Reference: LWC/ORB/Exp/FORGE

Date: 31 Mar 23

**ASTRID Task 327 - Statement of Requirement**

**Support to Land Warfare Centre Operational Research Branch**

**FORGE**

**Background**

1. Across the Land Domain, there is a drive to deliver strategic, operational and tactical advantage through change and adaptation in both near-term (REDACTED and REDACTED ) and in the future (REDACTED). This is being rapidly pursued through people-driven and technology-driven evolution, innovation and experimentation to enhance combat potential. This profound change from the status quo, because of the lessons from REDACTED and the realities of the pace of technological change, requires evolution at speed. However, changes, improvements and decisions must be underpinned by sound data, analysis and credible, assured evidence. A range of analytical methods, models and tools are needed to support this.

**Requirement**

1. Through Defence and Security Accelerator (DASA) funding, Cervus has developed and demonstrated FORGE - a prototype digital decision support capability that has the potential to dramatically reduce the time and resources needed to conduct pan-Defence Lines of Development (DLOD) analysis of high-level/complex issues and assess the benefits of new capabilities.
2. Over four years (FY23/24 to FY26/27) the Land Warfare Centre Operational Research Branch will explore the applicability of FORGE through test and usage in the design and delivery of experimentation “packages”. As a proof of concept, work will initially focus on supporting Warfare Development (WARDEV) changes and decision making but with the intent to also expand and understand/demonstrate benefit across Capability Development (CAPDEV) problem spaces.
3. In year one (FY23/24), FORGE will be matured and developed to support the (REDACTED) analysis and experiment (A&E) campaign (ASTRID Task 268). The FORGE prototype will be tuned to the examination of capability enhancements and decisions associated with the introduction and integration of REDACTED and the development of related tactical doctrine. FORGE use will be in parallel to the ASTRID Task 268 plan, complementing the traditional analysis and experimentation activities identified in the REDACTED IAECP. This two-track approach should allow assessment and assurance of FORGE applicability to the problem space allowing outputs from a range of models, tools and techniques to be compared.
4. Following this initial “use case”, in years two to four, the project team will continue to develop and explore the use of FORGE through further applied experimentation - testing capability changes/enhancements (across Defence Lines of Development), associated with Projects REDACTED and REDACTED, in a rapid and rigorous manner to generate insights, data and evidence. Additional FORGE “use cases” will be identified by the project team and stakeholders. It is envisaged that up to four Forge experimentation events per year would be available to support Land Domain requirements.
5. Wide stakeholder interest is anticipated. The project team may be required to leverage supporting resources, knowledge, experience and wider activities across the Land Warfare Centre, Field Army and Army HQ. Partnerships with the Experimentation and Trials Group (ETG) may offer opportunities to exploit FORGE outputs to demonstrate applicability, impact and benefit through, for example, subsequent ETG live activities.

**Approach**

1. Project management and planning
   1. As a research and exploration activity, it is expected that the project will be planned and delivered in Stages to achieve maximum flexibility. Each Stage will be defined by the project team and agreed by LWC Operational Research Branch. The project team will produce
      1. an outline Project Plan (including, but not limited to, Project design, team organisation, roles and responsibilities, expected Project products[[1]](#footnote-2), anticipated schedule)
      2. Stage Plans, to monitor and manage progress, to include (as a minimum)
         1. work packages or tasks to be completed during the Stage
         2. anticipated resource allocations and associated costs,
         3. expected duration,
         4. expected outputs and delivery dates,
         5. budget, forecasts and payment schedule for the Stage
      3. a FORGE development plan (live document),
      4. experimental designs/concept of analysis for each proposed experiment activity (including required experiment metrics/measures, data capture plans, etc.)
      5. stakeholder engagement and communications plan,
      6. risk, issues and assumptions register.
2. Stakeholder engagement
   1. As a research and exploration activity, the project team are required to identify and maintain close linkages with stakeholders to support FORGE development and identification of use cases for experiments.
   2. The project team will be part of the LWC Operational Research Branch enterprise approach, which aims to bring together all Operational Research Branch staff and contracted teams to encourage cross-project working and knowledge exchange. This will be facilitated through regular workshops (e.g. every two months) and continued cross-project collaboration. Non-disclosure agreements will be put in place as required.
3. Year 1 - develop the FORGE prototype and adapt it for Operational Research Branch use, including
   1. Accreditation to OFFICIAL SENSITIVE
      1. hardware configured with the necessary controls to enable the system to be accredited and meet MOD guidelines for handling of OFFICIAL SENSITIVE information,
      2. put in place processes for updating the software to ensure that it has the latest required security patches as advised by MOD,
      3. develop the system to manage OFFICIAL SENSITIVE data and scenarios, taking cloud elements and enabling them on physical hardware.
   2. Adaption for support to ASTRID Task 268 REDACTED A&E campaign
      1. update software and re-establish VR Forces, Hive and Hadean licences,
      2. build REDACTED and flanking ORBATs,
      3. build indicative RED ORBATs,
      4. build REDACTED and RED simulation capability parameters (up to OS),
      5. develop terrain and scenario models to reflect current operational planning (at OS),
      6. GFX acquisition and incorporation of models from the REDACTED programme.
   3. Supporting the ASTRID Task 268 REDACTED A&E campaign
      1. provision of subject matter experts (SMEs) into campaign scoping activities,
      2. refine FORGE components and toolsets to meet the REDACTED campaign needs including
         1. ingestion of appropriate documentation (up to OS) into a study repository on the FORGE database,
         2. develop WebScraper and Recommender software against predesignated search criteria,
         3. develop Analyser subcomponent with specific document and sentence classification requirements and test key documentation summaries,
         4. refine centralised and distributed models for employment of the simulation environment tool,
         5. refinement of framework metrics catalogue,
         6. provide documentary analysis outputs from FORGE components and tools into the REDACTED campaign activities,
         7. provide advice on how best to use FORGE to answer Operational Research Branch campaign data collection plans, analysis and evidence generation.
      3. deliver 2 x FORGE experimentation events that support the REDACTED A&E campaign.
   4. Testing and Demonstration
      1. deliver the updated system and equipment to the LWC Operational Research Branch facilities,
      2. conduct subcomponent acceptance testing,
      3. conduct of a full system pilot/acceptance test event,
      4. conduct demonstrations to Operational Research Branch staff,
      5. conduct demonstrations to Field Army / Army HQ / Dstl staff.
4. Years 2 to 4 – the potential and applicability of FORGE to test capability changes/enhancements (equipment, people, processes), associated with REDACTED and REDACTED, will be examined. The use of and applicability of FORGE for other analysis and experimentation requirements will be identified and developed by the project team and stakeholders. Further maturation and adaptation of the FORGE system, capabilities and components is likely to be required. The project team will provide up to four FORGE experimentation events per year to support wider Land Domain requirements. The project team will apply Stage Planning, within an agreed Limit of Liability funding model, to plan and execute activities against identified and agreed requirements.
5. Verification and Validation (V&V) will be a continuous process throughout the project lifecycle, intended to
   1. conduct end-to-end validation of the system using test scenarios to validate the expected outcomes,
   2. provide a method for updating existing models within VR-Forces to allow for entering classified parameters to the models,
   3. support to Operational Research Branch in developing a continuous V&V plan,
   4. execution of a baseline V&V plan for system FOC,
   5. continuous application of a V&V process,
   6. note that in developing the V&V process this will not fully validate the models within VR-Forces.

**Deliverables and Outputs**

1. The Project team, with LWC Operational Research Branch, will define and agree (in advance) the nature, timing and anticipated cost of all Project Products expected at each Project Stage. The Products may be influenced and/or defined by the needs of wider stakeholders and their requirements.
2. Deliverables will be defined in detail during initial stage planning and will be directly linked to an assessment of progress and formal payment.
3. An initial list of anticipated Deliverables is as follows
   1. a continuously maintained Project Plan (including Project design, Products, expected schedule); Risk, Issues and Assumptions Register; stakeholder and communications plan, initial Stage Plan – no later than contract award + 2 months,
   2. Stage Plans (with payment milestones),
   3. monthly Project Management review meeting record highlighting review of
   * Stage plans
   * completed vs. outstanding tasks
   * outputs and outcomes (including successes and failures)
   * realised and/or potential benefits/disbenefits
   * emerging requirements,
   * risks and issues
   1. End of Stage Project Management reporting to include record of effort expended.
4. Project Outputs will not be tied to payment schedule but will be generated to capture knowledge and provide a record of information and evidence.
   1. technical reports, Concept of Analysis (approach and methodology), Experimentation Design Documents and Data Collection plans.
   2. the transfer of knowledge and outputs (data, observations, insights, evidence and material) into practical outcomes to inform or support including (but not limited to)
   * Military Judgement Panels (MJP) and workshops
   * information products (e.g. to support Doctrine development, present FORGE results or support further experimentation activities with project partners)
   1. stakeholder reports and/or briefings,
   2. Capping reports – suitability and applicability of FORGE to meet stakeholder needs (e.g. FFD, LWC), exploitation of experimentation outputs, lessons learned and guidance to support future FORGE experiment activities.

**Exploitation and Outcomes**

1. The Project will
   1. demonstrate the applicability of FORGE, across Warfare Development (WARDEV) and Capability Development (CAPDEV) problem spaces, through the experimental use of FORGE to support identified requirements,
   2. conduct progressive development of the FORGE capability to meet and address requirements,
   3. develop an understanding of the range of problem sets that are applicable to FORGE,
   4. assess the impact and benefit of FORGE when compared to traditional analysis and experimentation approaches,
   5. conduct assessment and assurance of FORGE outputs against traditional analysis and experimentation approaches.

**Schedule**

1. The work should commence in May/Jun 2023 and be completed by March 2027. As this is a concept development task there will be contractual breakpoints at the end of each Financial Year. This should provide for a joint review of the FORGE performance and programme benefits to allow the authority to pause or terminate the contract should progress be judged unsuccessful.

**Assurance and Acceptance**

1. LWC Operational Research Branch, supported by stakeholders and/or contracted support as required, will review all Project Products prior to acceptance. The level of scrutiny and timescales for review will be appropriate to the nature of the Project Products and will be agreed between the Project team and LWC Operational Research Branch.

**Payment**

1. The contractor team will be paid according to an agreed Project and Stage Plans and on satisfactory completion of Project Deliverables, within a Limit of Liability (LoL), which will be endorsed and accepted by LWC Operational Research Branch. Given the agility required to deliver this project in support of dynamic priorities over the project period, it is expected that a LoL contract will best service the research and development nature of this task.

**Project Governance**

1. The project will be delivered as a contracted collaboration between suppliers, LWC Operational Research Branch and, where appropriate, wider stakeholders. It will be coordinated and supported through monthly Project review meetings with LWC Operational Research Branch (and stakeholders as required). These formal review meetings will
   1. review progress against Stage plans, give direction and take corrective actions as required,
   2. assess, manage and maintain project risks and issues register,
   3. facilitate meetings and back-briefs with key stakeholders where appropriate.
2. Wider stakeholder briefing, updates, briefings and/or Military Judgement Panels will be scheduled as required.

**GFX**

1. LWC will endeavour to provide, facilitate or enable access to
   1. relevant key stakeholders and information,
   2. coordination with other commercial entities supporting Field Army initiatives,
   3. existing models, tools and data,
   4. general support from LWC Operational Research Branch,
   5. ModNet access with appropriate permissions,
   6. access to military subject matter expert staff within the Land Domain,
   7. access to training events in the UK and (potentially) overseas,
   8. access to SSET Troops if required (early identification will be required).

**Security**

1. All Contractors employed on the task will require SC clearance. Deliverables may be sensitive in nature and will be delivered at the appropriate classification REDACTED.

**General Data Protection Regulations**

1. All data collected that could be considered “Personal data” under the new General Data Protection Regulation (GDPR) must be handled in accordance with the regulation. It should be noted that the GDPR widens the definition of personal data to include:

*“Any information relating to an identified or identifiable natural person (‘data subject’); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person”.*

1. Any personal data must comply with entire GDPR however the following key parts of the regulation are expected to be demonstrated as minimum. The six principles of this regulation must be followed, these are
   1. Processing must be fair and lawful
   2. Purposes of processing must be specified, explicit and legitimate
   3. Personal data must be adequate, relevant and not excessive
   4. Personal data must be kept up to date
   5. Personal data must be kept for no longer than necessary
   6. Personal data must be processed in a secure manner
2. A Privacy Impact Assessments (PIA) must be conducted as part of any personal data collection to ensure compliance with the GDPR. In addition, data subjects must opt into having any personal data collected and their consent must be provable. The individual rights of data subjects should also be understood and respected through the collection, processing and storage of their personal data. All parties involved in the handling of personal data should also understand their obligation to report data breaches as soon as they are discovered. Parties involved in processing personal data should understand their obligation for doing so lawfully. Data must be processed under one of the following bases to be lawful
   1. Consent
   2. Contract
   3. Legal obligation
   4. Vital interest
   5. Public Task
   6. Legitimate interest

**Contractors On Deployed Operations (CONDO)**

1. There may be circumstances where Contractors, and their respective employees, will visit (deploy to) a CONDO Applicable Area (CAA), designated for CONDO purposes by the Permanent Joint Headquarters, and therefore **DEFCON 697 shall apply**.
2. CONDO activities will be identified through stage planning. A short statement of work for each CONDO activity, including the expected work locations and expected travel arrangements for that work, will be produced.
3. Acceptance of CONDO conditions in the contract will be conditional on each task being subject to separate acceptance, **before deployment take place**, at which time the CAA environment will be assessed for risk to the individual(s) deployed. The contractor reserves the right to decline a CONDO task on a contract if the risk assessment is adverse.
4. The procedures set out in Def Stan 05-129 are to be followed.
5. Contractor and subcontractor deploying staff, for each deployment, must not deploy until;
   * They have been identified by the Contractor and assessed to be appropriately skilled, medically and dentally fit, briefed, inoculated/immunised (where appropriate), security cleared, hold appropriate visas, have been trained for the particular deployment to standards set by MoD, have the appropriate clothing available, have updated records of personal details including next of kin.
   * A Contractor ‘In-Theatre Manager’ has been designated from the CONDO Personnel for managing the In-Theatre contract implementation; and points of contact identified for managing the deployed staff and the contract from Contractor’s base.
   * the Contractor’s plans and procedures (e.g. work plans, Health & Safety procedures and GFE Forward Holding Records, exit plan) applicable to the particular tasks and deployment have been prepared, so far as is possible; where relevant and not already covered under the general responsibility of the contractor, equipment and other resources have been identified and made available for deployment with all necessary export licences, Crown Immunity letters for GFE and export end user paperwork to hand;
   * **CONDO Form 1 (Annex B, Appendix 1, to Def Stan 05-129)**, the conditional authority to deploy, has been prepared for the designated deployment and signed off in accordance with JSP 567 as described in Def Stan 05-129.
   * **CONDO Form 2 (Annex B, Appendix 2, to Def Stan 05-129) or DCS Form 2 (2015DIN03-018 - Joint Service Publication (JSP 567): Amendment to Part II: Contractors On Deployed Operations (CONDO): Introduction of Revised Policy, Sept 2015)**, being the Authority to deploy for the list of the complement of staff to be deployed, has been prepared by the Contractor and signed by the Contract Sponsor for the designated deployment in accordance with JSP 567 as described in Def Stan 05-129;
   * CONDO Personnel have been briefed on the need to comply with the terms of DEFCON 697 whether on or off duty, specifically Clauses 6, 18, 31, 33, 34, 35, 36, 37, 38, 39, 42, 47 and 48 of the Condition;
   * CONDO Personnel have been briefed on relevant personnel matters and on their legal status;
   * an appropriate ID card or security pass has been issued (where required) by MoD to each individual listed in CONDO/DCS Form 2;
   * CONDO Personnel have been designated under the Armed Forces Act 2006 as civilians subject to service discipline and a signed Form T-SL-DES01 has been received indicating that status; and
   * a risk assessment has been undertaken for each expected work location and the expected modes of transport, with a satisfactory outcome.
6. Any subcontract requirement for the presence of a subcontractor (at any level of contracting) and his employees in a CONDO Applicable Area designated for CONDO purposes **must have the text of the Appendix to DEFCON 697 included in the terms of each of those subcontracts, with the relevant sections at Clauses 1.f), 1.g), 1.l) and 1.r) completed.** These subcontractors and their employees are to be given the same briefings and training as contractor employees concerning contract compliance, working practices and the operating environment.

REDACTED

Principal Scientist

Land Warfare Centre Operational Research Branch

1. Project Products - what the team expects to deliver as management, technical and supporting information products, records or reports to enable successful delivery of the Project. [↑](#footnote-ref-2)