

QUESTIONS & ANSWERS - (CORE3D) IARPA-BAA-16-06

Responses #1 to 71

#	Response
1	<p>Does the Combined Synopsis/Solicitation under solicitation number IARPABAA1606 contain requirements similar to a current contract? If possible, please provide the current contract number. Or is this a new requirement for the government?</p> <p>A: No, IARPA-BAA-16-06 is a new requirement and is not similar to a current IARPA contract.</p>
2	<p>On page 8 of the BAA, the list of anticipated technical challenges includes ""Multi-modal data fusion to include data level, feature level, and decision level fusion." What is implied by decision level fusion? Could you provide examples?</p> <p>A: As an example, consider point cloud generation of the roof and facade of a building using both satellite imagery and full motion video from an unmanned aerial vehicle (UAV). In this situation, facades may be occluded from the satellite, and video from the UAV provides additional information to fully represent it. Data-level fusion may simply aggregate the point clouds from the two sources using registration techniques. Feature-level fusion may employ detected corners and edges in both point clouds to jointly determine roof and façade structure. Decision-level fusion may determine roof and façade structure independently in each point cloud and then combine those independent decisions to provide an improved estimate.</p> <p>These are only examples to demonstrate the very general idea and are not intended to influence any performer’s technical approach.</p>
3	<p>On 8 of the BAA states: "IARPA will provide a shape library of 3D geons, roof models and materials to all performers." What is the nature and format of the materials library? Would it consist of training sets of sensor data with designated material classifications? Can you provide any information as to the number of material classes in the library and the number of examples per class?</p> <p>A: The government team currently plans to provide the following:</p> <ul style="list-style-type: none"> - Reference spectral signatures (VIS, NIR, and SWIR) for material classes will be provided. Number of material classes is on the order of 10 but has not yet been finalized. Some classes may be defined as groups of indistinguishable materials. There is currently no plan to provide a training database of exemplars – only reference signatures. - An initial approved list of 3D geon (geometric primitive shape) definitions will be provided, potentially implemented in an example but not mandated format such as BRL-CAD. Government intent is not to mandate the language or implementation. Examples of the combination of geons to produce simple roof structures will also be provided. - Performer feedback will be employed to update government team plan for GFI data, but not until after program start.

4	<p>What ground truth will be provided to the performers? Will performers be responsible for developing their own ground truth? Will the Reference Data provided at the start of each period include ground truth to allow the performers to conduct their own preliminary test and evaluation, similar to the that to be performed later by the T&E team?</p>
A:	<p>A limited subset of ground truth data for both 3D structure and material identification will be provided at the start of each period to enable performers to conduct their own performance assessment prior to government test and evaluation. However, ground truth data provided is not expected to be sufficient to provide a training set for machine learning approaches, at least for the first year.</p>
5	<p>On page 13, the data sets provided for registration include "3D point clouds derived from different types of sensors, such as satellite EO and SAR." The provision of point clouds derived from satellite EO data is not mentioned elsewhere. Is it true that EO-derived point clouds will be provided in addition to the point clouds estimated by the performers?</p>
A:	<p>3D point clouds derived from SAR will be provided to performers. SAR imagery will not be provided. Performers are expected to derive 3D scene data from EO imagery, with or without producing an intermediate point cloud product. 3D point clouds derived from EO imagery may also be provided in some cases to support registration and data fusion experiments.</p>
6	<p>Georegistration methods commonly make use of georegistered reference imagery, such as the Digital Point Position Database (DPPDB) or georegistered imagery from the US Geological Survey. Will the pan / MSI imagery specified on page 13 include specified georegistered coordinates suitable for use in georegistration of estimated models?</p>
A:	<p>Performers are expected to block adjust or triangulate the commercial satellite image metadata to refine relative and absolute geolocation accuracy. No additional control points will be provided. Proposers should not include use of reference databases such as DPPDB or USGS DOQQ in their technical approach.</p>
7	<p>Previous IARPA solicitations have allowed for Key Management and Personnel Resumes (not to exceed 3 pages each) as allowable attachments. We feel this is an important addition to better explain the breath and depth of our team's experience. Can the CORE3D BAA be amended to allow resume attachments?</p>
A:	<p>We will allow for Key Management and Personnel Resumes (not to exceed 3 pages each).</p>

8	<p>On pages 7/8, the BAA states the following regarding data coverage:</p> <p>...The anticipated coverage of the areas of interest for the data to be provided to performers is as follows:</p> <ul style="list-style-type: none"> •Digital elevation model (DEM) and commercial satellite imagery, including Pan and MSI will have 100% coverage; •GIS data and synthetic aperture radar (SAR) point clouds will have approximately 50% coverage; and •Airborne imagery including full motion video (FMV) and wide area motion imagery (WAMI) will have approximately 10% coverage. <p>Can you elaborate on "50% coverage" for GIS & SAR? Can you elaborate on "10% coverage" for FMV/WAMI?</p> <p>Q:</p>
A:	<p>Percentage numbers provided in the BAA are notional and are only meant to convey limited coverage for those source data types. Actual percentages will depend on availability of data to support performer experiments and ground truth to support test and evaluation. Proposers should consider commercial satellite panchromatic and multi-spectral imagery to be the primary source data to support global coverage. Other sources are expected to have less global coverage and are intended to augment the primary source data to potentially improve product quality when they are available. Performers must demonstrate baseline capability with only the primary sources and separately demonstrate performance with secondary data sources to characterize the added value.</p>
9	<p>On page 10, the BAA states the following regarding object appearance:</p> <p>The appearance of an object in the 3D model may be represented by modeling the physical properties of the surfaces (texture and material), ambient lighting, and the environment. A number of properties will be assigned to each polygonal surface that include, but are not limited to, physical material properties, textures, and lighting conditions which may include a diffuse component, a specular component and an emissive component of materials.</p> <p>This statement is somewhat ambiguous regarding the inclusion of lighting conditions (e.g. "ambient lighting") as attributes of the 3D model itself. In our understanding regarding "lighting conditions", it would be sufficient to define diffuse, specular, and emissive attributes (perhaps included in the material/texture definition) for each surface of the 3D model, allowing for appropriate lighting at rendering time. Is this understanding correct?</p> <p>Q:</p>
A:	<p>Regarding "lighting conditions", it would be sufficient to define diffuse, specular, and emissive attributes (perhaps included in the material/texture definition) for each surface of the 3D model, allowing for appropriate lighting at rendering time.</p>
10	<p>The table of contents on page 2 of the BAA indicates that the maximum number of pages for Volume I is 45. Page 26, 4.B.1, indicates that the maximum number of pages is 25. Which is correct?</p> <p>Q:</p>

	A:	Amendment 1 has already been posted on FBO to correct this error. The maximum number of pages is 25 for Volume 1.
11	Q:	On page 17, Table 2 "Program Metrics", the build time metric is listed as "Model Build Time (computer)*". However, we see no elaborating footnote as to what the program considers a "computer". We are interpreting the definition of a "computer" as any reasonable cloud configuration of computation. This includes an unlimited number of cloud computing instances running in parallel, augmented with readily available high performance capabilities such as Amazon Web Services HPC This interpretation is subject to section 6.B.15 "Cloud Compatibility". Is this interpretation correct?
	A:	"any reasonable cloud configuration of computation" is technically correct, though the number of instances may not truly be unlimited due to cost considerations.
12	Q:	What style are citations in the bibliography expected to be in? I know that many proposals call for APA style, but I was unable to find any information about my question on the IARPA website.
	A:	There is no style requirements for citations in the bibliography.
13	Q:	Please clarify if 10-page limit for Volume 1 Summary is included in 25 page-limit for Volume 1. If not all 10 pages are used for Summary, can balance be applied to Detailed Proposal section?
	A:	Each page of the Proposal Summary (10 page limit) will count towards the 25 page limit for Volume 1. If not all 10 pages are used for the summary, the balance can apply to the detailed proposal section.
14	Q:	What are the margin specifications?
	A:	The BAA does not have margin specifications. All documents must be legible.
15	Q:	Section 4.B.1.4 references Attachment 7: Technical Approach and Performance Matrix (5 page maximum) with example provided in Appendix I. No Appendix I was not provided. Is this attachment required? If so, will an example be provided?
	A:	The CORE3D BAA will not include an Appendix I. All references to Appendix I will be removed, the BAA will be amended to address this.
16	Q:	Will there be a technical down-select between Phase 1 and Phase 2?
	A:	Continued funding is contingent upon a number of factors, including technical performance, portfolio balance, and availability of funds.
17	Q:	Please clarify the desired minimum size of objects (example graphic, Figure 1, shows some small objects).
	A:	The minimum size is not explicitly defined, though compact representation (using minimum number of objects in the model library) is desired. Objects of interest include the broad range of static structures readily observable in commercial satellite imagery. This includes large objects such as buildings and bridges and also somewhat smaller objects such as fences, towers, and monuments. Objects too small to readily identify in commercial satellite imagery are not expected to be included, though performers are encouraged to determine for themselves what is "too small".
18	Q:	Are the "Surprise" areas included in the baseline AOI counts in each Phase (e.g. 4 in Phase 1A), or are these additional areas?

	A:	The sequestered test locations will be separate from the baseline AOIs described for each phase of the program and will be made available at the end of each phase. Also, while specific numbers of small AOIs are defined for metric test and evaluation during the first year, performers are encouraged to also demonstrate performance over larger areas to fully highlight the benefits of their approaches.
19	Q:	Will training data / ground truth be provided for AOIs? (e.g. ortho-rectified products, ground control points)?
	A:	See answers to #4 and #6.
20	Q:	May cloud-hosted infrastructure (e.g. GPUs) be proposed if it supports a timeliness/performance objective, or will the Government define a common infrastructure baseline?
	A:	Yes, you may propose your own infrastructure. See answer to #11.
21	Q:	Section 4.B.1.3 Part F titled Cost, Schedule, Milestone states that offerors are to include cost by task, total cost and company cost share, if any. Please clarify if offeror is to include cost/pricing information both in Volume I (Technical & Management Proposal) as well as in Volume II (Cost Proposal).
	A:	The cost in Volume I (Technical & Management) should only state the bottom line summary of the base and each option periods. In Volume II (Cost), please provide a detailed layout of the cost makeup of the base year and each option periods.
22	Q:	Section 4.B.2.C last paragraph on Page 34 states, in addition to the full and complete subcontractor proposal, the offeror shall also provide its analysis of the subcontractor's proposal including justification for why the subcontractor was selected and its determination that the cost/price is fair and reasonable (Reference FAR Part 44 and FAR clause 52.244-2). Please clarify if offeror is to provide full and completed subcontractor proposal and its justification for why the subcontractor was selected if our proposal is selected for negotiation? If so, is the offeror to submit only Appendix F for its subcontractor with proposal submission?
	A:	The offer is to provide full and completed subcontractor proposal and its justification for why the subcontractor was selected; if the proposal is selected for negotiations, the prime must be prepared to present full subcontractor cost proposals (if applicable per subcontract type) for the base period, each option period and the total summary including all direct and indirect costs immediately upon request by the Contracting Officer. The Offeror can submit Appendix F in proposal submission but the Prime must be prepared to provide full subcontractor cost proposals for all periods (base and options) upon request.
23	Q:	When it comes to the materials library, what material information will be provided? Will it include items such as material spectral reflectance? Example photos? Text descriptions? Surface roughness?
	A:	A reference spectral reflectance library will be provided. Also, see answer to #3
24	Q:	What range/distribution of off-nadir angles can we expect in the set of 50+ satellite images provided for each AOI?
	A:	Images to be provided during the first year have not been acquired in such a way that optimal geometric diversity is ensured. However, a typical range of off-nadir angles from nadir to 30 degrees will be provided as collected and are expected to provide reasonable geometric diversity to support accurate 3D reconstruction. Feedback from proposers and performers during the first year of the program will be leveraged to inform future tasking decisions.
25	Q:	Is the stated GFI SAR point clouds expected accuracy absolute or relative? [1.B.4]?

	A:	The stated accuracy is relative and is representative of expected relative accuracy. However, SPC products to be provided have not all been produced at this time, so actual accuracy may vary.
26	Q:	What is the GFI SAR point clouds expected density?
	A:	Expected density is 30cm. Also see answer to #25.
27	Q:	What is the GFI Digital Elevation Models spacing and absolute accuracy?
	A:	We expect to provide 12m TanDEM-X Digital Surface Model (DSM) products for all AOIs. Accuracy has previously been characterized as 10m absolute vertical and 2m relative vertical. However, actual accuracy will vary.
28	Q:	Are the GFI Digital Elevation Models bare earth or DSM?
	A:	They are DSM products. For CONUS test sites, low-resolution DTM products are also publicly available but are explicitly not included in the approved data package since accurate DTM products are not globally available.
29	Q:	Can example GFI data be made available during the proposal period to help us calculate system performance? [4.B.1.2.B]?
	A:	No. . While we recognize the potential value, making useful GFI data available to the general public on such short notice is difficult to achieve and will not be pursued to support proposals.
30	Q:	Section 1.A.1.a of the BAA on page 11 lists data sets that will be provided by IARPA to performers. Included in that list are "3D point clouds derived from different types of sensors, such as satellite EO and SAR." However, Section 1.A of the BAA on page 6 says that "performers may need to address the following challenges: ... Point cloud generation from multi-view satellite images." Is development of methods for point cloud generation in scope for CORE3D? Can you clarify what is in scope and what is out of scope relating to the topic of point cloud generation?
	A:	See answer to #5
31	Q:	What type of material definitions will be provided? Will materials include reference signatures, BRDF, etc.?
	A:	See answers to #3 and #23.
32	Q:	Will reference material data be provided by IARPA? Will provided reference data (e.g. point clouds/images) include material attribution/labeling?
	A:	GFI point clouds and images will not include material attribution. Also see answers to #3, and #23.
33	Q:	Will 3D "ground truth" models be provided for evaluating and tuning reconstruction accuracy prior to formal T&E, or is this something the performers should plan on addressing on their own?
	A:	See answer to #4.
34	Q:	While no longer identified as a thrust of this BAA, would functional labeling of reconstructed models be of interest to IARPA? E.g., an approach might benefit from incorporating functional labels as part of a holistic approach to segmentation, material classification, and 3D modeling.
	A:	Yes. Functional labeling methods are of interest insofar as they contribute to addressing the stated CORE3D objectives. As semantic segmentation has been shown to aid in 3D reconstruction, performers are encouraged to think about the problem not only in geometric terms.

35	Q: Is there any other specs to the reconstruction portion that we will have access to other than RPC? For instance camera intrinsics?
	A: Metadata will be included with any imagery provided. For commercial satellite imagery, geopositioning metadata is RPC00B. For any airborne frame camera imagery, sufficient metadata will be provided to account for extrinsic and intrinsic parameters, either directly (e.g., 6DOF plus focal length, principal point, radial distortion, etc.) or indirectly (e.g., RPC00B), depending on the source.
36	Q: Will the Satellite EO, SAR and IR imagery that IARPA is providing for this research project be georeferenced and aligned?
	A: All data provided will be geo-referenced with accuracies consistent with the source. Performers will be expected to refine the relative alignment to enable accurate 3D reconstruction, geopositioning, and data fusion.
37	Q: Do the PowerPoint slides (Sec G of Section 2: Project Summary) get added into the PDF of the proposal document? Or should they be submitted in a different format? Do we need to adjust the pagination to accommodate for these three pages, as they do not count against the overall limit for this section?
	A: The three chart summary of the proposal should be incorporated into the PDF of the technical proposal. The project summary can be assigned page numbers. However, it will not be counted towards the 25 page count limit. In addition to including within the technical proposal, provide these PowerPoint slides as an attachment.
38	Q: What size margins are required for the documents?
	A: There are no margin requirements.
39	Q: On page 34, the BAA states that "A summary table listing all labor categories used in the proposal and their associated direct labor rates, along with escalation factors used for each base and option period of the acquisition." Does this mean that we can only escalate costs across base/option periods? Or may we escalate at the fiscal year boundary, which will occur mid-period? When would you prefer that our labor rates be escalated?
	A: If an offeror is proposing rates/ cost not aligned to the base and option years Period of Performance, please propose the average rate and/ or accumulated cost for each base and option period in accordance with the offeror's fiscal year. In addition, provide a note indicating that the rate and cost proposed for each Period of Performance is in accordance to more than one rate/ cost factors from the offeror.
40	Q: On page 5 it states that the program is intended to begin in December 2016 but on page 21 it states the program is intended to begin in November 2016. What should we use as our start date?
	A: The start date will be December 2016. The BAA will be amended to address this.
41	Q: Are we able to submit a proposal with ITAR-restricted material through the IDEAS system? If not, is there an alternative way to submit such a proposal? Or must there be no ITAR-restricted material in the proposal?
	A: It's okay to submit ITAR-controlled documents through IDEAS. Offerors MUST mark ITAR-controlled materials that they submit as being ITAR-controlled and, to the extent possible, identify the applicable U.S. Munitions List (USML) category.
42	Q: Will any labeled data be provided (for example for VNIR and SWIR)? If not, can it be purchased and labeled?

	A:	See answer to #4. Proposers are also welcome to suggest additional methods of providing labeled data for all performers, and the government team will consider all suggestions and attempt to provide comprehensive data sets to support performer activities.
43	Q:	The program mentions performers using only the approved data, but it doesn't say anything about using other data for training. Is that allowed?
	A:	During the first three months of each phase of the program, teams may nominate additional data for use in the program. After appropriate consideration, IARPA will determine if that data source will become a data source for the program and if so, will make the data available to all teams. Proposers are encouraged to recommend additional sources of data that would better enable performer teams.
44	Q:	The BAA mentions access to the raw data. Will we have access to the raw telemetry from the satellite (position, time of day, view angles, etc.)?
	A:	Commercial imagery is provided with RPC00B metadata as well as other NITF metadata that indicates date, time, and viewing angles. Also see answer to #35.
45	Q:	WorldView can provide stereo-pairs and single views. Will we be provided with stereo pairs? The BAA seems to indicate we will get satellite 50 images covering an area of interest, but it doesn't discuss whether any are stereo formed.
	A:	Performers should not expect to receive stereo pairs.
46	Q:	Will we be provided with RPC for mapping 3D to 2D and also raw sensor models for the mapping?
	A:	See answer to #44.
47	Q:	Will we have access to the CAVIS bands?
	A:	No.
48	Q:	DEM is an imprecise term which can mean different things. Is it closer to a terrain model (DTED) or it will be a DSM (digital surface model)? In the BAA it doesn't mention the resolution of DEM, although in the industry day it mentioned 10m.
	A:	See answers to #27 and #28.
49	Q:	What is the spatial resolution of SAR 3D?
	A:	See answers to #25 and #26.
50	Q:	Can we expect WAMI and FMV together but covering 10% of the data?
	A:	See answer to #8.
51	Q:	If only WAMI is present what is the preferred modality to register for small errors, WAMI or satellite?
	A:	See answer to #8.
52	Q:	Will the airborne imagery/FMV be geo-referenced with ground control? Will any ground control points be given regarding the area covered by aerial images?
	A:	See answers to #6 and #42.
53	Q:	Section 3.B. states signed Academic Institution Acknowledgement Letter(s) for each U.S. academic institution is highly recommended. Should letters be submitted for foreign universities as well?

	A:	Foreign academic institutions are not required to provide an Academic Institution Acknowledgment letter.
54	Q:	Will 4.B.1.4, Attachment 7, indicate there is to be an example "Technical Approach and Performance Matrix" provided in Appendix I. However there is no Appendix I included in the BAA. Was Appendix I inadvertently omitted?
	A:	The CORE3D BAA will not include an Appendix I. All references to Appendix I will be removed, the BAA will be amended to address this.
55	Q:	Will satellite imagery have useful views of the sides of buildings?
	A:	Satellite imaging coverage of building facades is limited by acute off-nadir viewing angles but is expected to provide utility.
56	Q:	Will SAR point clouds have a significant number of points on the sides of buildings?
	A:	SAR point clouds are expected to include coverage of building facades, subject to radar reflectivity of building materials.
57	Q:	Will other input sources have useful information on the sides of buildings?
	A:	All image sources provided will include some degree of coverage of building facades. More oblique imagery collected from an airborne vehicle will provide more useful information than less oblique imagery collected from space. However, the primary source data is satellite imagery. Also see answer to #8.
58	Q:	Will accurate reconstruction of the sides of buildings be included in any performance metric?
	A:	Accuracy will be measured in both 2D and 3D to separately characterize performance with and without good coverage of building facades. Also see answer to #8 regarding demonstration of performance for primary source data and then separately including other source data to clearly show any improvement.
59	Q:	In addition to objective measurement of dimensions and comparison of materials and texture to absolute ground truth for selected objects in the AOIs, the T&E team will also compare performers' automatically generated models to a human-generated model created manually by an expert using state of the art manual modeling techniques and the same data provided to the performer teams?
	A:	The government team will assess performer results objectively compared to ground truth. The government team will also assess manually produced models with the same ground truth to better understand the impact of the performers' automated solutions.
60	Q:	Will any ground truth (e.g. human generated models) be provided to the performer teams as GFI?
	A:	See answer to #4.
61	Q:	Can the government clarify if 3D geometric roads should be included in the final 3D Model, e.g., bridges and multi-level road networks?
	A:	Yes, all static 3D structures in the scene, including bridges and road overpasses, are of interest. Map data will be provided to support extraction of bridge and road features, but proposers should not assume the map data is entirely accurate.
62	Q:	Can the government clarify if the final 3D model should include 3D vegetation representations?
	A:	While modeling of vegetation in a scene is incredibly important in any complete 3D scene modeling solution, it is not included as a focus of this program.
63	Q:	Can the government clarify if the final 3D model should have Levels Of Detail (LODs), if so can the government define them?

	A:	IARPA is not specifying a required structure for LOD modeling, but performers should expect to deliver products that are comparable to government standards such as Common Data Base (CDB) and CityGML. Model fidelity is expected to be between LOD2 and LOD3, depending on the extent to which more oblique imagery is available to support accurate façade modeling.
64	Q:	Regarding the provided satellite imagery. Will all satellite imagery be from the WV3 platform? Will any imagery come from older Digital Global satellites (e.g. WV1 or WV2)? Will any imagery come from other commercial providers (e.g. Pleiades)?
	A:	For the first year, commercial satellite imagery provided will include WV2 and WV3. Other commercial providers may be considered for future years if there is a good reason to do so.
65	Q:	The description of the satellite imagery on page 19 is "50+ Digital Globe satellite images: Pan (31cm), MSI 16 band - VNI, SWIR)" does this imply that all 50+ images will have all of those modalities/bands? Or will some of the images be Pan while others are MSI, etc?
	A:	WV2 and WV3 imagery will include panchromatic and 8-band multispectral imagery collected coincidentally, not to include short wave infrared (SWIR) which is collected separately. SWIR imagery will be provided only where available, and coverage will be much more limited.
66	Q:	Will the WV3 imagery contain the 12 CAVIS bands that it is capable of collecting? This would be very useful for atmospheric correction. WV3 can produce up to 29 spectral bands (1 Pan, 8 VNIR, 8 SWIR, 12 CAVIS) which subset of these bands will be provided?
	A:	No . Also see answer to #47 and #65. CAVIS bands are not consistently available and are unique to WV3, making them less useful as part of a more general solution. SWIR bands are also not consistently available but are provided where available to support potential experiments to demonstrate utility.
67	Q:	Will IARPA provide ground truth and/or manually generated models for a subset of the data so that performers can self-evaluate? Likewise, will IARPA provide the evaluation code to the performers?
	A:	See answers to #4, #6, and #19 regarding providing ground truth. IARPA is not currently committing to provide evaluation code to performers, but it can certainly be a topic for further discussion, and the government intends for the test and evaluation process to be completely transparent to all performers.
68	Q:	What 2D properties are the 2D metrics (2D completeness, 2D correctness) intended to measure? For example, is this for material segmentation? In what space are the 2D metrics applied? In the image space? In a ground plane or DEM of the 3D space? On the surface of the constructed 3D models?
	A:	See answer to #58 for discussion of 2D and 3D measurements of model fidelity to separate performance with and without good coverage of building facades. 2D metrics will characterize only 2D outline of a 3D building that includes material classification, while 3D metrics will also characterize accuracy of entire 3 dimensional properties of the model.
69	Q:	How is the 3D geometry ground truth collected/produced? The ground truth needs to be a solid model for the proposed evaluation metrics. If the ground truth is from LIDAR, are annotators used to manually model solid surfaces from LIDAR?

		Ground truth for 3D modeling is based on airborne and terrestrial LIDAR with greater point density and resolution than expected from performer solutions. Ground truth for material identification is based on, or bootstrapped from, imagery with higher spectral and spatial resolution than provided in the performer data. All ground truth products will be produced semi-automatically with manual editing to ensure accuracy.
70	Q:	What is the source of ground truth for material identification?
	A:	Ground truth for 3D modeling is based on airborne and terrestrial LIDAR with greater point density and resolution than expected from performer solutions. Ground truth for material identification is based on, or bootstrapped from, imagery with higher spectral and spatial resolution than provided in the performer data. All ground truth products will be produced semi-automatically with manual editing to ensure accuracy.
71	Q:	The BAA states the cost volume must be Excel format. However the submission site states that PDF is preferable. Which takes precedence?
	A:	Please submit the cost volume in Excel format