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LETTER OF INTEREST
LETTRE D'INTÉRÊT

Title - Sujet
solution de base de données sur les

Solicitation No. - N° de l'invitation 47419-194399/A	**Date** 2019-02-06
Client Reference No. - N° de référence du client 1000344399	**GETS Ref. No. - N° de réf. de SEAG** PW-$$XL-109-34593
File No. - N° de dossier 109xl.47419-194399	**CCC No./N° CCC - FMS No./N° VME**

Solicitation Closes - L'invitation prend fin
at - à 02:00 PM
on - le 2019-02-28

Time Zone
Fuseau horaire
Eastern Standard Time
EST

F.O.B. - F.A.B.
Plant-Usine: ☐ **Destination:** ☐ **Other-Autre:** ☐

Address Enquiries to: - Adresser toutes questions à: Dale, Evonne	**Buyer Id - Id de l'acheteur** 109xl
Telephone No. - N° de téléphone (819) 360-3290 ( )	**FAX No. - N° de FAX** (819) 956-4294

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:

Specified Herein
Précisé dans les présentes

Comments - Commentaires

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Delivery Required - Livraison exigée See Herein	**Delivery Offered - Livraison proposée**

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Telephone No. - N°de téléphone
Facsimile No. - N° de télécopieur

Name and title of person authorized to sign on behalf of Vendor/Firm (type or print)
Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)

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K1A 0S5

Canada

SOLICITOR & CLIENT PRIVILEGED ITSPD RFI TEMPLATE-ANNOTATED

Request for Information (RFI)

MARINE VESSEL DATABASE SOLUTION (MVDS)
FOR
CANADA BORDER SERVICES AGENCY

TABLE OF CONTENTS

REQUEST FOR INFORMATION REGARDING

MARINE VESSEL DATABASE SOLUTION (MVDS)
FOR
CANADA BORDER SERVICES AGENCY

SECTION I – INTRODUCTION AND PROCESS FOR RESPONDING TO REQUEST FOR INFORMATION (RFI)

Purpose of this Request for Information (RFI) and Summary of Requirements

1. Purpose of this Request for Information

1.1. The purpose of this RFI is to obtain Industry Feedback regarding the proposed strategies, approaches, requirements and schedule associated with the draft bid solicitation enclosed pertaining to the acquisition, implementation and support of a new Marine Vessel Database Solution for the Government of Canada. Feedback provided in response to this RFI will be considered by Canada prior to completing the Request for Proposal (RFP).

The main objectives of this RFI have been described in a) and b) below.

a) To notify industry of Canada's intentions with respect to the Marine Vessel Database Solution requirements and encourage dialogue with industry regarding these intentions.

To provide industry with an opportunity to:

i. Assess and comment on the adequacy and clarity of the Marine Vessel Database Solution requirement as currently articulated.

ii. Offer suggestions regarding potential alternative solutions that would meet the Marine Vessel Database Solution requirement.

iii. Comment on whether the Marine Vessel Database Solution requirements and specifications can be delivered at a reasonable cost and, if not, make suggestions for improvements.

iv. Comment on the draft procurement strategy and the associated timeline for completing such as outlined in this RFI.

b) Comment on the draft approach and associated timeline to transition the work as outlined in this RFI; and

i. Identify any issues, concerns or recommendations in regards to the Marine Vessel Database Solution RFI.

c) Summary of Requirements:

The Canada Border Services Agency (CBSA) intends to enter into a contractual arrangement with potentially one or more Contractors to provide a new Marine Vessel

Database Solution. The Contractor's responsibilities will include, but not necessarily be limited to, the provision of:

i. COTS Software package(s);
ii. Implementation and Business Transformation Services; and
iii. Support Services.

2. Background

2.1. Canada Border Services Agency (CBSA)

The Enforcement and Intelligence Programs Directorate (EIPD) provides leadership, strategic direction, policy guidance and program management for its four divisions; Detentions Transformation and Program Management, Inland Enforcement Program Management, Intelligence, Targeting and Criminal Investigations Program Management and Policy Division. The Directorate is also responsible for the implementation of the Functional Management Model (FMM), monitoring the performance of EIPD programs, and business system integration and client support for enforcement and intelligence (E&I) systems.

2.1.1. EIPD Program Management Division

The Intelligence, Targeting, and Criminal Investigations Program Management Division (ITCPMD) provides leadership, strategic direction and program management, including program policy support and functional guidance to the Operations Branch for the delivery of five key programs: Intelligence, Security Screening, Document Integrity, Targeting and Criminal Investigations. The division is also responsible for leadership in the development and maintenance of related enforcement manuals.

ITCPMD supports the EIPD vision to ensure that the CBSA has the ability to enforce, investigate and criminally prosecute those who violate border legislation by being responsible for:

i. Immigration Investigations Program;
ii. Intelligence Program;
iii. Criminal Investigations Program; and
iv. Targeting Program.

3. Nature of Request for Information

This is not a bid solicitation. This RFI will not result in the award of any contract; therefore, potential suppliers of any goods or services described in this RFI should not earmark stock or facilities, nor allocate resources, as a result of any information contained in this RFI. Nor will this RFI result in the creation of any source list; therefore, whether or not any potential supplier responds to this RFI will not preclude that supplier from participating in any future procurement.

Also, the procurement of any of the goods and services described in this RFI will not necessarily follow this RFI. This RFI is simply intended to solicit feedback from industry with respect to the matters described in this RFI.

4. Nature and Format of Responses Requested

4.1. Respondents are reminded that this is an RFI and not an RFP and, in that regard, respondents are requested to provide their comments, concerns and, where applicable, alternative recommendations regarding how the requirements or objectives described in this RFI could be satisfied. RFI responses should also clearly identify any additional information and/or clarification that respondents suggest be incorporated into any future solicitation documents. Respondents are also invited to provide comments regarding the content, format and/or organization of any document included in this RFI. Respondents should explain any assumptions they make in their responses. Any marketing or promotional information submitted as part of the responses will not be reviewed.

4.2. Responses will not be used for competitive or comparative evaluation purposes thus the response format is not as rigorously defined as would normally be for an RFP. However, for ease of use and in order that the greatest value be gained from responses, Canada requests that respondents follow the structure outlined below.

4.3. Respondents are requested to provide responses to the RFI questions contained in Section III Questions to Industry directly in the Vendor Response Template provided as Attachment 1 to the RFI.

4.4. Format of Responses

a) **Cover Page:** Respondents are requested to indicate on the front page the title of response, the RFI number and the full legal name of the respondent.

a) **Title Page:** The first page of each response after the cover page, should be the title page, which should contain:

i. The title of the respondent's response;
ii. The name and address of the respondent;
iii. The name, address and telephone number of the respondent's contact;
iv. The date; and
v. The Request for Information (RFI) number.

4.5. Vendor Response Template

Respondents are requested to prepare their response using the Vendor Response Template provided as RFI Attachment 1- VENDOR RESPONSE TEMPLATE to this RFI. All references to descriptive material, technical manuals and brochures included as part of the response should be referenced accordingly.

4.6. Number of Copies

Canada requests that responses be provided electronically by e-mail attachment or in hard copy (1 original and 1 copy). The text in the email attachment and in each hard copy (as applicable) should be labelled with the date and the respondent's name on each page, and pages should be sequentially numbered. It is preferred that all pertinent information be included in the attachment without the need to visit respondent Web sites. If necessary, however, Web site references may be provided for additional information beyond that requested in this RFI. If this is the case, it should be

noted that the information contained in such Web sites would not be used for the analysis of the responses to this RFI.

4.7. Respondents should be aware that the preferred document format is Adobe PDF.

4.8. Canada requests that respondents submit responses to the attention of the Contract Authority and sent to the address below:

Evonne Dale
Supply Specialist
Science and Software Systems Procurement Directorate
Acquisition Branch (AB)
Les Terrasses de la Chaudière, 10 Wellington, 4th Floor, Gatineau, Quebec K1A 0S5
Telephone: 819-360-3290
E-mail : Evonne.Dale@tpsgc-pwgsc.gc.ca

5. Response Costs

Canada will not reimburse any respondent for expenses incurred in responding to this RFI.

6. Treatment of Responses

a) **Use of Responses:** Responses will not be formally evaluated. However, the responses received may be used by Canada to develop or modify procurement strategies or any draft documents contained in this RFI. Canada will review all responses received by the RFI closing date. Canada may, in its discretion, review responses received after the RFI closing date.

b) **Review Team:** A review team composed of the CBSA representatives will review the responses on behalf of Canada. Canada reserves the right to hire any independent consultant, or use any Government resources that it deems necessary to review any response. Not all members of the review team will necessarily review all responses.

c) **Confidentiality:** Respondents should mark any portions of their response that they consider proprietary or confidential. Canada will treat those portions of the responses as confidential to the extent permitted by the Access to Information Act.

d) **Follow-up Activity:** Canada may, at its discretion, contact any respondent to follow up with additional questions or for clarification of any aspect of an RFI response. There are no plans to conduct post-submission review meetings with respondents to this RFI. However, should such a review be required, respondents will be contacted by the Contracting Authority to arrange a closed meeting.

7. Contents of this RFI

This RFI document consists of the following four SECTIONS:

1. SECTION I - Introduction and Process for Responding to this Request for Information (RFI)

Section I provides introductory material on the Marine Vessel Database Solution requirement and information concerning the preparation and submission of responses to this RFI.

2. SECTION II - Scope of Potential Procurement and General Project Information

Section II provides a high level description of the Marine Vessel Database Solution work requirements.

3. SECTION III - Questions to Industry

Section III includes questions to industry regarding the Marine Vessel Database Solution requirement and related procurement process.

4. SECTION IV – Draft Statement of Work (SOW)

Section IV constitutes the SOW which would form part of any contract resulting from the procurement process. Please note, this section also includes a general description of potential future work requirements which Canada may consider implementing under any resulting contract at any time during the term of the resulting contract.

8. Enquiries

Because this is not a bid solicitation, Canada will not necessarily respond to enquiries in writing or by circulating answers to all potential respondents. Canada will address only enquiries pertaining to the RFI process, during the RFI enquiries period. Any requests for additional information and/or clarification to be incorporated in to the contemplated RFP should be clearly identified in the respondent's response. There will be no extension to the RFI response period. However, respondents with questions regarding this RFI may direct their enquiries to:

Contracting Authority: Evonne Dale
Telephone: 819-360-3290
Email Address: Evonne.Dale@pwgsc.gc.ca

9. Submission of Responses

a) **Time and Place for Submission of Response:** Vendors interested in providing a response should deliver it by email to the Contracting Authority identified above at the time and on the date indicated on page 1 of this solicitation document. Canada does not contemplate any extension to the RFI posting period.

b) **Responsibility for Timely Delivery**: Each respondent is solely responsible for ensuring its response is delivered on time to the correct location.

c) **Identification of Response:** Each respondent should ensure that its name and return address, the solicitation number and the closing date appear legibly on the outside of the response.

10. Preliminary Procurement Timeline

Canada is contemplating publishing an RFP for the Marine Vessel Database Solution Canada reserves the sole option to alter its contemplated procurement schedule as Canada sees fit.

SECTION II - SCOPE OF POTENTIAL PROCUREMENT AND GENERAL PROJECT INFORMATION

1. Through the contemplated RFP process, Canada is seeking to select potentially one or more Contractors depending on the responses received back from the RFP's that will be responsible for delivering the Marine Vessel Database Solution as set out in the draft Statement of Work (SOW).

   The work to be undertaken under the resulting contract will be planned, managed and tracked using an agreed-upon project management methodology that will break down the work into the following project phases.

1.1. Phase 1: Planning

Outlines the integrated plan that includes the business and technical requirements, defines how the project will be executed, monitored and controlled through the life of the project, forming the baseline for project scope, cost and schedule.
Exit criteria: All artefacts have been delivered to and signed off by the Project Authority.

1.2. Phase 2: Execution

Project deployment readiness is confirmed, the task financial agreements / costing are monitored, change control is in place and the product / solution is implemented and accepted by the end-user and transitioned to the program and operational areas. During this phase, risks, issues and changes will be tracked and managed by the Contractor as defined in the Plans and Strategy approved at the end of Phase 1.
Exit criteria: The solution is fully implemented to the satisfaction of Canada.

1.3. Phase 3: Close Out

Ensure all project work is completed; the project has met its objectives, including evidence of adopting the product / solution, and is ready to officially close. During this phase, roll out, training and adoption by client.
Exit criteria: The solution is fully operational and signed off by the Project Authority.

SECTION III - QUESTIONS TO INDUSTRY

1. Canada is seeking to identify any opportunities to improve the draft documents prior to release of the contemplated RFP. Canada encourages respondents to provide written feedback on the RFI.

   Detailed written responses will enable Canada to consider industry perspectives in the finalization of the contemplated RFP.

   Responses to this RFI should include, but not be limited to, responses to the following questions.

   For answered questions, please provide the rationale, details, the additional information needed, and any price or performance impacts of each of the additions or changes that you suggest.

1.1. Technical Complexity Requirements

Canada would like prospective bidders to give consideration to the technical complexity of the draft Statement of Work (SOW).

a) Are there requirements that, while possibly making business sense, are technically difficult to achieve?

b) Are there areas where Canada could reduce the technical complexity of the requirements with minimal impact on the desired business outcomes?

c) Are there any requirements that would be prohibitively expensive or impractical to perform and deliver?

d) To what degree will the technical complexity or lack thereof, impact the cost of the solution?

1.2. Open Architecture

Canada has determined that the solution should be “Open Architecture”.

a) Is Canada's vision of such architecture typical for a large organization, or government?

b) Will an open architecture solution preclude bidders from participating in the RFP process?

1.3. Future Requirements for Crew/Passenger

Currently CBSA’s risk assessment process for marine crew/passenger is manual and does not allow for automated risk assessment associated with crew and passengers on board marine commercial cargo conveyances.

a) What would be the most effective method to transfer data between the CBSA and the proposed Solution?

b) Are there other currently available solutions that would enable the proposed Solution to provide this information?

1.4. Reporting

a) What challenges will the bidder face in providing fully integrated reporting information across all components;

   i. Will it be possible to run a single report query that draws data from all sources?

   ii. Is the degree of data integration that Canada is seeking available "out-of-the-box"?

   iii. Will bidders face development costs?

   iv. Is there a more efficient data reporting approach that Canada might consider?

1.5. Security

Canada is committed to ensuring that an appropriate level of security and privacy be applied to all components of the solution. The objective of these questions is to understand the ability of the Vendor community to conform to Canada's security and privacy requirements, as presented in the RFI, while delivering a cost-effective solution that meets all of Canada's requirements.

a) Which industry standards is your solution compliant with in terms of information protection?

b) Would a requirement of compliance with some of these industry standards impose any significant additional cost to the solution?

c) What additional steps can Canada take in the contemplated RFP to provide clarity about privacy and security requirements to enable Vendors to respond to the RFP?

d) Please identify currently deployed security solutions for a large organization and/or government clients? Areas to consider:

   i. Access to solution via internet;

   ii. Data encryption;

   iii. User authentication;

   iv. Privacy of user information;

   v. Location of data;

   vi. Physical security of data storage facilities; and

   vii. Security related to Contractor personnel.

e) If your company is not compliant with industry standards, would compliancy prohibit you from responding to an RFP with these requirements?

f) What are your web services standards?

g) Are there any security requirements that would drive significant incremental costs or make the service very difficult to implement?

h) What, if any, services or functionality, as described in the RFI, might be very difficult to implement due to security and privacy requirements?

i) Government of Canada policies require the use of Certificate Base Technology for authentication, and authorization, and digital signature. If your solution does not interface with Certificate Base Technology services, what alternative authentication, authorization, digital signature, and/or web services are available to provide authorization and authentication.

j) What efficiencies or challenges would you anticipate regarding the integration of these services into the proposed Solution, during implementation or operations of this solution?

k) Software delivery of its associated data hosted centrally on the Contractors servers in Canada or behind the CBSA firewall; if information is considered Protected C, the proposed Solution will be required to be integrated behind a firewall.

   i. What would be the most effective method to transfer data between the CBSA and the proposed Solution?

   ii. Are there other currently available solutions that would enable the proposed Solution to be integrated behind a firewall?

   iii. Does the proposed Solution have a Cloud base technology? If yes, provide details.

1.6. Service Level Agreements

Canada needs to ensure that whatever solution is procured will be supported and maintained for the life of the contract.

a) What does the prospective bidder recommend as an appropriate Service Level Agreement (SLA) framework? What are the most relevant SLA's that should form part of the contract?

b) Are there proposed SLA's that Canada should consider adding for the RFP? If so, why?

c) Are there specific proposed SLA’s that will be difficult to monitor or report on?

1.7. Evergreening of the Solution

Canada needs to ensure that whatever solution is procured will remain 'current' for the life of the contract.

a) What steps can Canada take to ensure that the software components of the solution remain current with the generally available commercial offerings of these components?

b) What is the frequency of service packs and upgrades of the proposed solution?

c) What is the life expectancy of the solution being proposed before an upgrade is required?

d) What are the complexities to deploy service packs and upgrades?

e) Are service packs and upgrades covered in the annual maintenance and support cost? If no, provide details.

f) Has Canada provided enough information to for the Contractor to provide maintenance and support options? If yes, please provide with pricing. If not, what information is required to in order to do so?

g) Does the Contractor provide a testing environment/server for service packs and upgrades to be deployed and tested? If not provide details.

h) What would be CBSA’s role in deploying service packs and upgrades?

i) Are there requirements in the RFI that are, perhaps, overly prescriptive to the point of requiring a level of customization to COTS products that would be difficult to sustain as the core product evolved?

j) If there is customization; to what degree would it inhibit regular product updates without reapplying customization (coding)?

1.8. Generic Questions

This RFI contains a considerable amount of information across many appendices.

a) Is this information sufficiently clear to enable Vendors to respond?

b) Are Canada's requirements to implement and operate the solution sufficiently clear? If not, what information is missing?

c) Base on the SOW do COTS or Open Source products exist? If not, what percentage of the solution is core verses custom which would require customization to meet Canada's requirements excluding reporting? What options can you offer to Canada?

d) Does your organization have any concerns and/or suggested improvements with respect to the procurement approach as reflected in this RFI? Respondents are asked to provide comments (strengths, weaknesses, and feasibility) and any suggestions that would offer advantages to Canada.

e) Can you offer any other suggestions for improvement of this RFI prior to posting of the contemplated RFP? If so, please explain.

1.9. Licensing

a) Has Canada provided enough information to for the Vendor to provide licensing model options? If yes, please provide with pricing. If not, what information is required to in order to do so?

b) What are the standard support and maintenance options for which the solution can be upgraded without changing the core product?

1.10. Commercial Questions

Proposed Procurement Approach:

Respondents are asked to provide feedback on the strengths, weaknesses and general feasibility of the procurement approach described in this RFI, and provides any suggestions on how to make the process more efficient.

1.11. Innovative Ideas

Canada is open to including in the contemplated RFP; innovative ideas that would be of benefit to Canada as whole, its departments and/or users of the solution.

a) Are there any innovative or new ideas that Canada has not contemplated as part of the RFI that should be considered for the RFP?

b) How cost-beneficial, to Canada, are the proposed innovations?

SECTION IV – DRAFT STATEMENT OF WORK (SOW)

1. Introduction

Canada has a requirement to procure a Marine Vessel Database Solution, for the Canada Border Services Agency (CBSA) Enforcement & Intelligence Programs Directorate.

1.1. Purpose

The purpose of a new solution is to directly support the delivery of a suite of Enforcement & Intelligence programs. To implement a solution to support the program's requirements, improve data integrity and system reliability.

a) By implementing the new solution, this will facilitate the CBSA's ability to meet:

i. Departmental Results Framework (DRF);

ii. Accountability Framework (MAF); and

iii. Report on Plans and Priorities (RPP).

b) The activities with or in the solution should assist in supporting the following:

i. CBSA, Enforcement & Intelligence Programs Directorate commitments (Ongoing and Key, Operational and Strategic);

ii. Other related commitments (such as those outlined within the Office of the Auditor General (OAG) Report.); and

iii. IT Security Standards.

The information within the system should facilitate the generation of the Departmental Results Reports (DRR) and/or other similar reports.

1.2. Scope

The work to be undertaken under the resulting contract will be planned, managed and tracked using an agreed-upon project management methodology that will break down the work into the following project phases.

1.2.1. Phase 1: Planning

Outlines the integrated plan that includes the business and technical requirements, defines how the project will be executed, monitored and controlled through the life of the project, forming the baseline for project scope, cost and schedule. This phase includes but is not limited to the following deliverables:

a) Project Plan (WBS, Schedule and Dependencies);

b) RACI;

c) Risk Management Plan;

d) Issues Resolution Plan;

e) Communications Plan;

f) Change Management Strategy;

g) Project Documentation Management Plan;

h) Training Strategy; and

i) Acceptance Test Plan.

Exit criteria: All artefacts have been delivered to and signed off by the Project Authority.

1.2.2. Phase 2: Execution

Project deployment readiness is confirmed, the task financial agreements / costing are monitored, change control is in place and the product / solution is implemented and accepted by the end-user and transitioned to the program and operational areas. During this phase, risks, issues and changes will be tracked and managed by the Contractor as defined in the Plans and Strategy approved at the end of Phase 1. This phase includes but is not limited to the following activities and associated artefacts:

a) Design & Analysis;

b) Construction;

c) Data Conversion;

d) Deployment;

e) Testing and Acceptance; and

f) Security Accreditation.

The Contractor(s) is required to provide weekly project status reports to the Project Authority.

Exit criteria: The solution is fully implemented, including:

i. All project activities have been completed;

ii. All risks, issues and changes have been addressed; and

iii. Sign off by the Project Authority.

1.2.3. Phase 3: Close Out

Ensure all project work is completed; the project has met its objectives, including evidence of adopting the product / solution, and is ready to officially close. This phase includes but is not limited to roll out, training and adoption by the client.

Exit criteria: The solution is fully operational and signed off by the Project Authority.

1.3. Background

One of the units that fall under EIPD is the has a Targeting Program Unit (TPU) which is responsible for the development and management of national strategies, programs, policies and processes related to the CBSA's targeting programs (commercial and traveller).

TPU uses a Marine Vessel Database to track, catalog, and search, all ships coming into Canadian waters. The database provides information on, but not limited to, ship particulars and characteristics; ship owners, agents, and parent companies; and historical ship movement. The database is essential to CBSA; allowing CBSA to meet operation requirements and uphold border security.

a) TPU's Key Responsibilities

i. Providing functional direction to Operations Branch, and program policy guidance to senior management on the targeting program;
ii. Developing program policy and strategies for future components of the targeting program;
iii. Ensuring targeting training material accurately reflects policy and future direction;
iv. Supporting and responding to targeting related audits and evaluations;
v. Supporting the implementation of the CBSA Targeting Business Model through the National Targeting Policy as well as the mode-specific targeting processes;
vi. Providing advice to, and collaborating with, international CBSA partners to share best practices, as well as participating in capacity building activities related to targeting; and
vii. Participating in, and supporting, emerging initiatives that may impact the business of targeting.

b) National Targeting Program Objective

Develop and maintain the CBSA's ability to identify suspected high-risk people, goods and conveyances in order to alert the appropriate CBSA personnel of an impending suspected risk or threat to national security and/or public safety priorities, (public safety priorities include, but are not exclusive to, contraband, illicit migration and other government department (OGD) requirements) supported by intelligence. An intelligence supported targeting program allows targets to be intercepted to undergo further verification and examination from an informed position, with respect to the level of threat, through enhanced risk assessment methodologies, targeting systems and the use of actionable intelligence products.

1.4. Overview

Since 9/11, the Canada Border Services Agency (CBSA) has used an online Marine Vessel Database to track, catalog, and search, all ships coming into Canadian borders. The database provides information on, but not limited to, ship particulars and characteristics; ship owners, agents, and parent companies; and historical ship movements. CBSA Targeting and Intelligence officers use this information to determine if each ship, coming into Canada, should be subject to further screening. The database is essential to CBSA; allowing CBSA to meet operational requirements and uphold border security. The key requirements/functionality are: gathering intelligence, generating reports, ability to add notes and to customize for targeting purposes by the National Targeting Centre.

1.5. Tasks

The proposed system will provide Targeting and Intelligence officers with information on previous visited locations, current owners/operators and, ship particulars, on all ships coming into Canada;

along with voluntary submitted crew data, when and where available. The database will also provide the following specific information on the above mentioned categories:

a) Complete historical information of all movements:
   i. Latitude / Longitude of all stoppages at Ports and Anchorages (land and at sea)
   ii. Time zones in which these stoppages occurred
   iii. Time and dates of all stoppages at Ports and Anchorages (land and at sea)
   iv. Map Indicator of all stoppages at Ports and Anchorages (land and at sea)
   v. Movement history details back to vessel launch (when possible)
   vi. Current Position
   vii. Current Course
   viii. Current Speed
   ix. Estimated time of arrival (ETA) at next port
   x. Destination
   xi. Vessel Name
   xii. International Maritime Organization (IMO) Company Number
   xiii. Maritime Mobile Service Identity (MMSI) number
   xiv. Event type (Enter or Exit)
   xv. Port Name & Locode
   xvi. General cargo information

b) Vessel details:
   i. Vessel Name
   ii. Name Change History
   iii. International Maritime Organization (IMO) Company Number
   iv. IMO Document of Compliance Number (DOC)
   v. Maritime Identification Numbers
   vi. Flag
   vii. Flag History
   viii. Call Sign
   ix. Maritime Mobile Service Identity (MMSI)
   x. AIS type
   xi. Port of Registry
   xii. Vessel type
   xiii. Vessel Status (Live/Dead)

xiv. Registered Operator (with company contact info - address, email, and phone number)

xv. Registered Owner (with company contact info - address, email, and phone number)

xvi. Registered Technical Manager (with company contact info - address, email, and phone number)

xvii. Registered Beneficial Owner (with company contact info - address, email, and phone number)

xviii. Ownership History

xix. Parent and Associated Companies

xx. Gross Tonnage

xxi. Net Tonnage

xxii. Deadweight Tonnage

xxiii. Date Construction

xxiv. Construction Details (Yard, built by, launch)

xxv. Dimensions – (Length, breadth, depth / draught)

xxvi. Hull Information

xxvii. Inmarsat Numbers with details

xxviii. Classification Societies

c) Commercial Vessel Details:

i. Inspection records

ii. Casualty information/details

iii. Vessel technical specifications/details

iv. Photos

v. History since construction of:

1. Vessel name
2. Flag/Country of registry
3. Vessel type
4. Registered owner
5. Name of operator
6. Casualties
7. Inspections

d) Training:

i. Not to exceed 4 locations TBD by CBSA from among the following: Ottawa, Halifax, Montreal, Vancouver

1.6. Client Support

CBSA will provide the names of all users that the license will distributed to. User and technical support to be provided:

a) 8AM-8PM EST via phone and;

b) Website FAQ 24/7

1.7. Licensing

The conditions of the developer's shrink-wrap license are not acceptable to the Crown. The information product is proprietary, and the proposed Contractor must have the authority to negotiate the terms and conditions of the contract and the related information product licensing terms including, but not limited to; limitation of liability, indemnification, transferability of license, termination/refund to the Crown.

The CBSA is requesting pricing on three licensing models which would support Software delivery of its associated data hosted centrally on the Contractors servers in Canada or behind the CBSA firewall; accessed by users using a web browser over the Internet. Customs Duties are included and Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

1.7.1.Contract Period with Concurrent Users

The Contractor will provide the CBSA with access credentials for 250 users and license for 20 concurrent users with the ability to add groups of 5 concurrent users.

1.7.2. Contract Period with Name Users

The Contractor will provide the CBSA with access credentials for 250 users and license for 250 name users with the ability to add groups of 25 name users.

1.7.3.Contract Period with Enterprise License

The Contractor will provide the CBSA with access credentials for unlimited users.

1.8. Personnel and Facility Security

All Contractor personnel that will work on this engagement will require personnel security clearance Secret Level. All security requirements will require any subcontractor to adhere to these same parameters.

1.9. Privacy

Canada and its employees are continuously concerned with the Privacy Act, the Personal Information Protection and Electronic Documents Act, the US Patriot Act, and the US Transportation Security Authority (TSA) requirements as well as all related privacy issues. Canada is still assessing the privacy requirements for the upcoming solicitation. Contractors should note that the upcoming solicitation will include privacy requirements within the solution to which the Contractor must adhere.

2. Attachments

The purpose of this attachment is to facilitate and standardize the vendor response submittal process and content. This attachment is designed to capture information necessary to identify and analyze vendor responses to the RFI questions.

a) **Attachment 1: Vendor Response Template**

b) **Attachment 2: Requirements**

c) **Attachment 3: CBSA Technical Environment**

ATTACHMENT 1:
Vendor Response Template

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1. General Considerations

The purpose of this attachment is to facilitate and standardize the vendor response submittal process and content. This attachment is designed to capture information necessary to identify and analyze vendor responses to the RFI questions.

2. Vendor Information

Please fill in the following information

Company Information	
Company Name	
Address	
City	
Province/State	
Postal/Zip Code	
Country	
Web address	
Contact Information	
First Name	
Last Name	
Title	
Email	
Work Phone No.	
Fax Phone No.	
Cell Phone No.	

3. RFI Responses

The Vendor must submit their response to RFI questions in the format specified below.

Question: Please enter the question number and question sub-number in this field in the format {question number}{question sub-number}, i.e. “1.a)”

Response: The Vendor shall provide their response to the question listed in “Question” in a clear, concise and thorough manner

Notes: The Vendor may use this field to provide additional information or commentary.

Question	Response	Notes
1.1.a)		
1.1.b)		
1.1.c)		
1.1.d)		
1.2.a)		
1.2.b)		
1.3.a)		
1.3.b)		
1.4.a).i.		
1.4.a).ii.		
1.4.a).iii.		
1.4.a).iv.		
1.5.a)		
1.5.b)		
1.5.c)		
1.5.d).i.		
1.5.d).ii.		
1.5.d).iii.		
1.5.d).iv.		
1.5.d).v.		

1.5.d).vi.		
1.5.d).vii.		
1.5.e)		
1.5.f)		
1.5.g)		
1.5.h)		
1.5.i)		
1.5.j)		
1.5.k)		
1.5.l).i.		
1.5.l).ii.		
1.5.l).iii.		
1.6.a)		
1.6.b)		
1.6.c)		
1.7.a)		
1.7.b)		
1.7.c)		
1.7.d)		
1.7.e)		
1.7.f)		
1.7.g)		
1.7.h)		

1.7.i)		
1.7.j)		
1.8.a)		
1.8.b)		
1.8.c)		
1.8.d)		
1.8.e)		
1.9.a)		
1.9.b)		
1.10.a)		
1.11.a)		
1.11.b)		

ATTACHMENT 2:
Requirements

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How to Read the Requirements Tables

Requirements are expressed in a tabular format with each table being specific to a fairly broad requirement category. Requirements are not repeated even though some requirements might be suitable for inclusion in more than one category.

Requirements table contain the following information:

Column	*Description*
Unique identifier	Used to establish traceability in the future, particularly during testing
Requirement	Describes the requirement

1. Assumptions, Dependencies and Constraints

1.1. Assumptions, Dependencies and Constraints

This section provides the known assumptions dependencies, constraints that were current at the time of drafting this RFI.

1.1.1. Assumptions

Unique Identifier	*Requirement*
ASS01	It is assumed that all users will have a unique identifier number.
ASS02	User IDs/Logins are required by each user to access any of the functions they require in this initiative. Require automation to synchronize profiles currently being used by other applications.
ASS03	Current systems are not expected be modified to support program changes.
ASS04	The proposed solution will be a COTS or Open Source Solution with minor customization.
ASS05	Authentication system and role based management, requires being open architecture.
ASS06	It is assumed that any special connectivity requirements between the application and external sites can be supported by Shared Services Canada (SSC).

1.1.2. Dependencies

Unique Identifier	*Requirement*
DEP01	The proposed solution is highly dependent on external feeds. In the absence of multiple feeds, the Solution can still function albeit with less or stale information.

1.1.3. Constraints

Unique Identifier	*Requirement*
CON01	All the information on the database shall be specific to each vessel, all information shall be for ships over 100 gross tones, and all historical information shall be updated daily.
CON02	Provide access to, at least one year, historical information on at least 100,000 active vessels.
CON03	Provide access to, at least one year, historical information on at least 100,000 shipping companies.
CON04	Provide access to current global commercial port and marine facility information including location, physical layout (length of jetties/piers, depth alongside, etc.) services, capabilities, owner/operator information.
CON05	Any "CBSA" data added to the proposed solution may be considered Protected C. Example of CBSA data may include but not limited to; analyst notes, vessel rummage reports, and lookouts which is required to be behind a firewall.

2. General Requirements

The following general requirements are applicable to all aspects of the Marine Vessel Database Solution.

Unique Identifier	*Requirement*
GEN01	**Accessibility:** The proposed solution shall meet Canada's Common Look and Feel Guidelines for Accessibility https://www.canada.ca/en/treasury-board-secretariat/topics/government-communications.html
GEN02	**Common Look and Feel:** The Contractor shall deliver a Solution which meets Canada's Common Look and Feel Guidelines https://www.canada.ca/en/treasury-board-secretariat/topics/government-communications.html.
GEN03	**Language:** The Contractor shall provide all products and services delivered under the Contract in both official languages (English and French) unless otherwise specified, in accordance with the official languages act (English URL - http://laws.justice.gc.ca/eng/acts/O-3.01/index.html And French URL http://laws.justice.gc.ca/fra/lois/O-3.01/index.html).
GEN04	**Retention:** The Contractor shall ensure that the retention of reporting data is in accordance with Canada's records management and retention legislation, policies and guidelines.
GEN05	**On-line Help:** Provide context-sensitive help for all content displayed in the portal and in the applications accessible via the portal. The Contractor shall deliver functionality to present on-line help to users at various levels. Minimum levels to be included, but not limited to, are: a. On-line help at the page level; b. On-line help at the section of a page level (within a page); and c. On-line help at the data entry area level.

GEN06	**Audit Trail:** The application shall be capable of recording an audit trail for all transactions performed by a user in the system. Access to the audit information shall be available online and governed via role based application access.
GENO7	**Role Based Access Controls (RBAC):** The proposed solution shall support: a. Role assignment – A user can exercise a permission only if the user has been assigned a role. b. Role authorization – A user can only take on roles for which they are authorized, c. Permission authorization – A user can only exercise permissions for which they are Authorized. d. Management of roles, groups and Users such that roles can be defined, roles can be added to/removed from groups, and Users can be added to/removed from groups.
GEN08	**Weekly Status Meetings:** The Contractor shall conduct weekly project status meetings in the National Capital Region from the contract award date through to complete successful deployment of their Solution at the Project Authorities location. The focus of these meetings shall be to update the Project Authority on the status of the implementation of the Solution including management of issues and risks, and project schedule updates.

3. Functional Requirements

A functional requirement defines a function of a software application or its component. A function is described as a set of inputs, the behaviour, and outputs (software). They may be calculations, technical details, data manipulation and processing and other specific functionality that define what The proposed solution is supposed to accomplish.

The CBSA requires the Vendor to provide confirmation of how they meet each of the below requirements in this section by either providing training manual or user guide outlining where the information is located i.e., page number and how to access it. The Vendor may also, provide a screen shot of how this information will appear in the database.

Unique Identifier	***Requirement***
FUN01	Provide all of the information requested for FUN02, FUN03 and FUN04 and meet the following: a. Historical information shall be at least one year. b. Vessel details, characteristics, and movement information shall be updated daily. c. All information shall be specific to each vessel entering Canada. d. All information shall be for vessel over 100 gross tones. e. Newly built vessels shall be added to the database within 5 days after registry with International Maritime Organization (IMO). f. All data referenced in FUN02 is updated not less than 4 times per day. g. All data referenced in FUN03 is updated monthly.

FUN02	Provide a complete history of all movements including, portside movements, at anchor, leaving and entering international boundaries. Access to the following historical information shall be provided: a. Latitude / Longitude of all stoppages at Ports and Anchorages (land and at sea) b. Time zones in which these stoppages occurred c. Time and dates of all stoppages at Ports and Anchorages (land and at sea) d. Map Indicator of all stoppages at Ports and Anchorages (land and at sea) e. Movement history details back to vessel launch (when possible) f. Current Position g. Current Course h. Current Speed i. Estimated time of arrival (ETA) at next port j. Destination k. Vessel Name l. International Maritime Organization (IMO) Company Number m. Maritime Mobile Service Identity (MMSI) number n. Event type (Enter or Exit) o. Port Name & Locode p. General cargo information
FUN03	Provide access to the following information for the Vessel details: a. Vessel Name b. Name Change History c. International Maritime Organization (IMO) Company Number d. IMO Document of Compliance Number (DOC) e. Maritime Identification Numbers f. Flag g. Flag History

	h. Call Sign i. Maritime Mobile Service Identity (MMSI) j. AIS type k. Port of Registry l. Vessel type m. Vessel Status (Live/Dead) n. Registered Operator (with company contact info - address, email, and phone number) o. Registered Owner (with company contact info - address, email, and phone number) p. Registered Technical Manager (with company contact info - address, email, and phone number) q. Registered Beneficial Owner (with company contact info - address, email, and phone number) r. Ownership History s. Parent and Associated Companies t. Gross Tonnage u. Net Tonnage v. Deadweight Tonnage w. Date Construction x. Construction Details (Yard, built by, launch) y. Dimensions – (Length, breadth, depth / draught) z. Hull Information aa. Inmarsat Numbers with details bb. Classification Societies
FUN04	Provide access to the following information for the Commercial Vessel details: a. Inspection records b. Casualty information/details c. Vessel technical specifications/details d. Photos e. History since construction of: i. Vessel name

	ii. Flag/Country of registry iii. Vessel type iv. Registered owner v. Name of operator vi. Casualties vii. Inspections
FUN05	The ability to use filters within the software which can be adjusted to search and identify vessels by all the fields located as indicated in FUN02, FUN03, and FUN04.
FUN06	The ability to create filters by user. Each user shall have the ability to save, update, or edit filters. The filters saved by the user shall persist across multiple user sessions and continue to monitor and aggregate information which meets the filter criteria when the user is not currently logged onto the system.
FUN07	The ability to create, update, display and store user specific views based on geographic boundaries.
FUN08	The ability to store unique preferences and permissions for each user including, data access, dashboard configuration and personalized data views & queries.
FUN09	The ability to allow the user to create, update, display and store system-wide watch-lists and user specific lookouts available only to CBSA authorized users.
FUN10	The ability to set up alerts on vessel's entry to /exit from port delivered to CBSA via e-mail or SMS.
FUN11	The ability to assess vessels using an integrated risk analysis functionality which provides users with the ability to rate and simultaneously risk-score vessels against multiple dimensions of risk, such as Security, Safety, and Environmental factors.
FUN12	The ability to configure the risk rules and scoring as well as add additional risk analysis rules.
FUN13	Provide a sandbox environment with the ability to test new functionality, configurations of rules and scores without impacting the production environment.
FUN14	Provide a basic workflow capability that allows users to flag vessels of interest and refer vessels of interest to a secondary folder or list for closer scrutiny. The system shall provide the capability to refer vessels of interest to another user in the system.
FUN15	Provide the user with the capability to record notes and attach documents and pictures against vessels of interest.
FUN16	Provide the user with the ability to display the last known position of all of their flagged vessels of interest.
FUN17	Provide the ability to exchange information between users.

4. Non-Functional Requirements

Non-functional requirements are requirements that specify criteria that can be used to judge the operation of a system, rather than specific behaviors (also known as quality requirements), which impose constraints on the design or implementation (such as performance requirements, security, or reliability).

4.1. Performance Requirements

The extent to which a mission or function shall be executed; generally measured in terms of quantity, quality, coverage, timeliness or readiness.

Unique Identifier	*Requirement*
PER01	The proposed solution shall comprised of the Licensed Software, shall be complete and work in accordance with the requirements expressed in these Requirement Specifications.
PER02	The proposed solution shall allow for installation, copy, deployment and use of the Licensed Software, in whole or in part, where required operationally by CBSA, and is not dependent upon the provision of professional services by the Contractor.
PER03	The proposed solution shall be compliant with and be based on Treasury Board Secretariat standards, international standards, national technical regulations or recognized national standards, including, but not limited to: a. Hypertext Transfer Protocol (HTTP); b. Web Services Description Language (WSDL); c. Hypertext Markup Language (HTML); d. Wireless Markup Language (WML); e. Extensible Markup Language (XML); f. Lightweight Directory Access Protocol (LDAP); g. W3C Web Content Accessibility Guidelines Priority 1 (Provide content that, when presented to the user, conveys essentially the same function or purpose as auditory or visual content) and Priority 2 (Ensure that text and graphics are understandable when viewed without color) Checkpoints; and h. Metadata Standards
PER04	The proposed solution shall enable the preservation and protection of installation specific material across updates. Installation specific material include, but are not limited to: a. Configuration parameters; b. Customizations; c. Help screens; d. Content; e. Metadata; f. Workflows; g. Application integration capabilities; and h. User and personalization attributes.

PER05	The proposed solution shall include functionality in support of applications environments such as a solution oriented API that supports integration of application services.

4.2. Security and Privacy Requirements

Unique Identifier	*Requirement*
SEC01	The ability to support the management of security - role base - to manage users
SEC02	The ability to monitor user activities i.e. activity logs with time stamps
SEC03	The proposed solution will contain information that has not been classified to CBSA.
SEC04	The proposed solution will contain information that is has not been classified to each user.
SEC05	The proposed solution shall be certified to run on production systems at CBSA.
SEC06	Access to The proposed solution will be through a secure Internet connection (SSL).
SEC07	The proposed solution shall conform to Security Certification & Accreditation established in CBSA. In compliance with Government of Canada Security Policies.
SEC08	The proposed solution shall deliver, enable and support passwords and other access security features, either directly or through integration with the underlying operating systems, which: a. Prohibit unauthorized access to specific features and/or functions of the environment; and b. Prohibit unauthorized access to the system as a whole; for example, through unauthorized log-on attempts.
SEC09	The proposed solution shall deliver, enable and support a secure audit trail functionality(ies) that include, but are not limited to: a. Recording relevant system events; b. Recording changes to configurations; c. Recording changes to related data such as user profile data; and d. Providing secure access to audit trail data to enable reporting.
SEC10	The proposed solution's security services application interface functionalities shall include: a. Support for HTTP Security (HTTPS); and b. Support for Web Services end-to-end security functionalities.
SEC11	The proposed solution's security services functionalities shall include one single coordinated set of interfaces for the management of permissions for the purposes of definition and management of roles including individual, group and role.

4.3. System Interface Requirements

The Interface Requirements imposed on one or more systems, subsystems, configuration items, manual operations, or other system components to achieve one or more interfaces among these entities.

Unique Identifier	*Requirement*
SYS01	The proposed solution shall provide automatic notifications to users as required.
SYS02	The proposed solution shall allow for information entered in the system will be readily transferable either through an interface or electronic interaction between systems.
SYS03	The proposed solution shall interface with the CBSA business intelligence and/ or business warehouse systems.
SYS04	The proposed solution shall interface with the CBSA document storage system i.e., GCDOCS, CBSA's EDRMS solution Apollo.
SYS05	The proposed solution shall interface with the mail server.

4.4. User Interface Requirements

Unique Identifier	*Requirement*
USE01	The proposed solution shall use standard values (code value tables) wherever possible.
USE02	The proposed solution shall enforce the use of mandatory fields.
USE03	The proposed solution will conform to CBSA and GoC standards for web applications (e.g., adherence to CLF, Accessibility etc.)
USE04	The proposed solution's application screens and information guidance shall meet Treasury Board bilingual language standards.

4.5. Architectural Requirements

Architectural requirements explain what has to be done by identifying the necessary system architecture (structure + behaviour) of a system.

Unique Identifier	*Requirement*
ARC01	The proposed solution shall operate in an environment that does not impose restrictions with respect to technology (ies) used to access CBSA delivered through the proposed solution.

4.6. Operational Information, Data and Content Storage and Protection

Unique Identifier	*Requirement*
OPT01	The proposed solution shall have operational information, data and content that shall be protected, such as configuration data, preferences and status data.
OPT02	The proposed solution shall ensure the integrity, security, performance and accessibility of the operational data kept within the Solution. This could be accomplished through functions provided by Oracle relational database, Microsoft SQL Server relational database or XML data base mechanisms.

4.7. System Scalability

Unique Identifier	*Requirement*
SCA01	The proposed solution shall be designed for high availability and scalability so that it will continue to function as its context changes in size or volume.
SCA02	The expected total number of users for this Solution is about 300 which could increase in the future.
SCA03	The proposed solution is expected to be able to generate the following data throughputs between CBSA and external sources: 1. Maps are accessed on demand. 2. An average of 16 MB per hour of traffic for TV 32 (DOT) interface 3. An average of 16 MB per hour (based on TV32) per hour 4. An average of 80 MB per hour of traffic for AIS Live interface 5. Currently the following data is collected via seven (7) different FTP connections a. Weekly Ships Characteristics File @ 300-400 Mb (Full Refresh) b. Weekly Casualties File @15 Mb (Full Refresh) c. Daily Ships File @25-50 Mb (Daily Updates) d. Daily Casualties File @<1 Mb (Daily Updates) e. Daily Port History File @1 Mb (Daily Updates) f. Hourly AIS History @8 Mb (Hourly "Cleansed" AIS data used for the AIS History) g. Hourly Port History File @300-400 Kb (Updates every 2-3 Hours) h. Hourly Vessels Currently In Port File @1-16 Mb (Full Refresh every 2-3 Hours) i. Daily Duplicate MMSI/IMO Report @50 Kb (Full Refresh) j. Monthly Ports File @525 Mb (Full Refresh)
SCA04	The proposed solution shall enable growth as the user base increases to support end-user transactions per day (intranet, internet, extranet, inter-network, network, and Virtual Private Network (VPN)), where this number includes external and internal users accessing government services and content.

4.8. Directory Management

Unique Identifier	*Requirement*
DIR01	The proposed solution shall use external (to the Solution) directory environments where and when required in support of mail, permissions or other functions.
DIR02	The proposed solution shall be able to operate in and make use of the following

	directory environments at a minimum: a. Microsoft Active Directory; and b. Lightweight Directory Access Protocol (LDAP) compliant directories.

4.9. Electronic Mail Integration

Unique Identifier	*Requirement*
ELE01	The proposed solution shall interoperate with and make use of Simple Mail Transfer Protocol (SMTP) compliant e-mail systems.
ELE02	The proposed solution shall enable and support e-mail functionality which will be used for a) notification processing for end users, b) notifying the IT support team responsible for monitoring the application health and c) other workflow related events.

4.10. User Management Framework

Unique Identifier	*Requirement*
USE01	The proposed solution shall deliver, enable and support the functionality to create and manage user profiles within the environment including, but not limited to: a. Creation of a user with an associated user profile including security and access attributes appropriate to that user profile; b. Creating a group of users with common security attributes and profiles; c. Defining "roles" with role-specific attributes such as an Administrator role; d. Enrolling users into groups and assigning roles and attributes; e. Removing users from groups; and f. Modifying user attributes.
USE02	The proposed solution shall enable and support e-mail functionality as in the forwarding of notifications or other workflow related events.

4.11. System Management

Unique Identifier	*Requirement*
SYM01	The Systems Management Console (SMC) - The proposed solution shall deliver, enable and support role based security for system management so that administrative functions can be delegated, including those roles for application server management.

4.12. Presentation and Customization Services

Unique Identifier	*Requirement*
PRE01	The proposed solution shall deliver, enable and support a global one-box search

	allowing for phrased, Boolean, and multi-word searching.

4.13. Multi-Language Support

Unique Identifier	*Requirement*
MUL01	The proposed solution shall deliver and enable: a. All and any of the users to create, modify, store and retrieve content using the full character sets of both of Canada's official languages; and b. Where search or sorting functionality is an embedded characteristic of a software component within the solution, the Solution shall use the full character sets of both of Canada's official languages.
MUL02	The proposed solution shall process and deliver information, data, metadata and content in multiple languages including but not restricted to English and French.
MUL03	The proposed solution shall deliver, enable and support the UNICODE and UTF-8 standards. Where search or sorting functionality is an embedded characteristic of a software component within the solution, the Solution shall use the full character sets of the languages.

4.14. Data Requirements

4.14.1. Data Conversion/Migration

Map source system data elements to target entities and attributes and define conversion process requirements. Define conversion verification and operational requirements.

Unique Identifier	*Requirement*
DAC01	The proposed solution shall preserve all data in legacy systems with no loss of information. (This should allow for differences in the physical data structures in the old system and the new system).

4.14.2. Data Privacy

While it is recognized that privacy and security are separate concepts, data privacy requirements are captured under Non-Functional Requirements, Security and Privacy Requirements.

4.15. Common Look and Feel

The Contractor shall deliver a solution which meets Canada's Common Look and Feel Guidelines https://www.canada.ca/en/treasury-board-secretariat/topics/government-communications.html.

4.16. Integrity

Accountability is high (to Treasury Board and to the Canadian public). The information shall be accurate.

4.17. Privacy

The proposed solution will track marine vessels, vessel routing, ownership/registration data, and other static and dynamic information on vessels, as well as vessel crew members, cargo and their movements this information is considered unclassified. Any “CBSA” data added to the system may be considered Protected C. Example of CBSA data may include but not limited to; analyst notes, vessel rummage reports, and lookouts.

ATTACHMENT 3:
CBSA Technical Environment

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1. Data Centres

1 The CBSA has two Data Centers supported by Shared Services Canada (SSC) which house three (3) distinct technology platforms (i.e. hardware and operating systems):

a. Windows Platform – based on Intel x86 chip architecture running the Microsoft Windows Server operating system
b. LINUX Platform – based on Intel x86 chip architecture running the RedHat Enterprise LINUX (RHEL) operating system
c. Mainframe Platform – based on IBM mainframe architecture running the z/OS operating system

Additional considerations:

a. The two Data Centers may be located at distances greater than 50 kilometers
b. For high-availability business system resilience, active-active configuration redundancy is achieved either through intra-DC (redundancy within a data center) or configured across Data Centers
c. Disaster recovery may require additional passive (dormant) licensing to be activated in the case of a crisis whereby the primary software is no longer available
d. Disaster recovery (data perspective) is supported through hardware mirroring of the Storage Area Network (SAN)

2. Windows Platform

2.1 Distributed Computing Environment

The Distributed Computing Environment (DCE) is a Client/Server based infrastructure that consists of Windows-based servers, desktops, tablets and laptops with Windows Active Directory (AD) providing the backend directory services.

There are approximately 400 sites across Canada supported by the DCE. These sites will vary in size from a handful of users to thousands in a single building. Bandwidth at these sites also varies as indicated in section Network Environment. A distributed site may be comprised of one or more File and Print servers, access to local or centralized MS Exchange mail services, an AD domain controller, and a number of locally networked desktops. A larger portion of sites leverage regional hub and/or central services.

2.2 Centralized Windows Services

The Server side is currently running Server 2008 and/or Server 2008 R2 64bit. Servers are currently running on HP BL 465C/685C G7/G8 hardware. CBSA leverages VMware ESXi 5.5 to support a significant portion of production services.
SSC has also implemented the Centralized Technology Platform (CTP) using Citrix XenApp, which consists of central servers located in the National Capital Region hosting a variety of applications and

services for a select group of end-users. These applications and services include specific line-of-business applications along with base productivity applications such as MS Office, Outlook and Exchange, a host emulator (Attachmate) and basic File and Print services.

The CTP platform also accommodates Secure Remote Access (SRA) users who may not be on the current network shared between CRA and the CBSA (RCNet) and are connecting to the DCE via alternative access methods (e.g. Public ISP's). The SRA Platform is a subset of the DCE and is also based on the Windows Server and Windows Client operating systems.

The following bullets will highlight the key Windows based software installed within the DCE and their anticipated upgrades based on the current roadmap:

a. MS Windows 2016 Server;
b. Citrix XenApp;
c. MS Windows 7/10*;
d. MS Office 2016; and
e. MS Exchange 2016.

*CBSA is moving towards "Windows as a Service"; OS upgrades will be performed once a year.

The current version of the Java Runtime Environment (JRE) installed on each desktop is version 1.7.

The underlying hardware for the Windows environment consists of servers based on AMD and Intel architectures using multi-core and multi-processor technology. Desktops and laptops are also based on AMD and Intel architectures using both single or multi core processors and dual channel memory. CBSA almost exclusively leverages VMWare ESXi to host all production and non-production Windows-based servers.

3. LINUX Platform

SSC operates and supports the Red Hat Enterprise Linux (RHEL) platform to host web based services and other applications including commercial off the shelf (COTS) software.

The underlying hardware on this platform consists of C7 chassis /w 10g switches and up to 16 half-height 2-socket 8-core 256Gb RAM configured blades, running RHEL partitioned through VMWare virtualization. To meet high availability requirements, critical hardware and software components are redundantly deployed over two (2) data centers in Ottawa.

a. RHEL v6.4;
b. Weblogic 10.3.6;
c. Websphere Application Server v8.x; and
d. ESX 5.5, moving to 6.5.

4. Mainframe Platform

SSC operates multiple IBM zSeries Enterprise Class machines (currently z196, evolving to EC12 in the next year) deployed over two (2) data centers in the National Capital Region. Within each data center, the machines are clustered in parallel sysplex configurations. The platform supports z/OS and MVS operating systems for legacy systems, and may expand into z/LINUX over the next years. Workload is managed across a variety of general purpose and specialty engines (zAAP on zIIP, zIIP, crypto).

Peripheral device attachment and channel interfacing is primarily FICON. Connection to the network infrastructure is Ethernet via IBM Open Systems Adapters (OSA).

a. z/OS Version 1.13;
b. CICS v5 supported by CTG v9 (CICS Transaction Gateway);
c. Websphere Application Server v8.5.5.3;
d. MQ v7.1; and
e. IBM DB2 v10.

5. Network Environment

The SSC Finance Portfolio (formerly Canada Revenue Agency) operates a private Wide Area Network (RCNet) that extends to approximately 400 sites across Canada. RCNet installs MPLS based routing infrastructure and local switches in each building to interconnect user backbone and common access segments within the buildings, and to provide connectivity to the wide area network.

The majority of the buildings are interconnected via MPLS (Multiprotocol Label Switching) circuits, although others are connected via site and user based IPsec VP tunnels over Internet (DSL, cable, Satellite). Minimum MPLS connection speed is 1.5 mbps with sites upgraded to traffic demand require. Sites with IPSEC VPN tunnel have a variety of connection speeds using various ISP offerings.

6. Backup Software

SSC utilizes the Tivoli Storage Management (TSM) solution to back up required data and environments. TSM client is deployed on all servers to be backed up.

7. Lab Environment Overview

The CBSA utilizes a sophisticated set of environments to complete research, development, testing and end user tasks. The following is an overview of the number, size and basic usage of each category of labs.

Exact lab design is tailored to suit the requirement and application interoperability requirements.

8. Specialized Labs

Specialized labs are typically provisioned through virtualization, and currently provided with either Windows or RedHat kernels on VMWare images:

a. Workgroup development shared component environments;
b. Exploration and data manipulation sandboxes; and

a. SSC landing zone and test environment (including certification).

9. Pre-Development Phase

Research & Development Labs (RDL)

a. Facilitates the testing of new software, new versions of existing software and consumption of new features in existing products to validate the integration with existing systems prior to the release in the Development Phase;
b. Configuration mirrors production configuration; and
c. Consists of three labs (ever-greening, COTS integration, futures) which typically support only low volumes.

10. Construction Phase

a. Environments used by the application developers;
b. Low volume requirement, minimum configuration; and
c. Note: each phase also has support paths for developers to deploy fixes through (maximum number of developer environments including support labs: 7).

11. Testing Phase

There are various labs within the testing phase which handle different aspects of the CBSA quality assurance testing. These labs are sometimes deployed on the same hardware, sometimes spread across multiple servers:

11.1 Release Testing Lab (RTL)

a. Facilitates the release-related (application or technology) system integration, application functionality, performance & interface testing events;
b. Configuration mirrors production configuration;
c. Must be able to support high volume and failover testing; and
d. Consists of three labs where upcoming releases are tested concurrently.

11.2 Release Training Labs (RTR)

a. Facilitates training events for new application functionality that is destined for Production;
b. Provides an environment where external partners can test their current version of software against functionality in an upcoming CBSA release;
c. Subset of production configuration (single lab with limited redundancy); and
d. Medium volume requirement.

11.3 Pre-Production Lab (PPL)

a. Facilitates Release implementation dry runs to ensure successful production migrations (confirms the mechanics of a production release, rather than the content);
b. Configuration mirrors production configuration; and
c. Single lab with low volume requirement.

12. Production Phase

Production (PROD): Live business environment

12.1 Production Support Lab (PSL)

a. Facilitates testing of emergency fixes; and
b. Configuration mirrors production configuration.

12.2 Production Training Lab (PTR)

a. Facilitates training events for new application functionality that is in Production;
b. Provides an environment where external partners can test their new version of software against current CBSA functionality;
c. Subset of production configuration (single lab with limited redundancy); and
d. Medium volume requirement.