



RETURN BIDS TO:

RETOURNER LES SOUMISSIONS À:

Travaux publics et Services gouvernementaux
Canada
Place Bonaventure, 1st Floor
800 rue de la Gauchetière Ouest
Suite 1110
Montréal
Québec
H5A 1L6
Bid Fax: (514) 496-3822

**REQUEST FOR PROPOSAL
DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Title - Sujet Wide Field Space Astronomy Study | |
| Solicitation No. - N° de l'invitation 9F050-170022/A | Date 2017-08-10 |
| Client Reference No. - N° de référence du client 9F050-17-0022 | |
| GETS Reference No. - N° de référence de SEAG PW-\$MTB-215-14477 | |
| File No. - N° de dossier MTB-7-40036 (215) | CCC No./N° CCC - FMS No./N° VME |
| Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2017-09-28 | Time Zone Fuseau horaire Eastern Daylight Saving Time EDT |
| F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/> | |
| Address Enquiries to: - Adresser toutes questions à: Yee, Jenny | Buyer Id - Id de l'acheteur mtb215 |
| Telephone No. - N° de téléphone (514) 496-3870 () | FAX No. - N° de FAX (514) 496-3822 |
| Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: AGENCE SPATIALE CANADIENNE EXPLORATION SPATIALE/SPACE EXPLORAT 6767 ROUTE DE L'AEROPORT ST HUBERT Québec J3Y8Y9 Canada | |

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address

**Raison sociale et adresse du
fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution

Travaux publics et Services gouvernementaux Canada
Place Bonaventure,
800 rue de la Gauchetière Ouest
Voir aux présentes - See herein
Montréal
Québec
H5A 1L6

| | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Delivery Required - Livraison exigée | Delivery Offered - Livraison proposée |
| Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur | |
| Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur | |
| Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie) | |
| Signature | Date |

IMPORTANT NOTICE TO BIDDERS

- 1- **TENDER DOCUMENTS:** Suppliers intending to submit tenders on this project should obtain tender documents through the website:

<https://www.achatsetventes-buyandsell.gc.ca/>

- 2- **CHANGE OF ADDRESS – BIDS DELIVERY**

In person or by mail:

**Place Bonaventure, 1st Floor
800 de la Gauchetière Street West, Suite 1110
Montreal (QC), H5A 1L6**

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PART 1 - GENERAL INFORMATION

1.1 Introduction

The bid solicitation is divided into seven parts plus attachments and annexes, as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;
- Part 3 Bid Preparation Instructions: provides Bidders with instructions on how to prepare their bid;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;
- Part 5 Certifications and Additional Information: includes the certifications and additional information to be provided;
- Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by Bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The following Attachments:

Attachment 1 to Part 3 Electronic Payment Instruments
Attachment 1 to Part 4 Point Rated Evaluation Criteria

The following Annexes:

Annex A Statement of Work
Annex B Basis of Payment

1.2 Summary

Project Title

Science Maturation Study for UV/Optical Wide Field Space Astronomy for Dark Energy Investigations

Description

Public Works and Government Services Canada (PWGSC), on behalf of the Canadian Space Agency (CSA) located in St-Hubert (Quebec), is seeking proposals for one Science Maturation Study in Space Astronomy targeting wide field UV/optical imaging telescope aimed principally at the investigation of dark energy.

The overall objectives of CSA Space Exploration Strategic Planning Science Maturation Studies are to mature and validate science requirements and plans for future missions in planetary science, space astronomy and life sciences investigations. This study follows a previous concept study for a

UV/optical wide field space telescope. The Science Maturation study will refine science objectives and requirements as well as propose a plan forward including cost and schedule estimates.

Period of Contract

The period of the contract is approximately 15 months.

Security Requirements

There are no security requirements associated with this requirement.

Intellectual Property

Canada will own all intellectual property rights in foreground information.

Trade Agreements

This requirement is not subject to the trade agreements.

Canadian Content

The requirement is subject to a preference for Canadian services.

1.3 Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

1.4 Communications

As a courtesy and in order to coordinate any public announcements pertaining to this contract, the Government of Canada requests that successful Bidders notify the Contracting Authority 5 days in advance of their intention to make public an announcement related to the recommendation of a contract award, or any information related to the contract. The Government of Canada retains the right to make primary contract announcements.

PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2017-04-27) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of [2003](#), Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: 60 days
Insert: 240 days

2.2 Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

Due to the nature of the bid solicitation, bids transmitted by facsimile or email to PWGSC will not be accepted.

2.3 Former Public Servant

Contracts awarded to former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts awarded to FPSs, bidders must provide the information required below before contract award. If the answer to the questions and, as applicable the information required have not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply with Canada's request and meet the requirement within the prescribed time frame will render the bid non-responsive.

Definitions

For the purposes of this clause, "former public servant" is any former member of a department as defined in the [Financial Administration Act](#), R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- a. an individual;
- b. an individual who has incorporated;
- c. a partnership made of former public servants; or
- d. a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means a pension or annual allowance paid under the [Public Service Superannuation Act](#) (PSSA), R.S., 1985, c. P-36, and any increases paid pursuant to the [Supplementary Retirement Benefits Act](#), R.S., 1985, c. S-24 as it affects the PSSA. It does not include pensions payable pursuant to the [Canadian Forces Superannuation Act](#), R.S., 1985, c. C-17, the [Defence Services Pension Continuation Act](#), 1970, c. D-3, the [Royal Canadian Mounted Police Pension Continuation Act](#), 1970, c. R-10, and the [Royal Canadian Mounted Police Superannuation Act](#), R.S., 1985, c. R-11, the [Members of Parliament Retiring Allowances Act](#), R.S. 1985, c. M-5, and that portion of pension payable to the [Canada Pension Plan Act](#), R.S., 1985, c. C-8.

Former Public Servant in Receipt of a Pension

As per the above definitions, is the Bidder a FPS in receipt of a pension? **Yes () No ()**

If so, the Bidder must provide the following information, for all FPSs in receipt of a pension, as applicable:

- a. name of former public servant;
- b. date of termination of employment or retirement from the Public Service.

By providing this information, Bidders agree that the successful Bidder's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with [Contracting Policy Notice: 2012-2](#) and the [Guidelines on the Proactive Disclosure of Contracts](#).

Work Force Adjustment Directive

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive? **Yes () No ()**

If so, the Bidder must provide the following information:

- a. name of former public servant;
- b. conditions of the lump sum payment incentive;
- c. date of termination of employment;
- d. amount of lump sum payment;
- e. rate of pay on which lump sum payment is based;
- f. period of lump sum payment including start date, end date and number of weeks;
- g. number and amount (professional fees) of other contracts subject to the restrictions of a work force adjustment program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including Applicable Taxes.

2.4 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than 10 calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by Bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

2.5 Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the province of Quebec.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Bidders.

2.6 Improvement of Requirement During Solicitation Period

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least 10 days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

2.7 Basis for Canada's Ownership of Intellectual Property

The Canadian Space Agency has determined that any intellectual property rights arising from the performance of the Work under the resulting contract will belong to Canada, for the following reasons, as set out in the [Policy on Title to Intellectual Property Arising Under Crown Procurement Contracts](#):

- the main purpose of the Contract, or of the deliverables contracted for, is to generate knowledge and information for public dissemination; and
- the Intellectual Property in Foreground Information consists of material subject to copyright, with the exception of computer software and all documentation pertaining to that software.

2.8 Maximum Funding

The maximum funding available for the Contract resulting from the bid solicitation is \$ 450,000.00 (Applicable Taxes extra). Bids valued in excess of this amount will be considered non-responsive. This disclosure does not commit Canada to pay the maximum funding available.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

Canada requests that Bidders provide their bid in separately bound sections as follows:

Section I: Technical and Managerial Bid (2 hard copies and 2 soft copies on USB key or CD or DVD)

Section II: Financial Bid (1 hard copy)

Section III: Certifications (1 hard copy)

- a) If there is a discrepancy between the wording of the soft copy and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy;

- b) For the soft copies of Section I (Technical and Managerial Bid), all the information must be contained in one file. The copies must be provided on 2 separate USB key/CD/DVD. The acceptable formats are: MS Word and PDF;
- c) Prices must appear in Section II (Financial Bid) only. No prices must be indicated in any other section of the bid;
- d) The total number of pages for Section I should not exceed 50 pages, on 8.5 x 11 inch (216 mm x 279 mm) paper, excluding résumés (CV) included as bid appendices; and
- e) The bid should use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process [Policy on Green Procurement](http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, Bidders should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

Section I: Technical and Managerial Bid

In their technical and managerial bid, Bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability and describe their approach in a thorough, concise and clear manner for carrying out the work.

The technical and managerial bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that Bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, Bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

Section II: Financial Bid

3.1.1 Bidders must submit their financial bid in accordance with the following:

- (a) A firm, all inclusive lot price for the Work, which must not exceed the maximum funding specified in Part 2. The total amount of Applicable Tax is to be shown separately, if applicable.
- (b) Prices must be in Canadian funds, Applicable Taxes excluded and Canadian customs duties and excise taxes included.

3.1.1.1 Price Breakdown

Bidders are requested to detail the following elements for each task, milestone or phase of the Work, as applicable:

- (a) Labour : For each individual and (or) labour category to be assigned to the Work, indicate:
i) the hourly rate, inclusive of overhead and profit; and ii) the estimated number of hours.
- (b) Equipment : Specify each item required to complete the Work and provide the pricing basis of each one, Canadian customs duty and excise taxes included, as applicable.
- (c) Materials and Supplies : Identify each category of materials and supplies required to complete the Work and provide the pricing basis.
- (d) Travel and Living Expenses : Indicate the number of trips and the number of days for each trip, the cost, destination and purpose of each journey, together with the basis of these costs which must not exceed the limits of the National Joint Council (NJC) Travel Directive. With respect to the NJC Directive, only the meal, private vehicle and incidental allowances specified in Appendices B, C and D of the Directive <http://www.njc-cnm.gc.ca/directive/travel-voyage/index-eng.php>, and the other provisions of the Directive referring to "travellers", rather than those referring to "employees", are applicable. The Treasury Board Secretariat's Special Travel Authorities, http://www.tbs-sct.gc.ca/pubs_pol/hrpubs/tbm_113/statb-eng.asp, also apply.
- (e) Subcontracts : Identify any proposed subcontractor and provide for each one the same price breakdown information as contained in this article.
- (f) Other Direct Charges : Identify any other direct charges anticipated, such as long distance communications and rentals, and provide the pricing basis.
- (g) Applicable Taxes : Identify any Applicable Taxes separately.

3.1.2 Electronic Payment of Invoices – Bid

If you are willing to accept payment of invoices by Electronic Payment Instruments, complete Attachment 1 to Part 3 Electronic Payment Instruments, to identify which ones are accepted.

If Attachment 1 to Part 3 Electronic Payment Instruments is not completed, it will be considered as if Electronic Payment Instruments are not being accepted for payment of invoices.

Acceptance of Electronic Payment Instruments will not be considered as an evaluation criterion.

3.1.3 Exchange Rate Fluctuation

C3011T (2013-11-06), Exchange Rate Fluctuation

Section III: Certifications

Bidders must submit the certifications and additional information required under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical, management, and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.
- (c) The evaluation team will determine first if there are two or more bids with a valid Canadian Content certification. In that event, the evaluation process will be limited to the bids with the certification; otherwise, all bids will be evaluated. If some of the bids with a valid certification are declared non-responsive, or are withdrawn, and less than two responsive bids with a valid certification remain, the evaluation will continue among those bids with a valid certification. If all bids with a valid certification are subsequently declared non-responsive, or are withdrawn, then all the other bids received will be evaluated.

4.1.1 Technical Evaluation

4.1.1.1 Point Rated Technical and Management Criteria

The point rated technical and management evaluation criteria are included in Attachment 1 to Part 4 – Point Rated Evaluation Criteria. Criteria not addressed will be given a score of zero.

4.1.2 Financial Evaluation

4.1.2.1 Mandatory Financial Criteria

- The Bidder must submit a firm, all inclusive lot price for the Work, which must not exceed the maximum funding available indicated in Part 2, 2.8 Maximum Funding (Applicable Taxes extra, as applicable).

Bids valued in excess of this amount will be considered non-responsive. This disclosure does not commit Canada to pay the maximum funding available.

Bids which fail to meet the mandatory financial criteria will be declared non-responsive.

No points are awarded for the financial mandatory criteria, but they must be met in order for the bidder's proposal to be considered for further evaluation according to the Technical and Management point rated criteria.

4.1.2.2 Evaluation of Price

The price of the bid will be evaluated in Canadian dollars, Applicable Taxes excluded, FOB destination, Canadian customs duties and excise taxes included.

4.2 Basis of Selection

4.2.1 Basis of Selection – Highest Rated Within Budget

1. To be declared responsive, a bid must:
 - a. comply with all the requirements of the bid solicitation;

- b. meet all mandatory evaluation criteria; and
 - c. obtain the required minimum points for the technical evaluation criteria which are subject to point rating.
2. Bids not meeting (a) or (b) or (c) will be declared non responsive. The responsive bid with the highest number of points will be recommended for award of a contract, provided that the total evaluated price does not exceed the budget available for this requirement.

4.2.2 In the event that more than one responsive bid has the same highest number of points, the bid which obtained the highest overall number of points for the Science Merit and Feasibility Criteria divisions will be recommended for award of a contract.

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Bidders must provide the required certifications and additional information to be awarded a contract.

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Unless specified otherwise, Canada will declare a bid non-responsive, or will declare a contractor in default if any certification made by the Bidder is found to be untrue, whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority will render the bid non-responsive or constitute a default under the Contract.

5.1 Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the *Ineligibility and Suspension Policy* (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Bidder must provide with its bid the required documentation, as applicable, to be given further consideration in the procurement process.

5.1.2 Additional Certifications Required with the Bid

5.1.2.1 Canadian Content Certification

This procurement is conditionally limited to Canadian services.

Subject to the evaluation procedures contained in the bid solicitation, bidders acknowledge that only bids with a certification that the service offered is a Canadian service, as defined in clause [A3050T](#), may be considered.

Failure to provide this certification completed with the bid will result in the service offered being treated as a non-Canadian service.

The Bidder certifies that:

() the service offered is a Canadian service as defined in paragraph 2 of clause [A3050T](#).

5.1.2.1.1 *SACC Manual* clause [A3050T](#) (2014-11-27) Canadian Content Definition

5.2 Certifications Precedent to Contract Award and Additional Information

The certifications and additional information listed below should be submitted with the bid but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame specified will render the bid non-responsive.

5.2.1 Integrity Provisions – Required Documentation

In accordance with the [Ineligibility and Suspension Policy](#) (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Bidder must provide the required documentation, as applicable, to be given further consideration in the procurement process.

5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available at the bottom of the page of the [Employment and Social Development Canada \(ESDC\) - Labour's](#) website (http://www.esdc.gc.ca/en/jobs/workplace/human_rights/employment_equity/federal_contractor_program.page?&_ga=1.229006812.1158694905.1413548969#afed).

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

5.2.3 Additional Certifications Precedent to Contract Award

5.2.3.1 Status and Availability of Resources

The Bidder certifies that, should it be awarded a contract as a result of the bid solicitation, every individual proposed in its bid will be available to perform the Work as required by Canada's representatives and at the time specified in the bid solicitation or agreed to with Canada's representatives. If for reasons beyond its control, the Bidder is unable to provide the services of an individual named in its bid, the Bidder may propose a substitute with similar qualifications and experience. The Bidder must advise the Contracting Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the purposes of this clause, only the following reasons will be considered as beyond the control of the Bidder: death, sickness, maternity and parental leave, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Bidder has proposed any individual who is not an employee of the Bidder, the Bidder certifies that it has the permission from that individual to propose his/her services in relation to the Work to

be performed and to submit his/her résumé to Canada. The Bidder must, upon request from the Contracting Authority, provide a written confirmation, signed by the individual, of the permission given to the Bidder and of his/her availability. Failure to comply with the request may result in the bid being declared non-responsive.

5.2.3.2 Education and Experience

The Bidder certifies that all the information provided in the résumés and supporting material submitted with its bid, particularly the information pertaining to education, achievements, experience and work history, has been verified by the Bidder to be true and accurate. Furthermore, the Bidder warrants that every individual proposed by the Bidder for the requirement is capable of performing the Work described in the resulting contract.

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

6.1 Financial Capability

SACC Manual clause [A9033T](#) (2012-07-16) Financial Capability

PART 7 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

7.1 Statement of Work

The Contractor must perform the Work in accordance with the Statement of Work at Annex "A" and the Contractor's technical and managerial bid entitled _____, dated _____. (**To be completed at contract award**)

7.2 Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](#) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

7.2.1 General Conditions

[2040](#) (2016-04-04), General Conditions - Research & Development, apply to and form part of the Contract.

7.2.2 SACC Manual Clause

SACC Manual Clause K3410C (2015-02-25), Canada to Own Intellectual Property Rights in Foreground Information

7.3 Security Requirements

7.3.1 There is no security requirement applicable to the Contract.

7.4 Term of Contract

7.4.1 Period of the Contract

The period of the Contract is from date of Contract to _____ inclusive. **(To be completed at contract award)**

7.5 Authorities

7.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Jenny Yee
Title: Supply Specialist
Public Works and Government Services Canada
Acquisitions Branch

Telephone: (514) 496-3870
Facsimile: (514) 496-3822
E-mail address: jenny.yee@tpsgc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

7.5.2 Project Authority (To be completed at contract award)

The Project Authority for the Contract is:

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ____-____-_____
Facsimile: ____-____-_____
E-mail address: _____

The Project Authority named above is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the evaluation, recommendations and approvals of Progress claims, Schedule or Cost and Acceptance of the deliverable

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items of the Work under this Contract. Such Progress claim, scheduling, cost or acceptance of deliverables matters may be discussed with the Project Authority, however the Project Authority has no capacity to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

7.5.3 Scientific Authority (*To be completed at contract award*)

The Scientific Authority for the Contract is:

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ____-____-____
Facsimile: ____-____-____
E-mail: _____.

The Scientific Authority named above is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all recommendations to the Project Authority concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Scientific Authority, however the Scientific Authority has no capacity to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

7.5.4 Contractor's Representative

The Contractor's Representative for the Contract is:

Name :
Title:
Organization:
Address:

Telephone :
Facsimile :
E-mail address :

7.6 Proactive Disclosure of Contracts with Former Public Servants

By providing information on its status, with respect to being a former public servant in receipt of a [Public Service Superannuation Act](#) (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with [Contracting Policy Notice: 2012-2](#) of the Treasury Board Secretariat of Canada.

7.7 Payment

7.7.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid firm lot prices, as specified in Annex B for a cost of \$ _____ (**to be completed at contract award**). Customs duties are included and Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

7.7.2 Limitation of Price

SACC Manual clause [C6000C](#) (2011-05-16) Limitation of Price

7.7.3 Method of Payment

7.7.3.1 Milestone Payments

1. Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract, up to **90** percent of the amount claimed and approved by Canada if:
 - a. an accurate and complete claim for payment using form [PWGSC-TPSGC 1111](#), Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
 - b. the total amount for all milestone payments paid by Canada does not exceed **90** percent of the total amount to be paid under the Contract;
 - c. all the certificates appearing on form [PWGSC-TPSGC 1111](#) have been signed by the respective authorized representatives;
 - d. all work associated with the milestone and as applicable any deliverable required have been completed and accepted by Canada.
2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of all Work required under the Contract if the Work has been accepted by Canada and a final claim for the payment is submitted.

7.7.3.2 Schedule of Milestones

The schedule of milestones for which payments will be made in accordance with the Contract is detailed in Annex B.

7.7.4 SACC Manual Clauses

SACC Manual Clause A9117C (2007-11-30), T1204- Direct Request by Customer Department
SACC Manual Clause C2000C (2007-11-30), Taxes – Foreign-based Contractor

7.7.5 Electronic Payment of Invoices – Contract (To be specified at contract award)

The Contractor accepts to be paid using any of the following Electronic Payment Instrument(s):

- a. Visa Acquisition Card;
- b. MasterCard Acquisition Card;

- c. Direct Deposit (Domestic and International);
- d. Electronic Data Interchange (EDI);
- e. Wire Transfer (International Only)

7.8 Invoicing Instructions

7.8.1 Invoicing Instructions - Progress Payment Claim

1. The Contractor must submit a claim for payment using form PWGSC-TPSGC 1111 , Claim for Progress Payment.

Each claim must show:

- (a) all information required on form PWGSC-TPSGC 1111;
 - (b) all applicable information detailed under the section entitled "Invoice Submission" of the general conditions; and
 - (c) the description and value of the milestone claimed as detailed in the Contract.
2. Applicable Taxes, must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no Applicable Taxes payable as it was claimed and payable under the previous claims for progress payments.
 3. The Contractor must prepare and certify **one (1) original and two (2) copies** of the claim on form PWGSC-TPSGC 1111, and forward:
 - a) the **original and one (1) copy** to the Canadian Space Agency (CSA) at the address shown on page 1 of the Contract under « Invoices » (Financial Services Section) for appropriate certification by the Project Authority identified herein after inspection and acceptance of the Work takes place;
- and,**
- b) **one (1) copy of the original progress claim** to the Contracting Authority identified under the section entitled "Authorities" of the Contract.
4. The CSA's Financial Services Section will then forward the original and one (1) copy of the claim to the Contracting Authority for certification and onward submission to the Payment Office for the remaining certification and payment action.
 5. The Contractor must not submit claims until all work identified in the claim is completed.

7.9 Certifications and Additional Information

7.9.1 Compliance

Unless specified otherwise, the continuous compliance with the certifications provided by the Contractor in its bid or precedent to contract award, and the ongoing cooperation in providing additional information are conditions of the Contract and failure to comply will constitute the Contractor in default. Certifications are subject to verification by Canada during the entire period of the Contract.

7.9.2 SACC Manual Clauses

SACC Manual Clause A3060C (2008-05-12), Canadian Content Certification

7.10 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____. **(To be completed at contract award)**

7.11 Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) the general conditions 2040 (2016-04-04) General Conditions – Research and Development;
- (c) Annex A, Statement of Work;
- (d) Annex B, Basis of Payment;
- (e) the Contractor's bid dated _____ **(to be completed at contract award)**.

7.12 Foreign Nationals (Canadian Contractor **OR** Foreign Contractor) (To be specified at contract award)

SACC Manual clause [A2000C](#) (2006-06-16) Foreign Nationals (Canadian Contractor)

OR

SACC Manual clause [A2001C](#) (2006-06-16) Foreign Nationals (Foreign Contractor)

7.13 Insurance

SACC Manual clause [G1005C](#) (2016-01-28) Insurance

7.14 Government Site Regulations

The Contractor must comply with all regulations, instructions and directives in force on the site where the Work is performed.

7.15 Directive on Communications with the Media

1. DEFINITIONS

“Communication Activity(ies)” includes: public information and recognition, the planning, development, production and delivery or publication, and any other type or form of dissemination of marketing, promotional or information activities, initiatives, reports, summaries or other

products or materials, whether in print or electronic format that pertain to the present agreement, all communications, public relations events, press releases, social media releases, or any other communication directed to the general public in whatever form or media it may be in, including but without limiting the generality of the preceding done through any company web site.

2. COMMUNICATION ACTIVITIES FORMAT

The Contractor must early on coordinate with the Canadian Space Agency (CSA) all Communication Activities that pertain to the present contract.

Subject to review and approval by the CSA, the Contractor may mention and/or indicate visually, without any additional costs to the CSA, the CSA's participation in the contract through at least one of the following methods at the complete discretion of the CSA:

- a. By clearly and prominently labelling publications, advertising and promotional products and any form of material and products sponsored or funded by the CSA, as follows, in the appropriate official language:

“This program/project/activity is undertaken with the financial support of the Canadian Space Agency.”

“Ce programme/projet/activité est réalisé(e) avec l'appui financier de l'Agence spatiale canadienne.”

- b. By affixing CSA's corporate logo on print or electronic publications, advertising and promotional products and on any other form of material, products or displays sponsored or funded by the Canadian Space Agency.

Any and all mention or reference to the Canadian Space Agency in addition to those specified above in (a) and (b) must be specifically accepted by the CSA prior to publication.

The Contractor must obtain and use a high resolution printed or electronic copy of the CSA's corporate identity logo and seek advice on its application, by contacting the project authority as mentioned in Paragraph 5.2 of this contract.

3. COMMUNICATION ACTIVITY COORDINATION PROCESS

The contractor must coordinate with the CSA's Directorate of Communications and Public Affairs all Communication Activities pertaining to the present contract. To this end, the contractor must:

- a. As soon as the Contractor intends to organize a Communication Activity, send a Notice to the CSA's Directorate of Communications and Public Affairs. The Communications Notice must include a complete description of the proposed Communication Activity. The Notice must be in writing in accordance with the clause Notice included in the general conditions applicable to the contract. The Communications Notice must include a copy or example of the proposed Communication Activity.

- b. The contractor must provide to the CSA any and all additional document in any appropriate format, example or information that the CSA deems necessary, at its entire discretion to correctly and efficiently coordinate the proposed Communication Activity. The Contractor agrees to only proceed with the proposed Communication Activity after receiving a written confirmation of coordination of the Communication Activity from the CSA's Directorate of Communications and Public Affairs.
- c. The Contractor must receive beforehand the authorization, approval and written confirmation from the CSA's Directorate of Communications and Public Affairs before organizing, proceeding or hosting a communication activity.

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ATTACHMENT 1 to PART 3

ELECTRONIC PAYMENT INSTRUMENTS

The Bidder accepts to be paid by any of the following Electronic Payment Instrument(s):

- VISA Acquisition Card;
- MasterCard Acquisition Card;
- Direct Deposit (Domestic and International);
- Electronic Data Interchange (EDI);
- Wire Transfer (International Only)

ATTACHMENT 1 TO PART 4

Point Rated Evaluation Criteria

1. POINT RATED CRITERIA

Bids will be evaluated according to the point-rated criteria as specified in Table 1 and section 2 of this document: "Evaluation Criteria and Benchmark Statements".

The Bidder must achieve the minimum score requirements as indicated in Table 1: "List of Evaluation Criteria and Associated Ratings". Bids which fail to obtain the required minimum number of points specified will be declared non-responsive. Each point rated technical criterion should be addressed separately.

The criteria are grouped under the following divisions:

- 1) Science Merit;
- 2) Feasibility; and
- 3) Management.

Section 2, "Evaluation Criteria and Benchmark Statements" contains a series of evaluation criteria, each supported by a set of benchmark statements (0, A, B, C, D). Each of these statements has a corresponding relative value:

- 0 = 0% of maximum point rating
- A = 25% of maximum point rating
- B = 50% of maximum point rating
- C = 75% of maximum point rating
- D = 100% of maximum point rating

As an example, the maximum point rating for the "*Description of the science objectives and investigations*" criterion is 15 points. If a Bid receives a "C" for this criterion in the evaluation process, the score attributed will be:

75% of 15 points = 11.25 points (score)

Table 1 identifies:

- 1) The maximum point rating assigned to each criterion;
- 2) The maximum point rating possible for each division (Science Merit, Feasibility, and Management);
- 3) The maximum point rating possible for the overall score;
- 4) The minimum point rating required for the overall score;
- 5) The minimum point rating required for the Science Merit division.

Table 1: List of Evaluation Criteria and Associated Ratings

| Evaluation Criteria and Ratings | |
|-------------------------------------------------------------------------------|----------------|
| | Ratings |
| Science Merit Criteria | |
| 1. Description of the science objectives and investigations | 15 |
| 2. Relevance of the science objectives and investigations | 15 |
| Minimum Score | 18 |
| Maximum Score | 30 |
| Feasibility Criteria | |
| 3. Scope of the science maturation study | 10 |
| 4. Feasibility of achieving the science maturation study goals and objectives | 30 |
| Maximum Score | 40 |
| Management Criteria | |
| 5. Team Capability | 15 |
| 6. Management Plan | 15 |
| Maximum Score | 30 |
| Maximum Overall Score | 100 |
| Minimum Overall Score Requirement | 65 |

1.1. Cross-References to Evaluation Criteria in the Bid (Optional)

The Bidder may complete the following table by indicating where in its Bid the information is found demonstrating how the proposal meets the evaluation criteria, to assist in the assessment of the Bid.

Table 2: Cross-References to Evaluation Criteria in the Bid

| Evaluation Criteria | Location where the information is found in the Bidder's bid |
|----------------------------|--------------------------------------------------------------------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

2. EVALUATION CRITERIA AND BENCHMARK STATEMENTS

Science Merit Criteria

1. Description of the science objectives and investigations

This criterion evaluates the proposed science objectives and investigations for clarity, understanding and substantiation.

- 0)
 - The science objectives and investigations are not described.
- A)
 - The proposed science objectives and investigations are described, but not substantiated.
- B)
 - The proposed science objectives and investigations are described and substantiated with a literature review, but key references and justifications are missing.
- C)
 - The proposed science objectives and investigations are clearly described, in the context of international scientific goals and substantiated with a literature review, and indicate that the bidder has an understanding of the science.
- D)
 - The proposed science objectives and investigations are clearly described, in the context of recent results and international scientific goals and substantiated with a literature review, including a description of the theory and examples that demonstrate an expert level understanding of the science.

2. Relevance of the science objectives and investigations

This criterion evaluates the relevance of the proposed science objectives and investigations to Study objectives, Canadian priorities, in particular priorities in space astronomy and Science Readiness Levels (SRL).

- 0)
 - The science advancements proposed are not relevant or will not advance study objectives.
- A)
 - Limited traceability is provided to the community Long Range Plans, CSEW and / or international objectives, OR
 - The study targets SRL 2 or less.
- B)
 - Clear traceability is provided to the community Long Range Plans, CSEW and / or international objectives, AND
 - The study targets SRL 3

C)

- Clear traceability is provided to the community Long Range Plans, CSEW and / or international objectives, AND
- The study targets SRL 4, AND
- The science objectives build on scientific capabilities at Canadian institutions.

D)

- Clear traceability is provided to the community Long Range Plans, CSEW and / or international objectives, AND
- The study targets SRL 4 or above, AND
- The science objectives are strongly enabled by identified scientific expertise at Canadian institutions.

Feasibility Criteria

3. Scope of the science maturation study

This criterion assesses the degree to which the Proposal addresses the Statement of Work. It assesses the scope of the science maturation study itself. In general a detailed plan should include justification for the approach in terms of contribution to Science Maturation, methodology for the approach, and expected results.

0)

- No plan is provided to identify requirements for the measurements needed to address the proposed science objectives.

A)

- An approach is described to identify requirements for the measurements needed to address the proposed science objectives.

B)

- A plan is outlined to identify requirements for the measurements needed and the baseline and threshold investigations to address the proposed science objectives, AND
- The experiments, tools, models and/or approaches proposed under this study are adequate to achieve the study goals.

C)

- A detailed plan is described to identify requirements for the measurements and the baseline and threshold investigations with good traceability to the proposed science objectives, AND
- The experiments, tools, models and/or approaches being developed under this study will be essential for this study and for future development of this investigation.

D)

- A detailed plan is described to identify requirements for the measurements and the baseline and threshold investigations with good traceability to the proposed science objectives, AND
- The experiments, tools, models and/or approaches being developed under this study are essential for this study and for future development of this investigation and are of broad use for definition and development of other investigations in the area of interest.

4. Feasibility of achieving the science maturation study goals and objectives

This criterion assesses the overall feasibility of the science maturation study – the degree to which it is capable of delivering a science maturation report that meets SRL 4.

- 0)
- The methodologies for the science maturation study work are inappropriate or insufficient to engage the SOW tasks and deliver results.
- A)
- The broad methodology described for the science maturation study is appropriate, but better approaches exist, and it presents significant risks that expected study goals will not be achieved.
- B)
- The methodologies described for the elements of the science maturation study are appropriate and substantiated by a literature review, AND
 - The chosen methodologies are sufficient to allow the work to be completed and planned study goals achieved, but risks exist.
- C)
- The methodologies described fit all elements of the science maturation study and are substantiated by a literature review, AND
 - The chosen methodologies are comprehensive to allow the work to be completed and planned study goals achieved, but risks exist, AND
 - The science / data product requirements will be sufficiently defined and help future instrument / payload / mission development.
- D)
- The methodologies described fit all elements of the science maturation study and are substantiated by a literature review, AND
 - The chosen methodologies are comprehensive to allow the work to be completed and planned study goals achieved with minimal risks, AND
 - The science / data product requirements will be substantially defined to drive future instrument / payload / mission development.

Management Criteria

5. Team Capability

This criterion assesses the capability (education, knowledge, experience, expertise and completeness of skill-sets in science, engineering and management) of the personnel assembled to carry out the proposal.

- 0)
- Members of the proposed team do not have the minimum required expertise.

- A)
- The proposed team lacks key expertise and may not be capable of fulfilling the statement of work, OR
 - The roles and responsibilities of the team members are not provided.
- B)
- The key personnel identified in the proposed team has been involved in similar science definition roles for astronomical facility(ies), AND
 - The proposed team addresses the statement of work, but is lacking some expertise (skill-sets).
- C)
- The key personnel identified in the proposed team has been involved in similar science definition roles for astronomical facility(ies) similar in complexity and scope to what is requested in the SOW, AND
 - The expertise of the proposed team demonstrates that it is capable of fulfilling the statement of work, AND
 - The completeness of the team is demonstrated through the completeness or complementarities of skill-sets of its members, AND
 - The roles and responsibilities for key team members are defined.
- D)
- The key personnel identified in the proposed team has been involved in similar science definition roles for space astronomical facility(ies) similar in complexity and scope to what is requested in the SOW, AND
 - The expertise of the proposed team demonstrates that it is capable of fulfilling the statement of work with the potential of delivering an authoritative science maturation study, AND
 - The completeness of the team is demonstrated through the completeness or complementarities of skills and expertise of its members, AND
 - The roles and responsibilities of key team members are defined and supported with letters of agreement or commitment for key sub-contractors or collaborators.

6. Management Plan

This criterion assesses the effectiveness of the management plan, specifically risk, schedule and resource allocations, including meeting and/or conference plan. Justification should be provided for the added value of attendance at each of the meetings or conferences.

- 0)
- The project schedule is missing, OR
 - The resource allocations are missing.
- A)
- The schedule is underestimated and unrealistic to achieve study objectives, OR
 - The resource allocations are significantly under or over-estimated, OR
 - Risks are not identified.
- B)
- A basic schedule is provided and is appropriate, AND
 - Basic resource allocations are provided and is appropriate, AND

- Risks are identified, but mitigation strategies are missing, AND
- A plan is included to engage with potential future collaborators through meetings, conference attendance or other activities

C)

- A detailed schedule is provided that includes appropriate study milestones / deliverables, AND
- A detailed resource allocation is provided, associating personnel with study elements, AND
- A plan is included to engage with potential future collaborators through meetings, conference attendance or other activities with justification, AND
- Risks are identified and mitigation strategies are discussed.

D)

- A detailed schedule is provided that includes appropriate study milestones, deliverables and dependencies, AND
- A well-structured Work Package provides tasks descriptions (work breakdown structure), personnel and resource allocations and deliverables for each study element, AND
- A plan is included to engage with potential future collaborators through meetings, conference attendance or other activities with justification, AND
- Comprehensive risk analysis and mitigation strategies are provided.

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ANNEX "A"

STATEMENT OF WORK

The Statement of Work, appended to the bid solicitation package, is to be inserted at this point and forms part of this document.

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ANNEX B
BASIS OF PAYMENT
SCHEDULE OF MILESTONES

The schedule of milestones for which payments will be made in accordance with the Contract is as follows:

| Milestone No. | Deliverable | Firm Amount | Delivery Date |
|----------------------|--------------------|--------------------|----------------------|
| 1 | Specify | | |
| 2 | Specify | | |
| 3 | Specify | | |
| Etc. | | | |

Total Firm Price CAD \$ _____
(Taxes Extra, if applicable)



CSA-CASTOR-SOW-0002

Canadian Space Agency

Annex "A"

Wide Field Space Astronomy Study: Science Maturation Study for UV/Optical Wide Field Space Astronomy for Dark Energy Investigations

Statement of Work (SOW)

Initial Release

August 10, 2017

FOR CANADIAN SPACE AGENCY USE ONLY

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1 INTRODUCTION

1.1 PROGRAM BACKGROUND

The exploration of space is a highly visible endeavour, a powerful driver for scientific and technical innovation, a magnet for world-class talent, and an inspiration for young Canadians to pursue careers in science and technology. It enables scientific questions to be addressed in a unique environment such as investigations to better understand our universe through space astronomy. The Canadian Space Agency's (CSA) Space Exploration (SE) Strategic Planning helps to shape and determine the nature of Canada's contribution to potential future planetary and space astronomy missions.

Space Exploration Strategic Planning supports pre-Phase 0 activities that include:

- (i) Consultations and prioritizations (mission and technology roadmapping);
- (ii) Studies for science definitions and maturation; and
- (iii) Studies for mission concepts or contributions to international missions.

Through (ii) and (iii), Space Exploration Strategic Planning supports activities to identify the science and technology developments as most likely opportunities in future space exploration missions of interest to Canada and these studies are part of the requirement development activity to increase the level of readiness.

Responding to Canadian space exploration stakeholder priorities, CSA invests in the first stages of mission identification, including anticipated scientific, technological and operational needs and evaluate opportunities in potential missions.

SE Preparatory Activities target missions that are mature contenders at conceptual phases of strong interest to the Canadian space sector and scientific community. Results prepare Canada to offer well-informed and confident options.

1.2 PRIORITIZATION

Study objectives are selected and defined based on analyses of international and national space exploration priorities, through consultations committees, foreign space agency plans and strategies, agency-to-agency dialogue and national workshops (e.g. Canadian Space Exploration Workshop (CSEW)).

The current requirement will expand on the CSA Space Exploration priorities in **Space Astronomy**. Space-based observatories enable scientific measurements and imaging not possible from the ground, serving to increase our understanding of the origins and the nature and physics of the universe, its composition, matter and energy, age, structure and evolution.

For space astronomy, stakeholder priorities are reflected in the astronomical community (Canadian Astronomical Society (CASCA)) decadal plans – the Long Range Plan (LRP) 2010 and the LRP Mid-term review 2016 (RD-08, RD-09).

This Statement of Work (SOW) requires a Science Maturation Study in the areas defined in the following sections in support of the requirement development activity of CSA's Space Exploration Strategic Planning.

2 DOCUMENTS

2.1 REFERENCE DOCUMENTS

The documents identified in Table 2-1 provide additional information or guidelines that may clarify the contents or are pertinent to the history of this SOW.

TABLE 2-1: REFERENCE DOCUMENTS (RD)

| RD No. | Document Number / Source | Document Title | Rev. | Date |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------|-------------|
| RD-01 | http://www.asc-csa.gc.ca/pdf/eng/publications/space-policy/canadas-space-policy-framework.pdf | Government of Canada Space Policy Framework | | Feb. 2014 |
| RD-02 | https://www.ic.gc.ca/eic/site/062.nsf/eng/home | Canada's Innovation Agenda | | 2017 |
| RD-03 | ftp://ftp.asc-csa.gc.ca/users/Exp/pub/Publications/CSEW6/ | Canadian Scientific Priorities for the Global Exploration Roadmap, CSEW6 report | Initial | 30 May 2009 |
| RD-04 | ftp://ftp.asc-csa.gc.ca/users/Exp/pub/Publications/CSEW2016/ | CSEW 2016 abstracts, presentations | | Nov 2016 |
| RD-05 | CSA-SPEX-GDL-0001 ftp://ftp.asc-csa.gc.ca/users/TRP/pub/Exploration-Core-Science-Definition-Studies/2017/ | CSA Science Readiness Level Guidelines | Draft | June 2017 |
| RD-06 | CSA-ST-GDL-0001 ftp://ftp.asc-csa.gc.ca/users/TRP/pub/TRRA/ | CSA Technology Readiness Levels and Assessment Guidelines | C | March 2017 |
| RD-07 | CSA-ST-RPT-0003 ftp://ftp.asc-csa.gc.ca/users/TRP/pub/TRM/ | Technology Roadmap Worksheet | A | Sept 2012 |
| RD-08 | http://www.casca.ca/lrp2010/index.php | CASCA Long Range Plan 2010 "Unveiling the Cosmos" | Final | 2010 |
| RD-09 | http://casca.ca/wp-content/uploads/2016/03/MTR2016nocover.pdf | CASCA LRP MTR 2016 "Unveiling the Cosmos: Canadian Astronomy 2016-2020" - Report of the Mid-Term Review | | 2016 |

| RD No. | Document Number / Source | Document Title | Rev. | Date |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------|---------------|
| RD-10 | DWG-Cote-UVictoria-UVOptical-FINALREPORT ftp://ftp.asc-csa.gc.ca/users/TRP/pub/Science-Maturation-Studies/2015/ | Final Report of the CSA Discipline Working Group on Wide-Field Imaging from Space | Final | 23 Mar. 2009 |
| RD-11 | RPT-CSA-50188-1002 ftp://ftp.asc-csa.gc.ca/users/TRP/pub/Science-Maturation-Studies/2015/ | Canadian Space Telescope Mission Concept Study – Executive Summary | P2 | 24 Apr. 2012 |
| RD-12 | Coté et al, SPIE Vol. 8442, 2012, Space Telescopes and Instrumentation 2012: Optical, Infrared, and Millimeter Wave. http://spie.org/Publications/Proceedings/Paper/10.1117/12.926198 | CASTOR: The Cosmological Advanced Survey Telescope for Optical and ultraviolet Research | | 1-6 July 2012 |
| RD-13 | Coté et al, COSPAR Advances in Space Research, Vol. 53, Issue 6, 15 Mar. 2014, P. 982–989 http://www.sciencedirect.com/science/article/pii/S0273117713007369 | Wide-field UV imaging: Current capabilities and performance requirements for future missions | | 15 Mar. 2014 |
| RD-14 | Scott et al, SPIE Proc. 9915, High Energy, Optical, and Infrared Detectors for Astronomy VII. http://spie.org/Publications/Proceedings/Paper/10.1117/12.2231750 | NUV performance of e2v large BICMOS array for CASTOR | | 26 July 2016 |

3 OBJECTIVES OF THE SCIENCE MATURATION STUDIES

The overall objectives of CSA Space Exploration Strategic Planning Science Maturation Studies are to mature and validate science requirements and plans for future missions in planetary science, space astronomy and life sciences investigations. The outcome should include a maturation of science solutions to CSA Space Exploration's Science Readiness Level 4 or higher. The Science Readiness Level (SRL) scales are further described in RD-05 (and summarized in Table 3-1). This will provide information to assess viability to invest in potential subsequent developments.

TABLE 3-1: THE CSA SPACE EXPLORATION DEVELOPMENT SCIENCE READINESS LEVEL SCALE

(See details in RD-05)

| Science Readiness Level Description | SRL No: | Mission Phase |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------|
| Basic scientific principles observed and reported | SRL 1 | Fundamental research |
| Science investigation defined | SRL 2 | SE R&D programs (preparatory phases including: Science Definition, Concept Studies, Science Maturation) |
| Science investigation proof of concept | SRL 3 | |
| Science investigation validated using simulated and/or instrument breadboard data | SRL 4 | |
| Science investigation validated using analogue and instrument prototype data | SRL 5 | Phase 0/A |
| Science investigation validated using calibrated instrument Engineering Model data products | SRL 6 | Phase BCD |
| Science investigation validated using calibrated instrument Flight Model data products, and analogue science operations, where relevant | SRL 7 | |
| Science investigation data production validated through successful mission operations | SRL 8 | Phase E |
| Science investigation outcomes generated through publication of results | SRL 9 | Phase E and analysis |

These studies allow for development of the science elements in areas of CSA priorities through the development of scientific approaches, definition of the investigation and measurement requirements, models and tools and preliminary development of a science plan. These analyses and tools developed under this preparatory phase are important for trade studies and analysis of de-scope options in future mission development cycles that typically have a long lead time for development. The studies may allow for the refinement of scientific hypotheses to identify possible measurements or approaches to be made in subsequent or parallel space experiments.

3.1 SCOPE

This SOW defines the requirements and deliverables of the maturation study for the targeted mission identified below to inform the decision process when selecting Canadian-led missions or contributions to international space exploration missions by providing in general:

1. Refined Science and Technology Assessment
2. Conceptual Assessment
3. Programmatic Assessment

The nature and scope of this study requires an interdisciplinary team to address all aspects, including science, technology, operations, financial, and planning future developments. The Contractor must provide the facilities, personnel, materials, and services required to perform this study.

3.2 TARGET MISSION

This 2017 SOW is for one Science Maturation Study in Space Astronomy targeting wide field UV/optical imaging telescope aimed at principally the investigation of dark energy.

Under CSA's Space Exploration Development, concept studies were completed in 2012 through a competitive process to define possible future space missions or instruments that addressed priorities in Planetary Exploration and Space Astronomy. One of the resulting concept studies proposed a Canadian led Space Telescope Mission (CSTM) for astronomy, later renamed "Cosmological Advanced Survey Telescope for Optical and UV Research" or CASTOR.

As proposed, CASTOR is a 1-meter class space telescope concept on a small satellite platform that would make a unique contribution to astrophysics by providing wide field, high-resolution imaging in the UV/optical spectral region, surpassing any ground-based optical telescope in image sharpness. The mission's goal is directed at dark energy investigations that would supplement data from planned dark energy missions (such as Euclid, Wide Field Infrared Survey Telescope (WFIRST) and ground-based survey telescopes) in the mid-2020 timeframe.

Dark energy remains the top science priority identified in the CASCA LRP (RD-08) and the Mid-Term Review (MTR) (RD-09).

Other science investigations enabled by large aperture UV/optical wide field space observatory can naturally be included, such as galaxy and star formation, and the outer solar system. As part of CSA's space exploration planning activities, options for contributions to these science objectives, and others, can be explored.

The final executive report of the CASTOR study (RD-11) describes the mission and its scientific goals.

3.3 TOPICS FOR DEVELOPMENT

The topics for this Maturation Study related to the wide field UV/optical imaging mission must include, but are not limited to, the topics listed in 3.3.1 to 3.3.4.

3.3.1 *Science Elements*

1. Review and update of the **primary science objectives** of the wide field UV/optical space telescope concept consistent with the priorities of Dark Energy (DE) investigation. Definition and update of baseline requirements and performance floor, showing linkages to top level science objectives.
2. Review and update, including possible insertion or deletion, of **secondary science objectives** consistent with and assessed against the mission's primary (DE) requirements (scope). A suggested science traceability matrix is provided in Table 3-2.
3. Review of literature, application of theory, empirical models, other modeling, parameterization and simulations, to demonstrate possible **outcomes** and effectiveness.
4. Overview of **relevant past, current and planned DE investigations** using space or ground observatories, comparing:
 - a. type of observations and survey strategy,
 - b. timeline of the investigations (start dates, durations),
 - c. complementarity or value added,
 - d. expected science outcomes.

3.3.2 *Technical Elements*

1. Evaluation of options in approach to the **mission designs** and architecture (high level): science needs impact on mission elements such as spacecraft platform, orbit, survey strategy, data downlinks (ground segment), and operations lifetime.
2. Evaluation of options in approach to the **mission payload**: such as aperture, optical configuration, optics, focal plane (detector types, layout, bands, filters), and other components and instruments, that may be key to delivering required measurements. Updated **optical design** to demonstrate image quality, throughput, stability, meeting the science requirements. (RD-14)
3. Description of key **technology** elements needed, recognizing availability and challenges or innovations required. This must include the development of a Technology Readiness and Risk Assessment (TRRA) and Technology Roadmap (TRM) as per RD-06.
4. Optional: demonstrations to validate measurement feasibility at payload sub-system levels through testing.

3.3.3 *Community Elements*

1. Identification of **Canadian capacity** (academic, Other Government Departments (OGD)) to define and exploit the mission (development and operations phases): appraisal of existing scientific and instrumentation expertise. Assessment of research interests and expected commitments in the research community, and links to other research programs.
2. Identification of **scientific collaboration** opportunities: identify potential international collaborators (unofficially) to augment scientific impact, which may include access to other missions and data sources (space or ground-based telescopes).
3. Identification of **potential partners** (unofficially) that could contribute to the mission and leverage Canadian investments and the nature of the contribution (spacecraft elements, payload, launch, operations, etc.).

3.3.4 *Planning Elements*

1. Review the **overall cost estimate** of the mission, by project phases (0, A to D) as well as phase E (operations including data reduction) and science investigations support. This should include specific cost estimates for identified high risk elements (or sub-systems) and provide a development plan.
2. Description of programmatic **alignment** with: the Canadian Space Policy Framework (RD-01) and the Canadian astronomy priorities (RD-04, RD-08, RD-09) and international plans. Description of expected science impacts, contribution to knowledge, socio-economic benefits and Highly Qualified Personnel (HQP).

The studies must generate a final report (CDRL-7) describing the findings of the above topics.

TABLE 3-2: EXAMPLE OF SCIENCE TRACEABILITY MATRIX
(Adapted from NASA Standard AO)

| Science Goals | Science Objectives | Science Measurement Requirements | | Instrument Functional Requirements | | Projected Performance | Mission Functional Requirements (top level) |
|----------------|----------------------------|----------------------------------|------------------------|------------------------------------|--------|-----------------------|----------------------------------------------------------------------------------------------------------------|
| | | Observables | Physical Parameters | | | | |
| Goal 1 | Objective 1 | Image | Area Depth Bands | FOV | X' | | Observing strategies: requires survey slew rates and pointing; orbit, viewable sky. Data downlink. |
| | | | | Spatial resolution | X'' | | |
| | | | | Magnitude | X mag | | |
| Goal 2 Etc. | Objective 2 <i>Etc.</i> | Spectra | Range Resolution | Spectral range | X-Y nm | | Need Y months of observation to complete survey or to observe variability of phenomena |
| | | | | | | | |
| | | | | Timing | | | |

3.4 TASK DESCRIPTION

3.4.1 Science Maturation Development Activities

The Science Maturation Study activities will review and refine the science objectives and requirements in order to assess the maturity of the science readiness levels (SRL) of the investigations, including what are the risks to science success, and therefore what type of investments are needed to advance the target mission. Furthermore, the SRL assessment provides:

- a) a rationale for iterative science instrument design and re-investing in science definition if an implementation requires ameliorations;
- b) a rationale for continuing investment to increase SRL;
- c) a means to feedback to the team and science community on the draft documents and plans that will be key for (and after) mission selection, hence providing an opportunity for PI and science team training; and
- d) an assessment of the fidelity of science plans and costing in potential subsequent phases.

The scope of this study encompasses work to mature a science investigation from SRL 2 to SRL 4. Key elements in maturation between levels 2 and 4 are establishing baseline investigation / mission requirements, a well understood performance floor that can act as a descope position, and tools for demonstration and validation of these requirements.

Activities can include one or more approaches including development of theory, analysis of existing data, model development, etc., as listed in Section 3.3.

3.4.2 Project Management, Meetings and Conferences

The Contractor must provide project management activities necessary to ensure the project remains on budget and on schedule including the preparation of meeting agendas, minutes, presentations and project evaluation as described in CDRLs 1-5, and 7.

In order to engage with potential future collaborators, attendance at meetings, pertinent conferences or workshops for discussion, consultations, exchange of ideas and dissemination of results may be required. CSA must be informed at least 2 weeks prior to any travel to public conferences where the project will be discussed, in order for CSA to maintain awareness of ongoing discussions.

3.4.3 Intellectual Property (IP) Management

The Contractor must identify the Background Intellectual Property (BIP), the IP that will be generated in this study, and the owners of these BIP and IP and how it will be managed and coordinated among the various collaborators and entities involved (DID-0009 – Contractor Disclosure of Intellectual Property).

3.4.4 Science Maturation Study Project Schedule

The project schedule prepared by the Contractor must provide a graphical representation of predicted tasks, milestones, dependencies, resource requirements, task duration, and deadlines. The updated schedule must be provided at each milestone.

3.4.5 Final Report

A report must be prepared containing the results of the study corresponding to CDRL 7 (DID-0007 – Final Report).

3.4.6 Contract Milestones and Meetings

The Contractor must organize the meetings listed in Table 3-3.

TABLE 3-3: MILESTONE AND MEETING SCHEDULE

| Milestone | Meeting | Nominal date relative to Contract Award (CA) | CDRL | Location ¹ |
|-----------|-------------------------------|----------------------------------------------|---------------------------|-----------------------------------|
| M1 | Kick-off Meeting | CA + 2 weeks | 1, 2, 5 | By telecom |
| M2 | Progress Review | CA + 3 months | 1, 5 | By telecom |
| M3 | Mid-term Review (MTR) Meeting | CA + 6 months | 1, 3, 5, 7 | By telecom |
| M4 | Progress Review | CA + 9 months | 1, 5 | By telecom |
| M5 | Final Review Meeting (FRM) | End of Contract – 2 weeks | 1, 5, 7, 8, 9, 10, 11, 12 | CSA HQ ² or by telecom |

Notes: 1. Reminder: travel costs are the responsibility of the Contractor.

2. Choice of the meeting location (CSA HQ or Telecom) will be according to the Contractor's proposal.

All key participants under the contract, including at least one representative from each subcontractor, must attend all the meetings.

The Progress Reviews are meant for discussion on the success of the approach and review of schedule and future activities and any other issues.

The MTR Meeting is meant for discussion on the progress of the Science Maturation Report. A presentation at the MTR is required. It is necessary to have an agenda and minutes produced from the MTR, capturing any actions for either party.

The specific intent of the Final Review Meeting (FRM) will be to discuss in detail the results obtained and the proposed follow-on activities. This meeting is intended to provide an opportunity for the Contractor, the Project Authority (PA), the Scientific Authority (SA), and other invited

attendees to review and discuss the project. Canada reserves the right to invite additional knowledgeable people [Public Servants or others under Non-Disclosure Agreement (NDA), if necessary] to this meeting. The exact date and time of the meetings will be mutually agreed to by the PA, the SA, and the Contractor.

The Contractor may request ad-hoc telecons with CSA whenever required to resolve unforeseen and urgent issues. The CSA may also request such ad-hoc telecons with the Contractor. The selection of participants will depend on the nature of the issue.

3.4.7 Documentation, Reporting and Other Deliverables

The Contractor must submit the documentation as defined and at the date stipulated in the Contract Data Requirements List (CDRL), Table 3-4, to the PA.

In addition to any paper copy of all project documentation and reports, the Contractor must also provide the PA with an electronic copy in a format acceptable to the CSA. Both the PDF and original version, e.g. Microsoft Word or PowerPoint, must be provided to CSA. Original version of any figures or tables that are part of these documents must also be provided to CSA, e.g. Visio file of a figure created in Microsoft Visio. Instructions on how to name electronic documents are provided in Appendix A.1.

The cover page of each document must include the following text:

© CANADIAN SPACE AGENCY yyyy (insert year)

“RESTRICTION ON USE, PUBLICATION OR DISCLOSURE OF PROPRIETARY INFORMATION

This document is a deliverable under contract no. _____. This document contains information proprietary to Canada, or to a third party to which Canada may have legal obligation to protect such information from unauthorized disclosure, use or duplication. Any disclosure, use or duplication of this document or any of the information contained herein for other than the specific purpose for which it was disclosed is expressly prohibited except as Canada may otherwise determine.”

Then, on all internal pages, each document must include the following text:

“Use, duplication or disclosure of this document or any of the information contained herein is subject to the Proprietary Notice at the front of this document.”

The Contractor must not publish, nor discuss verbally in public (i.e. conferences), nor have published any information contained within this, without the prior written approval of the CSA.

All documents must identify the organisation’s name, contract number, title and document name and must be structured in accordance with the Data Item Description (DID) referenced in the CDRL.

In addition to the disclosure obligation under clause K3410C any Foreground Information must be fully disclosed and documented by the Contractor in the technical reports delivered by the Contractor to the Project Authority under this Contract.

TABLE 3-4: CONTRACT DATA REQUIREMENTS LIST (CDRL)

| CDRL | Deliverable | Due Date | Version | DID |
|-------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------|---------------------|
| 1. | Meeting Agendas | Meeting - 1 week | Final | 0001 |
| 2. | Kick-off Meeting Presentation | Meeting - 1 week | Final | 0002 |
| 3. | Mid-term Review Meeting Presentation | Meeting - 1 week | Final | 0003 |
| 4. | Final Review Meeting Presentation | Meeting - 1 week | Final | 0004 |
| 5. | Meeting Minutes | Meeting + 1 week | Final | 0005 |
| 6. | TRRA and TRM | End of contract - 2 weeks | Final | 0006, 0011 |
| 7. | Final Report | Draft version at Midterm Review Meeting - 2 weeks. Final version at end of contract -2 weeks | Draft Final | 0007 |
| 8. | Copies of presentations, publications given at workshops or conferences | Workshop or conference - 1 week | Draft | Contractor's format |
| 9. | Copies of submitted publications | End of contract - 2 weeks | As submitted | Contractor's format |
| 10. | Contractor Performance Evaluation | End of contract - 2 weeks | Final | 0008 |
| 11. | Foreground Intellectual Property (FIP) Disclosure | End of contract - 2 weeks | Final | 0009 |
| 12. | Final Data Package | End of contract | Final | 0010 |

4 LIST OF ACRONYMS

| | |
|--------|--------------------------------------------------------------------|
| AG | Agenda |
| AO | Announcement of Opportunity |
| BIP | Background Intellectual Property |
| CA | Contract Award |
| CASCA | Canadian Astronomical Society |
| CASTOR | Cosmological Advanced Survey Telescope for Optical and UV Research |
| CDRL | Contract Data Requirements List |
| CSA | Canadian Space Agency |
| CSEW | Canadian Space Exploration Workshop |
| CSTM | Canadian led Space Telescope Mission |
| DE | Dark Energy |
| DID | Data Item Description |
| ER | Executive Report |
| FIP | Foreground Intellectual Property |
| FRM | Final Review Meeting |
| HQ | Headquarters |
| HQP | Highly Qualified Personnel |
| IP | Intellectual Property |
| LRP | Long Range Plan |
| MM | Animation/Multimedia |
| MN | Minutes of meeting |
| MTR | Mid-term Review |
| NDA | Non-Disclosure Agreement |
| OGD | Other Government Departments |
| PA | Project Authority |
| PDF | Portable Document Format |
| PR | Progress Report |
| PT | Presentation |
| RD | Reference Document |
| SA | Scientific Authority |
| SE | Space Exploration |
| SOW | Statement of Work |
| SRL | Science Readiness Level |
| TN | Technical Note |
| UV | Ultra Violet |
| WFIRST | Wide Field Infrared Survey Telescope |

APPENDICES

A.1 DOCUMENT NAMING CONVENTIONS

Context

This appendix presents the naming convention to follow for any documentation generated under any resulting contract.

Documents must contain 4 main components:

1. Project identifier
2. Contract Number
3. Document title
4. Date Tracking number

1. Project Identifier

The project identifier must contain:

- **WXYZ**: A 4-8 letter acronym of the project
- **TYPE**: A 2 letter acronym according to the table below.

| Acronym | Description |
|---------|----------------------|
| AG | Agenda |
| ER | Executive Report |
| MN | Minutes of meeting |
| PR | Progress Report |
| PT | Presentation |
| TN | Technical Note |
| MM | Animation/Multimedia |

- **NUM**: A three digits sequential number (e.g. 001, 002, etc.)
- **CIE**: Name of Company (no space, no hyphen)

2. Contract Number

- For example: _9F028-07-4200-03

3. Document Title

Revision number or letter

4. Date Tracking Number

- **_sentYEAR-MONTH-DAY_draft**

The *_draft* mentioned should be removed on the final version of the document once approved by CSA.

A.2 DATA ITEMS DESCRIPTION (DID)

| | |
|---------------------------------------------------------------------------------------------------------------------------|-----------|
| DID-0001 – MEETING AGENDA | 18 |
| DID-0002 – KICK-OFF MEETING PRESENTATION | 19 |
| DID-0003 – MID-TERM REVIEW MEETING PRESENTATION | 20 |
| DID-0004 – FINAL REVIEW MEETING PRESENTATION | 21 |
| DID-0005 – MEETING MINUTES | 22 |
| DID-0006 – TRRA - TECHNOLOGY READINESS AND RISK ASSESSMENT (TRRA) WORKSHEETS AND TECHNOLOGY ROADMAP (TRM)..... | 23 |
| DID-0007 – FINAL REPORT | 24 |
| DID-0008 – CONTRACTOR PERFORMANCE EVALUATION..... | 26 |
| DID-0009 – CONTRACTOR DISCLOSURE OF INTELLECTUAL PROPERTY..... | 27 |
| DID-0010 – FINAL DATA PACKAGE | 28 |
| DID-0011 – TECHNOLOGY ROADMAP WORKSHEETS | 29 |

DID-0001 – Meeting Agenda

PURPOSE:

To specify the purpose and content of a meeting

PREPARATION INSTRUCTIONS:

The Meeting Agendas must contain the following information, as a minimum:

1. DOCUMENT HEADER:

- a) Title;
- b) Type of meeting;
- c) Project title, project number, and contract number;
- d) Date, time, and place;
- e) Chairperson; and
- f) Expected duration.

2. DOCUMENT BODY:

- a) Introduction;
- b) Opening Remarks: CSA;
- c) Opening Remarks: Contractor;
- d) Review of previous minutes and all open action items;
- e) Project technical and/or scientific issues;
- f) Project management issues;
- g) Other topics; and
- h) Set or confirm dates of future meetings.

DID-0002 – Kick-off Meeting Presentation

PURPOSE:

To present the Contractor's plan for carrying out the project and to address all significant issues

PREPARATION INSTRUCTIONS:

The Kick-off Meeting Presentation must contain the following information, as a minimum:

- 1) Review major assumptions for the study;
- 2) Review of contract deliverables;
- 3) Work requirements;
- 4) Project's funding and expected cash-flow; and
- 5) Other items as deemed appropriate.

DID-0003 – Mid-term Review Meeting Presentation

PURPOSE:

To present the results of the work done to date in the contract

PREPARATION INSTRUCTIONS:

The Mid-Term Review Meeting Presentation must contain the following information, as a minimum:

- 1) Review current status of the work, discuss orientation and preliminary results;
- 2) Discuss concept / maturation study work;
- 3) Technical and programmatic issues if any;
- 4) Review of contract deliverables;
- 5) Work requirements, status and schedule;
- 6) FIP and BIP;
- 7) Licensing issues if any;
- 8) Project's funding and expected cash-flow;
- 9) Other items as deemed appropriate;
- 10) Presentation's slides to include the required copyrights and intellectual property disclosure

DID-0004 – Final Review Meeting Presentation

PURPOSE:

To present the overall results of the work done in the project including the assessment of Science Readiness Level

PREPARATION INSTRUCTIONS:

The Final Review Meeting Presentation will reflect the final report and must contain the following information, as a minimum:

- 1) Presentation of the work conducted;
- 2) Review of Science Maturation against required elements, including review of up to 2-page illustrated summary suitable for publication;
- 3) Contractor's assessment of completed study against Science Readiness Level;
- 4) Review of technical and/or scientific and programmatic issues if any;
- 5) Discuss concept / maturation study work;
- 6) Final Funding and cash-flow;
- 7) Discuss project management issues;
- 8) Other items as deemed appropriate; and
- 9) Presentation's slides to include the required copyrights and intellectual property disclosure

DID-0005 – Meeting Minutes

PURPOSE:

To provide a record of decisions and agreements reached during reviews/meetings, and action items

PREPARATION INSTRUCTIONS:

The Meeting Minutes must contain the following information, as a minimum:

- 1) Title page containing the following:
 - a) Title, type of meeting and date;
 - b) Project title, project number, and contract number;
 - c) Space for signatures of the designated representatives of the Contractor, the CSA and the Public Services and Procurement Canada (PSPC); and
 - d) Name and address of the Contractor
- 2) Purpose and objective of the meeting;
- 3) Location;
- 4) Agenda;
- 5) Summary of the discussions, decisions and agreements reached;
- 6) Summary of action items;
- 7) List of the attendees by name, position, phone numbers and e-mail addresses as appropriate;
- 8) Listing of open action items and responsibility for each action to be implemented as a result of the review, numbered per the action items list;
- 9) Other data and information as mutually agreed; and
- 10) The minutes must include the following statement:

“All parties involved in contractual obligations concerning the project acknowledge that minutes of a review/meeting do not modify, subtract from, or add to the obligations of the parties, as defined in the contract.”

DID-0006 – TRRA - Technology Readiness and Risk Assessment (TRRA) Worksheets and Technology Roadmap (TRM)

PURPOSE:

Referring to the Technology Readiness and Risk Assessment (TRRA) Guidelines (RD-06), the TRRA describes in a systematic and objective fashion, at a specific point in time (milestone) in the development process, the technological readiness of a system for a particular spaceflight mission or environment, the criticality of the constituent technologies, and the expected degree of difficulty to achieve the remaining technology development steps.

The TRRA provides for all the Critical Technology Elements (CTEs) of the proposed concept, as per the Product Breakdown Structure (PBS), a high-level summary of the maturity of the technologies and the technology development risks. Agreement on the appropriate PBS level and identification of the CTEs is required prior to the TRRA.

PREPARATION INSTRUCTIONS:

The Technology Readiness and Risk Assessment must be carried out in accordance with the CSA Technology Readiness and Risk Assessment Guidelines using the CSA provided Worksheets (see RD-06 source link): the Critical Technologies Elements Identification Criteria Worksheet (CSA-ST-FORM-0003), the Technology Readiness and Risk Assessment Worksheet (CSA-ST-FORM-0001) for each CTE and TRRA summary template (CSA-ST-FORM-0004).

All the completed worksheets must be provided to CSA, and a summary of the TRRA assessment and recommendations must be included in the project Technical Report. The project Final Report must also contain the Technology Development Plan, Technology Roadmap (RD-07) and appropriate inputs to the Risk Assessment, Budget, and Schedule.

DID-0007 – Final Report

PURPOSE:

Provide a well-documented validated science case and review of requirements and approach for the targeted science mission goals. This will provide a well-documented report for reference in potential follow-on phases.

PREPARATION INSTRUCTIONS:

(The author may define and organize additional sub-sections as deemed appropriate to present the comprehensive results of the study.)

The Science Maturation document must contain the following information:

- 1) Fact sheet – a one or two page illustrated summary of the proposed science investigation, science objectives, approach and measurement goals, anticipated mission architecture, payload, technologies and data products, suitable for public.
- 2) Executive Summary
- 3) Introduction
 - a) Science background, overview of the goals and the mission
 - b) Context and needs for the mission in the discipline
 - c) Expected outcomes

Science Section

- 4) Science Objectives
 - a) Primary and secondary science objectives described with traceability to CSA and/or community strategic priorities as requested in this Statement of Work. This section includes a literature review justifying objectives and traceability.
 - b) Measurement goals described with justification addressing the identified science objectives. This section includes a description of the approach to defining measurement goals with reference to the previous studies and other references. It includes a justification of the proposed measurement in terms of specific science signatures relevant to the science objectives, or a description of the optimization activity, e.g. through modeling, simulations and results.
 - c) Mission architecture needs (spacecraft or platform, payloads), orbit and basis of operations, science plan (data reduction, distribution and policy, science teams).
 - d) Links, complementarities, dependencies, competition and / or contribution to concurrent or future observatories towards targeted science objectives.

- 5) Canadian Capacity
 - a) Summary of Canadian science capacity and resources available in Canada to carry out the proposed investigation (mission operations, data reduction, science), identifying existing and future needs. This includes a summary of relevant organizations and known complementary R&D initiatives.
- 6) International Collaborations
 - a) Opportunities for scientific collaborations.
 - b) List of potential or interested partners, outlining benefits to mission development and science outcomes.

Technical Section

- 7) Instrumentation Approach
 - a) Review of payload instruments and configuration.
 - b) Key technology drivers and needs; identifying options and technology items needing evaluation, proof of concept or development.
- 8) Mission Design Overview
 - a) Overall concept (platform, payload)
 - b) Space segment (orbit, lifetime, stability)
 - c) Ground segment (operations, data communications and handling)
- 9) Programmatic
 - a) Fit with respect to community and CSA priorities, government policies, benefits to Canadians (HQP, technology) and spin offs.
 - b) Priority future work – plans for science and technology developments (pre-mission)
 - c) Estimation of costs for Phase 0 and for mission development, risks, including operations and science support. (This can be in a separate document.)
- 10) Self-Assessment of SRL based on evaluation elements for SRL in RD-05.

DID-0008 – Contractor Performance Evaluation

PURPOSE:

To provide an evaluation of the overall success of the project

PREPARATION INSTRUCTIONS:

The Contractor Performance Evaluation must contain the following information, as a minimum:

- 1) Was the project completed on schedule (list deliverables with planned and actual delivery date)?
- 2) How many man-hours of highly qualified personnel (by category) did this work create or maintain?
- 3) What new opportunities were created by the work conducted under the study?

DID-0009 – Contractor Disclosure of Intellectual Property

PURPOSE:

To list all Foreground and Background Intellectual Property related to the project, to be reviewed at the Final Review Meeting

PREPARATION INSTRUCTIONS:

The Disclosure must address the questions listed the document CONTRACTOR DISCLOSURE OF INTELLECTUAL PROPERTY that can be found at:

<ftp://ftp.space.gc.ca/users/GPITT-IPMTT/pub/>.

DID-0010 – Final Data Package

PURPOSE:

The Final Data Package is a collection of all documents to be presented by the Contractor at the end of the contract

PREPARATION INSTRUCTIONS:

The Final Data Package must consist of the final/revised version of all deliverables requested under the present contract (electronic copy). For example, with no limitation, the final data package should include presentations, minutes, monthly or quarterly progress reports and other required deliverables in their final revision. It must also include the contractor disclosure of intellectual property and project evaluation sheet.

DID-0011 – Technology Roadmap Worksheets

PURPOSE:

The Technology Roadmap provides an overview of the required technology developments to meet mission needs and the plan and timeline to reach TRL 6 and 8

PREPARATION INSTRUCTIONS:

The Technology Roadmap must be done using the worksheet provided in RD-07 using the TRRA developed using RD-06.