NCIA-BE/ACQ/ASG/15/937
01 April 2015

To: See Attached Distribution List

From: NATO Communication and Information Agency

Subject: **Market Survey Questionnaire for NATO Land Command and Control Information Services Increment-2 (LC2IS INC-2) capability**

Dear Sirs,

1) NATO Communications and Information Agency (NCI Agency) is performing a market survey for the purpose of gathering information pertaining national industries' capabilities in the field of Land Command and Control Information Services to be fielded in support of NATO.

2) This Market Survey Questionnaire is related to the procurement of the NATO Land Command and Control Information Services Increment-2 (LC2IS INC-2) capability. In particular, the scope is the subset of the LC2IS INC-2 requirements dealing with interoperability with other systems and services, i.e. what is called the C4ISR IOP component.

3) The purpose of this Survey is to verify the existence of commercially available software that could be used as a basis for the development of the C4ISR IOP supporting the functionality described in this document.

4) The information acquired through this survey may be used to assess the feasibility of the delivery of the specified components and to analyse best practices procurement methods for the deployment of such capability. In addition, NCIA intends to use the provided information for estimating costs and expected project implementation timelines.

5) Any future NATO Acquisition of the capabilities in concern may be conducted on the basis of a competitive exercise and remains subject to the formal approval of the competent NATO authorities which, at this junction, has not been granted.

6) Any response to this Market Survey is to be provided purely on voluntary basis and the determination not to provide any feedback shall <u>NOT</u> constitute ground for the exclusion of companies from any form of NATO acquisition to be eventually conducted in the future.

7) NCI Agency, may at its sole discretion, determine to entertain further contacts with companies that provide a response to the Market Survey for the purpose of further

clarifying and/or exploring the nature and details of the information provided. Such contacts or meetings shall not be mandatory for the companies.

8) NCI Agency shall not recognize any compensation, regardless of the nature, for activities performed or expenses incurred into for the purpose of providing feedback to this Market Survey.

9) Present request and any information provided within the context of this note, including but not limited to quantities, capabilities, functionalities and requirement are not to be construed as binding for NATO. Similarly, any information provided by your company in response to the present request shall be kept confidential, be disseminated to NATO personnel only and solely for the purposes referred in this Market Survey and shall not be considered binding with regards to the future potential acquisition of the system(s) in concern.

10) In light of the above, we therefore request your assistance in forwarding the content of the present request to national industries with capabilities in the field in concern or to otherwise provide information to the undersigned thus for NCI Agency to solicit the companies referred directly. In Annex B we have already listed a number of companies for your consideration who have existing products in the market, or future products in the pipeline.

11) All information provided in response to this Market Survey shall be NATO UNCLASSIFIED and shall be forwarded to the Senior Contracting Officer stated in par 13 below **not later than 10.00 hrs (Local Time Brussels, Belgium) - 18 May 2015**.

12) This Market Survey remains the property of the NATO CI Agency and shall be protected in accordance with the applicable national security regulations.

13) The point of contact for the present exercise is the Senior Contracting Officer and can be reached via electronic mail at martin.steenwege@ncia.nato.int or via phone 0032-(0)2-707-8173.

FOR THE GENERAL MANAGER:

Peter Scaruppe
Director of Acquisition

Attachment:

      ANNEX A   Market Survey Questionnaire
      ANNEX B   Suggested companies

Distribution for Market Survey

<u>NATO HQ</u>
NATO Delegations
Albania	1
Belgium	1
Bulgaria	1
Canada	1
Croatia	1
Czech Republic	1
Denmark	1
Estonia	1
France	1
Germany	1
Greece	1
Hungary	1
Iceland	1
Italy	1
Latvia	1
Lithuania	1
Luxembourg	1
The Netherlands	1
Norway	1
Poland	1
Portugal	1
Romania	1
Slovakia	1
Slovenia	1
Spain	1
Turkey	1
United Kingdom	1
United States	1

Belgian Ministry of Economic Affairs   1

Embassies in Brussels (Attn: Commercial Attaché):
Albania	1
Belgium	1
Bulgaria	1
Canada	1
Croatia	1
Czech Republic	1

Denmark	1	
Estonia	1	
France	1	
Germany	1	
Greece	1	
Hungary	1	
Iceland	1	
Italy	1	
Latvia	1	
Lithuania	1	
Luxembourg	1	
The Netherlands	1	
Norway	1	
Poland	1	
Portugal	1	
Romania	1	
Slovakia	1	
Slovenia	1	
Spain	1	
Turkey	1	
United Kingdom	1	
United States (electronic copy to brussels.office.box@mail.doc.gov		1

NCI AGENCY

PM	Mr R. Porta	1
DACQ/ASG	Mr B. Maley	1
DACQ/ASG	Mr M. Steenwege	1
DOP/ILS	Mr. A. Hutzenlaub	1
NLO	Mr. C. Ulsh	1
SL Chief	Mr B. Tiems	1
Legad	Ms S. Rocchi	1

All NATEX

NATO Consultation, Command and Control Agency

Agence de Consultation, de Commandement et de Conduite des Opérations de l'OTAN

NATO Communications and Information Agency
Agence OTAN d'information et de communication

MARKET SURVEY QUESTIONNAIRE 1 (MSQ-01)
FOR DELIVERY OF
THE C4ISR-IOP COMPONENT OF
LAND COMMAND AND CONTROL INFORMATION SERVICES
(LC2IS) INCREMENT-2 CAPABILITY
(LC2IS INC-2 FS)

March 2015
The Hague

Table of Contents

24 February 2015
The Hague

1. Introduction

This section illustrates the purpose of the survey and provides related background information.

1.1. Purpose

This Market Survey Questionnaire is related to the procurement of the NATO Land Command and Control Information Services Increment-2 (LC2IS INC-2) capability. In particular, the scope is the subset of the LC2IS INC-2 requirements dealing with interoperability with other systems and services, i.e. what is called the C4ISR Interoperability (IOP) component.

The purpose of this Survey is to verify the existence of commercially available software that could be used as a basis for the development of the C4ISR IOP supporting the functionality described in this document.

The information acquired through this survey may be used to assess the feasibility of the delivery of the specified components and to analyse best practices procurement methods for the deployment of such capability. In addition, NCIA intends to use the provided information for estimating costs and expected project implementation timelines.

This Market Survey activity shall not be construed as an obligation for NATO to proceed with the acquisition of any system or services.

Finally, participation to the Market Survey is entirely voluntary and shall not result in compensation, regardless of the form, for any of the participant.

1.2. Background

The NATO Infrastructure Committee (IC) approved a new Capability Package - CP 9C0107 - Functional Services for Command and Control of Operations. The CP includes an LC2IS INC-2 Functional Service Project (LC2IS INC-2 FS), aiming at enhancing the support for Land Planning and Operations as currently provided by LC2IS INC-1. LC2IS is one of the FS's included in the Bi-Strategic Command Automated Information System (Bi-SC AIS) Project Portfolio

The NCI Agency is exploring the acquisition of new FS's that reuse software components within the Bi-SC AIS Program, through the acquisition of software components that will be shared between multiple FS's

This document aims at collecting information to establish the feasibility of procuring a re-usable component to be used – as first candidate – for LC2IS INC-2.

1.3. Scope

The scope of this Market Survey comprises a subset of the functionality of LC2IS INC-2. In particular it includes the following:

- Support for interoperability between LC2IS INC-2 and other (NATO and) National C2 Information Services based on the Multinational Interoperability Program [protocol] (MIP);

- Support for interoperability between LC2IS INC-2 and other (NATO and) National C2 Information Services based on ADatP-3 messages;

The overall functionality is expected to be implemented in one or more software components identified here as C4ISR IOP, which would be integrated with the 'core LC2IS Component' ('LC2IS Core') and with other Core and Functional Services.

1.4. Abbreviations

ACO	Allied Command Operations
ACT	Allied Command Transformation
AirC2IS	Air Command and Control Information Service
Bi-SC AIS	Bi-Strategic Command Automated Information System
C2	Command & Control
C3	Command, Control and Consultation
C2IEDM	Command and Control Information Exchange Data Model
C4ISR	Command, Control, Communication, Consultation, Intelligence, Surveillance and Reconnaissance
COTS	Commercial of the Shelf
CP	Capability Package
FS	Functional Service
GOTS	Government of the Shelf
GW	Gateway
INC	Increment
IOP	Interoperability
IPR	Intellectual Property Rights
JC3IEDM	Joint C3 Information Exchange Data Model
LC2IS	Land Command and Control Information Services
MIP	Multinational Interoperability Program
MS	Mission S e c r e t
MTF	Message Text Format (message type)
NCIA	NATO of the Shelf
NCOP	NATO Communications and Information Agency
NOTS	NATO Common Operation Picture
NU	NATO Unclassified
NS	NATO S e c r e t
NSIP	NATO Security Investment Program
O&M	Operations and Maintenance
SDK	Software Development Kit
SOA	Service Oriented Architecture
SW	Software

2. Reference Architecture

This section of the Market Survey Questionnaire presents some general architectural aspects of the LC2IS INC-2 FS and the Bi-strategic Automated Information System (Bi-SC AIS) which are relevant for design and implementation of the C4ISR-IOP.

2.1. Bi-Sc AIS

In the implementation of the services NATO decided to follow the principles of Service Oriented Architecture (SOA), predominantly by using the web services. The following figure is an overview of the capabilities included in the Bi-SC AIS.
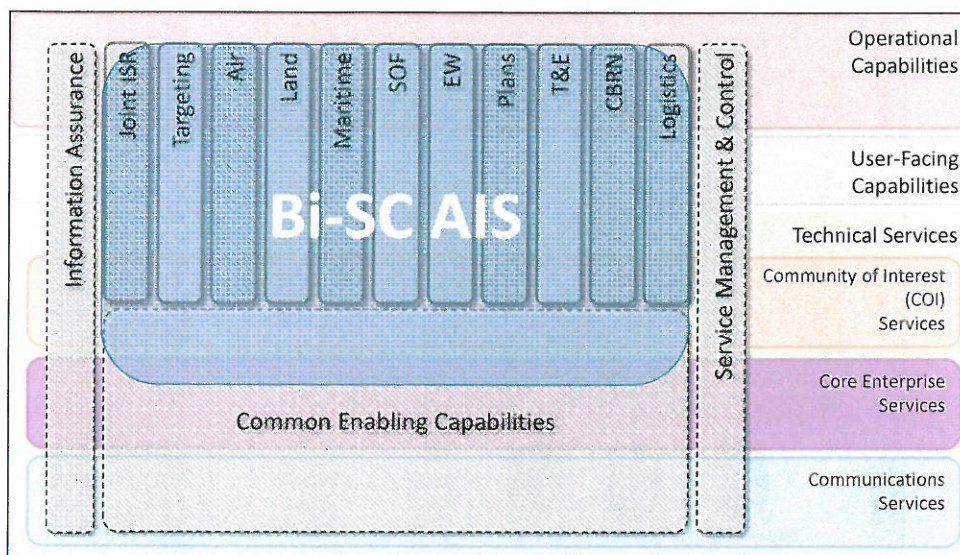

Figure 1: Bi-SC AIS Architecture

The following types of external NATO information systems can be identified as potential 'clients' for the C4ISR-IOP:

1. NATO C2 Services, including:

   - Land Command and Control Information Service (LC2IS)

   - Air Command and Control Information Service (AirC2IS)

   - Maritime Command and Information Service - TRITON)

   - Command Control Service for Special Operations (SOFC2IS)

   - NATO Common Operation Picture (NCOP)

2. NATO Portals, used to publish (directly or through the above mentioned services) the products of the C4ISR-IOP.

The C4ISR-IOP will be a Technical Service Supporting not only Land COI Services but also Air, Maritime and possibly other Bi-SC AIS Functional Services (FS).

The C4ISR-IOP shall be able to store and retrieve output and input data and share information managed through Core Enterprise Services (CES). It shall also make use –

when applicable - of additional CES-provided capabilities such as Infrastructure, Discovery, Interaction and Mediation Services.

2.2. LC2IS

For the purpose of this document, the LC2IS Architecture can be represented as three-layered (Presentation, Services and Data layers) as shown in the following figure[1].
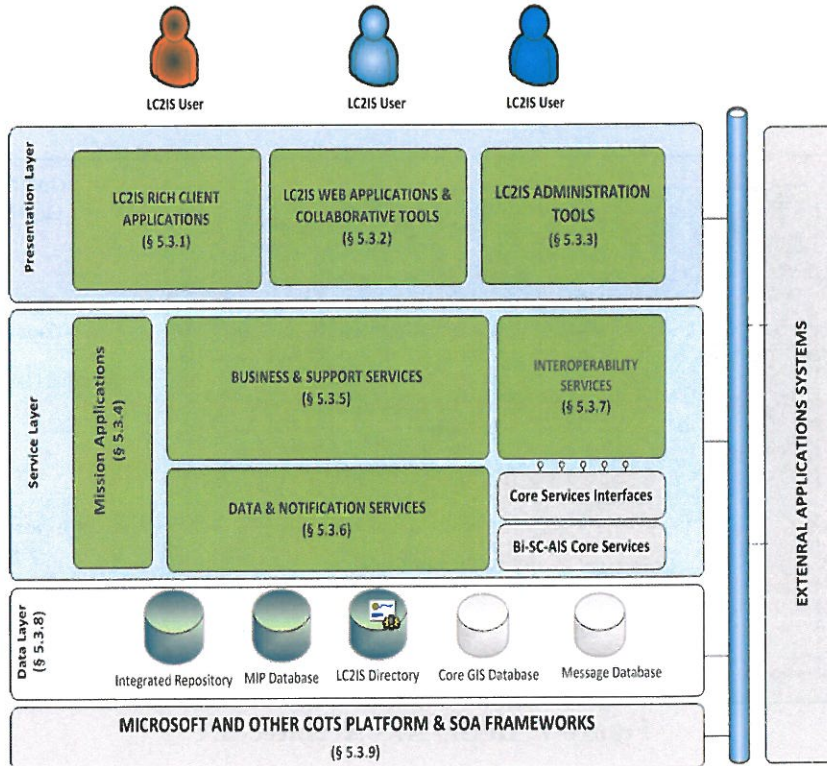

Figure 2: LC2IS Architecture

The C4ISR-IOP functionality is part of the 'Interoperability Services' component of LC2IS as depicted in Figure 2. C4ISR-IOP can be physically implemented by one or more software packages which could be used not only by LC2IS but also by other client FS's, as indicated in para. 2.1.

2.3. C4ISR-IOP

For the purpose of this document, the notional architecture of the C4ISR-IOP can be represented as shown in the following figure.

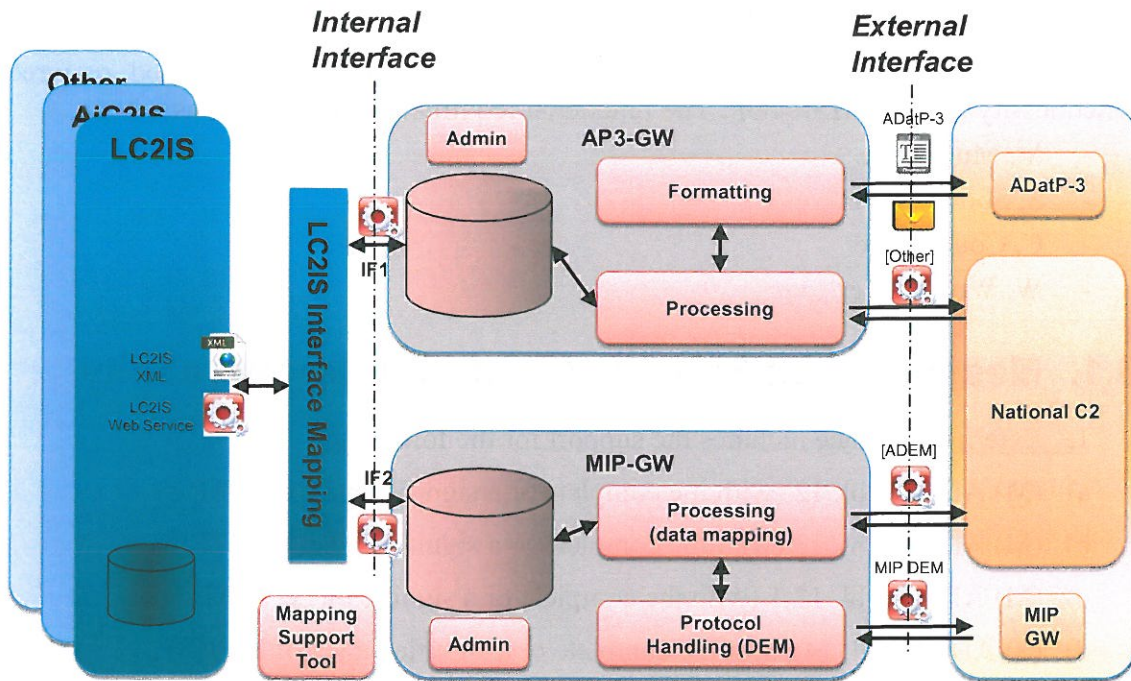[1] Which, more precisely, refers to LC2IS INC-1.1

Figure 3: Notional C4ISR-IOP Architecture

The C4ISR-IOP Component consists of two main modules:

- The ADatP-3 Interoperability Gateway (AP3-GW)
- The MIP Interoperability Gateway (MIP-GW)

and of the following elements

- The External Interface defines data formats, protocols and profiles to interoperate with NATO or National Systems or Services. Such interface complies with NATO, multinational, open and/or published industry standards

- The Internal Interface consists of the Application Programming Interface (API) through which any client application (such as LC2IS) could use the C4ISR-IOP Services. Such interface needs to be fully documented and should hide to the client programs differences between specific versions of the products supported as external interfaces

- The Mapping Support Tool (MST) includes functionality to support the mapping from the Internal Interface to a specific Client Interface (such as LC2IS). It may consist – as an example – of a Software Development Kit (SDK).

LC2IS stores all its objects into a database (called 'Integrated Repository' in Figure 2) defined according to a proprietary (XML) schema.

3. Required Functionality

This section of the Market Survey Questionnaire presents the envisaged required functionality for the C4ISR-IOP. The functional requirements are tagged as:

- M, Must Have
- S, Should Have
- C, Could Have
- W, Won't have

3.1. Message Text Format (ADatP-3) Interoperability

1. <u>External Interface</u> includes the support for the following

a) (M) ADatP-3 bl. 12 (with the complete or a significant set of MTF's)

b) (M) ADatP-3 bl. 13 (with the complete or a significant set of MTF's)

c) (M) ADatP-3 bl. 13.1 (with the complete or a significant set of MTF's)

d) (S) ADatP-3 bl. 14 (with the complete or a significant set of MTF's)

e) (C) ADatP-3 bl. 11.C (with the complete or a significant set of MTF's)

f) (M) Support for SMTP/email protocol message data transport with MTF included in the body or as attachment.

g) (M) Support for a Web Service Interface

2. <u>Internal Interface,</u> include the support for the following

a) (M) Single, documented interface (IF1), to be used by a client application to deliver and inject all supported ADat-P3 messages for all supported Baselines.

b) (S) IF1 is based on NATO or open Standard.

c) (S) A single interface covering both IF1 and IF2 – If applicable.

3. <u>Other Functionality</u>

a) (M) Administration Tool for the management of access and configuration

b) (S) (Dynamic) Configuration of new MTF's

c) (S) Tool supporting the mapping between IF1 and the external (e.g. LC2IS) web service and XML schema (Mapping Support Tool, MST)

d) (S) Debugging Support tool

e) (C) ADatP-3 to/from APP-6 (C and possibly A) symbol conversion (symbol is included in IFI)

3.2. MIP Interoperability

1. <u>External Interfaces</u> include the support for the following

a) (M) MIP Block-3.1.4 (DEM)

b) (C) MIP Block-2 (DEM)

c) (S) ADEM web Service

d) (C) Other Web Service

2. <u>Internal Interfaces,</u> include the support for the following

a) (M) Single, documented interface (IF2) to be used by a client application to use the C4ISR-IOP functionality

b) (S) IF2 is based on NATO or Open Standard.

c) (S) A single interface covering both IF1 and IF2 – If applicable.

3. <u>Other Functionality</u>

a) (M) MIP Administration Tool, supporting the management of access and configuration of the sub-component, including the management of MIP contract.

b) (S) Debugging Support tool

c) (S) Tool supporting the mapping between IF2 and the external (e.g. LC2IS) web service and XML schema (Mapping Support Tool, MST)

d) (S) MIP Data Configuration tool, supporting the dynamic definition of data types/List of Values to correct or improve the pre-configured mapping

e) (C) JC3IEDM to/from APP-6 (C) symbol conversion (symbol is part of IF2)

f) (C) MIP Block-2- MIP Block-3.1 (C2IEDM – JC3IEDM) conversion

4. Questions

This section is the Questionnaire for the Market Survey.

FILLING INSTRUCTIONS AND RECOMMENDATIONS

- For "Yes/No" questions, if your answer is not 100% "Yes" or "No", please provide an explanation.
- The response should not exceed 250 words. If more is required, please summarize in the response field and provide the amplification as attachment.
- In the column ARN (Amplification Reference Number), please indicate any applicable reference to an amplification document.

4.1. Functionality

This section includes questions related with the functionality required by the C4ISR-IOP.

If only one of the two sub-components (AP3 or MIP gateway) is supported, please state 'Not Applicable' for all questions regarding the non-supported component.

Id	Question	Response	ARN
F01	AP3-GW. Is there a substantial difference of the architecture respect to the depicted Notional Architecture? Please explain.		
F02	AP3-GW. Are all the mandatory requirements (M, W) supported? If not, please explain.		
F03	AP3-GW. Which of the non-mandatory requirements (S, C) are supported?		
F04	AP3-GW. Does the component support significant functionality in addition to what described in section 3 ?		
F05	AP3-GW. Is the internal interface (IF1) a proprietary or a standard one?		
F06	MIP-GW. Is there a substantial difference of the architecture respect to the depicted Notional Architecture?		
F07	MIP-GW. Are all the mandatory requirements (M, W) supported? If not, please explain.		
F08	MIP-GW. Which of the non-mandatory requirements (S, C) are supported?		
F09	MIP-GW. Does the component support significant functionality in addition to what described in section 3 ?		
F10	MIP-GW. Is the internal interface (IF1) a proprietary or a standard one?		
F11	Is there a single Internal Interface for both the AP3 and the MIP gateways (i.e. IF1 is equal to IF2) ?		

| F12 | What is the level of implementation maturity of the component/version ?
- N.A: under development.
- LOW: tested successfully in zero or one interoperability test event like CWIX
- MEDIUM: tested successfully in at least 2 interoperability test
- HIGH: deployed in operations or tested successfully in more than 2 interoperability tests | | |

4.2. Design, Implementation and Deployment

The C4ISR-IOP is expected to be fully – or to large extent - a COTS/GOTS product, which no major development activity to be done.

It should be designed to run on the BISC AIS infrastructure and – to the maximum possible - re-use or integrate with COTS elements already deployed in the NATO environment.

The majority of the NATO systems runs on Microsoft operating systems and majority of the sites provide virtual environment based on VMware.

The questions below apply to the whole C4IRS IOP or each of the modules (AP3 and MIP gateways). Please distinguish the two if the answers are different.

Id	Question	Response	ARN
D01	Is the product a subset/sub-component of a larger C4ISR application or system?		
D02	Is the Software an Off-The-Shelf product, i.e. it does not require any (significant) additional development effort to meet the requirements?		
D03	Is there is any Software module that needs to be developed or tailored to meet the requirements? Please specify which module and what tailoring is needed.		
D04	Can the software be deployed on a virtualised platform? What virtual environment can be used?		
D05	Is the software implementation hardware independent? Please explain if not.		
D06	What operating systems are required to run the software?		
D07	What 3rd party COTS software components are necessary to run the software?		
D08	What core services (e.g. Active Directory) can the system use? Which of them are necessary for system's operation?		
D09	What – if any - standard system monitoring and control tools can be used to manage the		

		Response	ARN
	system (e.g. System Centre Configuration Manager - SCCM)?		
D10	Is the product maintained by your company through a standard maintenance program? Please explain.		
D11	Is there any internal or externally required COTS SW whose maintenance support terminates before 2025? Please explain if and how this is addressed in the product maintenance program.		
D12	Which deployment configurations are supported? E.g. centralized/data-center, distributed ..)		
D13	If both MIP and AP3 GW are supported, can they be deployed independently from each-other ?		

4.3. Security requirements

Since the LC2IS INC-2 FS and the RSP's will be deployed on NATO S e c r e t and Mission S e c r e t networks, it must get security accreditation required for the approval to operate. The process involves security risk assessment and implementation of the agreed NATO security rules. The systems will have to operate with the restrictions of the NATO security settings applied both on servers and workstations.

Id	Question	Response	ARN
S01	Which type of user and service authentication is supported?		
S02	Can data (XML) security labels be applied and managed (for either AP3 or MIP GW)? Please explain.		
S03	Do your personnel have NATO security clearance or a national equivalent?		
S04	Was your system deployed in a NS environment or a national equivalent?		
S05	Has the system received any security accreditation approval?		
S06	What security precautions can be implemented within your system?		

4.4. Contractual aspects

The C4ISR-IOP is envisaged to be acquired as part of a NATO Security Investment Program (NSIP) acquisition and integrated with the 'LC2IS Core' functionality by the LC2IS Contractor(s).

Implementation activities that are required to support to the LC2IS or in general the Main Contractor include for example the following:

- Design and Development (e.g. development of the LC2IS Interface Mapping)
- Support to system accreditation
- Factory acceptance testing
- System integration testing
- User acceptance testing
- Security Evaluation and Testing, to approve system deployment in NATO networks
- Hardware delivery
- Site installation, following a site survey
- Training development and initial delivery
- Final system acceptance
- Warranty

After a successful contract implementation NATO usually is involved in follow-on system maintenance contract(s) allowing extension of the system warranty. The contractor is expected to be able to provide the following O&M Support services, provided to NCI Agency or to the main contractor:

- Effort-based system maintenance at a NATO site (2nd Level of Support)
- Remote 2nd level support
- Standard product Maintenance program
- Ad-hoc (3rd level support) maintenance
- Training classes at company site
- Training classes at customer site

NATO expects to possess full rights to the Foreground IPR for products developed under NATO funding, with the contractor and/or third parties maintaining the rights for the Background IPR (with respect to the proposed COTS/GOTS/NOTS).

As a result NATO shall be in position to deploy more instances of the system in NATO static structure, NATO operations and NATO Nations with only COTS license costs paid to the contractors. It is understood that in some cases system deployment outside of NATO structure must comply with specific national export regulations, which might require additional authorisation.

Id	Question	Response	ARN
C01	Is the company available to provide support to the Main Contractor for all the listed implementation activities? If not please specify		
C02	Is the company available to provide all the listed O&M Support Services with respect to the software under reference? If not please specify		
C03	If applicable, who is the owner of the Background IPR for the software?		
C04	What Third Party IPR are required to use the proposed system? (external required COTS SW are not included here)		
C05	If additional software development is required		

	to meet the NATO requirements would the company provide the Foreground IPR to NATO for this specific Software modules?		
C06	If the product is (based on) GOTS components, are there any special national regulations and procedures for NATO to procure it?		
C07	If the product is (based on) GOTS components, are there any special national regulations and procedures to employ it in NATO or national operations?		
C08	If there is a standard maintenance program in place, how could NATO subscribe/procure it (e.g. yearly fee, cost per release etc …)?		

4.5. Cost and Schedule Estimate

This section includes questions related with the Rough Order of Magnitude (ROM) cost for the RSP and its implementation schedule.

Cost and schedule are not considered as committing for the responder, but only aim at providing to the NCI Agency an indicative information.

With regard to the Warranty, it is assumed that it starts after Final System Acceptance and is for a duration of 12 months.

All NATO specific development is expected to be provided to NATO as the source code. The external elements, included in the COTS provided by the company shall be provided either as executable or binary libraries that could be re-built in a NATO environment to implement minor modifications.

Id	Question	Response	ARN
E01	What is the price for the basic product licences? Please indicate also applicability and conditions (enterprise, per site, per server, per users etc …)		
E02	What are the estimated price for any required 3rd party COTS and GOTS component (for standard or typical configuration)?		
E03	If additional functionality is required to meet the mandatory NATO requirements, please specify the cost/effort for the additional development and test? Please provide a minimum, most likely, and maximum estimated cost and effort and indicate the key assumptions done.		
E04	In the same case as in E03, what would be the additional price for providing the Foreground IPR to NATO for the newly developed software?		
E05	Has the company developed Interface		

	Mappings for client systems/applications not developed by the company?		
E06	If the answer to E05 is yes, what has been the indicative (minimum, average, maximum) effort (man days) spent for such activities? Please give also an indication of mapping complexity, e.g. number of mapped data elements.		
E07	If applicable, what is the availability date of the product meeting NATO mandatory requirements (e.g. if it is a planned new version)?		
E08	What is the estimated price for the extended (12 month) warranty? Please specify how it is calculated		
E09	If applicable, what is the estimated price for a 'standard' or for different maintenance programs? Please also indicate what is included.		

ANNEX B Suggested Companies

1. SYSTEMATIC
    www.systematic.com
    Soeren Frisch Vej 39
    8000 Aarhus C
    DENMARK

2. TELDAT
    www.teldat.pl
    ul. Cicha 19-27
    85-650 Bydgoszcz,
    POLAND

3. ESG Elektroniksystem- und Logistik-GmbH
    www.esg.de
    Livry-Gargan-Str. 6
    D - 82256 Fürstenfeldbruck
    GERMANY