Contractor shall employ the modelling tool to enable the relative effectiveness of sustainment options to be calculated.	Effectiveness assessment in Microsoft Word. The report will be validated and agreed by RM, PM and via liaison with Stakeholder community.	✓	-

Work Package 3 – Need & Numbers Analysis

10. Work Package 3 considers the justification for the sustainment of Link 16 until 2036. Its aim is to provide an auditable trail of evidence that a Do Something option provides a compelling case for upgrade or replacement of the Link 16 capability to enable continued sustainment.

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
3.1	**Demonstration of Compelling Need**			
3.1.1	The Technical Contractor shall provide a report which quantifies the risks associated with a Do Nothing baseline.	Need and Numbers report in Microsoft Word. The N&N report will be validated and agreed by RM, PM and User Stakeholders prior to acceptance by the Authority.	✓	-
3.2	**Estimation of Scaling / Numbers**			
3.2.2	The Technical Contractor shall provide a report which derives from a number of scenarios the scaling/numbers below which a viable Link 16 capability cannot be established.	Part of N&N	✓	-

Work Package 4 – Exploratory Capability COEIA

15. Work Package 4 covers development of an exploratory capability-based COEIA to consider the options to sustain Link 16 to 2036. It will draw and build upon the outputs developed within WP2 and 3. The Technical Support Contractor shall supply a deliverable at the interim milestone that describes the developed Options and a Final COEIA which expands on Interim statements and includes assessment of Options.

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
4.1	**Development of Options**			
4.1.1	The Technical Support Contractor shall develop capability options to be considered by the Exploratory COEIA.	In Microsoft Word. The COEIA will be validated and agreed by RM, PM and User Stakeholders prior to acceptance by the Authority.	✓	✓

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
4.1.2	As a minimum, the options to be considered shall include: a. Do Nothing, assuming current Link 16 capabilities continue as-is until mandated to cease operations. b. Do minimum necessary to meet Need & Numbers requirement developed in WP3. c. Do New Investment Options. This should consider a range of approaches including but not limited to development, "off the shelf" and tailored options for equipment, infrastructure and services that together provide a viable, supportable capability. Both single (to the maximum feasible extent) and mixed equipment fleet shall be considered. Options shall reflect the capabilities which could be supported as well as future capabilities which are reasoned to exist within the sustainment timeframe.	Part of COEIA	✓	✓
4.1.3	The Technical Support Contractor shall assess each option with respect to a relative comparison of time, cost, and performance metrics.	Part of COEIA	-	✓
4.1.4	The Technical Support Contractor shall assess the options with due regard to current Link 16 capabilities both in-service or planned to enter service.	Part of COEIA	-	✓
4.1.5	The Technical Support Contractor shall make recommendations based on an assessment of the options.	Part of COEIA	-	✓
4.2	**Policy and Planning Considerations**			
4.2.1	The Technical Support Contractor shall determine Policy & Planning considerations to be taken into account by the options.	Part of COEIA	✓	✓
4.2.2	The study shall take into account inputs to be collected by Key Policy and Planning Stakeholders identified by the Technical Support Contractor.	Part of COEIA	✓	✓
4.3	**Infrastructure Considerations**			
4.3.1	The Technical Support Contractor shall consider the key infrastructure requirements that enable Link 16 sustainment for each option.	Part of COEIA	✓	✓

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
4.3.2	Infrastructure studies shall include, but not be limited to: a. Test and Evaluation requirements. b. Link 16 Network Planning. c. Link 16 Network Design. d. Link 16 Network Management.	Part of COEIA	-	✓
4.4	**Export & Commercial Considerations**			
4.4.1	The Technical Support Contractor shall consider the key commercial requirements that would sustain Link 16 for each option considered.	Part of COEIA	✓	✓
4.4.2	The study shall include, but not be limited to: a. International agreements including Department of Defense / MIDS International Programme Office. b. Arrangements/agreements prepared or accepted for existing and future platforms. c. Import and Export issues, including International Traffic in Arms Regulations (ITAR). d. Relative equipment & associated infrastructure costs through-life.	Part of COEIA	✓	✓
4.5	**Support Solutions Considerations**			
4.5.1	The Technical Support Contractor shall consider the key support solutions requirements that would sustain Link 16 for each option considered. This shall include, but not be limited to: a. Achieving the desired figure of availability, by consideration of spares requirement, in-country or foreign country diagnostics & repair, and equipment failure rates. b. Resource gap analysis that considers the relative support resources required for each option.	Part of COEIA	✓	✓
4.6	**Interoperability Considerations**			

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
4.6.1	The Technical Support Contractor shall consider the key interoperability requirements for each option, including but not limited to: a. Intra-UK b. (Combined) Joint Expeditionary Force c. Very High Readiness Joint Task Force d. U.S. e. NATO.	Part of COEIA	-	✓
4.7	**Personnel Considerations**			
4.7.1	The Technical Support Contractor shall consider the impact on personnel for each option, including but not limited to: a. Operational personnel b. Maintainer personnel c. Test & Evaluation personnel d. Platform Teams e. Delivery Teams f. TLBs.	Part of COEIA	-	✓
4.8	**Training Considerations**			
4.8.1	The Technical Support Contractor shall consider the impact on training for each option, including but not limited to: a. Operator training b. Maintainer training c. Test & Evaluation personnel d. Platform Teams e. Delivery Teams	Part of COEIA	-	✓
4.9	**Concepts & Doctrine**			
4.9.1	The Technical Contractor shall consider Link 16 Concept of Operation and Concept of Effectiveness for the developed Options.	Part of COEIA	-	✓

Work Package 5 – Assumptions and Risks

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
5.1	**MDAL Development**			
5.1.1	The Technical Support Contractor shall develop a Master Data Assumptions List (MDAL) to inform production of Whole Life Cost models.	In Microsoft Word. The MDAL will be validated and agreed by RM, PM and User	Delivered monthly	
5.1.2	The MDAL shall capture assumptions across all DLoDs associated with the provision of Link 16 capability.	Part of MDAL.	Delivered monthly	

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
5.1.3	The MDAL shall capture as a minimum: a. Data/Assumption description. b. The authoritative reference for the source data or assumption (where applicable). c. The date the data/assumption was provided or last reviewed/updated. d. The source organisation (owner)	Part of MDAL.	Delivered monthly	
5.1.4	The MDAL shall consider the Operational, Programme, Logistics, Manpower/Manning, Training, Infrastructure/Facilities and Information aspects associated with each Exploratory COEIA Option.	Part of MDAL.	Delivered monthly	
5.2	**Risks**			
5.2.1	For each of the developed Options, the Technical Support Contractor shall develop a Risk Register.	In Microsoft Excel. The Risk Register will be validated and agreed by RM, PM and User	Delivered monthly	
5.2.2	The Technical Support Contractor shall develop a Risk Management Strategy and Plan that describe their approach to how risks will be captured, identification of key stakeholders.	In Microsoft Word. The MDAL will be validated and agreed by RM, PM and User	CA + 1 month	-
5.2.3	The Risk Register shall capture for each risk identified their cause, risk event and consequences.	Part of Risk Register.	Delivered monthly	
5.2.4	The Risk Register shall capture Threats and Opportunities.	Part of Risk Register.	Delivered monthly	
5.2.5	The Technical Support Contractor shall assess each risk to determine risk probability and impact.	Probability Impact Diagrams within Risk Register.	Delivered monthly	

Work Package 6 – TDL Sustainment Capability Roadmap

17. Work Package 6 shall develop roadmaps for each of the options identified within the Exploratory COEIA. It shall determine the logical route by which the Authority will transition from the current to a future state.

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
6.1	**Link 16 Equipment Roadmap**			
6.1.1	The Technical Support Contractor shall develop roadmaps for each equipment in Annex A.	Roadmaps exported into Microsoft Word. Roadmaps will be validated and agreed by RM, PM and User Stakeholders prior to acceptance by the Authority.	-	✓
6.2	**Link 16 Platform Roadmap**			

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
6.2.1	The Technical Support Contractor shall develop capability roadmaps for each platform in Annex A.	Part of roadmap.	-	✓
6.3	**Link 16 Logistics Support Roadmap**			
6.3.1	The Technical Support Contractor shall develop logistics roadmaps for each platform and equipment identified in Annex A.	Part of roadmap.	-	✓
6.4	**TDL Roadmap**			
6.4.1	The Technical Support Contractor shall develop roadmaps that indicate the relationships between Link 16 and other TDL capabilities to enable achievement of a Single Information Environment.	Part of roadmap.	-	✓

Work Package 7 – Link 16 Architecture Study

18. Work Package 7 shall develop architectures for each of the options developed within the Exploratory COEIA. It shall enable a relative comparison of the architecture options to be performed, determine if is consistent with the roadmap to a Single Information Environment, and identify critical dependencies.

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
7.1	**Link 16 Architecture Development**			
7.1.1	The Technical Support Contractor shall develop architectures, consistent with MODAF, which highlight network integrity, network capacity, and network connectivity for each sustainment option identified in the Exploratory COEIA.	Architecture exported into Microsoft Word. The architecture will be validated and agreed by RM, PM and User Stakeholders prior to acceptance by the Authority.	-	✓
7.2	**Link 16 Single Information Environment**			
7.2.1	The Technical Support Contractor shall provide technical input into methodologies by which a sustained Link 16 contributes to an SIE, consistent with the Contractors' roadmap developed in 7.1.1.	Part of study	-	✓

Work Package 8 – Future Link 16 Environment Study

19. Work Package 8 shall consider the future operational environment up to 2036 in which Link 16 may operate, as described by the Future Character of Conflict[1] and Future Operating Environment 2035[2]. An initial study that lays the foundation for further in-depth analysis shall be delivered as part of the interim milestone, followed by a final report as an element of the final milestone.

[1] Strategic Trends Programme, Future Character of Conflict, DCDC
[2] Strategic Trends Programme, Future Operating Environment, DCDC

Task No	Description / Resource	Deliverable / Format	Interim Milestone	Final Milestone
8.1	**Link 16 Message Assurance**			
8.1.1	The Technical Support Contractor shall develop a study which considers the Link 16 information assurance requirements to support: a. Command & Control of Unmanned Aerial Vehicles. b. Command & Control of Manned Aircraft. c. Command & Control of weapons in flight. d. Sensor payload downlink.	Study in Microsoft Word. The study will be validated and agreed by RM, PM and User Stakeholders prior to acceptance by the Authority.	✓	✓
8.2	**Link 16 Threat Analysis**			
8.2.1	The Technical Support Contractor shall develop a study which considers current and future threats and the vulnerabilities associated with: a. Physical security. b. Intentional and non-intentional interference within the L band. c. RF spectrum limitations within the L-band currently used by MIDS. d. Precise Time and Frequency Element denial of service, including GPS and GALILEO. e. Cyber.	Part of Study.	✓	✓
8.3	**Safety & Security**			
8.3.1	The Technical Support Contractor shall develop a study which considers current and potential restrictions on use of MIDS by primary users of the L band.	Part of Study.	✓	✓
8.3.2	The Technical Support Contractor shall develop a study encompassing Security issues in the future battlespace for each option identified within the COEIA. This shall include: a. Accreditation. b. Information Assurance. c. Information Security. d. TEMPEST. e. Access Control. f. Crypto devices and material. g. Identification and Authentication. h. Auditing and Accounting.	Part of Study.	✓	✓

Annex A: Equipment and Platforms under Consideration

Equipment:

- AN/URC-138
- JTIDS Class 2H
- MIDS-LVT(1)
- MIDS-LVT(4) [MIDS-On-Ship (MOS)]
- MIDS-STT (KOR-24A)
- MIDS-JTRS
- MIDS-JTRS (embedded software)

Platforms[3]:

Name	Link 16		
	Vendor	**Equipment**	**Configuration**
ADSI (EEC)	DLS	MIDS-LVT(1)	BC4
Airseeker (RJ) RC-135	Viasat	MIDS-JTRS	Core BC1+
Apache AH-64E	Viasat	KOR-24A STT	TBC
Atlas A400M	EuroMIDS	MIDS-LVT(1)	BC5
Crowsnest	Viasat	MIDS-JTRS	TBC (BC3)
CSI	DLS	MIDS LVT(1)	BC6A
Falcon FRA	Viasat	MIDS-STT KOR-24A	TBC
FF-GBAD	TBD	MIDS-JTRS[4]	TBC
Guardian	TBD	MIDS-JTRS[5]	TBC (BC3)
Heimdall IDASACS	TBD	MIDS-JTRS[6]	TBC (BC3)
Hercules C-130J	DLS	MIDS-LVT(1)	BC6A or BC7
Lightning II F-35B (Blk 2A/2B)	Northrop Grumman	MIDS-JTRS (embedded software)	TBC
LEAPP	DLS	AN/URC-138	TFP-006 Rev G
LPx (L16 SAC)	DLS	AN/URC-138	TFP-006 Rev G
JNMS	DLS	MIDS-LVT(1)	BC6A / BC7
MTMS	DLS	AN/URC-138	TFP-006 Rev G
Poseidon P-8A MMA	TBC	TBC	TBC
QE Class	DLS	MIDS-LVT(4)	BC4
Sentinel R1	DLS	AN/URC-138	TFP-006 Rev G
Sentry Mk1 E-3D	CSSA	JTIDS Class 2H	BCC 4.10
SKASaC (SKW AEW Mk7)	DLS	AN/URC-138	TFP-006 Rev G
Spear Cap3	TBD	TBD	TBC
T23 (L16 SAC)	DLS	AN/URC-138	TFP-006 Rev G
T26	TBD	TBD	TBC
T45 - Batch 1	CSSA	JTIDS Class 2H	BCC 4.09B
T45 - Batch 2	DLS	MIDS-LVT(4)	BC4 / ER4J
Tornado GR4	DLS	AN/URC-138	TFP-006 Rev G

[3] As at summer 2016
[4] To be confirmed
[5] To be confirmed
[6] To be confirmed

Name	Link 16		
	Vendor	**Equipment**	**Configuration**
Typhoon FGR4 - Tranche 1	DLS	MIDS-LVT(1)	BC4
Typhoon FGR4 - Tranche 2	DLS	MIDS-LVT(1)	BC4 / ER5D
Typhoon FGR4 - Tranche 3	DLS	MIDS-LVT(1)	BC7[7]
Voyager KC-30 AT / AAR	EuroMIDS	MIDS-LVT(1)	BC5
Wildcat	TBD	TBD	TBC

[7] With effect from mid-2017