Announcement of NFPF Competition

RFQ-CO-NFPF-2023-008

Provision of

Provision of Development of a NATO 5G Testbed for experimentation and proof-of-concept activities

RFQ Estimated Release Date: Q2 2023

Estimated Bid Closing Date: Q2 2023

Estimated Award Date: Q2 2023

The prospective Not-for profit Organisations' list is attached.

Interested organizations holding an active in NFPF Agreement with the NCI Agency may contact the below POCs to request inclusion in the Bidders' list:

Lise Vieux-Rochat and Gracja Jablonska solely at:
nfpf@ncia.nato.int

Annexes:

1. Summary of Requirements

2. Prospective Organisations List

Annex A – Summary of Requirements

1. Introduction

The purpose of this Request for Quotation is provision of Development of a NATO 5G Testbed for experimentation and proof-of-concept activities. This task shall be based on initial work and concepts developed by the NCI Agency, including associated activities. Specifically, the work shall deliver a functional 5G Testbed (hardware, software and technical documentation) that is capable of supporting future proof-of-concept activities addressing the concepts and architectures identified in previous NCI Agency work.

2. Background

5G is a key area of interest for NATO, both from the security concerns it poses and the opportunities it may bring for military uses in different contexts. In addition, 5G is considered an enabler and a catalyst of a number of Emerging and Disruptive Technologies.

The NCI Agency is conducting scientific work on military applications of 5G, primarily addressing Capability Development and Interoperability topic areas of interest, in addition to others such as Resilience and Business Continuity. Capability Development deals with using 5G technologies in different manners to support NATO operations – private implementations of 5G networks, incorporating 5G technologies into bespoke private military systems, or operating through public 5G networks. Interoperability deals with using 5G as a facilitator of multinational collaboration and/or coalition operations (also using 5G under different *utilization concepts*).

In this context, the Agency has identified key 5G technology enablers for military applications, military application domains and developed high-level concepts supporting a number of scenarios and use cases. This work was published in ICMCIS 2021, through the papers “Potential of 5G technologies for military application” (IEEE Xplore ref 9486402) and “5G for deployable and maritime communications” (IEEE Xplore ref 9486397). The follow-on research work focused on a subset of 5G enablers and military scenarios and culminated with a testbed architecture proposal that will allow: validation of proposed architectures and concepts; maturity assessment of associated 5G specifications; exploitation of opportunities for innovative and emergent concepts, such as dynamic spectrum management.

Following the scientific research and development activities conducted so far by the NCI Agency, there is now an aspiration for additional exploration opportunities through practical experimentation and proof-of-concept activities. Therefore, the NCI Agency now wants to engage with the scientific community involved in research and development (R&D) in advanced wireless mobile communications to: 1) **Develop a NATO 5G Testbed** in a laboratorial environment, including the acquisition, integration and configuration of relevant hardware and software components, based on the results from the previous study (which will be shared with the bid package); 2) **Demonstrate the functionality of the NATO 5G Testbed**; 3) **Plan and roadmap the implementation** of key 5G functionalities in the NATO 5G Testbed, for the execution proof-of concept (PoC) activities.

3. Project Scope

Considering the required scope of work and required profile(s), the requestor estimates that the work will cover the acquisition of hardware and software components and at least 110 days of effective engineering, writing, holding discussions, modifying documents after each meeting, and reporting progress plus 10 days for meetings (including travel times) to be agreed with NCI Agency during the performance period. Travel costs are not included in this contract and will be borne by the Agency separately.

The testbed development activity shall include, but not be limited to, the following activities and requirements:

1. **Formulate a problem statement** and agree study requirements with the requestor;
2. **Collect background information** on the NCI Agency work on the potential of 5G for military applications;
3. **Develop and deliver the NATO 5G Testbed:**
4. As an option, a duplicate instance of the NATO 5G Testbed shall be provided, to be hosted in NCI Agency facilities, to mirror the future developments and use of the NATO 5G Testbed in two locations (i.e. contractor facilities and NCI Agency facilities);
5. **Demonstrate the functionality of the NATO 5G Testbed**:
6. **Develop a detailed plan and roadmap** for the proof-of-concept activities:
7. Produce and deliver a technical report containing:
    a. The NATO 5G Testbed system description, including technical architectures, enabled features, initial testbed configuration and setup data and operation instructions;
    b. The results and outcomes of the NATO 5G Testbed initial configuration demonstration activity, including the agreed test plan;
    c. The detailed plan and roadmap for the implementation of IAB and Sidelink features and components, with findings, recommendations and proposals on the way forward for the proof-of-concept activities.
8. In coordination with NCI Agency, organize a workshop with interested industry to discuss prototype implementation and joint testing activities;
9. Develop and prepare an extended technical brief to be given to the NATO scientific community on 5G technology at a dedicated technical workshop to be organized by NCI Agency at a NATO location to be defined.

NCI Agency staff will provide oversight and inputs that shall be taken into account in the conduct of the work but which shall not waive the contractor’s responsibility for the deliverables.

Annex B – Prospective Bidder List

1	**ISDEFE**	**Spain/ESP**
2	**Instituto de Telecomunicacoes**	**Portugal/PRT**
3	**NASK - National Research Institute**	**Poland/POL**
4	**Universidade Autonoma**	**Portugal/PRT**
5	**TECHNICAL UNIVERSITY OF MADRID/Universidad Politecnica de Madrid**	**Spain/ESP**
6	**Czech Technical University in Prague**	**Czech Republic/CZE**
7	**INOV - Portuguese research centre in Information and Communication Technologies (ICT) and Electronics**	**Portugal/PRT**
8	**INEGI – Institute of Science and Innovation in Mechanical and Industrial Engineering**	**Portugal/PRT**
9	**Spektrum RDS LTD**	**United Kingdom/GBR**
10	**INESC TEC**	**Portugal/PRT**