(U) What we can learn from International Space Pitch Day

(U) On 17 November 2020, 10 companies out of 15 finalists were awarded same-day contracts valued up to $66,000 each at the inaugural International Space Pitch Day (ISPD). Winning companies are also granted the opportunity to compete for follow-on contracts [1]. Among the ten winning companies were two that are not of U.S. or U.K. origin: 114 AI Innovation Limited (India) and Clearbox Systems (Australia) [2]. In an effort to leverage the successful accelerator and pitch day model in order to keep pace with the rapid development of commercial technology, the U.K. Ministry of Defense (MoD) and the U.S. Department of Defense (DoD) organized International Space Pitch Day – marking the first ever instance that two nations have jointly awarded defense contracts based around a pitch-style event [3] [4].

(U) ISPD is an unsurprising product of recent space policy considerations by the U.S. and the U.K. Both nations have recently recognized space as a warfighting domain [5], as evident by U.S.'s Space Force and more recently, U.K.'s announced plans for a Space Command. As described in the *National Space Policy of the United States of America*, the U.S. will seek to leverage private industry and international cooperation to preserve position as a global leader in space [6]. Similarly, two of the four policy headings of U.K.'s *National Space Policy* describe the government's commitment to supporting the commercial space sector and cooperating internationally [7].

(U) The ultimate objective of ISPD is to efficiently connect world-class innovation in space technology to military end-users, supported by Allied Defense Accelerator – expert mentorship and specialized training – from the industry-standard Starburst Accelerator [3] [8]. To accomplish this objective, six unique challenges were defined to focus the scope of proposals by competing companies. The central thrust of these challenges is to create a mechanism that enables an enhanced understanding of some event, system, or situation across all levels of the coalition force by organizing and processing data from the existing and expanding multi-national space infrastructure [3]. The set of data-centric challenges advises building tools on Artificial Intelligence (AI) technological platforms.

(U) Both the DoD and MoD have established a commitment to investing in Artificial Intelligence. The MoD's 2019 Defence Technology Framework (DTF) defines seven high-level priority technology families that they determined necessary to adopt in order to secure their technological advantage, two of which are AI and Autonomous systems [9]. In an effort to outline their vision to secure advantages in the technological space, the U.K. produced *Science and Technology Strategy 2020*, which calls to establish an Artificial Intelligence and Autonomy Unit [10]. Moreover, the U.K. has even announced plans for an Artificial Intelligence Agency to build a strong presence and establish position as a world leader in applied AI [11]. In June 2018, the United States formed the Joint Artificial Intelligence Center (JAIC), a subdivision of the United States Armed Forces, to head the DoD AI strategy [12]. The strategy prioritizes forging strong partnerships with academia, private industry, and allies in addition to democratizing access to data, tools and frameworks with the law and ethics as the master values, in order to develop AI technology for the purpose of enhancing military decision-making capabilities [13]. Considering all of these factors, it is unsurprising that six of the winning companies explicitly proposed AI-driven solutions, including 114 AI Innovation Limited (India) [4].

(U) 114 AI Innovation LLP, a Delhi-registered firm established two years ago, won with a proposal titled "Spacewise" which proposed an "Exploitation toolset to visualise, access and analyse multiple input streams of data for advanced Space Command and Control using Cognitive AI" [14]. This contract acquisition for India's private industry comes on the back of significant changes to their space policy. In

an effort to provide private companies greater access to Indian space infrastructure, the Indian Union Cabinet approved the creation of the Indian National Space Promotion and Authorization Centre (INSPACe) – a regulatory organization that facilitates interaction between Indian Space and Research Organization (ISRO) and the private sector. Until recently, ISRO was India's lone space actor, in which all launches happen on ISRO rockets. The private sector was largely working in a subcontractor capacity [15] [16]. Moreover, Indian industries have been limited in their ability to compete because their role has been mainly limited to that of suppliers of components and sub-systems as opposed to producing end-to-end systems [16]. By expanding collaboration with the private sector, India believes it can better meet the growing demand of space-based applications and services, allowing them to improve on its roughly three percent share of the global space economy. Additionally, it will free up ISRO to concentrate on science, research, and development [16]. Their space policy reforms promoting private sector participation were reflected in the draft act *Spacecom Policy 2020* along with the draft Norms, Guidelines and Procedures (*Spacecom NGP 2020*) for the implementation of the Spacecom Policy, updating their first satcom policy framework released in 1997. These drafts were released in mid-October and are expected to be put in place sometime over the next few months, depending on the legislative process [15]. The space community expects continued policy reforms addressing Earth observation, navigation, launch and many other areas, which will further transform the industry in India.

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Additional Notes

- Each company has 3 months or less to complete the project
- US space policy gives way for more open commercial intervention
- US space policy recognizes space as a warfighting domain (2018)
- US emphasizing the ever-expanding capabilities of AI
- In 2019, DoD launched Artificial Intelligence strategy
- Both the US and UK have recently recognized space as a warfighting domain, as evident by the creation of the US Space Force and more recently, the UK Space Command.

Challenge 1: Enhance understanding of some space event through visualization of multi – national space assets (improve decision making)
Challenge 2: Enhance understanding of (friendly, adversary, and third party / commercial) satellite system in the area of operation (improve decision making)
Challenge 3: Enhance understanding of the impact of space weather, in particular how it effects availability of assets under management (mange assets, improve decision making)
Challenge 4: Enhance understanding of how some space event by a technologically sophisticated enemy could affect the operation through the use of real – time data (train against threats and reveal opportunities in an operation)
References
Challenge 5: Enable shared understanding across coalition force of multi – national space operations plan by providing viability of planning and execution process to include intelligence across multiple security levels. This is accomplished by providing Common Operational Picture which combines information across multiple levels of security into a commonly accessible pool. (enhance shared understanding)
Challenge 6: Ensure the use of the highest – quality data to produce the optimal operational plan by compressing and comparing data from various satellite catalogues in various formats.

114 AI Innovation LLP (India)
Title: Spacewise

Exploitation toolset to visualise, access and analyse multiple input streams of data for advanced Space Command and Control using Cognitive AI. This toolset enables space operations with allies and commercial partners by allowing visualization and analysis of multiple different sources of data in real time.

Clearbox Systems Pty Ltd (Australia)

- **Should I discuss Australia as well?**

Title: AI-enabled decision support for satellite service selection

To enhance a distributed satellite spectrum monitoring tool to incorporate AI-enabled decision support for satellite service selection. Applying AI techniques to the data and decision space can assist in improving prioritization and selection of satellite services based on the Radio Frequency (RF) environment.

Double check:

- Was there a winning company from Canada? (North American OR U.S. or U.K.)