Terahertz Intensity Mapper (TIM) Telescope RFP Pre-Bid Meeting

June 29, 2020
Agenda

• 1. Introductions - 10 min
• 2. Overview of TIM project - 20 min (D. Marrone)
• 3. Technical Specification - 20 min (N. Emerson)
• 4. SOW - 20 min (V. Gasho)
• 5. Proposal Submittal - 10 min (K. Kenagy)
• 6. Questions - 40 min (All)
Introductions

- UA Team
  - Dan Marrone – Principal Investigator
  - Victor Gasho – Project Manager
  - Nick Emerson – Mechanical Engineer
  - John Guzman – Mechanical Engineer
  - Karen Kenagy - Buyer
Virtual Meeting Details

• We are going to run right through the slides and hold all questions to the “Questions” part of the agenda.

• If you would like to ask a question during the presentation slides please write it in the “chat” box and we will address it in the “Questions” part of the meeting.

• During the “Questions” portion please “raise your hand” in the “Participants” menu if you have a question and if possible write your question in the chat box.

• If we did not address your question. Please “raise your hand” or speak up at that time.

• Most important: Please use “Mute” if you are not the one speaking.
Participant Menu

Participant actions “Raise Hand” here.

Participant Button
Chat Button
Buyers Ground Rules

• All Specifications, terms and conditions of this solicitation will remain unchanged unless the solicitation is amended in writing.

• The questions asked during this Zoom meeting and the responses will be documented in an Addendum posted to the UArizona Procurement website.

• Responses to questions raised on this Zoom meeting are not official and should not be considered in preparing your proposal unless the question and response appear in the Addendum.

• Questions after this date should be sent directly to the Buyer, Karen Kenagy at kenagy@arizona.edu.

• All addenda distributed will be made available to all interested parties via the Purchasing website at: [http://pacs.arizona.edu/RFP-BID_Opportunities](http://pacs.arizona.edu/RFP-BID_Opportunities)
Schedule of Events

- 07-15-20  Technical Questions/Inquiries due no later than 3:00 PM/MST
- 07-24-20  RFP is Due **July 24, 2020, no later than 3:00 PM, MST**
- TBD      Vendor Presentations July – August, (if necessary)
- 09-04-20  Award Notification
Overview of TIM Project

Dan Marrone
Terahertz Intensity Mapper (TIM)

- NASA-Funded Stratospheric Balloon Experiment
  - Launch from Antarctica in 2023-24 Austral Summer

- Collaborating Institutions:
  - Illinois
  - Arizona
  - UPenn
  - JPL
  - Arizona State
Terahertz Intensity Mapper (TIM)

- Mission: Map out the history of cosmic star formation from 5 to 10 billion years ago

- How?
  - Observe Ionized Carbon in galaxies
  - Capture wide range of wavelengths → time range through cosmic expansion
  - Map slices across the sky

Credit: NASA/WMAP Team
Terahertz Intensity Mapper (TIM)

- Observing at far-infrared wavelength: 240-420 microns
- Ground-based observations limited by atmospheric water.
- Stratospheric balloons from Antarctic provide nearly clear view of far-infrared sky
Terahertz Intensity Mapper (TIM)

• Every little bit of altitude helps!
→ Want to minimize weight
Terahertz Intensity Mapper (TIM)
Terahertz Intensity Mapper (TIM)

- TIM telescope illuminates two diffraction grating spectrometers
- Light along two parallel slits dispersed into 128 spectral channels
  - Each captures ~30 Million years of cosmic history
- Detectors: KIDs (Kinetic Inductance Detectors)
  - Cooled to ~0.2K
  - Cold optics at 4K
- Telescope thermal emission dominates
  - Surface emissivity is an important fabrication parameter
This RFP: TIM Telescope

- This package covers the primary mirror, secondary mirror support legs, and interface to the TIM gondola ("Telescope Interface Flange")
- Excludes secondary mirror and secondary mirror interface structure
This RFP: TIM Telescope

• This package covers the primary mirror, secondary mirror support legs, and interface to the TIM gondola (“Telescope Interface Flange”)
  • Excludes secondary mirror and secondary mirror interface structure
• We are open to all concepts that achieve our precision and weight goals (plus all other technical specifications)
This RFP: TIM Telescope

- Bids may include telescope + support legs + interface structure OR just telescope
  - See table on page 23 of RFB document

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
</table>
| #1     | Complete 2.0 m Telescope as per AD01 | • 2.0 m reflector with interface defined in AD01:  
  o CFRP carbon fiber reinforced plastic (CFRP) panels including a Physical Vapor Deposited (PVD) aluminum coating mounted by means of adjusters onto a reflector backup structure (BUS)  
  o or aluminum machined panels mounted by means of adjusters onto a (BUS)  
  o or electro-deposited nickel panels mounted by means of adjusters onto a (BUS)  
  o or a monolithic CFRP reflector with a PVD aluminum or gold coating.  
  o or a monolithic aluminum reflector.  
  • Secondary Support legs in either a tripod or quadrupod configuration to the secondary interface as per AD01.  
  • Packaging & Transportation costs FOB Tucson |

| #2     | 2.0 m reflector ONLY: | • 2.0 m reflector ONLY:  
  o CFRP carbon fiber reinforced plastic (CFRP) panels including a Physical Vapor Deposited (PVD) aluminum coating and panels mounted by means of adjusters onto a reflector backup structure (BUS)  
  o or aluminum machined panels mounted by means of adjusters onto a (BUS)  
  o or electro-deposited nickel panels mounted by means of adjusters onto a (BUS)  
  o or a monolithic CFRP reflector with a PVD aluminum or gold coating.  
  o or a monolithic aluminum reflector.  
  • Clearly defined interface and volume allowance for secondary support lets as per AD01.  
  • Packaging & Transportation Costs FOB Tucson |
Technical Specifications

Nick Emerson
TIM Key components (BLAST solution shown)

- Open to several different design concepts, with or without secondary support legs
  - Monolithic CFRP Primary mirror (as implemented in BLAST-TNG project)
  - Segmented CFRP Panels mounted to CFRP BackUp Structure (BUS)
  - Segmented Aluminum Panels mounted to CFRP BUS via adjusters
  - Segmented electro-deposited nickel panels mounted to CFRP BUS
  - Monolithic Aluminum Primary mirror

- If secondary legs are not provided, a clear interface to the legs shall be defined in agreement with U Arizona
**Terahertz Intensity Mapper (TIM) Optical Configuration**

- Preferred F/Ratio of 0.8
- An F/Ratio as large as 1.0 can be proposed if a significant cost savings due to manufacturability can be realized, but this will impact system optical performance so will be weighed accordingly during proposal evaluation

### Table 1: TIM Telescope Optical Prescription

<table>
<thead>
<tr>
<th>Element</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Mirror</td>
<td>Clear Aperature</td>
<td>2,000 mm</td>
</tr>
<tr>
<td></td>
<td>Focal Length (F/ratio)</td>
<td>1,600 mm (0.8)</td>
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<tr>
<td></td>
<td>Conic Constant</td>
<td>-1.00000</td>
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<tr>
<td></td>
<td>Radius of Curvature</td>
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<tr>
<td></td>
<td>Central Aperture</td>
<td>450 mm</td>
</tr>
<tr>
<td>Secondary Mirror</td>
<td>Clear Aperature</td>
<td>510 mm</td>
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<tr>
<td></td>
<td>Radius of Curvature</td>
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<td></td>
<td>Conic Constant</td>
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<td>Telescope</td>
<td>Primary Vertex to Secondary Vertex Distance</td>
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<tr>
<td></td>
<td>EFL</td>
<td>8,000.0 mm</td>
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<tr>
<td></td>
<td>F/#</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>FOV</td>
<td>1.3 degrees</td>
</tr>
</tbody>
</table>
• Primary mirror attaches to “Inner Frame” of gondola at the Telescope Interface Flange (TIF)
• Inner Frame is a welded aluminum structure that interfaces the instrument to the primary and secondary mirrors. Allowances must be made for CTE mismatch.
• Location of interface pads shown in interface drawing are nominal but can be relocated or modified to accommodate the chosen telescope design
• Interface to secondary mirror is at the top of support legs as shown. 3 or 4 legs can be accommodated.
• Volume restrictions defined in included drawing
• Available volume for Primary mirror (including BUS if applicable) restricted to be able to fit inside sunshade structure, maximum diameter 2.6m
Basic Environmental conditions

Operational conditions:
- Ambient temperature: \(-25 \, ^\circ\text{C} < T < 0 \, ^\circ\text{C}\).
- 3 mbar atmospheric pressure
- No Wind
- No direct sun
- 10°C Linear gradient between primary / secondary
- 8°C (CFRP) or 1°C (metal) linear gradients across primary

Launch
- 4g acceleration, any direction

Termination (Parachute deployment)
- 8g in Z, or Y, direction, damage allowed but no detachment

Storage
- Ambient temperature -50°C to +50°C
- Some condensation on surface possible
- Exposure to sunlight likely, direction away from boresight
Surface quality and error budget

- Surface accuracy requirement ≤10 μm rms, goal ≤6 μm rms. An error budget shall be provided to demonstrate the feasibility of the design to meet the accuracy requirements under the operational conditions listed (example shown in specification document and to the right here). Uncorrelated sources of error to be summed quadratically (RSS).

- Each item included in the error budget to be justified by analysis as appropriate.

<table>
<thead>
<tr>
<th>Error Source</th>
<th>RMS Error (μm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panels</td>
<td></td>
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<tr>
<td>Manufacturing (including measurement)</td>
<td>3.0</td>
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<tr>
<td>Aging (including moisture absorption/desorption)</td>
<td>1.0</td>
</tr>
<tr>
<td>Gravity</td>
<td>2.0</td>
</tr>
<tr>
<td>Absolute Temperature</td>
<td>1.0</td>
</tr>
<tr>
<td>Temperature Gradient</td>
<td>2.0</td>
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<tr>
<td>Total Panel Error</td>
<td>4.4</td>
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<tr>
<td>Backing Structure</td>
<td></td>
</tr>
<tr>
<td>Gravity</td>
<td>2.0</td>
</tr>
<tr>
<td>Absolute Temperature</td>
<td>2.0</td>
</tr>
<tr>
<td>Temperature Gradient</td>
<td>1.0</td>
</tr>
<tr>
<td>Aging (e.g. moisture)</td>
<td>2.0</td>
</tr>
<tr>
<td>Total Backing Structure Error</td>
<td>3.6</td>
</tr>
<tr>
<td>Panel Mounting</td>
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</tr>
<tr>
<td>Absolute Temperature</td>
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<tr>
<td>Panel Location In-plane</td>
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<tr>
<td>Panel Adjustment perpendicular to plane</td>
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<tr>
<td>Gravity</td>
<td>1.0</td>
</tr>
<tr>
<td>Total Panel Mounting Error</td>
<td>2.6</td>
</tr>
<tr>
<td>Total RSS of all errors</td>
<td>6.2</td>
</tr>
</tbody>
</table>
Design-specific requirements

**Segmented design**
- Panel gaps not to exceed 0.3%
- Fine adjustment from rear side of reflector, special tool to be provided if needed
- Adjustability to 5um or better (to be included in error budget)
- Honeycomb structures to be vented to accommodate change in pressure

**Monolithic design**
- Kinematic interface to accommodate non-planarity of TIF mating surface
Surface Verification

• Surface measurement and segment alignment (if applicable) to be performed at contractor facility

• Surface measurement is expected to be performed at ambient temperatures only. Behavior at low temperature and under thermal gradients to be verified by finite element analysis

• Final Surface Measurement method to be approved by U Arizona, and should be shown to have a measurement error of 3um rms or better
Statement of Work

Victor Gasho
SOW: General Considerations

- The work described herein consists of the furnishing of labor, materials, services, drawings, data, detailed specifications, test documents, hardware, tooling, and other items required for the design, engineering, fabrication, shipping and acceptance testing of a TIM telescope as further herein specified.

- The Vendor shall perform all engineering and management tasks associated with the present statement of work in accordance with the applicable documents, the state of the art and good engineering practice.

- The various tasks have to be performed according to the schedule given in Section 5.6, “Technical Milestones” hereunder.

- In particular, the Vendor shall perform:
  - The technical tasks defined under Section 6, “Detailed Definition of The Technical Tasks”.
  - The project management tasks defined under Section 7, “Project Management Related Documents”.

6/30/2020 TIM RFP Pre-Bid Meeting
SOW: Tasks Overview

• **Design Phase** - In this phase, the Vendor shall elaborate the proposal design up to all details and shall demonstrate at design and analysis level the compliance of the design with the Technical Specification. This phase will terminate with the Design Review in which the overall design will be reviewed by the TIM UArizona Project.

• **Manufacturing Phase** - During this phase, the Vendor shall manufacture the telescope. In this phase the Vendor will perform all subsystem and system pre-assembly and verification activities as he deems necessary to assure full compliance with the Technical Specification at the time of delivery of the telescope to UArizona.

• **Factory Assembly Phase** - During this phase, the various parts of the telescope are fully assembled, aligned and tested by the Vendor in the factory. This phase ends with an Assembly & Inspection Point, which allows the start of the Acceptance Testing Phase.

• **Acceptance Testing Phase** - During this phase, all the testing activities related to the Acceptance Testing of the telescope are performed at the Vendor’s facility. The testing will be performed in accordance with the Verification requirements of the Technical Specification. This phase terminates with the Assembly, Inspection, and Acceptance of the telescope.

• **Transport Phase** - During this phase, the Vendor shall pack and transport to UArizona
SOW: Technical Milestones

• T0 - Start of Contract
• KO - Kick-Off Meeting
• IPDR - Informal Preliminary Design Review
• PFDR - Pre-Fabrication Design Review
• IPT - Inspection Point for Tooling (Applicable to CFRP and/or electrodeposit panel mandrels.)
• IFA - Inspection of First Article (Applicable only to panel designs.)
• F1 - Fabrication Inspection 1 – Fabrication 50% Complete
• F2 - Fabrication Inspection 2 – Fabrication at 80% complete
• AIAT - Assembly, Inspection, and Acceptance of the Telescope at Vendor’s Facility
• DTU - Delivery to UArizona
SOW: Baseline Planning and Schedule Requirements

• The schedule of the top-level milestones for the execution of the Contract is the following:
  • Telescope Delivered to UArizona twelve (12) months after Start of Contract (T0).
  • The detail and intermediate milestones agreed with the Vendor will be incorporated in this Statement of Work at the time of signature of the Contract.
  • All deliverable Work set forth herein shall be delivered in strict accordance with the delivery/completion schedule of this contract. Unless otherwise provided delivery dates shall mean receipt at UArizona. If deadlines are missed the Project Manager shall provide notice within 10 days to UArizona that the deadline will be missed and report any corrective actions to be taken to recoup schedule.
SOW: Design Phase Definition

**Design Phase** - The purpose of this phase is to provide the detail design of the Telescope, starting from the Proposal Design selected for the execution of the Contract. This phase will terminate with the Pre-Fabrication Design Review. During this phase the vendor shall:

- Submit for approval to UArizona TIM Project within two (2) weeks from the Kick-off meeting an updated version of the compliance matrix provided in the bid package.
- As a minimum the Vendor shall perform the engineering analyses required under, “Analysis Tasks” and produce the corresponding reports.
- Compute the error budget related to the system performance of the telescope (Section 7 of AD01) and prepare the related error budget report.
- Prepare the engineering design reports related to the performance of the telescope not covered by the Error Budgets.
- Finalize the detail design of the telescope, compliant with the requirements of AD01 and produce the manufacturing plan.
- Perform, as applicable any engineering qualifications that are required by the Vendor’s design.
- Deliver the Pre-Fabrication Design Review Data Package four (4) weeks in advance of the Pre-Fabrication Design Review.
- Provide the documents listed under, “Analysis Tasks” below.

- The Design Phase ends when all issues identified during the PFDR have been resolved and/or implemented by the Vendor.
SOW: Analysis Task Definition

**Analysis Tasks** - The list below identifies specific analyses which have to be performed as a minimum. Specific requirements governing these analyses are given in ADO1.

- **Finite Element Analysis**
  - Gravity Loading Analysis
  - Stress analysis and fatigue verification
  - Dynamic analyses (eigenfrequency and launch)
  - Survival conditions load cases (launch and temperature)
  - Thermal modeling and thermal analyses

- **Error Budget Computations:**
  - Primary surface error budget

- **Primary blockage and gaps analysis**

- **Mass Budget**

- **Engineering Analysis and reports not specifically mentioned here, if necessary.**
SOW: Qualification Task Definition

• **Qualification Tasks**

  • The Vendor shall in this phase validate any technological choice likely to affect the performance of the Telescope, also considering the ability of the chosen telescope equipment to operate at the environmental conditions expected at altitude. At the PFDR the Vendor shall deliver a material qualification report, if necessary.

  • Vendor shall supply test coupons for surface emissivity verification to UArizona. UArizona shall perform the emissivity testing at UArizona’s own expense (see Section 8 of AD01). UArizona may require additional coupons for testing if the coating is not satisfactory. UArizona and the Vendor shall work collaboratively to formulate a suitable coating.
SOW: Packing and Transport Task Definition

• **Packing and Transport to UArizona in Tucson, Arizona**

• The Vendor shall pack, transport and deliver the Telescope and related equipment from the Vendor premises to UArizona in Tucson, Arizona.

• **F.O.B. is:** The University of Arizona, Steward Observatory, 933 N. Cherry Ave, Tucson, Arizona, 84721.

• The Vendor is responsible for all logistics, including the proper packing of the equipment in reusable crates. Packing shall assume that the equipment will ultimately be shipped by sea to an international destination. General environmental conditions for transport and specific environmental conditions are given in AD01. Particular care shall be applied for protection against corrosion during sea transport. Equipment shall be packed assuming water spray will be encountered during transport.

• For specific equipment, if needed, the Vendor shall include in the packing diagnostic tools (shock measurement devices, temperature and humidity monitors, etc.) able to identify severity of transport conditions, integrity and performance of the delivered Telescope.
SOW: Project Management Related Documents

• At the time of the Pre-Fabrication Design Review, the Vendor shall deliver the following project management related documents:
  • An updated version of the Manufacturing Plan submitted during the Proposal phase.
  • An updated Verification Plan listing all the verification activities to be performed during the manufacturing and the acceptance testing, in order to verify satisfaction of the requirements of the Technical Specification AD01.
  • Prepare a Compliance Matrix.
SOW: Fabrication Phase

- Fabrication of the Telescope. During this phase the Vendor shall manufacture the Telescope. This includes manufacturing or production of all hardware.

- The Vendor shall procure all parts and materials of the telescope in accordance with the manufacturing plan produced during the Design Phase.

- The Vendor shall perform in this phase all subsystem and system pre-assembly and verification activities as he deems necessary to ensure full compliance with the Technical Specification at the time of acceptance of the Telescope by UArizona.

- Prior to shipment the Vendor shall ensure that:
  - all parts and assemblies are free of manufacturing defects,
  - all parts and assemblies conform to the valid manufacturing file (lower level specifications, drawings, part lists),
  - all Vendor internal inspection and testing records are available and conform to the Vendor’s Verification Plan and Quality Assurance requirements.
  - all special tooling is provided.
  - all Instruction and an Alignment Manual is provided.

- Prior to integration individual subsystems shall have been accepted by the Vendor according to the inspections and tests foreseen in the Manufacturing Plan.
SOW: Acceptance/Verification Test/Tooling & Test Equipment

• Acceptance - Acceptance Testing of the Telescope and the associated deliverables for the Telescope shall take place at the Vendor’s facilities after successful completion of the corresponding Assembly Inspection.
  • The purpose of the Acceptance is to check that the Telescope:
    • Meets all functional and performance requirements of ADO1.
    • Is free from any material and workmanship defects.
    • Is built in accordance with the prescribed Manufacturing Plan.
    • The complete documentation is available, correct and in compliance with the Contract requirements.

• Verification Test - The vendor shall perform all Verification Tests as per ADO1.

• Tooling and Test Equipment - The Vendor shall design, procure and transport all tooling necessary for the manufacturing, testing, alignment, and transport of the Telescope.
SOW: Reviews

• The Vendor shall plan and prepare project reviews in consultation with UArizona, particularly with regard to the agenda, participants and contents of the reviews. The following major reviews shall be held:

• **The Prefabrication Design Review (PFDR)** is a review to verify the complete design of the telescope as prepared during the Design Phase.
  - The review will cover all aspects of the analyses and design of the telescope. A Design Data Package shall be produced. The Data Package shall be delivered to the UArizona not later than two (2) weeks in advance of the scheduled PFDR. UArizona will need one (1) week to study the Data Package, and to make written comments. The PFDR is closed when all issues and comments raised by UArizona have been taken into account in the design of the Telescope.
  - The PFDR will take place at Vendor premises.

• **The Telescope Acceptance Review** takes place at the Vendor’s facilities after completion of Acceptance tests. The Vendor shall complete the Acceptance Data Package to include the results of all tests performed during the acceptance phase as well as those related to the sub-assembly testing. After closure of all the actions identified, written Acceptance will be granted.

• **As a general rule:**
  - Completion of reviews is defined as resolution of all action items, as per the minutes of the review meeting.
  - The Vendor shall prepare the various data packages and submit them for comments to UArizona. UArizona will need one (1) week to study the data packages and prepare comments and requests for clarification that will be submitted to the Vendor one (1) week prior to the review meeting.
  - UArizona will need one (1) week to review and transmit the comments to the verification/test procedures after their reception.
  - When test reports are submitted, UArizona requires a two (2)-week period to approve the report.
SOW: Inspections

• Inspection Point for Tooling (IPT) will be held for CFRP and electroformed-nickel designs. An inspection of the mold shall be performed to ensure the required surface accuracy is met according to the Vendor’s specifications before replicating the final reflector surface.

• Inspection of First Article (IFA) for all panel designs shall be performed to ensure individual panels meet the manufacturers’ specifications.

• Assembly, Inspection and Acceptance of Telescope (AIAT), the aim of this inspection is to verify that all integration activities have been completed and that the telescope is ready to undergo acceptance testing. It also checks that all testing materials needed in the acceptance testing are available, including the approved Inspection and Test Procedures. A Final Inspection and Test Report shall be issued by the Vendor.
SOW: Meetings

- The Vendor shall plan and prepare project meetings in consultation with UArizona, particularly with regard to the agenda, participants and contents of the meeting.

- Unless otherwise requested by UArizona, the Vendor shall record all the action items for all formal meetings. The action items shall be agreed to by both parties. Agreement of such action items indicates solely that the wording is correct and properly reflects the action to be taken. Agreement to the action items shall not be construed as a formal, contractual agreement. Any matter having contractual implications shall be handled in accordance with the regulations of the Contract.

- Any decisions affecting performance, cost, or schedule require formal contractual coverage in order to become binding.

- The following major project meetings are foreseen:
  - **Kick-off Meeting** - At the beginning of the Contract, a Kick-off meeting will be held at Vendor’s premises or via videoconference. The aim is to clarify with the Vendor all technical and managerial aspects required to proceed during the Design Phase, and in general to set specific procedures and rules between the Vendor and UArizona to be followed during the execution of the Contract (example communication methods, documentation, etc.).
  - **Progress Meetings** - During the Design Phase progress, meetings shall be held every two weeks via videoconference, telephonically or at the Vendor’s facility as mutually agreed at the Kick-Off meeting. The purpose of a progress meeting is to review the progress of work and to highlight and discuss problems or issues needing special consideration and to determine, as appropriate, the corrective measures to be taken.
    - The progress meeting will cover the entire scope of the Contract, including programmatic, contractual, and technical aspects.
    - During the manufacturing phase, the progress meetings will be held every four (4) weeks at a minimum, but more frequently, if mutually agreed.
  - **Special Meetings** - Special meetings may be requested by UArizona to discuss urgent technical issues, or to review important programmatic aspects. UArizona may request special meetings, one (1) week in advance.
# SOW: Document Requirements List

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<th>DRD No</th>
<th>Title</th>
<th>Category</th>
<th>Delivery Date/Wks</th>
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<td>Project Management, Project Plan and Schedule</td>
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<td>T0 + 2w</td>
<td>Update from submittal of bid package Schedule to be updated Monthly.</td>
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<td>Product Assurance Plan</td>
<td>A</td>
<td>T0 + 2w</td>
<td>Update of the bid package</td>
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<td>3</td>
<td>Progress Reports</td>
<td>R</td>
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<td>To be delivered monthly</td>
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<td>4</td>
<td>Change/Waiver Request</td>
<td>A</td>
<td>As needed</td>
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<td>5</td>
<td>Non-Conformance Report</td>
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<td>6</td>
<td>Design Report</td>
<td>R/A</td>
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<td>Analysis Report</td>
<td>R/A</td>
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<td>Mass and Balance Budget</td>
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<td>Qualification Summary Report</td>
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<td>Finite Element Model</td>
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<td>Fabrication Plan</td>
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<td>14</td>
<td>Assembly – Disassembly Alignment Procedure</td>
<td>R</td>
<td>PFDR</td>
<td>Final version at AIAT</td>
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<td>Update from submittal of bid package To be updated at AIAT-4w</td>
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<td>16</td>
<td>Verification, Inspection and Test Procedure</td>
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<td>AIAT – 4w</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Inspection and Test Report</td>
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<td>AIAT +2w</td>
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<td>18</td>
<td>Compliance Matrix</td>
<td>A</td>
<td>FCDR</td>
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</tbody>
</table>

*Notes: A: Approval by UArizona, R: Review by UArizona*
Proposal Submittal

Karen Kenagy
Proposal Submittal
Section 3.8

• Proposal Due Date and Time
  Proposals must be uploaded no later than July 24, 2020 @ 3:00 PM/MST

• Proposal delivery should be sent via secure document upload to: https://pacs.arizona.edu/purchasing/upload.
  • Note the red box on the left hand of the screen titled Secure Document Upload
  • Click on the red box
  • Drag your RFP response to the section with cloud/documents icon
  • Under file description type as directed above (example: RFP S112004 Vendor A Response)
  • Enter your email as directed.

• Proposal Title Format RFP S112004 (Vendor Name) Response
  • Separate non-confidential information and propriety information into two separate PDF’s
  • Confidential information shall be titled as above and include “Proprietary”
CERTIFICATIONS AND FORMS
Section 6.0

- Vendor and all proposed Subcontractors must complete forms and submit with your proposal:
  - Certification of Proposal
  - Certification Regarding Debarment, Suspension, Proposed Debarment and other Responsibility Matters (Mar 1996 as amended) (Applicable to Federal Grants and Contracts >$30k)
  - Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions (Apr 1991 as amended) (Applicable to Federal Grants and Contracts >$150k)
  - Clean Air and Water Certification (APR 1984)
Proposal Submission
Section 5.18

• The following elements must be addressed in your proposal submission:
  • Selection of Option #1 or Option #2. Provide details on selection.
  • Fixed price cost for Option #1 or Option #2
  • Fixed price costs for packaging and shipping
  • Technical plan for design and fabrication of the telescope
  • Technical plan for design and fabrication of the Optics
  • Delivery schedule and your ability to meet such schedule
  • Provide three (3) References with contact names and details
  • Provide details on your company’s qualifications and reliability for this scope of work.
  • Provide details on your Management Plan and Qualified Personnel who will work on this project.
  • Provide details for Packaging and Transportation Plan
  • Include a list of all Subcontractors who will work on this project. List a portion of tasks that would be performed by Subcontractors.
  • Complete and submit all Certificates and Forms (including Subcontractors)
Method of Award
Section 3.9.8

• Method of Award. Each response to this RFP will be reviewed for its overall competence, compliance, format, and organization. Proposals which the University deems overly complex, disorganized, or difficult to evaluate may be rejected in accordance with Section 3.7.10 of this RFP. The award shall be made to the responsive and responsible vendor whose proposal is determined to be the most advantageous to the University of Arizona, taking into consideration the following evaluation criteria listed in the relative descending order of importance. Pricing must be a criterion. However, the University is under no obligation whatsoever to select as most responsive the proposal that demonstrates the lowest pricing.

• Evaluation Criteria
  • Technical plan for design and fabrication of the telescope
  • Cost
  • Vendor Experience
  • Overall Responsiveness and Completeness of Bid
  • Management Plan and Ability to Meet Schedule
  • Reliability/References
  • Transportation Plan
Questions

• Does the TIM Technical Spec contain the entire drawing package? Or will additional details be provided? We are assuming it’s complete and it’s up to the selected vendor to do all of the detailed design work.

• What is the desired material for the secondary mirror and what is the accuracy requirement?

• Has a vendor already been selected for the tubular structure for the balloon, sun shade, etc? Is it possible to bid on that structure also?

• Others?