BOREALIS Industry Day

Question and Answer

Following the BOREALIS Industry Day which took place in Bristol on 12th of July 2023, please see below a list of questions and answers from the BOREALIS Industry Day.

The questions were gathered during the event (via Slido or in person) and after the event (via the Space Delivery team Inbox). All answers have been provided by the DE&S Space Delivery Team and UK Space Command in good faith. They represent the Authorities early thinking about the BOREALIS project and do not represent a fully formed or finalised picture of the Programme or any specific requirement. The Authority reserves the right to make any amendments or changes as deemed appropriate, including the intended routes to Market, and is not responsible for any costs relating to any undertakings by any Organisation as a result of this information being published or the event taking place.

# ID	Question	Answer
1.	Paul - you mention Decision Quality Data. From a maritime perspective I would see this as data of sufficient timeliness and quality that could be used to provide an effect from a maritime platform for example - is that the ambition?	We have a tri-service and cross-government group working on SDA data requirements - decision quality will mean different things to different decision makers, so it is important that we capture the level of fidelity and timeliness required by all stakeholders.
2.	Becky - you mention various classification levels. Can you share whether industry will need to factor any Special Accesses in order to engage? Either UK or Allied for collaboration?	Our information exchange requirement identifies the need to process data across multiple classification levels. The industry partner involved in delivering the core of the system will therefore need to have appropriately cleared individuals to meet the security requirements (details will follow when appropriate). However, there is scope for some flexibility for industry partners providing tools that bolt on to the system, whilst there will still of course be some constraints, these are likely to be slightly more flexible than those involved in the core of the system.

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3.	Is there a developing view of the architecture for Asteria work? An Agile approach is requested, but one competition star was shown on the programme chart, are the high level characteristics the framework areas for SMEs to get involved?	The strategic outline case has been approved for ASTERIA to initiate including both BOREALIS and PANOPTES. The Agile approach for BOREALIS is to ensure the digital backbone to ASTERIA can keep pace with this rapidly evolving domain and achieve UK Space ambitions. Further work in this area with direct interfaces to BOREALIS is expected to progress in the future. The High-Level characteristics slide was intended to illustrate the requirements subsets for BOREALIS for which SME's are encouraged to get involved as part of a consortium bid.
4.	How linked into StratCom is this work with the recent standing up of the Integration Design Authority from the MDICP?	Initial stages of interaction with StratCom have taken place to understand how this ties in. We are also looking at MPE (Mission Partner Environment) – this means we need to understand from a UK perspective, how we would layer a Space SDA visualisation onto the land, air & maritime pictures. Data curation will be key part of BOREALIS.
5.	Charles - Is there an intent to host the multiple classifications of data within Defence/Government cloud platforms currently being delivered by Defence Digital through AWS or Azure?	Yes - the intent/aspiration is to host data on the MOD Cloud Official and MOD Cloud Secret, but this will be dependent on the BOREALIS target architectures meeting the requirements of MOD Cloud (at Official & Secret), or the performance and QoS measures (capabilities and limitations) of the MOD cloud supporting the needs of the BOREALIS performance targets. The BOREALIS contractor will have to work with all the MOD stakeholders early on to agree architecture requirements and performance feasibility to deliver a set of agreed target architectures and the hosting solutions. AURORA currently exists in the MOD Cloud at Official. AURORA has a standalone S high demonstrator at present. It is unclear if with the remaining contract time for AURORA, if the hosting on the MOD S Cloud will be achieved.
6.	BOREALIS is a multi-year programme, are MOD/ UKSA confident that any change of government in this period will not affect the strategic goals?	National Space Council meets again for the first time next week- co-chaired by Secretary State of Defence & Space Agency. This body will still stay, even if the government changes hands after the elections. This will be actively managed as we moved forward.

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7.	Has the team analysed the clear parallels in Intelligence Cycle processes and Cyber Situational Awareness for best practice ideas utilisable in this new Space domain?	Given the fundamental point of SDA is to understand the Space Domain, there are of course parallels with the intelligence cycle and indeed SDA includes fusion of intelligence with SST and SSA data. We have analysed this and seek to take the best/most relevant elements of extant processes without taking those that perhaps do not fit our use case.
8.	Charles, you mentioned our own UK catalogue of objects - can you talk a little about why we need our own and how that will integrate with existing catalogues?	We want our own sovereign assured capability - meaning we can develop a UK AS database for RSO's with UK specific attributes and metadata applied. Where applicable, existing catalogue databases will be used/investigated for use, at lower classifications to support business outputs at the appropriate classification level.
9.	Will BOREALIS include the software relating to collection / processing of space-based surveillance data (I.e. integrated into ISTARI)?	The level of the detail between the space portfolio isn't defined yet, we are working closely with the ISTARI team, as we understand there is likely to be a relationship between these two programmes. Monitoring the links between ISTARI. The MINERVA hub is part of MOD Cloud, so if needed we can integrate this architecture if we needed to.
10.	What opportunity will industry have to present and demonstrate capabilities relevant to the BOREALIS requirement to better inform UKSC/UKSA understanding of what capabilities are currently available?	Requests from Industry to demonstrate current capability must be carefully co-ordinated and impact/constraints on resource be managed. MOD are currently looking at the best way to undertake this and will follow up shortly with more engagement/Request for Info, as appropriate.
11.	Do you believe that the Integrated Review in 2025 will unlock additional resources to build upon initial delivery, given the direction to build SDA in future years?	If we have collected sufficient evidence that this project is to go, this will unlock resource, it is aligned with the integrated review in 2025.
12.	Programme - are BOREALIS and PANOPTES going through individual own approvals or just via ASTERIA? When is OBC/FBC expected?	The SOC is for the programme level of ASTERIA - split out the approval levels. BOREALIS will go straight to FBC in the next 12 months to fit with the procurement timeline. We are trying to work out how we deliver via Agile as DE&S, due to our processes being waterfall-driven.
13.	Is there an OV1 of ASTERIA similar to the ISTARI OV1 (through to 2031) as a visual summary of the programme?	The only graphics available currently are those provided in the slide pack, there are a number of different ways to meet the requirements and we therefore do not want to be too prescriptive beyond direction provided.

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14.	Are you anticipating a single prime contract or multiple contracts. If so, will SME's need to collaborate with primes at the tender phase?	The commercial model is yet to be finalised. The Authority is exploring all options for delivery of the capability, recognising the vibrant market and ensure we are able to optimise innovation in the supply chain. We do not want to implement a model without consideration of the wider supply chain, and therefore recognise that it may in fact be a 'hybrid' of the options presented and invite industry to support our decision making. A Request for Information (RFI) is currently being drafted and will be issued via DSP.
15.	Thinking beyond c2 to c3, could you speak to where the comms architecture & systems to distribute data to users fits into thinking about the programme? Especially for multi domain ops and data fusion	We have mapped all the systems that NSpOC use, that is subject to change/growth dependent on our allies and partners. We want to integrate these systems into BOREALIS, so we can use this as communication channel.
16.	Charles - Allied/NATO bullet on top left of vision slide: how/when will funding be managed for Allied connectivity, is that through APSS or separately? If not known yet, will industry be alerted so as to help synergies from both ends?	It is our intention where possible to utilise existing initiatives within Defence to enable Allied connectivity. Further details not yet available.
17.	How can industry find out more on PANOPTES?	There are a couple of upcoming procurements relating to PANOPTES which will be via UKSA, within the next 12 months. There will be broader communications on PANOPTES at a later date.
18.	Sorry - not clear if BOREALIS covers processing of data about space as well as data captured from space about land/maritime/air	Processing of data about Space primarily, with the ability to overlay it with the RAP/RLP/RMP.
19.	How will BOREALIS be procured - via the new Defence Space Capability Framework?	The procurement route is still to be decided, however current planning assumptions are that the Authority will issue a standalone PQQ & Contract Notice, followed by an ITN. If the procurement timelines align to that of the Defence Space Capability Framework (DSCF) then this may be used. Industry are advised to register for and review regularly the Defence Sourcing Portal (DSP) for comms regarding both BOREALIS and the DSCF.

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20.	Are the requirements fully mature, or is there an opportunity to provide BOREALIS with some User Needs and Journeys support?	Throughout the project lifecycle, an Agile methodology will allow new User Stories to be elicited and added to the backlog. Support with translating new User Stories into specific backlog items that fit into existing architectures will be expected from a vendor.
21.	Colin, thank you for v clear explanation - are MoD/UKSA expecting to regularly evaluate BOREALIS against standards themselves, or will suppliers be expected to provide independent assurance?	DE&S will evaluate the capability against the network joining rules, safety, security and quality standards to deliver the Minimal Viable Product. The current appetite is for DE&S to contract out additional services for independent test, evaluation and acceptance to a "customer friend" support entity. With each sprint it is expected that internal evaluation against agreed standards is upheld by the contractor employing automation to T&E to ensure an Agile and non-burdensome release cycle at "Development" and "factory" level. Formal authority testing with the contractor, supported by the independent external test team at "operator environment" level covering "site" the "User" level testing. We will require independent evaluation of the astrodynamics within the system; however, it is not yet known whether this will be provided by the contractor (via an appropriate ethical wall) or separately.
22.	Seeing some aggressive procurement timelines - proposal responses due within weeks of down select/requirements released. This leads to industry no bid decisions. HMG loses out on innovation/coalition diversity. How will this be factored?	All Timelines are indicative. Actual timelines will take into consideration the commercial model that will be used, and the appropriate timelines required to put bid submissions together - noting potential teaming arrangements/approvals needed etc. Relevant regulations will also dictate minimum timescales that this procurement will be required to adhere to. The Authority would welcome feedback on appropriate timescales for bid submission, this will be included within the RFI.
23.	Give the scale and complexity, will the project look to use the Scaled Agile Framework (SAFe), with Jira and Jira Align hosted within Defence Digital?	The DE&S-wide framework is yet to be determined, follow DE&S direction, Agile toolset will be adopted most likely JIRA.
24.	Given the scale of the BOREALIS vision, has DE&S considered the use of the Scaled Agile Framework (SAFe) as its approach to Agile implementation?	The DE&S-wide framework is yet to be determined, follow DE&S direction, Agile toolset will be adopted most likely JIRA.

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25.	The Commercial model feels very traditional (one large procurement). Given the desire to leverage domain experts, in an Agile manner, is there an opportunity to disaggregate the procurements to allow SMEs to get involved?	The commercial model is yet to be finalised. The Authority is exploring all options for delivery of the capability, recognising the vibrant market and ensure we are able to optimise innovation in the supply chain. We do not want to implement a model without consideration of the wider supply chain, and therefore recognise that it may in fact be a 'hybrid' of the options presented and invite industry to support our decision making. A Request for Information (RFI) is currently being drafted and will be issued via DSP.
26.	Are Commercial-X involved, to assist with Agile procurements?	Yes, Commercial-X are assisting more generally with Agile procurements.
27.	Ruth - why will it take a year from ITN issue to contract award?	Timescales are indicative and as discussed, the commercial model is yet to be finalised. The route to contract and associated timescales will be driven by the commercial model and its complexity (taking into consideration time for bids to be generated), along with the required MOD assurances/approvals. The date given was a not to exceed - where this can be improved upon it will and there will be required to be a suitable handover period and transition of the current AURORA capability.
28.	Is delivery using overseas resources acceptable or as a Sovereign capability does the solution need to be developed and delivered via UK resources only?	Moving away from the term Sovereign, it's about assured access and the criticality of that capability. Higher levels of assurance may mean some overseas options can't be used but in other cases we still may be able to. The country is interested we have onshore capabilities, this doesn't mean sovereign – so there will be investments from government to make the UK an attractive place for foreign companies to work with. Some elements of the system will, due to security considerations, have some restrictions on the nationalities that are able to deliver them. However, the level of security will vary depending on which elements and we are very aware of the useful products that already exist on the marketplace developed by companies from Allies which we would potentially like to make use of. Further details will be provided at an appropriate point.

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29.	Ruth - will contracting likely be done by KDO within broader project?	The requirement will be iterative and output-based (KDO). The working assumption is that the contract will cover the full intended scope of BOREALIS, however the commercial model to achieve this is yet to be finalised. It will depend on the emerging requirements, but there may instances in the future where we want to contract separately for specific elements, but this is the unknown.
30.	If this is modular, iterative, plug and play (great approach), will there be future windows for industry to respond beyond the initial restricted competition?	We have mapped all the systems that NSpOC use, that is subject to change/growth dependent on our allies and partners. We want to integrate these systems into BOREALIS, so we can use this as communication channel.
31.	If there are other contracts beyond BOREALIS, can we see an OV1 or ASTERIA project summary for industry situational awareness and strategic planning purposes	The only graphics available currently are those provided in the slide pack, there are a number of different ways to meet the requirements and we therefore do not want to be too prescriptive beyond the direction provided. There are a couple of upcoming procurements relating to PANOPTES which will be via UKSA, within the next 12 months. There will be broader communication on PANOPTES at a later date.
32.	You state the aspiration is to use MoD cloud to support BOREALIS, noting S cloud is not currently available (and timelines are TBC), what is the UKSA plan to overcome this? Are interim solutions being considered?	As presented by the Defence Digital representative MOD Cloud S is now available, with Hyperscale version (phased availability) due across 2024. For environments where MOD Cloud is not available or offers too many limitations for operation, a contract provided and secured environment is to be supplied.
33.	Noted the Agile approach, but is there an aspirational date for a v1 go live?	We are defining the formal IOC for BOREALIS at the moment. Noting that AURORA is already live and the output/capability will need to be maintained.
34.	Can you provide details on any advisory services you envisage requiring as part of this programme?	Unknown at this time.
35.	Have the DT considered contracting for a Strategic Partner?	The commercial model has not yet been decided. The Agile methodology, however, will allow for a similar approach to strategic partnering and will allow for collaborative working with the Authority, customer and the supply chain.

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36.	There seems to be an incumbent or several incumbent providers. Who are they?	There is one current supplier of AURORA which is CGI Ltd.
37.	Would you consider, with permission, sharing the industry attendance contact details for the am and pm event to aid networking?	GDPR will not permit the Authority to release names. Details of companies in attendance will be provided. *POST-SCRIPT: The list of Company delegates was issued along with the Industry Day slide deck immediately after the event.*
38.	Are there any plans to include more advanced and suitably validated data models (e.g. associated with registered space object astrodynamic profiles) as part of the BOREALIS project in order to potentially reduce data storage requirements?	We can utilise DSTL and some external partners. We need outputs that are reliable, that we can place decisions on. We are not sure how this will look in terms of validations, but it will be an essential part of our understanding of the software and its outputs.
39.	How much capability will there be internally to project manage, run business change and comms elements or will this be part of the BOREALIS requirement for industry to deliver?	We don't underestimate the amount of resource that will be needed for the agile methodology. It will be a collaborative effort as users and providers. This is a change to the operational community, it should be better at meeting needs. This is why the training and integration element is important.
40.	Reference the goal to leverage overseas industry - is someone looking at adjusting procurement processes to remove a UK mindset? Affected industry would love a platform to share / discuss lessons learned so far with ISTARI as example	The ISTARI system had a lot of UK flags but this system is being developed with cooperation with 5 eyes partners at the heart of it. Hard work ahead on how we allow access of common data standards and space objects. We are going after it, we just aren't there yet.
41.	Given the challenges with obtaining Approvals for Agile programmes, is there a need for some Approvals and cost modelling support?	This is outside of this industry event, we may need it separately and separate commercial mechanisms, potentially through some delivery partner routes or direct.
42.	What is the venue to provide feedback on commercial approach that you invited?	An RFI will be sent out in the near future, the timelines are to be decided but likely to be sent in August.
43.	What's the split of funding for defence vs civil on BOREALIS (Space Command vs UKSA) - what's the UKSA contribution?	The proportion of funding between HMG departments has not yet been finalised.

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44.	What expectations do you have on the dissemination of BOREALIS data products?	Dissemination of products is a key part of the BOREALIS concept, the "customers" will vary significantly ranging from commercial users of UKSA services to Military decision makers. This will also impact the type of product which will need to be disseminated with some likely requiring technical/data based outputs whereas some will just require PDFs or other simple forms of product.
45.	Is there re-use of Aurora software elements envisioned in BOREALIS?	Subject to winning contractors solution, if a fit, form, function alternative is available. Likely yes AURORA is retained, as it is a critical capability that NSpOC and UKSA must retain until BOREALIS provides a suitable capability alternative.
46.	Have sovereign sensing gaps been identified?	Cross-government SDA requirements covering sensing are available at https://www.gov.uk/government/publications/space-domain-awareness-requirements
47.	If BOREALIS is an "evolution of the current software", will the current software be provided as GFX under the Should BOREALIS ITT/contract?	There will be a 3 month handover period with the current (CGI) and new supplier, the Authority is currently working with CGI to ensure the IP strategy for BOREALIS is fully understood. This will form part of the tendering documents.
48.	Are you planning on starting a new Registered space objects catalogue vs extending ones that Allies have already built in order to ease interoperability?	Yes, an assured RSO catalogue that enables fusion of UK Eyes Only Data with Allied data.
49.	How will the functions of NSpoC today be migrated into the BOREALIS based NSpoC of tomorrow?	The assessment of missions and tasks (shown in the concept diagram in the slide pack with overlapping circles) demonstrates the variety of NSpOC functions we are anticipating, including continuation of some current tasking. The systems integration element of BOREALIS is an important aspect of ensuring continuation of existing outputs. There will be a balance between integration of current tools and generation of new ones to maintain and evolve outputs.
50.	What is the anticipated initial size of the Catalogue and by what factor is exponential growth anticipated	45 TB, able to register an initial 10,000,000 objects.

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51.	The Lewis et al analysis showed we are already dealing with over 25000 cams per month just W/ Starlink. With a growth projection - 800 000 per month just on trackable when China/Amazon etc are on orbit. Are we just dreaming wrt safety?	Yes, increased constellations will make space safety an increasingly difficult problem to solve internationally, but we are reliant on satellite systems to improving safety is a must. As the numbers of satellite increase, there will need to be changes such as: - operators will need to submit high quality ephemeris - nations will need to get better at data sharing - systems will need to become more automated BOREALIS will help the UK play a strong role in space safety.
52.	What about SSA data from sovereign satellites?	SST/SSA/SDA data from any future sovereign assets be they space-based or otherwise will be ingested into BOREALIS. The element of processing done within the sensor system vs within BOREALIS will be sensor and data type dependent.
53.	How can you determine trajectory and subsequent risk of sub 3cm debris fields post a collision event given the University of Florida test demonstrated that the number of pieces in that range was in the thousands?	BOREALIS will only be able to utilise the data we have available. Data projects are being run separately.
54.	What's the relative expected spend on BOREALIS vs PANOPTES?	Current estimates of contract values have been provided for BOREALIS, although the value of the UKSA contribution is not yet known, further indicative values will be provided in the contract notice. PANOPTES will be a system of systems which will therefore consist of multiple contracts utilising part of the £85M allocated for SDA in the IR.
55.	BOREALIS will require PNT calibration amongst other functions. Where is that expected to occur?	The precise timing and ordering of individual user stories/features will be determined as part of the Agile management process.
56.	Are you expecting BOREALIS to support operations by being able to provide operators outside of the Nspoc with a picture on the ground eg overlaying commercially available images?	We are not, however, expecting BOREALIS to deliver ISR.

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57.	What do you see as the main route to market? Is it expected that capability will be delivered predominantly by a prime or will contracts be specific enough for SMEs to apply?	The commercial model is yet to be finalised. The Authority is exploring all options for delivery of the capability, recognising the vibrant market and ensure we are able to optimise innovation in the supply chain. We do not want to implement a model without consideration of the wider supply chain, and therefore recognise that it may in fact be a 'hybrid' of the options presented and invite industry to support our decision making. A Request for Information (RFI) is currently being drafted and will be issued via DSP.
58.	Further to the question on RSO catalogues, what is the extent of the intention to build sovereign capabilities in favour of collaborating/accessing those of allies?	This is more of a PANOPTES question - the mix of own, collaborate and access will depend on the specific requirements for availability, fidelity and resilience. The sensors/data mix will evolve over time.
59.	Which company delivers (and evolved) the current software in AURORA? Will they have a separate contract to BOREALIS to continue their involvement/input into BOREALIS?	The current supplier is CGI, there will be a 3 month handover period with the current (CGI) and new supplier, once the current CGI contract ends, the Authority is currently working with CGI to ensure the IP strategy for BOREALIS is fully understood. This will form part of the tendering documents. There will not be a follow on/continuation of the current contract. BOREALIS is the follow on contract.
60.	How will BOREALIS contribute to mitigation of adversarial electronic effects (from the ground and Space) that aim to deny, degrade, disrupt C2 and sense capabilities, including PNT denial?	BOREALIS will aid in the generation of the UNDERSTAND function initially which underpins any mitigation action. The extent to which BOREALIS then contributes depends on the nature of the mitigation action hence the different levels of C2 we have articulated- specifically in this case, C2 for multidomain integration and C2 for any future space assets.

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61.	Is this one big prime contract, or a core contract with plug in application contracts?	The commercial model is yet to be finalised. The Authority is exploring all options for delivery of the capability, recognising the vibrant market and ensure we are able to optimise innovation in the supply chain. We do not want to implement a model without consideration of the wider supply chain, and therefore recognise that it may in fact be a 'hybrid' of the options presented and invite industry to support our decision making. A Request for Information (RFI) is currently being drafted and will be issued via DSP.
62.	Do MOD see issues with potential conflict of interests with some primes or orgs who have a vested interest in delivering payloads and/or constellations against the risk analysis elements of BOREALIS	Potential conflicts of interest are currently being understood as part of the strategy and commercial model development phase. Where a conflict of interest is determined, risk analysis will be undertaken and where applicable appropriate mitigations/management strategies will be reviewed and implemented. This will also form part of the wider data assurance work.
63.	Will lessons learned from other similar Agile, cloud programmes (Preda etc) be made available to suppliers?	We are currently working with a number of programmes and learning from their experience. If we were to contract with the SMEs, we would share that learning.
64.	Are there any SAP requirements in the AS domain?	Potentially yes but this is TBD.
65.	There seems to be a key dependence on the maturity MOD Secret cloud to host a large constantly changing low latency catalogue without slowing the BOREALIS Eco system. How are you going to mitigate this in the short to medium term?	The operation and scope of the MOD Cloud used will likely place constraints on the development of BOREALIS that the contractor and authority/user needs to agree with the supplier via scrum/epics/sprint and associated mitigation actions.
66.	Do all software elements in the BOREALIS need to be developed with the mentioned iso standards or just the pipeline which is "gluing" COTS elements together	These were given as guidelines for the use of open standards and best practice. The contractor is to provide adequate assurance throughout the contract that the software applications or services they are developing, be they either; new APIs or Apps or the pipeline services "gluing" COTS/government supplied items into the architecture are done to a recognised quality standard. Contractor sourced COT items are to have software quality risk minimised through appropriate quality selection criteria.

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67.	How does the UK Resident Space Object Catalogue differ in concept to the US UDL?	UK Resident RSO catalogue will contain UK Eyes Only data (either due to classification or commercial reasons), that can be fused with Allied and Open Source data for sovereign missions. It will also be resilient and independent. The full UK Catalogue concept has not been agreed yet, but is planned to be completed this FY.
68.	Does the Authority have a view on where AI training might be introduced in the architecture map and/or through the Agile methodology?	The authority is open for the contractor to innovate in the AI training space if there is seen to be a beneficial application for it in the architecture supplied. Automation of particular tasks is seen to be a benefit to the ease of use of BOREALIS but would need to be appropriately bounded.
69.	Are the current air gaps between systems a result of technology or security accreditation policy shortfalls, if it's the later how are you going to address this?	The current gaps are due to the UK SpOC evolving gradually rather than under the remit of a single programme of record coordinating and cohering activities and the technology that was available at the time rather than due to accreditation/policy shortfalls.
70.	2027 for operational delivery and capability. Given the exponential growth already seen before starship will be hoisting 400 satellites per week, is the requirement scope really understood given the changes seen in the last 5 years?	The requirements scope for 2028 is not understood; it is a known unknown. That is why we are pursuing with Agile methodology to build adaptation and modularity from the outset.
71.	What is the anticipated exit strategy - will BOREALIS be 'owned' by NSpOC at the end of the period of performance?	Exit Strategy in development as part of the commercial model piece. Engagement with Intellectual Property Rights specialists is ongoing to inform the IP strategy - including future use/ownership. The IP strategy will seek to avoid vendor lock.
72.	What is driving a 3+1 +1 year contract length Vs a 5 year (especially given the US SSC recent lessons to US Congress that a short contract cycle for their Space C2 recapitalisation drove the wrong program priorities?	This is indicative at the moment. The 3+1+1 gives the Authority flexibility, recognising the vibrant, fast paced market and ensuring we are able to optimise innovation in the supply chain. Will be included in RFI for feedback.
73.	Are there any sustainability requirements for the commercial agreements?	A Carbon Reduction Plan will be required as part of the ITN. Social Value criteria will also form part of the ITN and provide for at least 10% of the non-cost score. Social Value performance indicators will be monitored within the resultant contract.

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74.	Do MOD anticipate any major issues with the almost certain change in Govt in 2024?	No issues anticipated.
75.	If the Prime is U.K. owned, can subs be foreign (allied)?	Yes - a Security Aspects Letter (SAL) will be issued as part of the Tender to provide clarity on the security restrictions and how this should be managed.
76.	Is there an expectation for the inclusion of SME in their own right, and if so will PQQ / ITN be shaped appropriately	The commercial model is yet to be finalised. The Authority is exploring all options for delivery of the capability, recognising the vibrant market and ensure we are able to optimise innovation in the supply chain. We do not want to implement a model without consideration of the wider supply chain, and therefore recognise that it may in fact be a 'hybrid' of the options presented and invite industry to support our decision making. A Request for Information (RFI) is currently being drafted and will be issued via DSP.
77.	Will there be requirements to integrate with the Digital backbone?	Absolutely, we are understanding how BOREALIS will fit into the UKStratcom programme
78.	What alert mechanisms will be required? Text messages, app push notifications as well as email alerts for example?	The Cloud environment service needed to host the capability will be funded by the DE&S.
79.	You seem to have set a vision / architecture based on specific functions are you open to alternate methodologies to achieve some if the required outcomes	The key delivery outcomes are exactly that, how it is achieved is for industry to innovate.
80.	Will all hosting be paid for by the project through the use of MODCloud services or will these also be funded through the contract?	The Cloud environment service needed to host the capability will be funded by the DE&S.
81.	Will a POC budget exist to experiment with new capabilities/modules/apps before inclusion into the production platform? Will this be made available to SMEs?	Not known at this time, this will depend somewhat on the commercial strategy.
82.	If you go for commercial model 3 would you consider awarding different requirements at a faster pace. It sounds like there are many challenges/ opportunities to have impact fast eethan the 18 month window. Eg data import / cohesion	It may be considered.

Timescales are indicative and as discussed the commercial model is yet to be finalised. The route to contract and associated timescales will be driven by |

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		the commercial model and its complexity (taking into consideration time for bids to be generated, along with the required MOD assurances/approvals. The date given was a not to exceed - where this can be improved upon it will and there will be required to be a suitable handover period and transition of the current AURORA capability.
83.	Do you want the ability to spin up and manage adhoc capabilities/applications in containers, maybe using Kubernetes, to handle surges in use and faster delivery of emerging software?	Yes, we could take advantage of that.
84.	Will there be a publicly accessible catalogue? Organisations like JSPoC are well trusted by operators. How do you build that trust to get people using data from NSPoC as opposed to relying on the US which has been doing this since the 60s?	So as there are different classification levels, the official level will be available publicly to anyone of interest.
85.	Do you envisage any restrictions on where the s/w development activities are hosted (eg will the team need to be embedded within the NSpoC facility)?	Initially, no as long as the vendor complies with MOD procurement security policy i.e. you couldn't subcontract to a red-list company. When NSpOC has a physical location, we are considering how we will incorporate develops to enable close working between operators and developers.
86.	Is the competition open to UK companies (/primes) only?	No, not limited to UK. The commercial model is yet to be finalised. The Authority is exploring all options for delivery of the capability, recognising the vibrant market and ensure we are able to optimise innovation in the supply chain. We do not want to implement a model without consideration of the wider supply chain, and therefore recognise that it may in fact be a 'hybrid' of the options presented and invite industry to support our decision making. A Request for Information (RFI) is currently being drafted and will be issued via DSP.

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# ID	Question	Answer
87.	Please comment a bit more on interoperability. What needs to be interoperable and with whom? Will existing standards e.g. Ccsds be utilised or new standards be adopted. Will legacy data formats need to be supported e.g. TLEs.	We have a complex IER involving data exchange with numerous partners across defence, government and with Allies and partners. The level of interoperability will vary depending on the use case in each instance varying from customer-provider through to genuine burden sharing potentially. Existing standards such as CCSDS will be utilised as far as practical and legacy data standards will also need to be supported in instances where they are still widely utilised.
88.	If industry is to be able to export parts of the future capability, the IPR needs to be well established. Agile development needs to explicitly handle this, this was not clear in the exposition today. Can you comment?	The BORELAIS IPR strategy is still being developed. The Authority is working closely with both the incumbent and our internal IPR team to ensure key information is accessible and the IPR strategy is sufficient in allowing future developments.
89.	Will BOREALIS be feeding into cross-government as well as USKA/MoD?	Yes.
90.	Is the remit of NSPoC to assess intent, and if so should a capability assessment be a part of this?	Fusing intelligence, Defence Intelligence are one of our key stakeholders.
91.	What is automated fusion data?	It's about being able to understand via multiple sources.
92.	If there is a provider that can support now, will you still stick to the competition timeline?	The DE&S-wide framework is yet to be determined, follow DE&S direction, Agile toolset will be adopted most likely JIRA
93.	Where will BOREALIS be hosted?	That would depend on the solutions provided by industry. Currently it is planned on being hosted on MODCloud and MODCloud Secret; AS hosting solutions are open. Likewise, if industry pitches a different hosting environment that is better suited to the Delivery Outcome, this will be considered.
94.	CKUR 1 pager point 5: Provision of observation in restricted or denied environments - Can you elaborate on this KUR? Our assumption based on what is stated is that this would be a function of available sensor types and locations.	This requirement refers to the EW threat and to provide coverage during EM denial scenarios.

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95.	CKUR 1 pager point 8 & 9: Ability to act as an interoperable element with wider UK Defence and cross-Government ISR frameworks. Ability to act as an interoperable element with wider allied ISR frameworks. Is there a detailed listing of other systems with which interoperability is required? Domestic (ie Defence and UKSA and other Govt Depts) and Foreign (Which Allies/Partners) would be a good start to make sure we have considered protocols and dissemination means.	Yes, this has been captured and the systems within have been prioritised.
96.	CKUR 1 pager point 14: The User requires the ability to conduct mission management and decision making to mitigate adversary space effects and support allied space effect integration in multi-domain operations- Beyond the requirement of flexible/Agile C2 and Mission management, does this also extend towards a goal of effector on target capability?	No, this Key Delivery Outcome refers to the provision of Space Domain Awareness and Space Situational Awareness facilitated through the NSpOC. On target effects, with the exception of media outreach, i.e. Space Control, is beyond the remit of BOREALIS. There may be a future requirement to integrate with Space Control C2 systems however in the future.
97.	BOREALIS Slide Deck slide 11 (and 19) - Project BOREALIS will deliver the core software elements… (and the Vision Diagram with different Security Classification Apps) - To meet security multi-class environment is it expected that the solution proposed will also consist of hardware solutions such as Cross Domain Solutions etc to meet the operational need, or will that be GFX. (Particular in light of any S-level demand)	The KDO is to enable x-classification, x-system working; how this is achieved is for a supplier to propose, whether via a hardware solution or through GFX. Security and boundary risks will need to be assessed (through Secure by Design) and appropriate mitigations identified and implemented to ensure compliance with applicable MOD cyber security policies, good practice and guides e.g. NIST 800, JSP 604 network joining rules and system Codes of Connection etc.