

Public Tender Notice No. PR/PT/AS/TMT/SOFTWARE/CON/547

Dated 1st January 2013

EVENT SERVICE PRELIMINARY DESIGN PROTOTYPING
PHASE (EVPDPT)
FOR THE
THIRTY METER TELESCOPE (TMT) PROJECT



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1. BRIEF STATEMENT OF THE WORK

Thirty Meter Telescope (TMT) is an advanced, wide field (20 arcmin), altitude-azimuth telescope with a primary mirror consisting of 492, 1.44-meter segments. At first light, multiple instruments will be available for observations, such as, IRIS, a near-infrared instrument with parallel imaging and integral-field-spectroscopy support; and IRMS, an imaging, multi-slit near-infrared instrument. A seeing-limited, wide-field, multi-object optical imaging spectrograph (MOBIE) will also be available at first light. The telescope and facilities are currently in the advanced design phase. The TMT observatory software consists of a set of software components that control the operations of the telescope, the mirrors, the telescope dome or enclosure, and the various instruments. Event Service is a software-only product that provides a high-performance publish and subscribe messaging infrastructure between the different software components. This request for proposals is for Event Service Preliminary Design Prototyping Phase, with the following job description: carry out performance measurements of a set of open source and off-the-shelf products, come up with a recommended implementation product on which the TMT observatory software event service must be based on, and provide initial implementation.

2. BACKGROUND INFORMATION

The optical and infra-red (IR) astronomical community in India, under the umbrella name India-TMT coordination center (ITCC), had made a strong case to the Department of Science and Technology, Government of India for participation in upcoming international, 30-m class telescope project. The proposal effort is led by the Indian Institute of Astrophysics (IIA), Bangalore, the Inter-University Center for Astronomy and Astrophysics (IUCAA), Pune and the Aryabhata Research Institute for Observational Sciences, (ARIES), Nainital. The Department of Science and Technology (DST), Govt. of India, made a decision, on July 24th, 2010, to join the TMT project as an observer with a strong intention of becoming a full partner in due course of time. The TMT project is led by the California Institute of Technology, University of California and Association of Canadian Universities for Research in Astronomy (ACURA) to build a 30-m diameter optical-IR telescope at Mauna Kea in Hawaii, USA. Other partners in the consortium are Japan and China. The TMT construction work is scheduled to start by the middle of 2012 on the summit of Mauna Kea at an altitude of 4200m from sea level.

As part of India's contribution to the TMT, ITCC intends to develop, within the country, various sub-systems needed for the telescope and deliver to the TMT project. Towards this, ITCC in consultation with the TMT project, has identified various sub-systems. As a first step towards demonstrating the technical capabilities available in India, ITCC proposes to develop the technology, by manufacturing prototypes of these sub-systems. In pursuance of the above, **The Purchase Officer, Indian Institute of Astrophysics**, Bangalore on behalf of TMT India, invites proposals from potential industries to provide Event Service Preliminary Design Prototyping Phase (EVPDPt) for TMT Observatory.

3. SUBMISSION OF THE PROPOSAL

Proposals are invited from reputed industries / vendors with proven technical expertise, track record and experience in executing precision fabrication and experience in developing sub-systems for optical-infrared telescopes and/or executing large astronomical projects. Industries / Vendors willing to submit

proposals are invited to submit a letter of Expression of Interest (EOI) followed with a two bid system as explained below:

Submission of proposal has to be done in **Two Bid System** :

The vendors who qualify through Part 1 process will be provided details of the observatory software, the communications between software components, event streams, alarm events, etc, and the block diagrams of the software layers required in order to put a detailed proposal as per the procedure given in Part 2.

Stage 1: Submission of a letter of Expression of Interest (EOI).

Stage 2: Submission of offer in two parts:

(a) Technical Bid

(b) Price Bid

Guidelines for submission, including the details of documents required, are provided in Section B.

4. PROCESS SCHEDULE

Date of Announcement	02 January 2013
Deadline for receiving Expressions of Interest	21 January 2013 1500 hrs
Opening of EOI	22 January 2013 1530 hrs
Qualification of contractors	29 January 2013
Deadline for receiving Tenders	28 February 2013 1500 hrs
Opening of Technical Bids	01 March 2013 1530 hrs
Technical Qualification meeting at IUCAA/IIA	15 March 2013
Opening of Price Bids	19 March 2013
Award of Contract	29 March 2013
Delivery of final product at IIA, Bangalore	30 September 2013

The Contractor shall participate in the following meetings. The meetings may be via phone or video. ITCC reserves the right to meet at the Contractor's facility.

- 4.1 The pre-EOI meeting will be held with the representatives of vendors willing to participate in the design of EVPDPt
- 4.2 A meeting will be called with the qualified contractors to sign on Non-Disclosure Agreement (NDA). In the same meeting, preliminary design and other technical documents will be provided.
- 4.3 A pre-bid meeting with qualified contractors will be held as per the date mentioned in the process schedule. In this meeting, technical or any other queries related to the contract will be addressed.
- 4.4 A kick off meeting will be held after the award of contract. The meeting shall be used to answer any questions from the Contractor and to also review the EVPDPt implementation and test procedures. Vendor should include any concerns with or proposed changes in the SOW or project deliverables.
- 4.5 Any other informal meetings as required or requested by ITCC or Contractor to demonstrate the EVPDPt.
- 4.6 At any time ITCC may request in writing, and the Contractor shall comply, for the delivery of any completed and tested EVPDPt module.

INFRASTRUCTURE PREPARATION:

Contractor/Vendor shall ensure the availability of required infrastructure for the development of the EVPDPt, implementation, trade study and testing as detailed in EVPDPt Evaluation Test, and Quality Assurance Plans. Contractor activities during the planning phase include, but are not limited to, the following:

- 1 Preparing the infrastructure
- 2 Installing and verifying all required software/hardware platform
- 3 Recruiting and training personnel
- 4 Implementing all provisions of the EVPDPt, Test, and Quality Assurance Plans

5. CONTACTS:

Administrative Clarifications:

1. **Sri .Y. K. Raja Iyengar, (ykri@iiap.res.in)**
Purchase Officer, IIA

Technical Clarifications:

1. Prof. Ranjan Gupta
IUCAA, Pune (tmtsoft@iucaa.ernet.in)
2. Prof. Swara Ravindranath
IUCAA Pune (tmtsoft@iucaa.ernet.in)
3. Prof. Annapurni Subramaniam,
IIA, Bangalore (purni@iiap.res.in)

I. SECTION - A

STATEMENT OF WORK

6. TECHNICAL BACKGROUND

6.1 INTRODUCTION

Thirty Meter Telescope (TMT) is an advanced, wide field (20 arcmin), altitude-azimuth telescope with a primary mirror consisting of 492, 1.44 meter segments. At first light, a facility multi-conjugate adaptive optics (MCAO) system will be available using a laser guide star (LGS) system. The facility's twin Nasmyth platforms will concurrently support multiple instruments, all of which are available during the night for observations. Two science instruments will be delivered for use with the MCAO-LGS system: IRIS, a near-infrared instrument with parallel imaging and integral-field-spectroscopy support; and IRMS, an imaging, multi-slit near-infrared instrument. A seeing-limited, wide-field, multi-object optical imaging spectrograph (MOBIE) will also be available at first light. The telescope and facilities are currently in the advanced design phase. India is a partner in the TMT project. The telescope is planned for installation on the summit of Mauna Kea on the island of Hawaii in the United States.

The Event Service is a software-only product that provides a high-performance publish-subscribe messaging infrastructure to support functionality required by the TMT Common Software. The TMT Observatory Event Service is a critical software service for the TMT Observatory Common Software (CSW). Deliverables of this work will contribute to the OSW Preliminary Design.

The EV-PDPT work takes a multi-phase approach to research, design, and develop a prototype Event Service. EV-PDPT work will be divided into phases: Finalizing Implementation Product List and Requirements; Product Evaluation, Testing and Trade Study; and Event Service Prototype Development. Each phase will be concluded with appropriately sized reports and/or reviews. The important deliverables include a trade study of products on which to base the Event Service including performance measurements and a recommended implementation product.

The following are goals of the Event Service Preliminary Design Prototyping Phase:

- To provide important design information for the Preliminary Design of TMT software.
- To become involved with an India software contractor.
- To allow the contractor to demonstrate a wide range of skills.
- To learn more about how to successfully work on software in a distributed collaboration.
- To support and participate in any major TMT project reviews during the course of the work.

Each phase of the work will be performed in close collaboration with the TMT Observatory Software Group. Regular email, chat, etc. should be assumed and regular video meetings or telecons will be organized. Monthly written progress reports will be submitted. All software development will be done using an agile software approach with TMT acting as the product owner. TMT will specify software tools for tracking development progress and a software configuration management tool. The overall duration of the Event Service Preliminary Design Prototyping Phase is expected to be no more than 6-7 months.

6.2 TECHNICAL BACKGROUND ON SOFTWARE AND EVENT BASED SERVICES

6.2.1 TMT Common Software

The software system of TMT consists of a set of software components interacting with each other through a software communications backbone and software infrastructure. The individual software components have a wide range of purposes within the software system. Some are stand-alone software-only applications, while others are software components within a more complex software/hardware subsystems. Figure 1 shows a block diagram of the observatory software which includes the TMT subsystems and the TMT communications backbone.

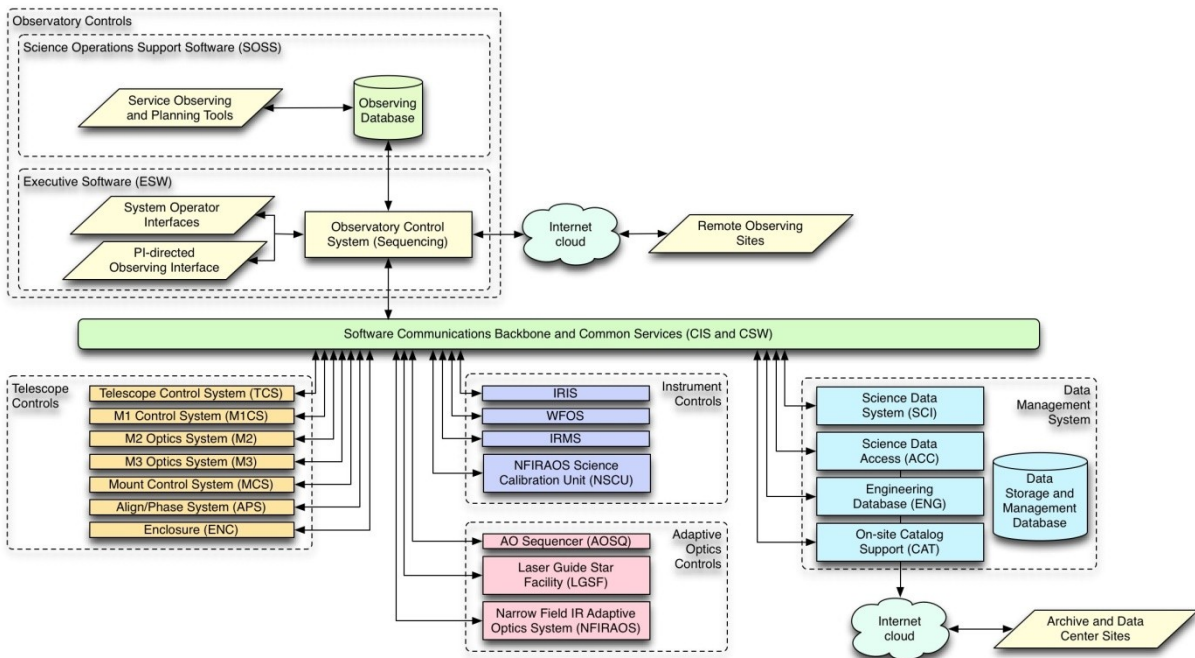


Figure 1: Block diagram of Observatory Software

As seen from the figure, there are various TMT subsystems with software components to control the operations, and the integration of all this software requires a software infrastructure that is outside the scope of these individual components. The communications software is a number of channels which correspond to a different command, or configuration, or data transfer services required by the integration task. The infrastructure services will be built on top of a generic protocol stack and layered on top of the standards-based, physical IT infrastructure. The TMT software layers are shown in Figure 2.

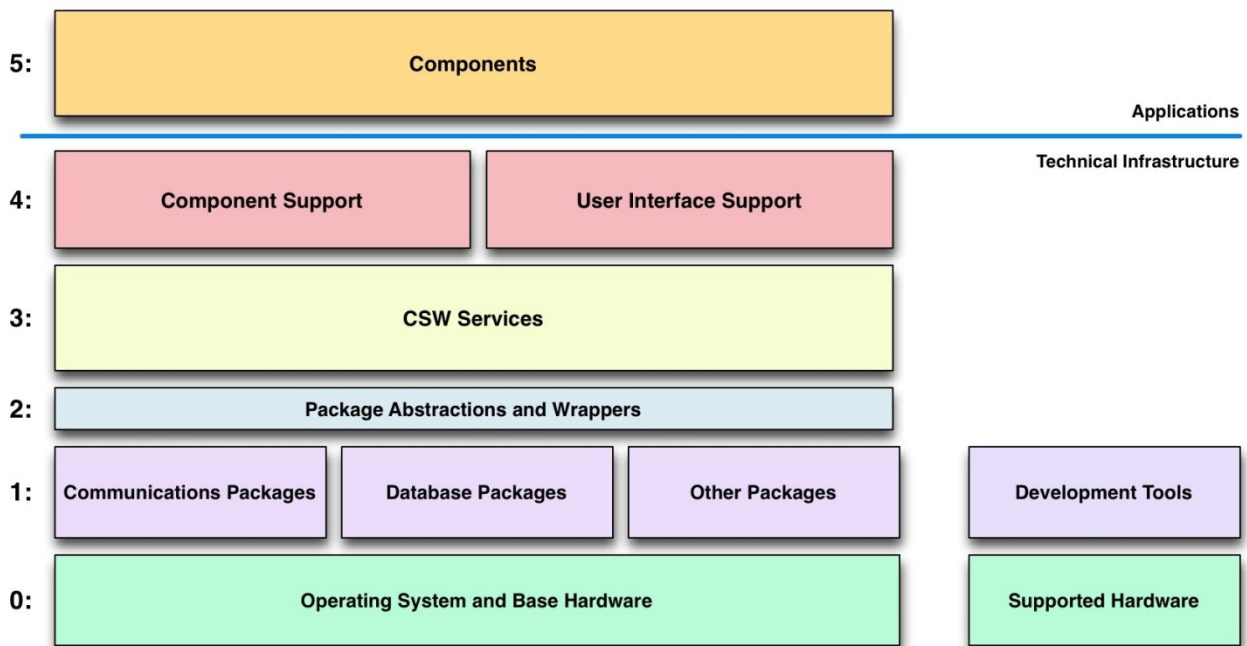


Figure 2: TMT Software layers

Layer 0 is the operating system and base hardware (such as disk drives, network interfaces, etc) and these will be provided by hardware and operating system vendors. Layers 1-3 are the layers of common software that provide the infrastructure integration services. Layer 4 of the common software includes libraries to allow the applications to integrate with the integration services infrastructure. Layer 5 is the astronomy applications or components themselves, which are built to use the Component Support and User interface Support.

This RFP is concerned with the development of a part of the Common Software that occupies layers 1 through 4.

6.2.2 Event-Based Services

The event-based services are at the most important part of the Common Software. These services allow one software component to send a piece of information (i.e., an event) to one or many other components. This operates in a high-performance publisher-subscriber mode. In this mode, the components can publish their information (such as, the state of a device or position of the telescope, or instrument setting), and other software components can subscribe to the information so that they are notified when a new information is published. The advantage of this event-based messaging system is that it allows efficient communication between publishers and subscribers that are decoupled. The relation between the publisher and subscriber can be one-to-one, one-to-many, many-to-one, or many-to-many. Subscribing can be topic-based or content-based. For example, when the telescope elevation changes, the telescope control system (TCS) might publish a **tmt.tcs.elevation** information which is a topic-based event. Every instrument that subscribes to that topic-based event, will be notified whenever there is a change in the telescope elevation. On the other hand, there can be content-based events. For example, if the detector on the MOBIE instrument on TMT has a change in temperature above a value 20, an alarm GUI might alert the observer with the event **tmt.mobie.detector.temperature > 20**. Both subscriptions may be relevant to some of the subsystems.

6.2.3 Events, Event services, and Event streams

In an event-driven system, an event marks the occurrence of some activity that is of interest to the other subsystems. An event can be a change of state of something or it can indicate a condition that has occurred. For example, the detector closes its shutter after a science observation has been completed. The "close instrument shutter" event is asynchronously sent by the science detector component throughout the system to all interested subscribers of the close shutter event. A subscriber component that would be interested in such an event could be a system that samples and records all the system values at the conclusion of an observation. The Event Service will provide an Application Programmer Interface (API) that allow events to be created and published.

The TCS (and other systems) will require to compute certain demand values for certain other systems. For example, the TCS accepts a target position in user coordinates, and in order to actually execute the task of pointing to the target, the TCS uses its pointing kernel to compute the demands for the mount at 20 Hz, and the mount uses this computed value to track the position. The TCS can directly send commands to the Mount Control System (MCS), but could alternatively publish the mount demands as event streams. The advantage of working with event streams is that no direct connection is required between the TCS and MCS and they can loosely coupled. Multiple systems can also subscribe to the event stream in this case. The event stream does not require any new additional features, because it only requires that the publisher will publish the values at a higher rate.

6.2.4 Telemetry Events and Telemetry Service

The software components have internal status values that are of interest to other components of the systems. In the TMT, the internal status values are published when a status value changes. A **telemetry event** is used to publish a status value. An example telemetry value is shown in Figure 3, which publishes the information that the blue channel filter on the MOBIE instrument of the TMT has a value GG495. A telemetry event can also be one event in a sequence of updates that serves to monitor a system. Monitoring is the act of subscribing to a particular telemetry item and receiving and processing telemetry events as updates. For example, the change in detector temperature is a telemetry event that can be subscribed for.

If the temperature changes, the telemetry service will post a new value and all subscribers monitoring the event receive the new value. For example, a user interface program that displays the state of the detector would monitor the temperature and update the value on the screen when it receives the published update.

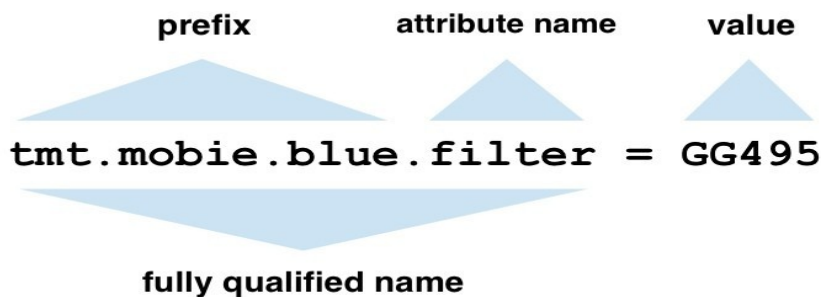


Figure 3: An attribute with a value is included in a telemetry event

The telemetry service will provide an API that allows telemetry events to be created and published. The API will also provide a way for the clients to subscribe and unsubscribe to specific telemetry

events. High Performance is essential for the Telemetry Service implementation. TMT requirements specify 20,000 events/second, but realistically a rate of 30,000-50,000 events/second is a more reasonable requirement that is demanded by the Common Software. *It is the goal of this SOW to measure and to determine how to optimize the event rate of candidate Event Service products.*

6.2.5 Alarm Events and Alarm Service

An alarm event is published to mark the abnormal condition that requires attention. Alarms are not errors, but they are conditions that occur asynchronously while components are executing. An alarm event could be published to indicate an out-of-range value, for example, if the detector temperature is too high. An alarm could also notify that a power supply has failed within a hardware device. The alarm service will provide an API that allows creating and publishing alarm events with time stamp and alarming description. The API will also allow clients to subscribe and unsubscribe to alarm events.

Alarms are most useful to operators and observers who monitor the status of the telescope and instruments.

6.2.6 Health and Health Service

Each component must maintain a health, which is a representation of the components ability to operate properly. The health event contains a health state and an optional description. Health state values can have value GOOD, ILL, BAD, or UNKNOWN. A health event is an information that is published to provide notification of a change of health state.

A health state GOOD indicates that the component is working normally and has no problems. Health ILL means that a problem exists that is important and needs to be brought to the attention of the users. A component may continue to be able to work with ILL health, but there may be data degradation. BAD health indicates that a component is in a state that will not allow continued operations. The user or operator must solve the problem before operations can be continued. UNKNOWN health condition implies that the system is not responding, but it may or may not be operating.

The health service will also provide an API that allows health events to be created and published to interested subscribers, and the event will contain information about the health state and an optional description. The API will provide clients with a way to subscribe and unsubscribe to health events.

6.3 THE STATEMENT OF WORK: DIFFERENT PHASES, DELIVERABLES, AND REVIEWS

6.3.1 Finalizing Implementation Product Requirements and Test Systems

The Event Service will be built upon an open-source or commercial off-the-shelf product. The first phase is planned for 4 weeks and includes two tasks. A trade study will be completed in phase 2 to determine which of the implementation products will be used to implement the prototype event service. The first task of phase one is to define criteria and metrics that can be used to compare the candidate implementation products and the assignment of relative weights to the criteria. The Common Software DRD provides basic Event Service requirements that should be included for this purpose, but other matrices will be used to measure performance. The second task of phase 1 is a review of the list of candidates (Table 1), make recommended additions or removals based on

research and vendor experience, and finalize choices for stage 2 (at least 4-5). The first stage will conclude with a stage review of the list of implementation candidates to be tested in stage 2 and the criteria and metrics to be used when comparing products in the stage 3 trade study. Final choices for testing during stage 2 is a TMT decision.

Implementation Candidate Description	Candidates and URLs
XMMP, Extensible Messaging and Presence Protocol, publish-subscribe extension.	XMPP ((http://xmpp.org), jabberd (http://jabberd.org), Openfire (http://www.igniterealtime.org))
Apache Kafka distributed publish-subscribe messaging system	http://kafka.apache.org
EPICS V4 pvData/pvAccess	http://epics-pvdata.sourceforge.net
Advanced Message Queuing Protocol -based solutions (AMQP)	http://www.openamq.org , http://rabbitmq.com , http://wpid.apache.org , http://www.redhat.com/products/mrg
Data Distribution Service (DDS)	Open Management Group DDS RTI Connex DDS (http://www.rti.com) OpenSplice DDS (http://www.primstech.com)
Akka communication toolkit	http://akka.io provides a publish-subscribe capability

Table 1: Planned list of candidate implementations for testing in stage 2.

6.3.3 Product Evaluation, Testing, and Trade Study

The second stage consists of product evaluation, testing, and a trade study. At this stage the task is to perform extensive tests on the implementation products that are determined in the previous stage. The tests will involve identical performance measurements for each of the candidate implementations that measure message throughput and latencies as a function of the number of publishers and subscribers and event size on multiple distributed machines over unloaded 1 GbE (10GbE if available). This stage will include the coding of the performance measurements and automated scripts to measure the results. This stage is the longest stage of the project and the implementation tests will be done in two parts, each of 6 weeks duration. At the conclusion of the first 6 week part a review will be held to evaluate the results and make any adjustments that may be needed prior to the second part. At the end of 12 weeks of evaluation, there will be 3 weeks to prepare the trade study document and stage review materials. At the end of that 3 weeks, there will be a product evaluation review which will be a major milestone for the work. The trade study includes a product recommendation for the Event Service implementation based on the metrics of stage1 and the test results of stage2.

6.3.4 Event Service Design and Prototype Development

The third stage of the work is an actual Event Service design and implementation based on the implementation product chosen in the previous stage. After the various measurements done in the previous stages, the team is familiar with the implementation product, allowing a quick

implementation. The design will include a first draft of the Event Service Application Programmer Interface (API) based on a TBD subset of the common software (CSW) requirements (and Event Service description in this document) in the TMT chosen computing environment and programming language (Unix-like OS (Solaris, Linux, Mac OS X) Java or Scala). The product backlog for implementation will be developed in cooperation with the TMT Observatory Software Team.

Unit tests shall be included with the code that demonstrates the proper behavior of the Application Programmer Interface. The Prototype Event Service will be developed through an agile process using TMT chosen tools (e.g., github, git). This phase is estimated to take 5 weeks with one or two iterations. Following the development, the code and all other tools and scripts needed to build and test the product will be delivered to TMT prior to the conclusion of the project. Once the final document is prepared, there will be a final review which will examine how does the prototype evaluates against the metrics, are there other products that we should be investigating, and how to improve the development process.

6.4 SCHEDULE – EVDPDt

Meetings and deliverable shall be as per the following schedule. All dates are from Effective Date of Contract.

Item	Description	Completion Date from Effective Date
1	Kick-Off Meeting	Week 1
2	Requirements, Trade Study Metrics, and Candidates complete	Week 4
3	Product Evaluation and Testing part 1 complete	Week 10
4	Part 1 Evaluation Progress Review	Week 10
5	Product Evaluation and Testing part 2 complete	Week 16
6	Product Evaluation Review	Week 19
7	Event Service Implementation complete	Week 24
8	Final Product Delivery	Week 25
9	Project Conclusion	Week 25

Table 2: Planned schedule

6.5 DELIVERABLES

Stage 1:

Create a document including recommended list of candidate products for testing in stage 2 and trade study criteria and metrics for comparing candidate implementation products and weights.
Phase review presentations

Stage 2:

Performance testing code for top 3-4 implementation products.
Scripts for automated test execution.
Presentation of testing results after testing Part 1.
Prepare a trade study on the results of the 2 phases of tests.
Recommend product to be used for design and prototype implementation.
Phase Review and presentation.

Stage 3:

Code for Event Service prototype.
Code for Event Service unit and component tests
Scripts needed to start and stop the Event Service
Scripts or code demonstrating the Event Service Use
Final Application Programming Interface documentation
Final project review, project summary document and presentation summarizing work showing final service metrics

The code will be delivered through the TMT-software repository and other documents will be delivered as produced.

6.6 MEETINGS AND PROGRESS OF WORK:

Contractor shall hold bi-weekly (every two weeks) status meetings with ITCC where Contractor shall present and discuss technical, schedule, and program status of the EVPDPt development effort with ITCC. The bi-weekly status meetings can be a videoconference or similar mode of communication. The bi-weekly status meetings may be held at the Contractor's facility at TMT-India's sole discretion. Contractor shall provide a proposed agenda and any meeting material 2 days prior to the bi-weekly status meetings. ITCC can add items to the agenda at its sole discretion. Contractor shall submit a Meeting Summary Report, including a list of any open Action Items, to ITCC after each meeting. As mentioned earlier, all the monitoring meetings will be coordinated at IUCAA, Pune.

ITCC may elect to locate one or more representatives of ITCC at the Contractor's facility during any stage of the work. Contractor shall provide the TMT- India representative(s) with access to English-language translators, a work area, telephone, fax, and the internet while they are at the Contractor's facility.

6.7 REPORTS AND DATA ARCHIVING:

Contractor shall prepare written plans and reports as listed throughout this SOW. All of these prepared documents and any other relevant information/data shall be archived electronically and transmitted electronically to ITCC. All reports shall be in English.

II SECTION - B

METHODOLOGY OF SUBMISSION AND QUALIFICATION

7 EXPRESSION OF INTEREST (EOI)-PART 1

- 7.1 Sealed EOI shall be submitted in the format specified in the Appendix, enclosing documents listed below and any other documents that would help in the evaluation of the EOI.
- a) The profile of the company and description
 - b) The management structure and brief bio-data of top most technical personnel
 - c) Technical staff strength in all categories
 - d) Manufacturing plants and equipment of the company
 - e) Financial position of the contractor/company
 - f) Audited balance sheets for the last three years
 - g) Solvency certificates (not older than 12 months) issued by scheduled/nationalized bank with which the Contractor holds the current account
 - h) Copy of Registration, LST/CST/WCT No., PAN No., and TIN No. allotted by concerned authorities
 - i) Details of past experience of the company in executing precision work, including projects related to astronomical or other sciences if any (including photographs), client lists etc.
 - j) Appreciation/Reward letters from clients
 - k) Examples and performance on projects of similar size, schedule, budget, and technical complexity.
 - l) Examples of and experience with geographically separated development
 - m) Experience with software testing and automated tests
 - n) Astronomy or large science project experience
 - o) Describe the proposed plan for project staff – planned organizational structure – experience of team with TMT chosen technologies--include key staff, personnel backgrounds, skills, and percentage of time dedicated to the project
 - p) Plan for managing and execution of SOW
 - q) Describe the available computing equipment and environment planned for the project.
 - r) Describe the available audio and video conferencing facilities available for meetings within India and to the United States
 - s) Describe the ability of the company to take on larger TMT responsibilities, long-term commitment of company and people
 - t) Provide sample code and examples of documentation
 - u) Vendor should include any concerns with or proposed changes in the SOW or project deliverables
- 7.2 The EOI should be printed on company stationery and the authorized person who signs the offer is required to indicate his/her name and e-mail ID, mobile no. and also general e-mail ID for easy and fast communication.
- 7.3 The envelopes for EOI shall bear the following: “Event Service Preliminary Design Prototyping Phase (EVPDPt) for the Thirty Meter Telescope Project; Expression of Interest”, name and address of the contractor/vendor. It shall be addressed to:

THE PURCHASE OFFICER
INDIAN INSTITUTE OF ASTROPHYSICS, SARJAPUR ROAD,
KORAMANGALA II BLOCK, BANGALORE - 560034

8 **SUBMISSION OF TECHNICAL AND PRICE BIDS – PART 2: GENERAL TERMS**

- 8.1 The Contractor shall prepare one Original Bid only.
- 8.2 Original Bid shall be signed by the Contractor or a person or persons duly authorized by the Contractor. The latter's authorization shall be indicated by written Power of Attorney accompanying the Bid.
- 8.3 The bid must be submitted in an organized and structured manner. No brochures/leaflets etc. should be submitted in loose form. Please indicate page nos. on your quotations. For e.g., if the quotation is containing 25 pages, please indicate as 1/25, 2/25, 3/25,.... 25/25.
- 8.4 The contents must be clearly typed without any cancellation/corrections or overwriting. Each page of the bid and cutting/corrections (if any) shall be duly signed and stamped by the Contractor. Failure to comply with this requirement may result in the bid being rejected.
- 8.5 All pages of the Bid (except for un-amended printed literature) shall be initialed by the person or persons signing the Bid. The Contractor's name stated on the proposal shall be the exact legal name of the firm.
- 8.6 The Technical and Price Bids shall be sealed in separate envelopes. The envelopes shall bear the following: “Event Service Preliminary Design Prototyping Phase (EVPDPt) for the Thirty Meter Telescope Project”, and “Technical Bid” or “Price Bid” as appropriate.
- 8.7 Both the envelopes shall bear the name and address of the contractor/vendor.
- 8.8 The two sealed envelopes shall be enclosed in a third sealed envelope. The envelopes shall bear the following: “ Event Service Preliminary Design Prototyping Phase (EVPDPt) for the Thirty Meter Telescope Project: Technical and Commercial Bids”, bear the name and address of the contractor, and shall be addressed to:

THE PURCHASE OFFICER
INDIAN INSTITUTE OF ASTROPHYSICS, SARJAPUR ROAD,
KORAMANGALA II BLOCK, BANGALORE - 560034

If the envelopes are not sealed and marked as required, IIA will not take any responsibility for misplacement or loss Bid's or premature opening whatsoever the reason may be.

- 8.9 The Contractor has the option of sending the Bid by registered post or submitting the Bid in person so as to reach IIA by the date and time indicated. IIA will not be responsible for late, delayed Bids and loss of Bids in transit whatsoever the reason may be.
- 8.10 IIA, on behalf of ITCC, reserves the right to accept/reject any or all bids without assigning any reasons.

- 8.11 Any other condition or guideline for submission of the bids shall be notified by IIA if it finds necessary.
- 8.12 IIA, on behalf of ITCC, may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents, in which case all rights and obligations of IIA and Contractor previously subject to the deadline will thereafter be subject to the deadline as extended.
- 8.13 At any time prior to the deadline for submission of Bids, IIA, on behalf of ITCC, may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Contractor, notify changes in the Bidding documents through an amendment.
- 8.14 In order to allow reasonable time for the prospective Contractors for taking the amendment into account in preparation of their Bids, IIA, on behalf of TMT India, may, at its discretion, extend the deadline for the submission of the Bids.
- 8.15 The amendments, if any, shall be notified in writing at IIA's website and the amendments shall be binding on all the Contractors. Hence the Contractors shall view the notification in complete before submitting their Bids.
- 8.16 The Contractor responding to announcement shall be deemed to have read and understood the documents in complete. Where counter terms and conditions have been offered by the Contractor, the same shall not be deemed to have been accepted by IIA, unless a specific written acceptance thereof is obtained.
- 8.17 Any effort by a Contractor to influence IIA in the Bid Evaluation, Bid Comparison or Contract Award decisions may result in the rejection of its Bid.
- 8.18 Any clarifications pertaining to this document may be obtained from IIA by the Contractors by writing at the following address at least fifteen days prior to the due date for submission of bids.

THE PURCHASE OFFICER

**INDIAN INSTITUTE OF ASTROPHYSICS, SARJAPUR ROAD,
KORAMANGALA II BLOCK, BANGALORE - 560034**

Contact for Administrative Queries:

Sri .Y. K. Raja Iyengar, (ykri@iiap.res.in)

Purchase Officer, IIA

Technical Clarifications:

1. Prof. Ranjan Gupta
IUCAA, Pune (tmtsoft@iucaa.ernet.in)
2. Prof. Swara Ravindranath
IUCAA Pune (tmtsoft@iucaa.ernet.in)
3. Prof. Annapurni Subramaniam,
IIA, Bangalore (purni@iiap.res.in)

TECHNICAL BID - PART2A: DETAILS

9.1 A compliance sheet clearly indicating any deviation with reference to the terms and specifications shall be included. Limitations and assumptions, if any, should be clearly mentioned. Scope description may explicitly state anything which is not covered.

9.2 The Technical Bid shall include but not limited to the following items:

- a) Description of the proposed technological approach to be followed for making the product
- b) Strategy to be followed for the execution of the project including tools and technologies to be used
- c) Project execution and management details, including details of the project team, escalation paths etc
- d) Details of the data expected to be provided by IIA/IUCAA, on behalf of ITCC, to the successful contractor/vendor for undertaking the project
- e) Risk identification and mitigation plans
- f) Quality audit, control and assurance plans
- g) Change control process
- h) Detailed time schedule for the project
- i) Commercial terms and conditions
- j) Acceptance criteria and test plans
- k) A copy of the Price Bid without indicating the quoted Price
- l) Earnest money deposit for Rs.2,00,000/- (Rupees Two Lakhs only) by way of Demand Draft drawn on a Nationalized / Scheduled Bank only in favour of [The Director, Indian Institute of Astrophysics](#)

PRICE BID – PART 2B: DETAILS

10.1.The Price Bids shall include the following:

- a) An item wise break-up of the cost in Indian Rupees, clearly indicating any free-issue material, imports etc., labor costs; training costs and equipments etc.
- b) Applicable taxes, duties or other statutory payments will be paid extra as applicable.
- c) No travel / transport / accommodation support on Domestic / international account will not be entertained by IIA.
- d) Total cost along with proposed payment stages, schedule and percentage to be paid at each stage.

10.2.The offer should be complete to indicate that all products and services asked for are quoted.

10.3.Price Bids shall be valid for a period of 120 days from the date of opening of bids. IIA, on behalf of ITCC, may ask for the Contractor's consent to extend the period of validity. Such request and the response shall be made in writing only. A Contractor agreeing to the request of IIA for extension of the bid will not be permitted to modify the bid.

ELIGIBILITY CRITERIA AND QUALIFICATION PROCESS

- 11.1** First only the EOI envelopes shall be opened on the date specified by IIA. Contractors/vendors or their authorized agents can be present at their own interest when the EOI are being opened.
- 11.2** The EOI will be evaluated by an Expert Committee. Mere submission of EOI will not entitle a Contractor to get selected to the tendering stage. The criteria for qualifying for the tender evaluation stage shall include, but are not limited to the following :
1. The Contractor should be registered in India for the last 5 years.
 2. The Contractor should have a minimum average annual turnover of Rs. 10 crores during the last three years and should be of sound financial status.
 3. The Contractor should have executed at least two projects involving similar software modules costing above Rs. 5 crores in the past three years.
 4. The Contractor must have the necessary infrastructure, in-house facilities and experience for design, development, integration and testing the product.
 5. The Contractor must have well defined quality policy and assurance program.
 6. The Contractor should have a well defined plan for the development of the product and organizational structure for project planning, monitoring, schedule tracking, corrective measures etc.
 7. Prior experience working with Government, Semi Government, Government Undertaking and Government Autonomous Bodies will be an added advantage.
 8. EOI submitted by the Contractor shall be complete in all respects and shall include all details asked for in item 7.1 of Section B.
- 11.3** The parties shortlisted through the evaluation of the Expression of Interest will be intimated and invited for a meeting to sign a Non-disclosure Agreement and receive additional documents.
- 11.4** Technical Bids from only those parties who have responded to this EOI notice and short-listed by the Expert Committee will be qualified for the tendering process. Bids from the parties who do not qualify in the EOI stage will be rejected without opening.
- 11.5** IUCAA may organize a pre-bid meeting, approximately two weeks prior to the last date of submission of the bids. All the parties who have been shortlisted during the EOI stage, may attend the meeting and obtain clarifications regarding the technical and commercial terms and conditions.
- 11.6** Technical Bid shall be opened on the date specified by IIA. Contractors or their authorized agents may be present at their own interest when the Bids are being opened.
- 11.7** The Technical Bids shall be evaluated by an Expert Committee and the shortlisted Contractors may have to make presentations on their detailed proposals to the Committee at a meeting to be held at IUCAA, Pune.

The following points should be covered in the presentation:

- a) Contractor's over all profile.
- b) Contractor's strengths in dealing with the specific requirements in hand.
- c) Contractor's experience in developing products of similar nature and specification. List of projects executed to be presented and few will be discussed in detail.
- d) Contractor will discuss few challenging cases where it made specific efforts to develop software using innovative techniques and approach for schedule and cost control.
- e) Contractor's understanding about over all scope of work and responsibility for this project. Please identify all activities involved in this job and discuss them in detail.
- f) Critical areas identified by the Contractor having serious impact on delivery schedule and cost of the product. Contractor's proposed solutions for these problems.
- g) Contractor will justify his financial capabilities to develop and deliver the product in given cost and time schedule.
- h) Codes and standards regularly followed by the Contractor, especially international ones.
- i) Details of Contractor's Quality Policy and Program, organizational set-up for Quality Surveillance and Quality Assurance, Quality Audit program, non-conformity control and reporting and testing and inspection facilities.
- j) If some development, testing and inspection facilities are not available with the Contractor, it should mention about their access to such required facilities at other places.
- k) Project planning and Execution methodology followed by the Contractor, with specific emphasis on schedule and cost control.
- l) Contractor's views if any, on the need to form a consortium to meet quality, cost and time schedule.
- m) Last five years track record of the Contractor in terms of projected and actual delivery schedule and cost for projects above Rs.10 Crores.
- n) Commitments and loading of the Contractor in terms of projects costing 10% or more of annual turnover.
- o) Commitment from Contractor's highest authority for complete and credible involvement of the Contractor till completion of the deliveries.

Evaluation criteria for Technical bids:

The technical evaluation of the bids and acceptance will be based on the following (weightage points are in % which adds upto a total of 100%):

1. Relevant experience and performance in similar software projects involving large, distributed, middleware systems {20%}
2. Existence and quality of facilities and infrastructure needed for the work at the development site (e.g., computing facilities, networking, data storage) {10%}
3. Vendor experience with planned tools and technologies {10%}
4. Vendor experience with software testing {10%}
5. Appropriate staff plan including size, skill set, experience, and commitment {10%}
6. Quality of management plan for planning and executing SOW {10%}
7. Assurance, likelihood of successful completion of tasks and implementation as outlined in the SOW {10%}
8. Ability of vendor to contribute in the long-term to TMT software {10%}

9. Ability to discuss few challenging cases where it made specific efforts to develop software using innovative techniques and approach for schedule and cost control {10%}
 - a. To assist in the evaluation of Bids, IUCAA, on behalf of ITCC, may, at its discretion, ask the Contractor for a clarification of its Bid. IUCAA may call for meetings with Contractors to seek clarification at appropriate times in its premises at IUCAA, Pune. The Contractors shall attend the meeting at their own cost. The request for clarification and the response shall be in writing.
 - b. Following the evaluation of Technical Bids, the Price Bids of qualified Contractors shall be opened to choose the Contractor to execute the Project. [The date of opening of Price Bids will be intimated to the qualified vendors/Contractors.](#)
 - c. The evaluation committee may hold techno-commercial discussion with short listed and select the contractor or contractors or consortium to manufacture and deliver the product as per designs, technical specifications and delivery schedule given in the tender document. The order(s) may be placed with one contractor or more than one contractors or a consortium.
 - d. During the assessment of the bids, specific weightage will be given to the contractors for innovative suggestions on development feasibility, cost optimization and schedule control. Selection of the successful contractor will be mainly based on procurement optimization from an integrated point of view, involving the implementation, testing, schedule and cost. Prior experience with similar projects, commitment and risk evaluation will also play an important role in the selection process.

12 **TERMS AND CONDITIONS**

The successful Contractor who is awarded the Contract as the Contractor shall be subjected to the Terms and Conditions that include, but not limited to the following. A detailed Contract Agreement will be drawn and signed by both the parties before the award of the contract.

13 **SUBCONTRACTS**

- a. The Contractor is an independent contractor.
- b. The Contractor shall provide as an independent contractor, and not an agent of IIA, all necessary personnel, infrastructure and facilities to perform the Work.
- c. The Contractor shall not assign its rights or obligations to a third party without the prior written approval of IIA.
- d. Notwithstanding any subcontract under this Agreement, whether approved by IIA or not, the Contractor shall remain fully liable and responsible to IIA for the satisfactory and timely completion of the Work.

14 **PAYMENT**

- a. Payment shall be made by IIA, Bangalore on behalf of TMT India.
- b. IIA shall pay the Contractor the Price in accordance with a Milestone Schedule.
- c. Upon completion of each Milestone, the Contractor/vendor shall submit to IIA an Invoice for the amount corresponding to that Milestone in Schedule.
- d. The Contractor/vendor shall submit reasonable documentary evidence, including but not limited to illustrations, as verification of completion of each Milestone. IIA may at its own discretion verify and substantiate that the Milestone has indeed been performed or completed as invoiced by the Contractor/vendor. Such verification may require Contractor/vendor to submit to IIA, additional documentation with regard to quality control normally expected during process of development, and/or inspection by IIA representatives. Any request for substantiation under this clause shall be made by IIA within fourteen (14) days of its receipt of the corresponding Invoice.

15 **VESTING OF TITLE AND ASSUMPTION OF RISK**

- a. On each item to be delivered by the Contractor/vendor, including an item of work in progress, in respect of which payments have been made in accordance with item 14 of Sec C above, IIA shall have a security interest in such items which shall be deemed to be released only at the time when the applicable Deliverable Item is finally delivered to and accepted by IIA.

- b. Risk for loss or damage to Deliverable Items provided by the Contractor/vendor shall rest with the Contractor/vendor, until final acceptance by IIA.
- c. Title to all Deliverable Items provided by the Contractor/vendor shall pass from the Contractor/vendor to IIA upon final acceptance or the final payment under item 14 of Sec C above, whichever occurs last.
- d. IIA shall not accept any liability for the Contractor/vendor and its subcontractors, their subsidiaries and/or their officers, employees or agents, servants, and assignees, or any of them or for their property. The Contractor/vendor shall indemnify and keep harmless IIA, its officers, employees consultants, servants, agents and assignees, or any of them, against any loss or liability, costs or claims, action or proceedings which they or any of them may incur by reasons of damage to property or injury, including death, caused to the employees of the Contractor/vendor, its subsidiaries and/or their officers, employees or agents, servants and assignees, or any of them in connection with the performance of Work under this Agreement, and caused by an act of commission or omission by the Contractor/vendor, its subsidiaries and/or their officers, employees or agents, servants and assignees, or all or any of them.

16. INTELLECTUAL PROPERTY RIGHTS

- a. All Intellectual Property Rights existing in a party prior to the Contract (“Existing Intellectual Property Rights”) shall remain with that party. Except to the extent necessary to complete the Work or expressly stated otherwise, neither party grants any rights in its Existing Intellectual Property Rights to the other party. This project should not depend on any proprietary vendor code or other Intellectual Property. All source code must be released and will be the property of ITCC and TMT.
- b. All Intellectual Property Rights arising directly from the Work (“Work Intellectual Property Rights”) shall, upon completion of the Work, vest in TMT India and TMT project.

17. CONFIDENTIAL INFORMATION

- a. The Contractor/vendor shall protect the Confidential Information and keep it secure, and shall not at any time (except with the prior written consent of IIA):
- b. directly or indirectly disclose or distribute the Confidential Information to any person other than a representative, employee, agent or advisor of the Contractor/vendor; or
- c. directly or indirectly disclose or distribute the Confidential Information to a representative, employee, agent or advisor of the Contractor/vendor except where such disclosure is necessary for the purpose of the Work; or
- d. use or copy the Confidential Information except for the purpose of the Work.
- e. Where the Contractor/vendor discloses Confidential Information to a representative, employee, agent or advisor, the Contractor/vendor shall ensure that such person is aware of the confidential nature of that Confidential Information and is bound by suitable obligations of confidentiality to ensure that, that person protects and keeps secure that Confidential

Information and does not use the Confidential Information for any reason other than the purpose of the Work.

- f. The Contractor/vendor shall, on demand by IIA, or where the purpose of this Agreement has been served, promptly return to IIA all Confidential Information (including copies or reproductions of the same) which is reasonably capable of being returned which is in the possession or control of the Contractor/vendor.
- g. This Agreement is not intended to restrict the use or disclosure of Confidential Information by the Contractor/vendor to the extent that it is required to be disclosed by law provided that the Contractor/vendor has taken such steps as are available under law (but not the institution of legal action) to protect such Confidential Information and notifies IIA here under of its obligation to make such disclosure prior to the time such disclosure is made.
- h. The provisions of this item 17 are subject to the provisions of item 16.

18. SETTLEMENT OF DISPUTES

- a. All disputes arising in connection with the interpretation or implementation of the Contract shall be amicably settled by IIA and the Contractor/vendor, by direct discussion.
- b. If IIA and the Contractor/vendor are unable to resolve a Dispute within 30 working days of the Dispute being referred to them, the parties may agree to refer the Dispute to mediation.
- c. IIA and the Contractor/vendor appoint a Mediation Committee comprising of two nominees by IIA and two nominees by the Contractor/vendor. IIA and the Contractor/vendor will seek the opinion of this Mediation Committee to amicably settle the disputes.
- d. In the event of a dispute or difference which cannot be resolved by mediation, the same shall be referred to an Arbitration Tribunal consisting of three members. Either party shall give notice to the other regarding its decision to refer the matter to arbitration. Within 30 days of such notice, one Arbitrator shall be nominated by each Party and the third Arbitrator shall be nominated by agreement between the Parties to this Agreement. The venue of the arbitration will be Bangalore. Subject to the aforesaid, the Indian Arbitration and Conciliation Act, 1996 and the rules there under and any statutory modification thereof for the time being in force shall be deemed to apply to the Arbitration proceedings.

19. FORCE MAJEURE

- a. Neither party shall be held responsible for any losses, if the fulfillment of any terms and conditions of this Contract are delayed or prevented by acts of lawful Government, revolutions and other disorders, wars (declared or undeclared), acts of enemies, strikes, fires, floods, acts of God and, without limiting the foregoing, any other cause not within the control of the party whose performance is interfered with and which, by the exercise of reasonable diligence, he is unable to prevent.
- b. Each party will promptly notify the other in writing when a condition of Force Majeure described in item 19a arises. Neither party will be liable for any failure to perform its obligations hereunder if prevented from doing so by reason of Force Majeure, provided that it

will have used all reasonable endeavours to perform its obligations notwithstanding such situation or event.

- c. As soon as practicable after the lodging of such notice the Contractor/vendor and IIA shall jointly determine whether the situation constitutes Force Majeure and if so the appropriate measures to meet the situation. Either party shall not be liable for any penalty or damage resulting in delays to perform its obligations as a consequence of Force Majeure.

20. TERMINATION

- a. IIA may terminate the Work with sixty (60) days prior written notice any time without assigning any reason or cause by notifying the Contractor/vendor in writing. In the event that the Work is so terminated by IIA, then IIA shall pay the Contractor/vendor total amount of the costs and liabilities incurred by the Contractor/vendor up to the date of termination (for satisfactorily completed milestones only).
- b. IIA may at any time terminate the Contract by giving written notice with immediate effect in any of the following cases.
- c. If the Contractor/vendor is adjudged insolvent or if its financial position is such that within the framework of its national law, legal action leading towards bankruptcy is taken against it by its creditors or its Government, or
- d. If it is determined through appropriate proceedings that the Contractor/vendor has resorted to fraudulent or corrupt practices in connection with its securing or implementation of this Agreement.

21. ACCEPTANCE PROCEDURE: Please refer to items in section 11 of Section B.

22. PATENTS, COPYRIGHTS AND OTHER PROPRIETARY RIGHTS

The Contractor/vendor warrants that any Deliverable Item provided to IIA shall to the best of its knowledge and belief be free of any rightful claim of any third party for infringement of patent, copyright, or other proprietary right.

23. ACCESS TO WORK

- a. Work in progress and data and documentation related to the Work, including design and test data necessary to understand the ability of the Work to meet the specifications are subject to examination, evaluation, and inspection by IIA at reasonable times and with reasonable notice to the Contractor/vendor.
- b. The Contractor/vendor shall provide IIA access to such documentation and to those of its premises where Work on or in connection with the subject of this contract is being performed during normal business hours and subject to prior arrangement.

- c. IIA may depute engineers/scientists of its choice from time to time who will be allowed by the Contractor/vendor to participate in the Work in respect of the disciplines in which they are specialized.

24. WARRANTY

- a. The Contractor warrants that all Deliverable Items shall be free and clear of all liens and encumbrances pertaining to title at the time of delivery to TMT India or TMT USA. The Contractor's/vendor's liability and IIA's sole remedy under this Warranty shall be limited to the Contractor/vendor procuring the removal of any such lien or encumbrance or the replacement of the goods and parts thereof that has been identified as defective of title. The Contractor/vendor will provide a one year warranty from date of acceptance of the Deliverables by IIA. During the warranty period, any operational defects in the supplied software will be rectified by the agency at no extra cost to IIA.

And the Contractor warrants that:

- b. All Deliverable Items that are procured or furnished by the Contractor/vendor or its subcontractors or suppliers shall be new and shall conform in grade and quality to all the requirements of the Contract; where the grade or quality is not specifically defined therein, they shall be of a grade or quality suitable for their intended use;

25. DELIVERABLE DOCUMENTATION AND STANDARDS

The Deliverable Documentation shall include the Design and implementation reports, trade study documents, test reports, and Manuals (user handbooks). All documentation shall be in the English Language.

26. PROGRESS REPORTS

The Contractor/vendor shall provide IIA with detailed reports on progress of the Work and notify any deviations on the schedule, at least monthly highlights and bi-monthly detailed reports on the progress of the Work, up to the Delivery Date.

27. PERFORMANCE GUARANTEE

The agency will have to deposit 5% of the order value amount towards performance guarantee which will be released only after satisfactory completion of the warranty period. In case the agency has not provided the services during the warranty period, IIA will recover such expenses from the performance guarantee/security deposit. The EMD amount will be adjusted against the security deposit.

28. GOVERNING LAW

This Agreement shall be governed by and construed in accordance with the law for the time being in force in India.

TENDER INFORMATION

INDIAN INSTITUTE OF ASTROPHYSICS, 2ND BLOCK KORAMANGALA, SARJAPUR ROAD, BANGALORE – 560034 (INDIA), invites sealed tenders in two-bid formats, i.e., “**Technical Bid**” and “**Financial Bid**” from eligible and qualified tenderers for “**Software Development for TMT Project**”(Event Service Preliminary Design Prototyping Phase (EVPDPt) for the Thirty Meter Telescope Project)

Tender Documents : Please visit our website
www.iiap.res.in/tenders.htm to download the
Tender documents

Closing date & time for receipt of Tender : 28 February 2013 1500 hrs
Tender opening date & time : 01 March 2013 at 15:30 hrs.
Place of Tender opening : IIA’s office
Earnest Money Deposit : Rs.2,00,000/- (Rupees Two Lacs only)

1. Tender documents may be downloaded from our website and a non-refundable fee of **Rs.500/- (Rupees Five hundred only)** towards Tender Fee in the form of demand draft drawn on a nationalised bank, in favour of **INDIAN INSTITUTE OF ASTROPHYSICS, 2ND BLOCK KORAMANGALA, SARJAPUR ROAD, BANGALORE, payable at Bangalore** to be attached with Technical bid. Both Demand Drafts for Rs.2,00,000/- (EMD amount refundable) and Rs.500/- (Tender Fee - Non refundable) must be attached with Technical bid only and sent to us with in the due date.
2. Tenderers shall ensure that their tenders, complete in all respects, are dropped in the tender box located at the address given above on or before the closing date and time indicated as above, failing which the tenders will be treated as late and rejected.
3. In the event of any of the above mentioned dates being declared as a holiday / closed day for IIA, the tenders will be sold/received/opened on the next working day at the appointed time.
4. The tender enquiry documents are not transferable.
5. IIA reserves the right to reject any or all of the tenders without assigning any reasons.

Administrative Officer
INDIAN INSTITUTE OF ASTROPHYSICS
2ND BLOCK KORAMANGALA,
SARJAPUR ROAD,
BANGALORE – 560034 (INDIA)

FORMAT FOR SUBMISSION OF “EXPRESSION OF INTEREST”

IIA RFP No -

Bidder's Offer No. -----

Dated -----

FROM

M/s -----

To

The Purchase Officer
INDIAN INSTITUTE OF ASTROPHYSICS,
2ND BLOCK KORAMANGALA,
SARJAPUR ROAD,
BANGALORE – 560034 (INDIA)

Dear Sir,

We have gone through the conditions pertaining to the Announcement of Opportunity and by accepting the same, we are submitting herewith our Expression of Interest.

We hereby agree to supply the Stores conforming to the specifications incorporated in Section – A.

Yours faithfully,

Stamp and Signature of the Contractor

Technical Bid - Part A
For “ Software Development for TMT Project ”

**INDIAN INSTITUTE OF ASTROPHYSICS,
2ND BLOCK KORAMANGALA,
SARJAPUR ROAD,
BANGALORE – 560034**

Name of Work: TMT Software (EVPDPt)

Name of Vendor / Firm / Company _____

Postal Address _____

Telephone Off. _____

Telex / Fax _____

Email ID _____

Signature & seal of Bidder

Technical Bid Form	
Software Development for TMT Project Client : India TMT coordination center (ITCC)	
1	Name of the Company & address
2	Company Registration No & related documents
3	Telephone Nos <i>Mobile no.</i> <i>Fax Nos.</i> <i>E-mail</i>
4	Contact Person <i>Name</i> <i>Designation</i> <i>Mobile #</i>
5	Organizational Capability (staff strength) <i>Project Manager</i> <i>Software Developer</i> <i>Software Designer</i> <i>Quality Controller</i> <i>Team Leader</i> <i>Project Leader</i>
6	Proposed Team for this Project <i>Project Manager</i> <i>Software Developer</i> <i>Software Designer</i> <i>Quality Controller</i> <i>Team Leader</i> <i>Project Leader</i>
7	Financial Capacity over last 3 years (Turnover & Profit – Enclose Balance Sheet) <i>Financial year 2009-10</i> <i>Financial year 2010-11</i> <i>Financial year 2011-12</i>

<p>8</p> <p>a.</p>	<p>Detail Information about three jobs completed of similar nature</p> <p><i>Name of the project</i> <i>Start of Project year</i> <i>Completion year</i> <i>Value</i> <i>Project proposed for inspection</i> <i>Client contact details (Name with tele / fax and e-mail).</i></p>
<p>b.</p>	<p><i>Name of the project</i> <i>Start of Project year</i> <i>Completion year</i> <i>Value</i> <i>Scope</i> <i>Project proposed for inspection</i></p> <p><i>Client contact details (Name with tele / fax and e-mail).</i> <i>Name of the project</i></p>
<p>c.</p>	<p><i>Name of the project</i> <i>Start of Project year</i> <i>Completion year</i> <i>Value</i> <i>Scope</i> <i>Project proposed for inspection</i> <i>Client contact details (Name with tele / fax and e-mail).</i> <i>Name of the project</i></p>
<p>9</p> <p>1</p> <p>2</p>	<p>Work in hand (provide details in following format - Attach additional sheets if required)</p> <p><i>Name of the project</i> <i>%age completed/status</i> <i>Completion time</i> <i>Value.</i></p> <p><i>Name of the project</i> <i>%age completed/status</i> <i>Completion time</i> <i>Value.</i></p>
<p>10</p>	<p>Infrastructure Facility / Equipment/ Machinery details:</p>
<p>11</p>	<p>PF/ESI details :- <i>Reg. No. PF</i> <i>Reg. No. ESI</i> <i>Reg. No. WCT.</i> <i>Reg. No. Service Tax</i> <i>Reg. No. VAT</i> <i>Reg No. CST</i></p>

	<i>Reg No of Profession Tax Certificate</i>
12	PAN Details: <i>PAN No:</i> <i>Photocopy of PAN</i> <i>Latest Income tax clearance certificate</i>
13	Quality Assurance <i>Provide details of methodology adopted.</i>
14	Solvency certificate (not older than 12 months) issued by Nationalised/Scheduled Bank with which bidder holds the current account
15	List any arbitration cases/ legal disputes on Current/ previous projects - Mention name of project, reason for dispute, party filing the suit and current status)
16	Is the company ISO Certified?
17	List any awards, recognitions on previously executed projects
18	Any other documentation relevant to Pre-qualification (Contractors can modify the tables to create additional space for information if required)
19	Prepared and Submitted by:

Notes - 1) The **Indian Institute of Astrophysics, Bangalore** reserves the right to accept or reject any or all applications without assigning any reasons.
2) Please support Work in hand and completed work information with copy of the work order from the client.

Financial Bid - Part B
For “ Software Development for TMT Project ”

INDIAN INSTITUTE OF ASTROPHYSICS, SARJAPUR ROAD,
KORAMANGALA II BLOCK, BANGALORE - 560034

Name of Work: TMT Software (EVPDPt)

Name of Vendor / Firm / Company _____

Postal Address _____

Telephone Off. _____

Telex / Fax _____

Email ID _____

Signature & seal of Bidder

Sr No	Milestones	Percentage	Amount
1	Stage 1:- Create a document with the set of requirements for choosing candidate implementations. Create a document defining criteria and metrics for comparing candidate implementation products and weights.	15%	

	Update of the Common Software DRD with any new requirements. Phase review presentations	
2	Stage 2:- Create a document with a table and narrative describing implementation candidates and their merits. Phase review presentation with recommendations for 3-4 implementations for testing	10%
3	Stage 3:- Performance testing code for top 3-4 implementation products. Scripts for automated test execution. Prepare a trade study on the results of the 2 phases of tests. Recommend product to be used for design and prototype implementation. Phase Review and presentation.	30%
4	Stage 4:- Create a document describing software design of the event service using the chosen product. Create the product backlog and user stories for the initial iterations. Documentation of initial Event Service Application Programming Interface Phase Review and presentation	15%
5	Stage 5:- Code for Event Service prototype. Code for Event Service unit and component tests Scripts needed to start and stop the Event Service Scripts or code demonstrating the Event Service Use. Final Application Programming Interface documentation Final project review and presentation showing final service metrics	30%
	The code will be delivered through the TMT-software repository and other documents will be delivered as produced.	
	Total	100 %

Amount in Words :-