ESTONIAN SPACE OFFICE /
ESA ARTES 4S

Request for Information (RFI)

Space Cyber Range

1. Background information

ESA's ARTES 4.0 strategic programme line 'Space Systems for Safety & Security (4S)' works on innovative and secure satellite communication systems, and their integration into public and private terrestrial networks to enhance safety, resilience and security within society. Appropriate services, systems, technologies and product development for safety and security systems are launched, conducted and co-financed.

In an increasingly digital world, security and privacy concerns are becoming driving market needs both for consumers and businesses. In order to achieve sustained competitive advantages for the coming decade, satellite communications need to adopt state-of-the-art security technologies and processes including security by design, trusted components, third-party validation and comprehensive testing and training.

With the growing trend of digitalization of the space sector and the growing number of satellites on orbit creates new cyber threats. For example, the space infrastructure or servicers could be hacked by a third party. Therefore, it is necessary to focus on how to prevent malicious activity on board satellites and ground stations to protect the integrity of system logs, data and service. Possible solutions how to protect the space segment and learn how to solve critical situations would be the creation of cyber security exercises with an integrated space component, validation cyber security software on orbit or a combination of both.

Estonia is acknowledged as an international cybersecurity leader. Thanks to Estonian participation in ESA optional programme ARTES 4.0 strategic programme line 'Space Systems for Safety & Security (4S), new avenues are opened for Estonia in the field of **Space Cyber Security**. ESA and the space community needs sophisticated new technologies to protect space assets and data, as well as to carry out exercises and training in commercial **Space Cyber Range**, to be established in Estonia.

The Estonian commercial Space Cyber Range activity is in line with the Estonian Space Policy and Programme 2020-2027, with the aim to spin in Estonian knowledge about cyber ranges to the space doimain.

To collect ideas and conceptual solutions for the forthcoming Space Cyber Range, Estonian Space Office is opening a **Request for Information (RFI)**.

2. What we are looking for

A commercial **Space Cyber Range** could contribute to the above presented goals by:

i) Offering the space industry, with focus on Satcom and including New Space actors, a safe, realistic and cost-effective end-to-end laboratory environment that emulates the targeted environment(s) and threats:
   - for the design, development, assessment, testing and/or validation of innovative security solutions;

- for the security assessment, testing and validation of satellite communications systems (test range) and products (ground, space and user segment) at any stage of development (i.e. to detect vulnerabilities);
- for assessing new solutions/products against accreditation/certification requirements, in view of a future accreditation/certification;
- the use of **space component** in the facilities must be analyzed. Hybrid solutions are encouraged;

ii) Enabling validation capabilities for **cybersecure end to end solutions** to European industry**,** including security aspects of use cases and applications (from Satcom operations to SatCom– (based) service delivery aspects);

iii) Becoming a centre of expertise by providing satcom actors, e.g.:
- Satcom and wider industry with access to cybersecurity expertise (for supporting them during design of new solutions for example);
- facilities for dedicated events, i.e. red team exercises, demonstration of new cybersecurity solutions, as well as for training purposes;
- facilities to acquire knowledge on existing threats, i.e. 'honeypot', or to distract hackers from other targets.

3. RFI Objectives and Planning

The Request for Ideas (RFI) is aimed at proposing the concept of the **Space Cyber Range** in Estonia. Selected consortia will have to carry out the following tasks:

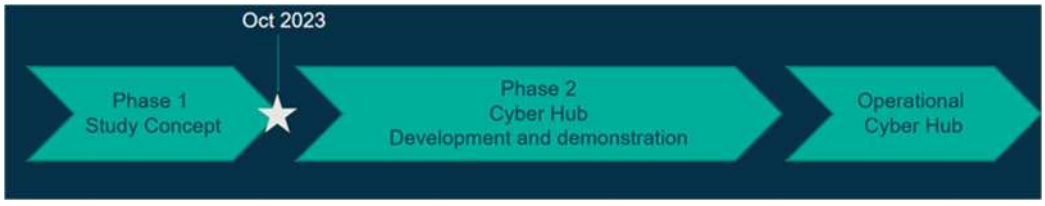
- Market analysis of potential customers of the **Space Cyber Range**, with a focus on commercial space industry including New Space startups;
- Competition analysis, i.e., identification of main software players on the space cybersecurity market;
- User need analysis, including the identification of knowledge gaps between the space sector and the cybersecurity sector;
- User requirement analysis, including different types of technical requirements (functional, interface, operational, human factor, design, verification);
- Service model analysis, including value proposition and the description of services currently unavailable on the market including 2-3 use cases of the value proposition of the Space Cyber Range with business case assessment and business plan consolidation;
- Space Cyber Range development and operational model definition;
- Architecture of the Space Cyber Range;
- Service value chain and development plan.

In addition, the creation of satellite digital twins may be considered in this activity.

Furthermore, bidders are required to involve CR14 (https://www.cr14.ee/) as a key partner. Up to two consortia will be contracted for project implementation.

Outcomes of this first phase will be assessed jointly by ESA and the Estonian National Delegation to make an informed decision regarding the initiation of the second phase.

4. Timeframe



5. Funding of the first phase

Maximum two, submitted to the first phase of current RFI concept studies, will be funded by ESA by following conditions:

- Total volume of the concept study project – 300k€
- Funding provided by ESA – 240k€
- Own funding, provided by bidding consortia 60k€

6) Respond to RFI and application

Applications should be submitted through the ARTES AGILE Framework by using appropriate templates, see https://artes.esa.int/news/artes-agile.

All companies from Estonia are welcome to apply.

7) Due date

The deadline for submission of applications to ESA ARTES AGILE Framework is:
26th April, 00.00 EET
Copies of the submitted documents should be presented to Estonian Space Office: kosmos@eas.ee.

8) Additional information and details of the RFI - webinar

ESA and Estonian Space Office inviting all interested entities to attend the webinar on Monday **6th March at 14.00 – 16.00 EET**.
To attend the webinar please contact Estonian Space Office: kosmos@eas.ee.
TEAMS invitations will be sent in due time.

Practical information about how to respond to the RFI will be provided during the Webinar.