REQUEST FOR PROPOSALS (RFP) FOR THE REQUIREMENT OF:

ANALYSIS STUDY FOR CANADIAN CONTRIBUTIONS TO THE NASA WIDE-FIELD INFRARED SURVEY TELESCOPE (WFIRST)

FOR THE:

CANADIAN SPACE AGENCY

Bid Submission Deadline:
September 25th, 2014 at 2:00 PM (EDT)

Submit Bids to:

Canadian Space Agency
TENDERS RECEPTION OFFICE/MAILROOM
Receiving/Shipping (between 8:00 am and 4:30 pm)*
6767 Route de l'Aéroport
Saint-Hubert QC
Canada J3Y 8Y9

* Note: closed between 12:00 pm and 1:00 pm

Attention: Robert Kardum

Reference: CSA File No. **9F052–140344/A**

August 18th , 2014

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PART 1 - GENERAL INFORMATION

1. Introduction

The bid solicitation and resulting contract document is divided into six parts plus attachments and annexes, as follows:

Part 1 General Information: provides general description of the requirement;

Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation and states that the Bidder agrees to be bound by the clauses and conditions contained in all parts of 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, if applicable, and the basis of selection;

Part 5 Certifications: includes the certifications to be provided;

Part 6 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Attachments include:

Pricing Schedule
Outline and Content of Technical/Managerial Bid
Technical and Financial Criteria and Evaluation Procedures
Certifications Precedent to Contract Award

The Annexes include the:

Annex “A” Statement of Work

2. Summary

The Exploration Core program of the Canadian Space Agency is seeking bids from qualified suppliers in order to conduct an Analysis Study for a Canadian Contribution to the Wide-Field Survey Telescope (WFIRST) mission.

Requirement Development is part of the Exploration Core program of the Canadian Space Agency. Through Requirement Development, Exploration Core supports CSA’s exploration planning activities and defines the science and technology developments most likely to be required in future space exploration missions of interest to Canada, and assesses potential contributions that Canada could make to such missions. Concept Studies are part of the Requirement Development activity.

This requirement requests Mission Contribution Analysis Study proposals in the following areas of space exploration:

1) Wide-Field Infrared Survey Telescope (WFIRST) - Instrument à grand champ.
2) Wide-Field Infrared Survey Telescope (WFIRST) - Coronagraph.

The complete description of the work to be completed under this requirement is in the Statement of Work provided in Annex “A”.

It is intended to result in the award of up to two (2) contracts for a period of eight (8) months each commencing on the date of contract award (est. for early Fall 2014).

Interested bidders are required to submit their proposals in accordance with the instructions provided in this RFP.

Bids can be submitted in either of Canada's official languages.

3. Communications Notification

As a courtesy, the Government of Canada requests that successful bidders notify the Contracting Authority in advance of their intention to make public an announcement related to the award of a contract.

4. Debriefings

After contract award, bidders may request a debriefing on the results of the bid solicitation. Bidders should make the request to the Contracting Authority within 15 working days of receipt of notification that their bid was unsuccessful. The debriefing may be provided in writing, by telephone or in person.

PART 2 - BIDDER INSTRUCTIONS

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 issued by Public Works and Government Services Canada (PWGSC): https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual.

The 2003 (2014-06-26) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation. Please note that this solicitation and any resulting Contract(s) are being issued directly by the CSA and not by PWGSC acting as Contracting Authority on the CSA's behalf. As a result, the Standard Instructions 2003 (2012-03-02) - Goods or Services - Competitive Requirements, is amended as follows:

1. Section 01 (2014-03-01) Integrity Provisions – Bid, is deleted in its entirety.

2. Subsection 5.2.d. is deleted in its entirety.

3. In subsection 5.4,

   Delete: sixty (60) days
   Insert: one hundred and twenty (120) days.

4. In Sections 06 and 07,

   Delete: PWGSC
   Insert: Canada.

5. Section 08 is deleted in its entirety.

6. Subsection 20.2. is deleted in its entirety.

7. In subsections 12.1.a. and 12.1.b.,

   Delete: "Vendor Performance Corrective Measure, under the Vendor Performance Corrective Measure Policy"

   Insert: "corrective measure under the CSA's Contractor Performance Evaluation policy".

For the purposes of this RFP, all references to "Canada", "Crown", "Her Majesty" or "the Government" in the clauses and conditions herein, including those incorporated by reference, shall designate the Canadian Space Agency.

If there is a conflict between the provisions of 2003 and this document, this document prevails.

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

1.1 SACC Manual Clauses

A7035T (2007-05-25) List of Proposed Subcontractors

2. Submission of Bids

Bids must be submitted only to the CSA's Tenders Reception Office/Mailroom and Shipping/Receiving bay area located at the rear of the John H. Chapman Space Centre in St-Hubert, QC, by the date, time and at the address indicated on the front page of this bid solicitation. A Bid is considered received only when it reaches this area and nowhere else at the Agency.

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

3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority **no later than five (5) 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 questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

4. 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.

5. Basis for Canada's Ownership of Intellectual Property

The Canadian Space Agency has determined that any intellectual property arising from the performance of the Work under the Contract will vest in Canada.

6. Bidder's Conference

A bidders' conference will be held at the John H. Chapman Space Center, 6767 route de l'Aéroport, St-Hubert, QC , Canada J3Y 8Y9 on Thursday September 11th, 2014 (time and room to be confirmed, WebEx, video/tele conferencing will be enabled). The scope of the requirement outlined in the bid solicitation will be reviewed during the conference and questions will be answered. It is recommended that bidders who intend to submit a bid attend or send a representative.

Bidders are requested to communicate with the Contracting Authority before the conference to confirm attendance. Bidders should provide, in writing, to the Contracting Authority, the name(s) of the person(s) who will be attending and a list of issues they wish to table no later than COB, Monday September 8th, 2014.

Any clarifications or changes to the bid solicitation resulting from the bidders' conference will be included as an amendment to the bid solicitation. Bidders who do not attend will not be precluded from submitting a bid.

7. Maximum Funding

The maximum funding available, Goods and Services Tax (GST) or Harmonized Tax (HST) and/or Quebec Sales Tax (QST) extra as appropriate, for a study resulting from the bid solicitation is $300,000 per category, including all expenses, excluding Applicable Taxes (GST and QST). Bids valued in excess of this amount will be considered non-responsive, as per PART 4- Evaluation Procedures and Selection Process, section 1.2 Financial Evaluation. This disclosure does not commit Canada to pay the maximum funding available.

In the event that funding priorities change during or after the bidding process but before the contract award, the CSA may at its sole discretion elect to award fewer or more contracts than advertised (see section 2.1.8 of PART 4). The number of contracts awarded will depend on the value of the awarded contracts and the availability of funds.

PART 3 - BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

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

Section I: Technical/Managerial Bid, 1 hard copy and 1 soft copy on CD or DVD;
Section II: Financial Bid, 1 hard copy and 1 soft copy on CD or DVD;
Section III: Certifications, 1 hard copy.

The acceptable electronic formats are:
Microsoft Word™, Corel WordPerfect™, Microsoft Excel™, Adobe PDF™ and HTML.

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.

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

(a) the total number of pages for Section I should not exceed 60 pages, including bid appendices;
(b) font size should be at least 11pt, including bid appendices;
(c) use 8.5 x 11 inch (216 mm x 279 mm) paper;
(d) use a numbering system that corresponds to the bid solicitation;
(e) each electronic file should be named by using the Bid reference number and the applicable Bid Section;
(f) the cover pages of the Bid (Sections I, II and III) should include the following table duly filled:

Company Name	Company Address
Project Title	
Project Summary (8 lines of text)	

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). To assist Canada in reaching its objectives, bidders are encouraged to:

1) use paper containing fibre certified as originating from a sustainably-managed forest and/or 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/Management Bid

In their technical 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 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, and 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.

In their management bid, bidders should describe their capability and experience, the project management team and provide client contact(s).

Attachment 1 to Part 4, Technical and Financial Criteria and Evaluation Procedures, contains additional instructions that bidders should consider when preparing their technical/managerial bid. The structure and content requested for Section I is detailed in Attachment 2 to Part 3, Outline and Content of the Technical/Managerial Bid.

Section II: Financial Bid

1.1 Bidders must submit their financial bid in Canadian funds and in accordance with the pricing schedule detailed in Attachment 1 to Part 3. The total amount of Goods and Services Tax (GST) or Harmonized Sales Tax (HST) and/or Quebec Sales Tax (QST) is to be shown separately, as applicable.

1.2 Bidders must submit their prices and rates FOB destination, as applicable, Canadian customs duties and excise taxes included, as applicable, and GST or HST and/or QST excluded.

1.3 When preparing their financial bid, bidders should review clause 1.2, Financial Evaluation, of Part 4 and Section 1.1 of Attachment 1 to Part 4.

1.4 Bidders are requested to detail the cost elements for each work package of the Contract Work Breakdown Structure (CWBS). At a minimum, the following information shall be provided for each work package for the price quoted in response to the pricing schedule detailed in Attachment 1 to Part 3:

1- Professional fees: For each individual and (or) labour category, bidders should indicate: a) the quoted hourly rate, inclusive of overhead and profit, if any; and b) the estimated corresponding time (i.e., hours). If daily or monthly rates are proposed, bidders should specify the number of hours included in a working day or month, exclusive of meal breaks.

2- Equipment, if applicable: Bidders shall specify each item required for purchase and provide the pricing basis for each one.

3- Materials and Supplies, if applicable: Bidders shall identify each category of materials and supplies required for purchase and provide the pricing basis of each one. Bidders shall indicate, on a per category basis, whether the items are likely to be consumed during the performance of the contract.

4- Travel and Living Expenses: Indicate the number and cost of journeys, together with the basis of these costs. Refer to Appendices B, C and D of the National joint Council Travel Directive (http://www.njc-cnm.gc.ca/directive/travel-voyage/index-eng.php), and with the other provisions of the directive referring to "travellers", rather than those referring to "employees".

5- Subcontracts, if applicable: Bidders shall identify any proposed subcontractor and provide in their financial bid for each one a price breakdown in accordance with this section.

6- Other Direct Charges, if applicable: Bidders shall identify any category of other direct charges anticipated, such as long distance communications and rentals, providing the pricing basis for each and explaining the relevance to the work.

7- Applicable value added taxes: any applicable GST and (or) HST and (or) QST is (are) to be shown separately.

The bidder should use a Microsoft Excel™ spreadsheet to present the cost breakdown for each of the work packages.

1.5 Cash flow Estimates:

The Bidder shall provide in its proposal a Cash Flow estimates for the work to be carried out based on the Table 1 below:

Milestones	Fiscal Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
	2014-2015				
	2015-2016				

1.6 Bidders should include the following information in their financial bid:

1. Their legal name;
2. Their Procurement Business Number (PBN) and GST number; and
3. The name of the contact person (including this person's mailing address, phone and facsimile numbers and email address) authorized by the Bidder to enter into communications with Canada with regards to:
   a) their bid; and
   b) any contract that may result from their bid.

1.7 SACC Manual Clauses

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

Section III: Certifications

Bidders must submit the certifications required under Part 5.

ATTACHMENT 1 to PART 3
PRICING SCHEDULE

The Bidder must provide a pricing schedule for each bid in the following format and include it in its financial proposal.

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

Milestone	Title	Description of the deliverable	Schedule of the delivery	Firm Amount
1	Specify			$ _____
2	Specify			$ _____
3	Specify			$ _____
Etc.				$ _____
***Evaluated Price (GST and QST excluded): $_____** * not to exceed $300,000.00				
GST & QST (14.975%) : $ _____				

ATTACHMENT 2 to PART 3
OUTLINE AND CONTENT OF TECHNICAL/MANAGERIAL BID

The required outline and content of Section I Part 3 - Bid Preparation Instructions, is detailed herein. Should clarification be required, it is the responsibility of the Bidder to contact the Contracting Authority prior to submitting the bid.

Section I should address only one project and be contained within a single document/file, not exceeding 60 pages, including 6) Bid Appendices. The information should be organized in the following order:

1) Title / Project Identification Page;
2) Executive Summary;
3) Table of Contents;
4) Technical Bid;
5) Managerial Bid;
6) Bid Appendices:
   - 6.1) List of acronyms used in the Bid;
   - 6.2) Bidder's Criteria Substantiation (refer to section 3 of Attachment 1 to Part 4);
   - 6.3) Résumés or NSERC form 100 or equivalent (including résumés of subcontractors); and
   - 6.4) List of Contacts.

   If applicable:

   - 6.5) Corporate literature;
   - 6.6) Relevant technical papers published by team members;
   - 6.7) Any other Bid appendices deemed appropriate by the Bidder.

   Note: The structure of Section I and subsections are described below. Some of the subsection headings are followed by numbers in brackets. These numbers represent the Evaluation Criteria (see Attachment 1 to Part 4) that are applicable to that specific section/subsection.

1. Title / Project Identification Page

This is the first page of the Bid. It should be laid out in accordance with the requirements specified in Part 3 and should clearly state:

1) RFP file number;
2) The company's name and address;
3) The Category of the proposed project;
4) The title of the proposed project (the use of acronyms in the title is discouraged, unless they are described);
5) A short summary of the Bid summarizing the Bid in 8 lines (maximum).

2. Executive Summary

The Executive Summary of Section I of the Bid should be a stand-alone document suitable for public dissemination, for example, through the CSA web site, if the Bid is successful. It should not exceed one page in length (8.5" x 11") and should highlight the following elements:

1) Project objectives;
2) Targeted Technology;

3) Main technical innovations;
4) Major milestones and deliverables; and
5) Relevance to CSA strategy and programs;

3. Table of Contents

The table of contents should be formatted such that its headings are linked to their respective location in the Bid for ease of reference when using the Bid's electronic version.

4. Technical Bid

The Bid should describe the proposed project as outlined in the following subsections. The bidder should strive to address all items under the letter "D" of each criterion.

4.1 Technical and Criteria

4.1.1 Understanding the Requirements and Technical Principles (Evaluation Criterion 1)

This section should identify and substantiate in detail the underlying requirements and the scientific and technical principles and knowledge necessary for realizing the mission contribution options. It should thoroughly demonstrate an understanding of these requirements and principles also to what extent and how they relate to the mission objectives. The proposal should include a presentation of all the potential mission contributions and operations requirements that will be addressed by the proposed activities, and their relationship to mission objectives. References to and a thorough discussion of the existing literature relevant to the central theme of the proposed concept is provided.

4.1.2 Feasibility of Achieving Goals and Technical Objectives (Evaluation Criterion 2)

In this subsection the Bidder should provide a description and overall feasibility assessment of the proposed approach and the degree to which it is capable of delivering the goals and technical objectives of the survey. This includes the effectiveness of the strategy selected to address the technical requirements

The proposed effort should be well displayed and substantiate. A well thought-out, feasible and valid strategy that can obtain the desired technical results should be presented. The bidder should identifies and analyse the technical risks associated with the thoroughness and completeness of the survey.

A preliminary technology development roadmap should be presented in order to meet the scientific and technical basic requirements of the study.

The CSA Technology Readiness Levels and Assessment Guidelines are provided in MRD-6 and the Technology Readiness Levels Handbook for Space Applications is provided in MRD-1 for further details on technology readiness.

4.1.3 Scope of the Concept (Evaluation Criterion 3)

The section should address the scope and aspects of the proposed study in relation to what is asked in the statement of work. It should provide a detailed description and substantiation of a relevant approach for the survey strategy. It should provide a preliminary overview of the proposed contribution options and a description of the operation concepts.

5. Managerial Bid

The Managerial Bid should demonstrate the effectiveness and commitment of the Bidder in delivering the project

on time and budget. Its sub-sections should address in detail: key-personnel qualifications, team organisation and arrangements, previous project experience, and the Management Plan.

5.1 Team Capability (Evaluation Criterion 4)

5.1.1 Team expertise

This subsection should identify the Principal Investigator, Project Manager and Technical Lead and outline their respective qualifications. It should identify the key members of the project's technical and management teams and state their specific and relevant qualifications and experience for the work involved. Detailed résumés are to be put in an appendix of Sections I and II of the Bid. Provisions for back-up personnel for key positions are to be stated.

Key personnel include at least the principal investigator, project manager and technical leads for all the top-level technical work packages.

5.1.2 Team Organisation and Arrangements

This subsection should outline the roles and responsibilities of the proposed team members, and discuss and highlight the unique expertise they offer with respect to the capability of the team. This subsection should also provide details on the subcontractors' roles, responsibilities and on the nature of their contractual relationship with the prime contractor. An organisation chart should be included illustrating the structure of the proposed project team.

Letters of Agreement between the prime contractor, subcontractors, and other collaborators should be provided. These Letters of Agreement typically describe the scope-of-work, financial contributions, IP ownership, commercialisation activities, and any other applicable items. For scientific co-investigators, this letter should include the proposed role and time commitment.

5.1.3 Previous Project Experience

The Bidder should identify any previous experience with Research and Development (R&D) projects of a similar scope as the one proposed, including any projects undertaken with the CSA or other government institutions. The Bidder should list previous projects and assignments undertaken, within the last five years, which are relevant to proposed scope of work. The Bidder should identify any team members in the current Bid that participated in those other projects and describe the nature of their contributions to those projects.

Note: The Bidder may describe as many previous projects as it feel is necessary in order to adequately demonstrate the experience and qualifications of the company and of the proposed team, as long as the Bid length is compliant to the requirement.

5.2 Project Management Plan (Evaluation Criterion 5)

This subsection describes the Management Plan that will be retained in order to deliver the project, and to do so in the most effective manner.

The Management Plan should contain, as a minimum, the following information: Work Break-down Structure, WP definitions, personnel allocation, managerial risk assessment, milestones and deliverables, schedule, and project control system.

The Management Plan's presentation should be based on the recognised management tools most applicable to the proposed project, such as a scope planning (WBS), schedule development charts (e.g. Gantt chart, etc.). Equivalent company-developed, project-tailored tools/charts are also acceptable, provided that the information is complete and comprehensive.

5.2.1 Work Package Definition

This Management Plan subsection should define and specify the work to be executed according to the requirements of this SOW. The project should be broken down into Work Packages (WPs). Each WP should focus on specific activities that will form the total project and, as a minimum, should define and describe the specific work to be carried out and indicate: the person responsible, the WP's associated levels-of-effort and required resources, the schedule (start and finish dates), the risks, and its associated deliverable or output.

WPs stem from the WBS. The WBS should be taken to a low enough level and the associated WP should be defined in sufficient depth in order for the Bidder to demonstrate a clear understanding of the process that will be followed to perform the project.

As a guideline, Table 1 of this attachment presents a fictitious example of a Work Package Definition Sheet.

The Bidder should provide a detailed SOW for each subcontractor along with a Letter of Agreement in Principle to be included in the Bid appendices. **The subcontractors' price information should be included in the Financial Bid only**.

Table 1: Example of Work Package Definition Sheet

<table>
<tr><td colspan="4">Project: Novel T/R Unit Demonstration</td></tr>
<tr><td colspan="4">Work Pack Title:

TEST SETUP
WBS Ref: 2200</td></tr>
<tr><td>Sheet:</td><td>1 of 1</td><td>WP Estimated Value:</td><td>Do not indicate $ value in Section I of Bid, indicate value in Section II</td></tr>
<tr><td>Scheduled Start:</td><td>T0 + 2 weeks</td><td>Accountable Manager:</td><td>Resource A</td></tr>
<tr><td>Scheduled End:</td><td>T0 + 12 weeks</td><td>Resources:</td><td>Resource A,
Resource B,
Resource C</td></tr>
<tr><td>Estimated Effort:</td><td>80 hours</td><td colspan="2"></td></tr>
<tr><td colspan="4">Objectives:
➢ 1. Deliver a functional test setup for the T/R unit</td></tr>
<tr><td colspan="4">Inputs:
➢ 1. Test plan and procedure
➢ 2. Unit drawings
➢ 3. Unit Interface Control Documents</td></tr>
<tr><td colspan="4">Tasks:
➢ 1. Review input documentation
➢ 2. Define requirements
➢ 3. Produce initial concept
➢ 4. Design test setup
➢ 5. Fabricate test setup
➢ 6. Commission and debug</td></tr>
<tr><td colspan="4">Outputs and Deliverables:
➢ 1. Fully functional T/R unit test setup
➢ 2. Test setup log manual
➢ 3. Test setup user manual</td></tr>
</table>

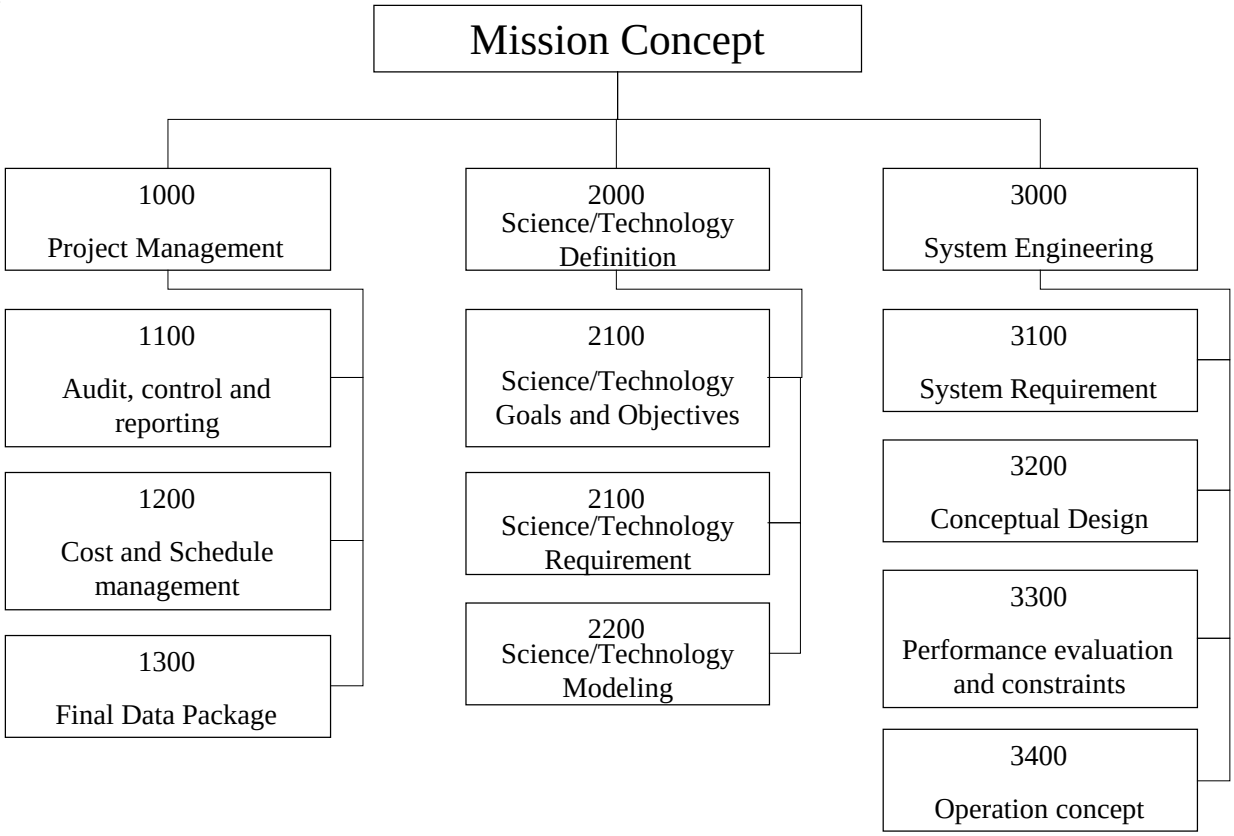

Figure 1: Example of a Work Breakdown Structure

5.2.2 Personnel Allocation

This Management Plan subsection should include a resource assignment matrix showing the level-of-effort for each individual team member that has been allocated to each WP. The matrix should identify each individual by name, and provide the estimated time (number of hours or days) required to complete each task. As a guideline, Table 2 of this attachment presents a fictitious example of a Responsibility Allocation Matrix (RAM) also known as a Resource Allocation Matrix. **The RAM should be presented in both the Technical, and Managerial Bid and the Financial Bid.**

Table 2: Example of Responsibility Allocation Matrix

WBS number	Work Pack Title	*Resource A*		*Resource B*		*Resource C*		Total
1.1	Project Management	A	200	P	25	P	25	250
1.2	Literature Survey	A	25	P	100	-	0	125
1.3	Requirements	P	50	A	100	P	100	250
1.4	Design	P	100	A	100	P	150	350
1.5	Build	-	0	P	200	A	150	350
1.6	Test and Analysis	A	100	P	200	P	200	500
	Total		475		725		625	1825

P: Participant
A: Accountable

5.2.3 Managerial Risk Assessment

This Management Plan subsection should provide an assessment of the managerial risks involved in performing the work for the concept study, and identify critical issues that may jeopardise the successful completion of the project within cost and schedule constraints.

5.2.4 Milestones and Deliverables

Milestones and deliverables should be detailed in accordance to what is specified in Table 5 in Annex A - Statement of Work.

5.2.5 Schedule

This Management Plan subsection should relate tasks, milestones and deliverables to a project timetable. For planning purposes, the project expected start date is October 2014.

5.2.6 Project Control System

This Management Plan subsection should outline the methods and systems to be used to control tasks, schedules, and costs for the project. Any project management tool or a spreadsheet software package may be used as long as it contains, as a minimum, the information required in the Monthly Progress Report (DID-0006). Additionally, the Project Control System should provide the capability to report the amount of work per WBS item for each individual on a monthly basis.

The cost figures and values of all industrial contributions should be provided separately in the Financial Bid in Section II.

6. Bid Appendices

The following items should be addressed in individual appendices as part of the Bids.

Required Bid Appendices

6.1) List of acronyms used in the Bid
6.2) Bidder's Criteria Substantiation (refer to Section 3 of Attachment 1 to Part 4).
6.3) Résumés: The Bid should include résumés (and/or NSERC form 100) of all key personnel including those of subcontractors and these should be appended to Sections I and II.
6.4) List of Contacts: The list of contacts should be appended to Section I, in a format suitable for distribution and should include all of the Bidder's points-of-contact involved in the Bid development and/or contract negotiations. The following example format should be used:

Table 3: Sample List of Contacts

Role	Name	Telephone	Fax	E-mail
Project Manager				
Project Engineers/ Principal Investigator				
Contracting Authority				

Claims officer				
Communications (for press release)				
Etc.				

Applicable Bid Appendices

The following Bid appendices are to be provided, *if applicable,* with Section I:
6.5) Corporate literature: Only literature that is relevant and will be useful to support the Bid.
6.6) Relevant technical papers published by team members.
6.7) Any other Bid appendices deemed appropriate by the Bidder.

Bidders are reminded that there are a limited number of pages that the bid must not be exceed. If the number of pages of Sections I, as described herein, is exceeded, the evaluation will strictly be based on the first 60 pages submitted, including appendices.

PART 4 – EVALUATION PROCEDURES AND BASIS OF SELECTION

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.

1.1 Technical and Financial Criteria

1.1.1 Mandatory Technical and Financial Criteria

Refer to Attachment 1 to Part 4.

1.1.2 Point Rated Technical Criteria

Refer to Attachment 1 to Part 4. Point-rated technical criteria not addressed will be given a score of zero.

1.2 Financial Evaluation

1.2.1 For bid evaluation and contractor(s) selection purposes only, the evaluated price of a bid will be determined in accordance with the Pricing Schedule detailed in Attachment 1 to Part 3.

2. Basis of Selection

2.1 Basis of Selection - Highest Combined Rating of Technical Merit 70 % and Price 30 %

2.1.1 To be declared responsive, a bid must:

(a) comply with all the requirements of the bid solicitation;

(b) meet all the mandatory evaluation criteria; and

(c) obtain the required minimum number of points specified in Attachment 1 to Part 4 for the point rated technical and managerial criteria.

2.1.2 Bids not meeting (a) or (b) or (c) will be declared non-responsive. Neither the responsive bid obtaining the highest number of points nor the one with the lowest evaluated price will necessarily be accepted.

2.1.3 The lowest evaluated price (LP) of all responsive bids will be identified and a pricing score (PS), determined as follows, will be allocated to each responsive bid (i): **PSi = LP / Pi x 30.** Pi is the evaluated price (P) of each responsive bid (i).

2.1.4 A technical merit score (TMS), determined as follows, will be allocated to each responsive bid (i): **TMSi = OSi x 70** OSi is the overall score (OS) obtained by each responsive bid (i) for all the point rated technical and managerial criteria specified in Attachment 1 to Part 4, determined as follows: total number of points obtained / maximum number of points available.

2.1.5 The combined rating (CR) of technical merit and price of each responsive bid (i) will be determined as follows: **CRi = PSi + TMSi**.

2.1.6 The responsive bid with the highest combined rating of technical merit and price will be recommended for award of a contract. In the event two or more responsive bids have the same highest combined rating of technical merit and price, the responsive bid that obtained the highest overall score for all the point rated technical criteria detailed in Attachment 1 to Part 4 will be recommended for award of a contract.

2.1.7 The table below illustrates an example where the selection of the contractor is determined by a 70/30 ratio of the technical merit and price, respectively.

Basis of Selection - Highest Combined Rating of Technical Merit (70%) and Price (30%)			
Bidder	**Bidder 1**	**Bidder 2**	**Bidder 3**
Overall Technical Score	**92%**	**82%**	**88%**
Bid Evaluated Price	**C$60,000**	**C$55,000**	**C$50,000***
Calculations	**Technical Merit Points**	**Price Points**	**Total Score**
Bidder 1	92 % x 70 = 64.4	50,000* / 60,000 x 30 = 25	89.4
Bidder 2	82 % x 70 = 57.4	50,000* / 55,000 x 30 = 27.3	84.7
Bidder 3	88 % x 70 = 61.6	50,000* / 50,000 x 30 = 30	91.6 (winning bidder)

* represents the lowest evaluated price

2.1.8 In the event that there are no responsive bids in one particular Category, Canada may at its sole discretion elect to award an additional contract under another Category where there are sufficient responsive bids. The responsive bid(s) with the next 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. If there are two or more bids not yet recommended for award with the same highest overall number of point, the bid with the highest score in the Technical Criteria group identified in Table 1 in Attachment 1 to Part 4 will have precedence for recommendation of award of a contract.

ATTACHMENT 1 TO PART 4
TECHNICAL AND FINANCIAL CRITERIA

1. Mandatory Criteria

The bid must meet the mandatory technical and financial criteria specified below. The Bidder must provide the necessary documentation to support compliance with this requirement.

Bids which fail to meet the ALL mandatory criteria will be declared non-responsive. Each mandatory criterion should be addressed separately.

To be compliant, the bidder's proposal must meet the following mandatory criteria:

M1. Separate Bid for each Category

The Bidder must bid on at least one of the categories (CS 1 & CS 2) identified in the SOW and may bid on up to all of them. If bidding on more than one category, the Bidder must prepare a separate bid for each as per the instructions in part 3 of this RFP. Each bid will be evaluated separately. The Bidder must clearly identify which category is the subject of the proposed study it is bidding on in each bid package sent.

M2. Compliance with Established Budget

The financial proposal for each bid must respect the maximum established overall budget of $300,000.00 per study, this includes all expense, Goods and Services Tax and Quebec Sales Tax are extra, if applicable. This disclosure does not commit Canada to pay the maximum funding available.

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

2. Point Rated Technical and Management Criteria

Proposals meeting all the mandatory criteria will be evaluated and scored as specified in the table inserted below.

Proposals 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 Bidder should achieve the minimum score requirements as indicated in Table 1: "List of Evaluation Criteria and Associated Ratings". Bids will be evaluated according to the point-rated criteria as specified in Table 1 and at subsection 4 of this document: "Evaluation Criteria and Benchmark Statements". The criteria are grouped under the following divisions:

1) Technical; and
2) Management.

"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 the 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 "*Understanding the Requirements and Technical Principles"* criterion is 20 points. If a Bid receives a "C" for this criterion in the evaluation process, the score attributed will be:

75% of 20 points = 15 points (score)

Table 1 identifies:

1) The maximum point rating assigned to each criterion;
2) The maximum point rating possible for each division (Impact, Technical, and Management);
3) The maximum point rating possible for the overall score;
4) The minimum point rating required for the overall score.

Table 1: List of Evaluation Criteria and Associated Ratings

Evaluation Criteria and Ratings	
	Ratings
Technical Criteria	
1. Understanding the Requirements and Technical Principles	20
2. Feasibility of Achieving the Goals and Technical Objectives	20
3. Scope of the Study	25
Maximum Score	***65***
Management Criteria	
4. Team Capability	15
5. Project Management Plan	20
Maximum Score	***35***
Maximum Overall Score	***100***
Minimum Overall Score Requirement	***70***

3. Bidder's Criteria Substantiation

The Bidder is requested to provide a substantiation, which should be submitted as an appendix to their Section I.

For each of the applicable criteria, provide the substantiation and summarized cross-reference(s) to the bid.

The substantiation should be concise yet sufficiently comprehensive to ensure that the evaluators get a good overall appreciation of the bid's merit relative to the specific criterion. Cross-references to appropriate sections of the bid should be provided and the essence of the referenced information should be summarized in the substantiation.

For convenience, a template for the Self-Evaluation Table is provided in Table 1. Enter each technical/management section number, and the substantiation. It is expected that approximately half a page should be sufficient to make the Bidder's case for the rating chosen in the substantiation column.

Table 1: Bidder's Criteria Substantiation.

Company: **Project Title:**	
Criteria **Substantiation**	
Ex.: 1 *(criterion number)*	*Criterion substantiation and Bidder's bid cross-reference.* *It is expected that 300 words or so should be sufficient to make your case.*

4. Evaluation Criteria and Benchmark Statements

TECHNICAL CRITERIA

1. UNDERSTANDING THE REQUIREMENTS AND TECHNICAL PRINCIPLES

This criterion assesses the degree to which the Bid identifies and substantiates in detail the underlying requirement and the scientific and technical principles of the potential mission contributions and also to what extent it thoroughly demonstrates an understanding of these requirements and principles and how they relate to the mission objectives as stated in Appendix 2 of Annex A – Statement of Work

0)

- The bid does not address the requirements, OR
- Does not identify the technical principles driving the mission.

A)

- The proposal includes an incomplete overview of the main requirements of some of the potential mission contributions OR
- The proposal demonstrates incomplete knowledge of the scientific and technical principles of some of the potential mission contributions and how they relate to the goal of the mission; OR
- The bid does not identify how the mission objectives will be in achieved with the potential mission contributions; OR
- The proposal does not include an adequate review of the existing literature or that of previous relevant studies.

B)

- The proposal includes only an overview of the main requirements of some of the potential mission contributions; AND
- The proposal demonstrates a general understanding of the scientific and technical principles of some the potential mission contributions and how they relate to the goal of the mission; AND
- The proposal includes a presentation of some of the potential mission contributions and their operations requirements that will be addressed by the proposed activities; AND
- The proposal includes a cursory review of and references to existing literature or that of previous relevant to the central theme of the proposed mission contributions.

C)

- The proposal identifies and demonstrates understanding of the main requirements of all the potential mission contributions; AND
- The proposal demonstrates knowledge of the scientific and technical principles of all the potential mission contributions and how they relate to the goal of the mission; AND
- The proposal includes a presentation of all of the potential mission contributions and their operations requirements that will be addressed by the proposed activities; AND
- The proposal includes references to and a discussion of other work or previous activities relevant to the potential mission contributions.

D)

- The proposal includes an exhaustive identification of the requirements of all the potential mission contributions; AND
- The proposal demonstrates a comprehensive knowledge of the scientific and technical principles of all the potential mission contributions and how they relate to the goal of the mission; AND
- The bid includes a presentation of all the potential mission contributions and operations requirements that will be addressed by the proposed activities, and their relationship to the mission objectives; AND
- The proposal includes references to and a thorough discussion of the existing literature relevant to the potential mission contributions is provided.

2. FEASIBILITY OF ACHIEVING GOALS AND TECHNICAL OBJECTIVES

The criterion assesses the description and overall feasibility of the proposed approach and the degree to which it is capable of delivering the goals and technical objectives of the survey. This includes the effectiveness of the strategy selected to address the technical requirements. This criterion evaluates the technical risks associated with the thoroughness and completeness of the survey. It assesses if the proposed effort is well documented and substantiated.

0)

- The feasibility of achieving the goals and technical objectives is not demonstrated

A)

- The proposal does not present an adequate case that the survey can deliver the technical objectives; OR
- The proposed survey strategy can obtain the desired technical results, but gaps exist.; OR
- Main elements of a preliminary technology development road map, in order to meet the scientific and technical basic requirements, are lacking.

B)

- The proposal presents an adequate case that the survey can deliver the technical objectives; AND
- The proposal presents a survey strategy that could deliver the desired technical results, but some details or information of limited importance are omitted; AND
- Main elements of a preliminary technology development road map, in order to meet the scientific and technical basic requirements, are lacking.

C)

- The proposal presents a well-referenced case that the survey can deliver the technical objectives; AND
- The proposal presents creative, feasible and valid technologies and methods that can obtain the desired technical results with details; AND
- Main elements of a preliminary technology development road map are presented in order to meet the scientific and technical basic requirements of the study.

D)

- The proposal presents a well-referenced and convincing case that the survey can undoubtedly deliver the technical objectives. AND

- The proposal identifies well proven technology with one or more components having flight heritage and is substantiated with ample details; AND
- A preliminary technology development roadmap is presented in order to meet the scientific and technical basic requirements of the study.

3. SCOPE OF THE SURVEY

The criterion assesses the description and overall scope of the proposed Study.

0)
- The bid does not address the scope and the aspects of what is requested in the SOW OR
- does not provide a description of the approach for the survey strategy.

A)
- The bid addresses the scope and the aspects of what is requested in the SOW, but gaps exist, OR
- It does not provide a description of the approach for the survey strategy.

B)
- The bid addresses the scope and the aspects of what is requested in the SOW, but gaps exist, AND
- It provides a description of the approach for the survey strategy, but either gaps exist or is not relevant.

C)
- The bid addresses the full scope and aspects of what is requested in the SOW, AND
- It provides a description and substantiation of a relevant approach for the survey strategy.

D)
- The bid addresses the full scope and aspects of what is requested in the SOW. AND
- It provides a detailed description and substantiation of a relevant approach for the survey strategy, AND
- The bid provides preliminary overview of the mission contribution options and a description of the operation concepts. The bid provides a comprehensive overview of all contribution options for the identified category.

MANAGEMENT CRITERIA

4. TEAM CAPABILTY

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)
- The proposed team does not have the required expertise; OR
- The proposal does not address this criterion.

A)
- The proposed team has no experience in conducting work similar in complexity and scope to what is requested in the SOW; OR
- The proposed team lacks expertise and may not be capable of fulfilling the statement of work (SOW); OR
- The roles and responsibilities of the team members are not defined.

B)
- The key personnel identified in the proposed team has been involved in at least one project similar in complexity and scope to what is requested in the SOW; AND

- The proposed team is lacking some expertise but demonstrates that it is capable of fulfilling the statement of work (SOW); AND
- The team may have deficiencies in the completeness of the skills of its members; AND
- Some team members have experience in the design and development of space flight hardware in a similar environment as described in the relevant SOW or space software.

C)

- The key personnel identified in the proposed team has been involved in at least two projects similar in complexity and scope to what is requested in the SOW; AND
- The expertise of the proposed team demonstrates that it is highly capable of fulfilling the statement of work (SOW); AND
- The completeness of the team is very well demonstrated through the complementarities of skills of its members and by the roles / tasks that they are assigned during the study; AND
- The roles and responsibilities for most of the team members, including sub-contractors, are defined; AND
- Most of the required key personnel are identified and there are qualified back-up personnel identified for most of them; AND
- The key personnel have experience in the design and development of space flight hardware in a similar environment as described in the relevant SOW or space software.

D)

- The key personnel identified in the proposed team has been involved in more than two projects similar in complexity and scope to what is requested in the SOW; AND
- The expertise of the proposed team demonstrates that it is highly capable of fulfilling the statement of work (SOW) with the potential of delivering an authoritative study; AND
- The roles and responsibilities of all the team members, including all sub-contractors, are defined; AND
- The completeness of the team is very well demonstrated through the complementarities of skills of its members and by the roles / tasks that they are assigned during the study; AND
- All required key personnel are identified and there are qualified back-up personnel identified for all of them; AND
- The key personnel have significant experience in the design and development of space flight hardware in a similar environment as described in the relevant SOW and space software.

5. PROJECT MANAGEMENT PLAN

This criterion assesses the completeness of the management plan (including WBS, WPs, personnel allocation, detailed schedule and milestones, and managerial risk assessment) and evaluates the effectiveness of the described methodology in successfully achieving the stated objectives of the work to carry out this study.

0)

- The work-plan does not follow methodological approach and is unlikely to obtain the appropriate objectives; OR
- The proposal does not address this criterion.

A)

- The proposal presents a poor work-plan; OR
- The proposed methodology is not effective in achieving the objectives of the work; OR
- There is a lack of correlation between the work-plan and the management method; OR
- Risks are not identified.

B)

- The proposal presents a basic work-plan; OR
- The proposed methodology is not effective in achieving the objectives of the work; OR

- There is a lack of correlation between the work-plan and the management method; OR
- Risks are identified and mitigation strategies are insufficient.

C)

- The work-plan as described in the proposal is based on a methodological approach; AND
- The effectiveness of the proposed methodology in achieving the objectives of the work is credible; AND
- The correlation between the work-plan and the management method exists; AND
- Risks are identified and mitigation strategies are discussed.

D)

- The work-plan as described in the proposal follows a clearly defined methodology; AND
- The effectiveness of the proposed methodology in achieving the objectives of the work is highly credible; AND
- The correlation between the work-plan and the management method is clear; AND
- Comprehensive risk analysis and mitigation strategies are provided.

PART 5 - CERTIFICATIONS

Bidders must provide the required certifications to be awarded a contract. Canada will declare a bid non-responsive if the required certifications are not completed and submitted as requested. Bidders should provide the required certifications in Section III of their bid.

The certifications provided by bidders to Canada are subject to verification by Canada at all times. 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 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 with this request will also render the bid non-responsive or will constitute a default under the Contract.

1. Certifications Precedent to Contract Award

The certifications included in Attachment 1 to Part 5, Certifications Precedent to Contract Award, should be completed and submitted with the bid, but may be submitted afterwards. If any of these required certifications is not completed or submitted as requested, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

ATTACHMENT 1 TO PART 5
CERTIFICATIONS PRECEDENT TO CONTRACT AWARD

1.1 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 (http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml) available from Human Resources and Skills Development Canada (HRSDC) - Labour's website.

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.

1.2 Former Public Servant Certification

Contracts with 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 spending public funds. In order to comply with Treasury Board policies and directives on contracts with FPS, bidders must provide the information required below.

Definitions

For the purposes of this clause,

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 up 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 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:

a) name of former public servant,; and

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 Reduction Program

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of a work force reduction program?

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;, and
g) number and amount (professional fees) of other contracts subject to the restrictions of a work force reduction program.

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

1.3 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.

1.4 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.

1.5 Certification

By submitting a bid, the Bidder certifies that the information submitted by the Bidder in response to the above requirements is accurate and complete.

_____ _____

Signature of Bidder's Authorized Representative **Date**

PART 6 - RESULTING CONTRACT CLAUSES

1. Statement of Work

The Contractor must perform the Work in accordance with the Statement of Work at Annex A and the technical and management portions of the Contractor's bid entitled _____, dated _____.

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 issued by Public Works and Government Services Canada.

For the purposes of this contract, all references to "Canada", "Crown", "Her Majesty" or "the Government" in the clauses and conditions herein, including those incorporated by reference, shall mean Her Majesty the Queen in right of Canada as represented by the Minister of Industry, acting through the Canadian Space Agency;

2.1 General Conditions

General Conditions – Higher Complexity – Services 2035 (2014-06-26) apply to and form part of the Contract with the following modification:

- Paragraph “2035 41 (2014-03-01) Integrity Provisions - Contract” is deleted in its entirety and replaced with the following:

  “2035 41 (2010-01-11) Code of Conduct for Procurement

  The Contractor certifies that it has read the *Code of Conduct for Procurement* and agrees to be bound by its terms. “

2.2 Supplemental General Conditions

Supplemental General Conditions 4007 (2010-08-16) Canada to Own Intellectual Property Rights in Foreground Information, apply to and form part of the Contract.

3. Security Requirements

There are no specific security requirements associated with the work to be performed under this Contract. However, the proposed resource(s) may be required to sign non-disclosure agreements associated with documents received, the work performed and the deliverables submitted under the contract.

Contractor personnel **MAY NOT ENTER** sites where (PROTECTED/CLASSIFIED) information or assets are kept, without an escort provided by the CSA.

4. Term of Contract

4.1 Period of the work

Duration of eight (8) months after Contract Award.

5. Authorities

5.1 Contracting Authority

The Contracting Authority for the Contract is:

Robert Kardum
Canadian Space Agency
6767 Route de l'Aéroport
Saint-Hubert, QC
Canada J3Y 8Y9

Telephone: (450) 926-4875
Facsimile: (450) 926-4969
E-Mail: robert.kardum@asc-csa.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.

5.2 Project and/or Technical Authority

To be identified at contract award.

The Project and/or Technical Authority 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 technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority; however, the Project Authority has no authority 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.

5.3 Contractor's Representative

(to be specified at contract award)

6. Payment

6.1. Basis of Payment – Firm Price

6.1.1 Professional Fees

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price of $_____. Customs duties are included and Goods and Services Tax or Harmonized Sales Tax and/or Quebec Sales Tax are extra, if applicable.

6.2. Limitation of Price

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.

6.3 Method of Payment – Milestone Payments

Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract if:

(a) an accurate and complete invoice and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;

(b) all such documents have been verified by Canada;

(c) the Work performed has been accepted by Canada.

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

(See Attachment 1 to Part 3)

6.4 T1204 Supplementary Slip Requirement - Invoicing Procedures

1. Pursuant to paragraph 221 (1)(d) of the Income Tax Act, R.S. 1985, c.1 (5th Supp.), payments made by departments and agencies to contractors under applicable services contracts (including contracts involving a mix of goods and services) must be reported on a T1204 Government Service Contract Payments slip.

2. To enable departments and agencies to comply with this requirement, the Contractor must provide the following information:

   (a) the legal name of the Contractor, i.e. the legal name associated with its business number or Social Insurance Number (SIN), as well as its address and postal code;

   (b) the status of the Contractor, i.e. an individual, a sole proprietorship, a corporation, or a partnership;

   (c) the business number of the Contractor if the Contractor is a corporation or a partnership and the SIN if the Contractor is an individual or a sole proprietorship. In the case of a partnership, if the partnership does not have a business number, the partner who has signed the Contract must provide its SIN;

   (d) in the case of a joint venture, the business number of all parties to the joint venture who have a business number or their SIN if they do not have a business number.

3. The information must be sent with the first invoice to the invoicing address specified herein. If the information includes a SIN, the information should be provided in an envelope marked "PROTECTED".

7. Invoicing Instructions

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.

   Each invoice must be supported by a copy of the applicable progress report(s).

2. Invoices must be distributed as follows:

   (a) The original and one (1) copy must be forwarded to the following address for certification and payment.

   9F052: FINANCIAL SERVICES
   EXPLORATION DEVELOPMENT
   6767 ROUTE DE L'AÉROPORT

ST-HUBERT, QC
CANADA J3Y 8Y9

8. Certifications

8.1 Compliance

Compliance with the certifications provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the term of the Contract. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

9. Disclosure Certification

On completion of the Work, the Contractor must submit to the *Technical Authority and/or Project Authority* and to the Contracting Authority a copy of the Disclosure Certification attached as Annex _____ " stating that all applicable disclosures were submitted or that there were no disclosures to submit under section 02 of supplemental general conditions 4007.

10. Foreign Nationals (Canadian Contractor)

The Contractor must comply with Canadian immigration requirements applicable to foreign nationals entering Canada to work temporarily in fulfillment of the Contract. If the Contractor wishes to hire a foreign national to work in Canada to fulfill the Contract, the Contractor should immediately contact the nearest Service Canada regional office to enquire about Citizenship and Immigration Canada's requirements to issue a temporary work permit to a foreign national. The Contractor is responsible for all costs incurred as a result of non-compliance with immigration requirements.

11. 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.

12. Insurance

The Contractor is responsible for deciding if insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any insurance acquired or maintained by the Contractor is at its own expense and for its own benefit and protection. It does not release the Contractor from or reduce its liability under the Contract.

13. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the Province of Quebec.

14. Contractor Performance

1) Canada will evaluate the Contractor's performance during and upon completion of the work. If the Contractor's performance is determined to be unsatisfactory on more than one contract, the Contractor's bids on future work may be inadmissible for a period of 18 months or 36 months thereafter.

2) The Contractor Performance Evaluation Report Form used to record the performance is attached to the contract at Appendix __.

15. 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) Supplemental General Conditions 4007 (2010-08-16) Canada to Own Intellectual Property Rights in Foreground Information ;
(b) General Conditions – Higher Complexity – Services 2035 (2014-06-26);
(c) Annex X, Statement of Work;
(d) Annex X, Basis of Payment;
(e) Annex X, Disclosure Certification;
(f) Annex X, Contractor Performance Evaluation
(g) the Contractor's bid dated _____.

ANNEX A

STATEMENT OF WORK

TITLE:
Analysis Study for Canadian contributions to the NASA Wide-Field Infrared Survey Telescope (WFIRST)

A.1 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 incentive for young Canadians to pursue careers in science and technology. To shape and determine the nature of Canada's contribution to potential future international space exploration and astronomy missions CSA's Exploration Core program was created in 2007. Exploration Core engages in three types of activities: (i) requirement development; (ii) prototyping and deployment; and (iii) building and maintaining operational infrastructure required to support prototype integration and deployment. Through (i) requirement development, Exploration Core supports CSA's exploration planning activities and defines the science and technology developments most likely to be required in future space exploration missions of interest to Canada, and assesses potential contributions that Canada could make to such missions.

A.2 Objective

Requirement Development is part of the Exploration Core program of the Canadian Space Agency. Through Requirement Development, Exploration Core supports CSA's exploration planning activities and defines the science and technology developments most likely to be required in future space exploration missions of interest to Canada, and assesses potential contributions that Canada could make to such missions. Concept Studies are part of the Requirement Development activity

This Requirement Development activity requests Mission Contribution Analysis Study proposals in the following areas of space exploration: identified in Table 1 and detailed in Appendix 2 of Annex A.

Table 2: Requirement categories, classes and titles.

Category CS #	Contribution Category	**Detailed SOW**
CS 1	Wide-Field Infrared Survey Telescope (WFIRST)- Wide-Field Instrument Category	Appendix 2 – Category 1
CS 2	Wide-Field Infrared Survey Telescope (WFIRST)- Coronagraph Instrument Category	Appendix 2 – Category 2

A.3 Scope

This document provides the requirements and deliverables for the categories identified above to inform the decision process when selecting Canadian-led missions or contributions to international space exploration missions by providing in general:

1) Part 1: Preliminary Science and Technology Assessment
    a. Options overview
    b. Options assessment
2) Part 2: Conceptual Assessment
    a. Executive Summary
    b. Mission Considerations

c. Scientific Considerations

d. Performance Sensitivity

e. Technical Considerations

f. Project Cost Breakdown

g. Preliminary Schedule

h. Risk Assessment

i. Business Case Inputs

Detailed scopes for each category are given in Appendix 2.

A.4 Master Reference Documents

The documents identified in Table 2 provide additional information or guidelines that either may clarify the contents or are pertinent to the history of this document. They are applicable to all Categories given in Table 1.

Table 3: Reference Documents.

MRD No.	Document Number	Document Title	Rev. No.	Date
MRD-1.	ESTEC TEC-SHS/5574/MG/ap	Technology Readiness Levels Handbook for Space Applications *ftp://ftp.asc-csa.gc.ca/users/TRP/pub/TRRA/*	Iss. 1 / Rev. 6	March 2009
MRD-2.	CSA-SE-STD-0001	CSA Technical Reviews Standard *ftp://ftp.asc-csa.gc.ca/users/TRP/pub/SE-STD/*	A	Nov 7, 2008
MRD-3.	CSA-SE-PR-0001	CSA Systems Engineering Methods and Practices *ftp://ftp.asc-csa.gc.ca/users/TRP/pub/SE-STD/*	Rev. B	Mar 10, 2010
MRD-4.		Science Readiness Levels Definitions and guidelines for implementations *ftp://ftp.asc-csa.gc.ca/users/TRP/pub/Exploration-Core-Science-Definition-Studies/2013/Science%20Readiness%20Level%20Guidelines_Draft%20Version%201.pdf*	Draft V1.1	June 14, 2013
MRD-5.	CSA-ST-GDL-0002	CSA Technology Tree *ftp://ftp.asc-csa.gc.ca/users/TRP/pub/Technology-Tree/*	IR	December 2009
MRD-6.	CSA-ST-GDL-0001	CSA Technology Readiness Levels and Assessment Guidelines *ftp://ftp.asc-csa.gc.ca/users/TRP/pub/TRRA/*	B	February 2014
MRD-7.	CSA-ST-FORM-0001	Technology Readiness and Risk Assessment (TRRA) Worksheet *ftp://ftp.asc-csa.gc.ca/users/TRP/pub/TRRA/Technology_and_Risk_Assessment_Worksheets%20_and_Rollup_Tool/*	E	July 29, 2013

MRD No.	Document Number	Document Title	Rev. No.	Date
MRD-8.	CSA-ST-RPT-0002	Technology Readiness and Risk Assessment Rollup: TRRA - Data Rollup Tool.xlsm *ftp://ftp.asc-csa.gc.ca/users/TRP/pub/TRRA/Technology_and_Risk_Assessment_Worksheets%20_and_Rollup_Tool/*	E	Sept 11, 2013
MRD-9.	CSA-ST-FORM-0003	Critical Technology Element (CTE) Identification Criteria Worksheet *ftp://ftp.asc-csa.gc.ca/users/TRP/pub/TRRA/Technology_and_Risk_Assessment_Worksheets%20_and_Rollup_Tool/*	A	March, 2014
MRD-10.	CSA-ST-RPT-0003	Roadmap Framework ExCore Concept Study: Technology Roadmap CSA-ST-RPT-003 Rev A.xlsx *ftp://ftp.asc-csa.gc.ca/users/TRP/pub/TRM/*	A	September 2012
MRD-11.		NASA TABS (Technology Area Breakdown Structure) *http://www.nasa.gov/pdf/501627main_STR-Int-Foldout_rev11-NRCupdated.pdf* and NASA Technology Roadmaps *http://www.nasa.gov/offices/oct/home/roadmaps/*		Dec 13, 2013
MRD-12.		Treasury Board Business Case Guide / Guide sur l'analyse de rentabilisation *http://www.tbs-sct.gc.ca/emf-cag/business-rentabilisation/bcg-gar/bcg-gartb-fra.asp* *http://www.tbs-sct.gc.ca/emf-cag/business-rentabilisation/bcg-gar/bcg-gartb-eng.asp*		Jul 22, 2009

A.5 Project Duration

Duration of eight (8) months after Contract Award.

A.6 Generic Task Description

This section presents the activities that apply to all Categories listed in Table 1. The work to be performed by the Contractor under this concept study is divided into three major Work Packages (WPs). Each WP has one or more associated major tasks. Figure 1 describes the Work Breakdown Structure (WBS):

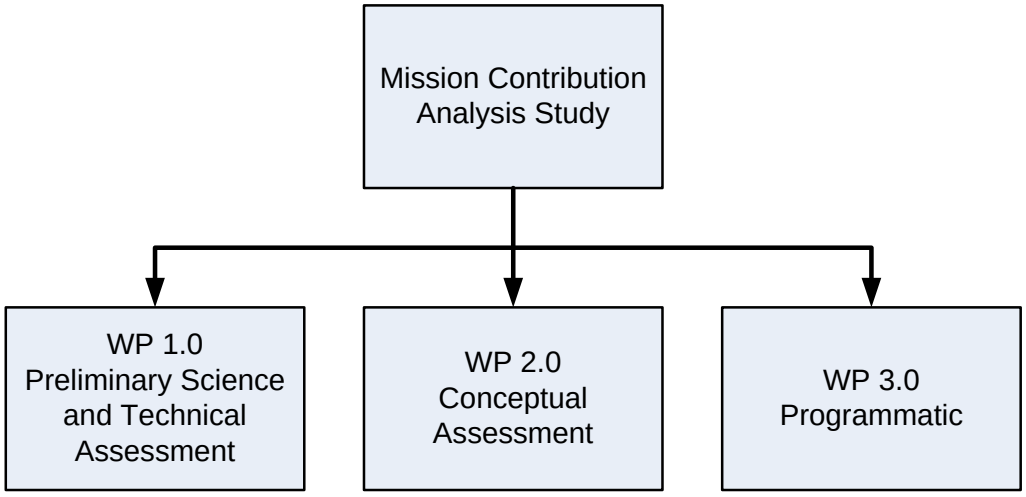

Figure 1: Work Breakdown Structure (Top Level)

A.6.1 Preliminary Science and Technical Assessment

Detailed scope, requirements, concept and task descriptions for each category are given in Appendix 2

A.6.2 Contribution Option Conceptual Assessment

Detailed scope, requirements, concept and task descriptions for each category are given in Appendix 2. The following subsections describe generically the work that is expected.

A.6.2.1 Cost

The Contractor must provide cost estimates as per Table 3 below, for all phases leading to the development, qualification, implementation, launch, operation and disposal of the hardware/software/instruments resulting from the concept.

Table 4: Cost

		Prior to Mission	Phase A	Phase B	Phase C	Phase D	Phase E	Phase F
Labour	**Management**							
	Technology Development							
	Design							
	Documentation							
	Reviews							
	Manufacturing							
	Assembly							
	Testing							
	Product Assurance							
	Operations							
	Total Labour							
Non-Labour	**Hardware / Software Procurement**							
	Tools, equipment & facilities							

		Prior to Mission	Phase A	Phase B	Phase C	Phase D	Phase E	Phase F
	T&L							
	Overhead							
	Total Non-Labour							
Risk	**Risk Contingency**							
Total								

Total all Phases:

A.6.2.2 Estimate of Canadian Content

The Contractor must provide an estimate of the anticipated percentage of Canadian content relative to the overall cost presented in Table 3, what options could be undertaken to maximize the Canadian content, and their corresponding impacts and benefits.

A.6.3 Schedule and Implementation

A.6.3.1 Schedule

The Contractor must suggest a preliminary schedule relative to the overall life cycle of the Concept. The timeline must include key milestones corresponding to Preliminary Design Review (PDR), Detailed Design Review (DDR), and readiness for integration onto the mission, launch, and landing.

A.6.3.2 Technology Readiness and Risk Assessment (TRRA) and Technology Roadmap

The Contractor must perform a Technology Readiness and Risk Assessment (TRRA) in accordance with the requirements of the CSA Technology Readiness and Risk Assessment Guidelines (MRD-6) and Technology Readiness Levels Handbook for Space Application (MRD-1), to formally document the technology status.
The Contractor must produce the TRRA with Worksheets and Rollup (CDRL 13) using Technology Readiness and Risks Assessment Worksheet (MRD-7), Critical Technology Element (CTE) Identification Criteria Worksheet (MRD-9) and rollup using Technology Readiness and Risk Assessment Rollup (MRD-8).
The Contractor must also provide a Technology Development Plan, also known as Technology Roadmap (TRM) including the required technology developments to meet mission needs, and a plan and timeline to reach TRL 6 and 8. The TRM must be provided in the format of (MRD-10).

A.6.3.3 Development, Manufacturing and Qualification Approach

The Contractor must provide an overview of the development approach, specifying subsystem providers, key subcontractors, and the general strategy best suited for this approach. The Contractor must also list the major tasks required in the development and manufacturing cycles. The Contractor must provide the Verification and & Validation plan and qualification approach and assumptions made.

A.6.4 Programmatic

A.6.4.1 Preliminary Mission Risk Assessment

The Contractor must provide a preliminary technical, schedule, cost and programmatic risks assessment. This assessment must also consider access to information issues, like Export Control (International Traffic in Arms Regulations (ITAR) and others).

A.6.4.2 Business Potential

The Contractor must provide information on the minimum business, in the field, required to maintain the necessary expertise in the long run.

A.6.4.3 Canadian Capabilities Development

The Contractor must provide an overview of its strategy to develop and maintain Canadian capabilities. If the overall approach of the Contractor implies technology transfer and partnership with foreign entities to develop the Canadian capabilities, the Contractor must specify teaming arrangements, Intellectual Property (IP) ownership issues, royalties, etc., as well as opportunities that this partnership would open.

A.6.4.4 Intellectual Property Management

The Contractor must identify the Background Information (BIP), the IP that will be generated, and the owners of these BIP and IP and how it will be managed and coordinated among the various collaborators and entities involved (DID-0008).

A.6.4.5 Preliminary Commercialisation Plan

The Contractor must provide a preliminary commercialization plan to support further Canadian positioning beyond the scope of the proposed CSA program. This must include an analysis of who the competitors are (national and international) for the proposed subsystem/technology/concept and for the overall mission. It must identify who are the stakeholders and how Canada and/or the bidder are positioned.
This must also include potential spin-offs (space and non-space).

A.7 Mission Contribution Analysis 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 project's master schedule must inter-relate all tasks on a common time scale and be in the form of a Gantt chart. The project schedule must be detailed enough to show each WBS task to be performed, the name of the person responsible for completing the task, the start and end date of each task, the deliverables and the expected duration of the task. The Contractor must also provide all WPs.

Important Notice: The estimated contract start date is October 2014.

A.8 Contract Meetings and Deliverables

This section reviews and describes the contract meetings and deliverables.

A.8.1 Contract Meetings

The Contractor must organize the meetings listed in Table 4.

Table 5: Meeting Schedule

Meeting	Date	Location
Contract Award	Start of contract (October 2014)	N/A
Kick-off Meeting	No later than 2 weeks After Contract Award (ACA)	CSA's HQ
Mid-term Review Meeting	Contract award + 2 to 3 months	CSA's HQ
Final Review Meeting	End of contract	CSA's HQ
CSA-Contractor technical team tag-up	Monthly	Telecon

All key participants under the contract, including at least one representative from each subcontractor, must attend all the meetings. This can be done in person or via teleconference.

The Mid-term Review Meeting will analyze the list of potential mission contributions for the selected contribution category and a subset of at most three options will be selected for further conceptual investigation.

The specific intent of the Final Review Meeting 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)] to this meeting. Key Contractor personnel involved in the work under review must attend the meetings. The exact date and time of the review meeting will be mutually agreed to by the PA, the SA, and the Contractor.

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

A.8.2 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 5, to the PA. All diagrams must be clearly drawn and labelled.

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 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 1 of Annex A.

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

© CANADIAN SPACE AGENCY 2014

RESTRICTION ON USE, PUBLICATION OR DISCLOSURE OF PROPRIETARY INFORMATION

This document is a deliverable under contract no. _____ . This document contains information proprietary to the Crown, or to a third party to which the Crown 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 the Crown 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 or 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 and 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 supplemental general conditions 4007, any Foreground Information must be fully disclosed and documented by the Contractor in the technical reports delivered by the Contractor to the Technical Authority under this Contract.

Table 6: CDRL

CDRL No.	Deliverable	Due Date	Version	DID No.
1.	Meeting Agendas	Meeting – 1 week	Final	0001
2.	Kick-off Meeting Presentation	Meeting – 1 week	Final	0002

CDRL No.	Deliverable	Due Date	Version	DID No.
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.	Monthly Progress Reports	Monthly	Final	0006
7.	Technical Report	Draft at each milestone End of contract – 2 weeks	Draft Final	0007
8.	Foreground Intellectual Property (FIP) Disclosure	End of contract – 2 weeks	Final	0008
9.	Executive Report	End of contract – 2 weeks	Final	0009
10.	Final Data Package	End of contract – 2 weeks End of contract	Draft Final	0010
11.	Contractor Performance Evaluation	End of contract – 2 weeks	Final	0011
12.	Action Items Log (AIL)	Meeting + 1 week	Final	0012
13.	Technology Readiness and Risk Assessment Worksheets and Rollup and Critical Technology Element Identification Criteria	Draft copy at milestone End of contract – 2 weeks	Draft Final	0013
14.	Technology Roadmap Worksheet	Draft at each milestone End of contract – 2 weeks	Draft Final	0014
15.	Science Investigation Mission Contribution Study Report	Draft copy at Midterm Review Meeting - 2 weeks Final copy at end of contract -2 weeks	Draft Final	Contractor's Format, see DID-0007, 1a) iii) and 2c)

A.8.3 Data Items Description (DIDs)

A.8.3.1 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;
   f) Mandatory and desirable attendance; and
   g) Expected duration.

2) DOCUMENT BODY:

a) Introduction, purpose, objective;
b) Opening Remarks: CSA;
c) Opening Remarks: Contractor;
d) Review of previous minutes and all open action items;
e) Project technical issues;
f) Project management issues;
g) Other topics;
h) Review of newly created/closed action items, decisions, agreements and minutes; and
i) Set or confirm dates of future meetings.

A.8.3.2 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, WBS status and schedule;
4) FIP and BIP;
5) Licensing issues if any;
6) Project's funding and expected cash-flow;
7) Presentation to include the required copyrights and IP disclosure;
8) Other items as deemed appropriate

A.8.3.3 DID-0003 – Mid-Term Review Meeting Presentation

PURPOSE:

To present the results of the work done to date in the contract, and in particular since the previous meeting. The mid-term review must cover elements typically found in a Mission Concept Review (MCR). See CSA-SE-STD-0001 for a description of the MCR.

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) Technical and programmatic issues if any;
3) Review of contract deliverables;
4) Work requirements, WBS status and schedule;
5) FIP and BIP;
6) Licensing issues if any;

7) Project's funding and expected cash-flow;
8) Other items as deemed appropriate;
9) Presentation's slides to include the required copyrights and intellectual property disclosure

A.8.3.4 DID-0004 – Final Review Meeting Presentation

PURPOSE:
To present the overall results of the work done in the project including the elements of a Mission Requirement Review (MRR). See CSA-SE-STD-0001 for a description of the MRR.

PREPARATION INSTRUCTIONS:
The Final Review Meeting Presentation must contain the following information, as a minimum:

1) Detailed presentation of the work conducted (presentation of the content of the technical and/or science report, concept, design, interface, feasibility, etc.)
2) Elements of a Mission Requirement Review;
3) Technical and programmatic issues if any;
4) Contract deliverables;
5) FIP and BIP;
6) Licensing issues if any;
7) Final Funding and cash-flow;
8) Discuss project management issues;
9) Other items as deemed appropriate;
10) Presentation's slides to include the required copyrights and intellectual property disclosure

A.8.3.5 DID-0005 – Meeting Minutes

PURPOSE:
To provide a record of decisions and agreements reached during reviews/meetings.

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 and the CSA, 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) List of the attendees by name, position, phone numbers and e-mail addresses as appropriate;
7) Listing of open action items and responsibility for each action to be implemented as a result of the review, numbered per the AIL (see CDRL No. 6, and DID-0013);
8) Other data and information as mutually agreed; and
9) 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."

A.8.3.6 DID-0006 – Monthly Progress Report

PURPOSE:
To record the status of the work in progress during the previous calendar month. The Progress Report is used by the Government to assess the Contractor's progress in performance of the work.

PREPARATION INSTRUCTIONS:

The Monthly Progress Report must list each deliverable and contain the following information, as a minimum:

1) Current % of completion
2) Planned and actual completion date
3) Brief summary of the work performed in the current month
4) The work planned for the following month
5) A highlight of problems, if any, and the proposed corrective approach
6) A table showing current financial status (cash flow planned vs. actual)
7) Any other relevant information deemed necessary.

Based on the above, the Monthly Progress Report should not exceed 3 pages.

This report is required even in the case of a fixed firm price contract.

A.8.3.7 DID-0007 – Technical Report

PURPOSE:
To fully describe the technical work done, problems encountered and achieved objectives.
(The author may define and organize additional sub-sections as deemed appropriate to present the comprehensive results of the study.)

PREPARATION INSTRUCTIONS:
The Technical Report must contain the following information, as a minimum:

1) Part 1: Preliminary Science and Technology Assessment
    a) Options Overview: for all contribution options in this category
        i) Canadian Industrial capabilities
            (1) Pool of key personnel critical for the realization of the concept
            (2) Preliminary TRRA at the system level
            (3) Modifications and level-of-effort required to adapt or develop technology
        ii) Science Objectives relationship to mission objectives: *these sections can be included in the Science Investigation Mission Contribution Study Report (CDRL-15) or lumped into the main report*
            (1) Science Readiness Level (MRD-4)
            (2) Assessment of current capabilities with respect to anticipated system performance
            (3) Science capacity in Canada
            (4) Science merit and objectives
            (5) Instrument Measurement goals and associated data products

(6) Preliminary implications for related tools (breadboarding, calibration, data handling)

iii) Development

(1) Rough development schedule

(2) Rough cost estimate, or perhaps cost range for the total life cycle cost (as per DID-0009)

(3) Required facilities, for development, testing, ground support, etc.

iv) Commercialization potential, i.e. other space or terrestrial application

b) Options Assessment: Evaluation of each option

i) Alignment with Canadian Space policy

(1) Canadian Interests First

(2) Positioning the Private Sector at the Forefront of Space Activities

(3) Excellence in Key Capabilities

(4) Progress through Partnerships

(5) Inspiring Canadians

ii) Alignment with mission plans and partnership opportunities

iii) Science

(1) Scientific return

(2) Potential for the advancement of Canadian Science Community

iv) Development

(1) TRL and a general assessment of the technological risk

(2) Programmatic risk and schedule

v) Cost

vi) Commercialization potential

2) Part 2: For each option selected in part 1b)

a) Executive summary

b) Mission considerations

i) Requirements

ii) Success criteria

iii) Operations concept and requirements

c) Scientific considerations : *these sections can be included in the Science Investigation Mission Contribution Study Report (CDRL-15) or lumped into the main report*

i) Science performance specifications

ii) Literature survey

iii) Preliminary prototype, analog, calibration and testing requirements

iv) Preliminary science operations concept

(1) Data archiving

(2) Analysis

(3) Potential scientific return of guest observer program for Canada.

d) Performance sensitivity

i) Scientific return change with increase in capability

ii) Challenges of increasing the capability in terms of cost, level of effort, schedule and risk

iii) Main sources of error and uncertainty

e) Technological considerations

i) Description of the system or instrument

(1) Preliminary requirements, including environmental, functional and performance

(2) System budget estimates including, as appropriate:

(a) Mass budget

(b) Power budget

(c) Processing/computing budget
(d) Thermal budget
(e) Communication budget including communication power link budget for both potential cases
(f) Operational timeline budget
(g) Software development and budget

ii) Sub-options description (optional subsystems, add-ons, features and functionality)
iii) Concept design trades of proposed concepts and technologies
iv) TRRA and Roadmap assessment with respect to identified sub-systems and elements. See Section A.6.3.2
v) Identification of Canadian Key Industrial Capabilities, and associated NASA Technology Areas (MRD-11).

f) Project cost breakdown
i) Labour and non-labour costs
ii) Broken down by Phases – Phase A, B-C-D, E and F
(1) Phase E cost to include support for operations, failure support (Troubleshooting, with assumptions)
iii) Broken down by Government Fiscal Year – Phase A, B-C-D, E and F
iv) Broken down by component
v) Rough order of magnitude value subcontracted out
(1) Number of subcontractors and type of work subcontracted
(2) Assumptions (including sparing philosophy) and methodology must be clearly presented as well as the recommended risk reserve.
vi) Estimate of Canadian Content

g) Preliminary schedule
h) Risk assessment
i) Programmatic including schedule, cost and corporate risks
ii) Technical risks

i) Business case inputs: refer to MRD-12
i) Phase 1: Defining the investment
(1) Assumptions
(2) Boundaries
ii) Phase 2: Analysis and recommendation
(1) Methodology
(a) Evaluation criteria
(i) Screening criteria
(ii) Essential criteria
(iii) Desirable criteria
(b) List of possible options
(c) Screening of options
(d) Rationale for discounted and viable options
(2) Detailed evaluation

A.8.3.8 DID-0008 – 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.asc-csa.gc.ca/users/GPITT-IPMTT/pub/.*

A.8.3.9 DID-0009 – Executive Report

PURPOSE:
To fully describe the entire project for dissemination in the public domain.

PREPARATION INSTRUCTIONS:
The Executive Report will be placed in the public domain (e.g. CSA's library, publication and/or website). The report should not exceed ten (10) pages.

The Executive Report must contain the following information, as a minimum:

1) Introduction (~2 pages);
Presentation of overall concept and main objectives. Illustrative picture(s) should be included.

2) Concept Overview (2-3 pages);
Discussion on main user/mission requirements, feasibility and compatibility with target mission.

3) Technology (~1 page);
Description of the innovative technologies requiring development and summary of the application fields.

4) Technology Development Roadmap, Cost and Implementation (2-3 pages);
Schedule, Technology Development Roadmap with TRL and R&D3, overall cost category, collaboration. For the cost, the following categories must be used:

- > $200M
- $75M - $200M
- $20M -$75M
- $10M - $20M
- $5M - $10M
- $1M -$5M
- <$1M

5) Business Potential (~1 page);
Business potential, Canadian capabilities development
The CSA and the Contractor, or others designated by them, have the right to unrestricted reproduction and distribution of the Executive Report. The report must include the following proprietary notice ("Owner of FIP" being either the CSA or the Contractor):

A.8.3.10 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 progress reports and other required deliverables in their final revision. It must also include the contractor disclosure of intellectual property and project evaluation sheet.

A.8.3.11 DID-0011 – 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) New opportunities created by the work conducted under the study.

A.8.3.12 DID-0012 – Action Items Log

PURPOSE:
The Action Item Log (AIL) lists, in chronological order, all items on which some action is required, allows tracking of the action, and in the end provides a permanent record of those Action Items (AI).

PREPARATION INSTRUCTIONS:

The Action Item Log (AIL) must be in a tabular form, with the following headings in this order:
1) Item Number;
2) Item Title;
3) Open Date;
4) Source of AI (e.g. PDR meeting, RID, etc.);
5) Originator;
6) Office of Prime Interest (OPI);
7) Person responsible (for taking action);
8) Target/Actual Date of Resolution;
9) Status (Open or Closed); and
10) Remarks.

The date in column 8) will be the target date as long as the item is open, and the actual date once the item is closed.

A.8.3.13 DID-0013 – Technology Readiness and Risk Assessment Worksheets and Rollup

PURPOSE:

The Technology Readiness and Risk Assessment provides for all the elements of the proposed concept, as per Product Breakdown Structure (PBS), a high-level summary of the maturity of the technologies and the technology development risks.

PREPARATION INSTRUCTIONS:
The Technology Readiness and Risk Assessment must be done using MRD-6 for each technology and rolled-up into a summary using MRD-8. The Critical Technology Element Identification Criteria must be provided in Worksheet (MRD-9). See section A.6.3.2.

A.8.3.14 DID-0014 – 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 MRD-10..

Appendix 1 to Annex A

Document Naming Conventions

Context

This annex presents the naming convention to follow for any documentation generated under this RFP and any resulting contract.

Documents must contain 3 main components:

Project identifier
Contract Number
Date Tracking number
WXYZ-TYPE-NUM-CIE_ContractNumber_sent2014-03-30

Project Identifier

The project identifier must contain:
WXYZ: A 4-8 letter acronym of the project
TYPE: A 2 letter acronym according for 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)

Contract Number

For example: _9F028-07-4200-03

Date Tracking Number

_sentYEAR-MONTH-DAY_draft
The _*draft* mention should be removed on the final version of the document once approved by CSA.

Appendix 2 to Annex A

Canadian Contribution to WFIRST

1. Mission Contribution Study

1.1 List of Acronyms

AD	Applicable Document
AFTA	Astrophysics Focused Telescope Assets
CASTOR	Cosmological Advanced Survey Telescope for Optical and UV Research
CDRL	Contract Data Requirements List
CSA	Canadian Space Agency
CTE	Critical Technology Element
DE	Dark Energy
DID	Data Item Description
EMCCD	Electron Multiplying Charge Coupled Device
EW	Element Wheel
FGS	Fine Guidance Sensor
FRM	Final Review Meeting
FTP	File Transfer Protocol
HST	Hubble Space Telescope
IFS	Integral Field Spectrograph
IFU	Integral Field Unit
JWST	James Webb Space Telescope
LSST	Large Synoptic Survey Telescope
MTR	Midterm Review
NIR	Near Infrared
RD	Reference Document
RFP	Request For Proposal
ROM	Rough Order of Magnitude
SDT	Science Definition Team
SRL	Science Readiness Level
TBC	To Be Confirmed
TBD	To Be Determined
TMA	Three Mirror Anastigmat
TRL	Technological Readiness Level
TRM	Technology Roadmap
TRRA	Technology Readiness and Risk Assessment
WFI	Wide Field Instrument
WFIRST	Wide-Field Infrared Survey Telescope

1.2 Introduction

The goal of this Exploration Core mission contribution study is to identify potential Canadian contributions – hardware and software - to the science payload of the WFIRST-AFTA space astronomy mission studied by NASA. The Wide-Field Infrared Survey Telescope (WFIRST) is a space mission designed to perform wide-field deep surveys of the near infrared sky and could be the next major space astronomy project following JWST. The mission implementation being studied makes use of one of the 2.4m telescopes transferred to NASA from another US government agency, referred to as the Astrophysics Focused Telescope Assets (AFTA). As described in the USA's National Research Council study, AFTA will be significantly more capable than previous versions of WFIRST based on smaller aperture telescopes. NASA has chartered a science definition team (SDT) to expand the study of the WFIRST-AFTA concept (the 2.4m telescope) with international participants including representation from Canada.

WFIRST will help settle essential questions in astrophysics such as the nature of dark energy and the prevalence of planetary systems in our Galaxy. WFIRST-AFTA will perform imaging of a quality and depth similar to the Hubble Space Telescope (HST) but over a much wider field of view. It will principally perform a survey of the near infrared (NIR) sky that will enable studies on a broad range of topics of astrophysical research. A coronagraphic instrument is also proposed, to enable exoplanet investigations. A guest observer program is planned that will offer opportunities to the astronomical communities to propose programs of pointed observations with WFIRST. It will also be complementary to future ground-based observatories such as the LSST and space-based observatories such as (ESA) Euclid and (NASA) JWST.

Participation in a world-class dark energy mission such as Euclid or WFIRST or the development of a Canadian-led mission such as CASTOR (concept for a 1-m class UV/optical wide field mission) is the top-ranked space-based priority for the Canadian astronomical community in the current Long Range Plan for astronomy. A contribution to WFIRST would follow-on the Canadian contributions to the major space astronomy projects such as FUSE, JWST, Herschel and Planck and would help the Canadian aerospace industry advance its leadership in electro-optical, advanced optics, and focal-plane imaging payloads. This is also an excellent opportunity to further develop Canada's leadership and excellence in space-based astronomy and technology through international cooperation. Finally, WFIRST will be producing dramatic panoramic images of the cosmos and partnership in such a high-profile mission will be a source of pride to all Canadians.

1.2.1 Bidder's Conference

With this RFP, the CSA seeks to obtain a complete survey of the potential Canadian contributions to the WFIRST mission, and help identify the relative merits and benefits of each option. The results of these studies will be used to document the decision process on whether and how CSA might participate in the WFIRST mission. In issuing this RFP, the CSA offers the opportunity to the Canadian scientific community and industry to contribute openly and materially in this decision process. A Bidder's conference will be organized, roughly at the mid-point of the RFP posting period, to answer questions regarding the purpose of the RFP.

1.3 Reference Documents

The following documents provide additional information or guidelines that either may clarify the contents or are pertinent to the history of this document.
Reference documents are listed in Table 1.

Table 7: Reference Documents.

RD No.	Document Number	Document Title	Rev. No.	Date
RD-1.		Canadian Astronomical Society Long Range Plan http://www.casca.ca/lrp2010/11093_AstronomyLRP_V16web.pdf		2010
RD-2.		NASA WFIRST mission website http://wfirst.gsfc.nasa.gov/		

RD No.	Document Number	Document Title	Rev. No.	Date
RD-3.		Wide-Field InfraRed Survey Telescope-Astrophysics Focused Telescope Assets WFIRST-AFTA Final Report by the Science Definition Team (SDT) and WFIRST Project http://wfirst.gsfc.nasa.gov/science/sdt_public/WFIRST-AFTA_SDT_Final_Report_Rev1_130523.pdf		May 23, 2013
RD-4.		Evaluation of the Implementation of WFIRST/AFTA in the Context of New Worlds, New Horizons in Astronomy and Astrophysics, NRC National Academies http://www.nap.edu/openbook.php?record_id=18712&page=R1		Pre pub 2014
RD-5.		WFIRST-AFTA SDT Interim Report April 2014 http://wfirst.gsfc.nasa.gov/science/sdt_public/WFIRST-AFTA_SDT_Interim_Report_April_2014.pdf		April 30, 2014

1.4 Science Payload and Technology Descriptions for WFIRST

The WFIRST science payload will include a 2.4m aperture telescope that will feed the wide-field instrument and a coronagraph. The two-mirror telescope was originally built by ITT/Exelis and provided to NASA by another American government agency. Some modifications of the telescope will be required to convert it to a three-mirror anastigmat (TMA) configuration for a wide field-of-view instrument. Additional components will need to be added or modified for an astronomical application (baffles, Outer Barrel Extension, telescope electronics), and a validation of operation at lower temperature (270K) is in progress.

The **Wide Field Instrument** (WFI) will include a single-channel instrument made of three mirrors and a wheel for filters and grisms (Element Wheel or EW) providing imaging in the 0.76-2.0 µm range and spectroscopy (R = 645-900) in the 1.35-1.95 µm range. The WFI focal plane will include an array of 18 (6x3) 4k x 4k HgCdTe detectors with 10 µm pixels that will provide an active area of 0.281 deg^2. The WFI will also feature an **Integral Field Unit** (IFU) channel that will primarily be used for SNe spectroscopy (R ~ 75) over a 3.00 x 3.15 $arcsec^2$ field of view with a single HgCdTe detector covering the 0.6-2.0 µm range.

A **Coronagraph Instrument** will provide high contrast imaging and spectroscopic capabilities allowing studies of exoplanets and debris disks around nearby stars. It will operate in the 0.4-1.0 µm range and provide a contrast of 10^{-9} with an inner working angle of 100-250 milliarcseconds (3λ/D). An **Integral Field Spectrograph** (IFS) will be used in the spectroscopy mode in the 0.6-0.9 µm range with R ~ 70. A significant technology development effort for the coronagraph instrumentation is underway in order to reach TRL-5 by September 2016.

1.5 Scope

The contractor shall explore the concept(s) listed in Table 2. Potential contributions to the WFIRST mission from Canada are grouped in two categories: (1) contributions to the Wide Field Instrument (WFI) and (2) contributions to the Coronograph Instrument (CI). Two contracts will be awarded to survey the contribution categories (one contract for each category). At this stage, there is no commitment to what might be a Canadian contribution to WFIRST, if any, so the contractor will be expected to explore all potential Canadian contributions listed in the category for which the contract is awarded. The study will be conducted in two parts:

1. For the Part 1 of this study, the contractor will perform a preliminary science and technology assessment of all the identified options for the selected instrument category.

2. The CSA will then select from the list of potential contributions up to three options that will be investigated further at a conceptual level in the Part 2 of the study.

In their proposed work plans, the bidders are expected to allocate about one third of the resources for Part 1 of the study, and the remainder for Part 2. Part 1 is meant to produce a high-level survey of all possible Canadian contributions, while Part 2 should produce detailed information on the most promising potential contributions. The latter information will subsequently be used by the CSA to make an informed recommendation on the option(s) Canada would propose for the WFIRST mission. The bidders should understand that because of the strategic nature of the recommendation, other factors outside the scope of this study will also be used to make the final recommendation (e.g. changing CSA and Canadian Government priorities, evolution in the NASA priorities, available budgets, etc.). For these reasons, the contractors should not expect that the final CSA recommendation will necessarily correspond to the one(s) from the contractor studies.

1.5.1 WFIRST Canadian Contribution Options

The study should specifically consider contributions of major sub-systems to the two science instruments such as the Integrated Field Unit (IFU) for the Wide-Field Instrument, the imaging camera incorporating a low noise detector (such as the EMCCD), or the Integral Field Spectrometer (IFS) (or elements thereof) for the Coronagraph instrument. The study should also explore the option of providing software and electronics to be used as a part of a Fine Guidance System (FGS) that would make use of the guide window sub-array functionality on the H4RG SCAs. The study team must consult the science community (See Section 1.5.2) in the definition and interpretation of science requirements and define a plan for the integration of a Canadian science team during the WFIRST mission, including science support and a long term plan for investigations based on WFIRST data.
The list of potential Canadian contributions to the suite of the WFIRST AFTA Science payload to be assessed includes the following options and sub-options:

Table 8: Potential Canadian contributions to the suite of the WFIRST AFTA Science payload

Category 1: Contributions to the Wide-Field Instrument	
Integral Field Unit (IFU)	To provide the full IFU channel or a sub-system of the IFU (image slicer, optical relay, detector (H2RG 2048x2048, 18 microns pixels)).
Photometric calibration	To provide pre-flight ground photometric stability testing of the main focal plane pixels and IFU, and provide flight calibration instruments for these components.
Fine Guidance System	To provide a fine guidance system that will support focal plane guiding during wide-field and IFU observations and other observing modes (including coronagraphy) as needed by the mission and a dedicated guiding images processor.
Data processing and archiving (also applicable to Category 2)	To provide data simulations tools (instruments, surveys) and develop and provide an infrastructure for the processing, archiving and distribution of WFIRST data.
Category 2: Contributions to the Coronagraph Instrument	
EMCCD	To provide EMCCD cameras or control electronics for the coronagraph imaging and spectroscopic channels.
Integral Field Spectrograph (IFS)	To provide the full IFS arm (lenslet-based) or key optical sub-components.
Other optical sub-systems	To provide other optical elements such as deformable mirrors, flip mirror, fine-steering mirror.
Image processing	To provide speckle suppression algorithms needed to achieve contrast goals of the coronagraph instrument.
Data processing and archiving (also applicable to Category 1)	To provide data simulations tools (instruments, surveys) and develop and provide an infrastructure for the processing, archiving and distribution of WFIRST data.

The contractor will also investigate any probable sub-option within one of the contribution options, for example, the image slicer for the IFU.

1.5.2 Consulting the Science Community for each Contribution Category

Under this RFP, the CSA expects to receive bids under each Contribution Category and the CSA will select the best proposal for each that aims at delivering a complete survey, with a well documented report. On the other hand, there are separate groups of experts in Canada in the fields of Dark Energy and Exoplanets. It is therefore crucial not to exclude a priori any experts from providing input to the work done under these contracts. For this reason, the CSA prefers that individuals or organizations from the interested Science Communities refrain from committing themselves exclusively to a single bidder. Instead, the CSA will seek to create a pool of experts for each Contribution Category, and the contractors winning the bids in each category will be directed to work with the science teams selected by the CSA. These pools of experts will be created during the Bidder's Conference (see Section 1.2.1), where the interested individuals/organizations will be invited to submit their names under each category. The CSA expects the bidders will include sufficient resources in their management plan (time and/or funding, as appropriate) to use and support a strong science team. The proposals will be evaluated accordingly.

1.5.3 Part 1: Preliminary Science and Technology Assessment

The CSA requires insight into the science implication and benefit to the Canadian academic and scientific community, and how the science drives the technical requirements. This information will be used to choose a subset of options that will be examined in further detail in Part 2. Furthermore, the studies must identify the industrial capabilities and define a technology development roadmap, with cost and schedule. For this part of the study, each option will be explored and characterized by the following:

1. Canadian Industrial capabilities
    a. Identify a pool of key personnel critical for the realization of the concept. *Are there specific individuals or groups that are critical to the successful realization of the specific option?*
    b. Preliminary TRRA at the system level and main sub-systems at discretion of contractor.
    c. Modifications and level-of-effort required to adapt or develop technology.
2. Science Objectives relationship to WFIRST mission objectives
    a. Science Readiness Level, see MRD-4.
    b. Assessment of current capabilities with respect to anticipated system performance.
    c. Science capacity exists within Canada: *Who in Canada is placed to make use of data gathered from either the technological implementation directly, or the instrument that the option is essentially a sub-system.*
    d. Science merit and objectives described, and justified: *The expectation here is to identify how a specific contribution can promote Canadian science investigations.*
    e. Instrument Measurement goals and associated data products. *This is expected to feed into technical requirements: Current capability vs. anticipated capability. The goal here is to understand how the science requirements affect the technical requirements, and what can be expected to be developed.*
    f. Preliminary implications for related tools (breadboarding, calibration, data handling): *The goal here is to identify areas that may require additional development above and beyond those purely required for the technical development. In other words, what infrastructure is required to support the science and their current availability?*
    g. Any added information contractor deems relevant
3. Development
    a. Rough development schedule
    b. Rough cost estimate, or perhaps cost range for the total life cycle cost (as per DID-0009).
    c. Required facilities, for development, testing, ground support, etc.
4. Commercialization potential, i.e. other space or terrestrial application

1.5.4 Selection of the Contribution Options for Part 2

The contribution options will be reviewed at the contract Mid-Term Review and a subset of at most three options will be selected for further conceptual investigation. The criteria that will be used to select the conceptual options are:

1. Alignment with Canadian Space policy
    a. Canadian Interests First: National sovereignty, security and prosperity will be at the heart of Canada's activities in space.
    b. Positioning the Private Sector at the Forefront of Space Activities: Support Canada's space industry to bring to market cutting-edge technologies that meet national interests.
    c. Excellence in Key Capabilities: Support and advance proven Canadian competencies in telecommunications, remote sensing and robotics while being open to new technological niches.

d. Progress through Partnerships: Continue partnerships to share the expenses and rewards of major space initiatives, including working in collaboration with international partners to pool data for mutual benefit and obtain services or technologies that would otherwise be unavailable.
e. Inspiring Canadians: Working with industry, universities and colleges, communicate the importance of space to motivate, recruit and retain highly qualified personnel for future careers in science, technology, engineering and math.

2. Alignment with WFIRST mission plans and NASA partnership opportunity
3. Science
    a. Scientific return in terms of the integration of Canadian astronomers in the future WFIRST Science Team, on access of data products from the WFI and the Coronagraph Instrument surveys addressing the main scientific objectives in dark energy and exoplanets research, and on Canadian access to the Guest Observer program.
    b. Potential for the advancement of Canadian astronomical community priorities as described in the CASCA Long Range Plan and for creating opportunities in other established or emergent fields of astrophysics.
4. Development
    a. TRL and a general assessment of the technological risk
    b. Programmatic risk and schedule
5. Cost: Establish the cost category and if any shared development with other organization or leveraging of other mission developments. Low cost options are as valuable as high cost options at this point.
6. Commercialization potential, favoring technologies that have near term commercial opportunities

1.5.5 Part 2: Selected Potential Contributions

Once the options are selected in the preliminary investigation phase, the contracts will further elaborate on up to three options at the conceptual level. For each option, the contractor will:

1) Produce an **executive summary** of the activities performed in this concept study, which may be used as key points for the Minister to announce. Include objectives, approach, and emphasize alignment to the 5 Principles of the Canadian Space Policy Framework (RD-5). Summarize with conclusions or recommendations, including only the essential or most significant information to support those conclusions.

2) **Mission considerations**: How does the option support the WFIRST mission goals and objectives?

a. Elaborate on and develop Mission requirements relevant to the proposed concept.

b. Propose criteria for mission success.

c. Preliminary mission operation concepts and requirements.

3) **Scientific Considerations**: the science portion and how it relates with the technological aspect is to be further expanded with the intent of providing greater insight into the benefits, cost, and implications on the technology in order to be able to develop the requirements and business plan sufficiently to justify and define the scope of work in follow on contracts. This includes instrument-driving performance goals and functional elements.

a. What are the minimum performance specifications that allow for advancing the science enabled by the selection option?

b. Literature review, where relevant supporting the above.

c. Preliminary prototype, analog, calibration and testing requirements. *From the perspective of science, what are the infrastructure elements required (if any) for the option under investigation? This is especially important if there are developments required that affect the technology development, specifications, project cost and schedule.*

d. Preliminary science operations concept,

i. Data archiving.

ii. Analysis. *The intent is to gain understanding on the overall approach of the level of effort to make use of returned data from WFIRST by the Canadian science and academic community.*

iii. Potential scientific return of guest observer program for Canada.

4) Performance sensitivity with level of effort/cost/capability

a. How does the scientific return change with increasing capability? *This is to address how the science is affected if the performance is increased by a certain amount.*

b. What are the challenges of increasing the capability in terms of cost, level of effort, schedule and risk? *This is to gain an understanding of the limits and costs of the performance, and determine if tighter technical specifications warrant the effort.*

c. Main sources of error and uncertainty starting from manufacturing all the way through to the final useful science products. *This can also include techniques in data processing which can effectively reduce these errors, and other techniques which if used can also reduce these errors.*

5) Technological considerations

a. Description of the system or instrument
   i. Preliminary requirements, including environmental, functional and performance
   ii. System budget estimates including, as appropriate:
      1. Mass budget
      2. Power budget
      3. Processing/computing budget
      4. Thermal budget
      5. Communication budget including communication power link budget for both potential cases
      6. Operational timeline budget
      7. Software development

b. Describe sub-options (optional subsystems, add-ons, features and functionality)

c. Concept design trades of proposed concepts and technologies

d. TRRA and Roadmap assessment with respect to identified sub-systems and elements. See section A.6.6.2 of Annex A

e. Identify Canadian Key Industrial Capabilities, and associated NASA Technology Areas MRD-11.

6) Project cost breakdown: The Contractor must provide cost estimates as detailed below, for all phases leading to the development, qualification, implementation, launch, operation and disposal of the hardware/software/instruments resulting from the concept. *A bottom-up costing approach is to be used for all phases of mission including manpower, hardware and facilities. Results are to be delivered in the form of a linkable spreadsheet on the system and sub-systems levels.*

The cost breakdown must provide the following elements.

ROM cost per Development Phase:

i. Labour and non-labour costs

ii. Broken down by Phases – Phase A, B-C-D, E and F

1. Phase E cost to include support for operations, failure support (Troubleshooting, with assumptions)

iii. Broken down by Government Fiscal Year – Phase A, B-C-D, E and F

iv. Broken down by component

v. Rough order of magnitude value subcontracted out

1. Number of subcontractors and type of work subcontracted

2. Assumptions (including sparing philosophy) and methodology must be clearly presented as well as the recommended risk reserve.

vi. Estimate of Canadian Content

7) Preliminary schedule: produce a high level schedule starting from the concept through all phases of the mission, including correlated sequence of development milestones from contract start date through to completion of design, implementation, integration, verification, certification, and delivery;

8) Risk assessment options and plans to manage risks.

a. Programmatic including schedule, cost and corporate risks
b. Technical risks

9) Business Case inputs, including Options Analysis

For each Contribution Option, the bidder will provide Business Case inputs (using MRD-12 for clarifications and definitions). This document will be used to provide management with a strong case that links investments with program results and, ultimately, with the strategic outcomes of the organization.

Inputs for Phase 1 (Defining the Investment):

1) Assumptions, Constraints, Dependencies (Section 1.3.1, 1.3.2 and 1.3.3 of MDR-12)
2) Boundaries (if any) that should be considered in the scope of the investment (Section 1.4.1 of MRD-12)

Inputs for Phase 2 (Analysis and Recommendation – Section 2 of MRD-12).

In this section, the bidder must come up with a methodology to perform the analysis, and then carry out the work. The following steps (as detailed in MRD-12) must be followed:

1. Evaluation criteria
2. List of possible options
3. Screening of options
4. Rationale for discounted and viable options

As a minimum, the Contractor must produce detailed evaluation criteria (Section 2.1 of MRD-12) and in three categories:

1. Screening Criteria (if applicable)
2. Essential evaluation criteria
3. Desirable evaluation criteria

The summary table below includes examples of suggested evaluation criteria, however, the bidder has discretion to produce and define their own set of criteria. The full list of evaluation criteria will be approved by the Project Authority when the Methodology for Phase 2 is reviewed. Supporting evidence should be in the documentation, with the summary in a table. The contractor may choose an approach for score and weight, in order to produce a final comparison between options, and a final recommendation.

Evaluation Criteria Option A		
Criteria	**Justification**	**Score/Weight**
Cost		
Canadian Capability – List of potential Scientific Collaborators		
Canadian Capability – Technology Content		
Socio-Economic Benefits for Canadians		
Supports Canadian Key Industrial Capabilities		
Commercialization Potential		
Positions Canada for future exploration		
Supports multiple destinations		
Potential to Inspire Canadians		
Partnerships – government, domestic or international		
Produces new products, processes and/or technologies		
Potential to make discoveries about the universe and solar system		
Know-how acquired through exploration endeavour (technical and scientific)		
Potential to transfer of know-how and technology to other applications		
Potential access to space-generated processed scientific data		
Demonstrates multiple use and application of knowledge acquired from past space exploration missions		
Key Programmatic Risks		
Key Technical Risk		
TRRA and Roadmap Showing Feasibility		
SRL Feasibility		
	OVERALL SCORE:	
	RECOMMENDATION:	