Modernised ADRIREP system

Technical requirements

1.0
Date: 17/10/2022

EMSA

Document History

Version	Date	Changes	Prepared	Approved
0.1	30/08/2022	First draft based on the business requirements document and discussions at the 2nd meeting	EMSA	
0.2	27/09/2022	Amended after the 3rd meeting with EUREKA Consortium (20.09.2022)	EMSA	
0.3	11/10/2022	Feedback received from the EUREKA stakeholder group	EMSA	
1.0	17/10/2022	Remove indication to EMSA's IRD in the requirements related to platform for requesting access to the ship interface	EMSA	EUREKA stakeholder group on the modernisation of ADRIREP (4th meeting)

Table of Contents

1.   Introduction

Under the "Interreg Adrion Programme 2014-2020" the Croatian Ministry of the Sea, Transport and Infrastructure is the leading project partner of the Adriatic-Ionian joint approach for development and harmonisation of procedures and regulations in the field of navigation safety (EUREKA project), with partners represented by maritime administrations in Adriatic-Ionian region, namely: Albania, Italy, Greece, Montenegro and Slovenia. Associated project partner is the Ministry of Communications and Transport of Bosnia and Herzegovina.

The EUREKA project goals are to:

- reduce excessive administrative burden and duplication of data collected by administrations,
- carry out capacity-building activities (harmonized and standardized VTS service training, education),
- coordinate implementation of new Traffic Separation Schemes in the congested areas,
- test the implementation of Sea Traffic Management (STM) within national VTMIS's and
- establish of the Maritime Safety Permanent Transnational Network aiming on continuation of expert cooperation between the administrations.

Croatia on behalf of the EUREKA Consortium sent a formal letter to EMSA, inviting the Agency to present the request for technical assistance at the next EMSA Administrative Board meeting of June 2022. The EMSA Administrative Board held on 15 June 2022 approved EMSA to provide the technical assistance requested by the Croatian Ministry of the Sea, Transport and Infrastructure on behalf of the EUREKA Consortium under Phase 1.

EMSA supported the EUREKA Consortium during phase 1 aiming at developing a common understanding on the modernised ADRIREP system by performing an extensive stakeholder consultation process, both through dedicated workshop (online, physical, hybrid) and written process. The support consisted of defining the business and user requirements for the modernised ADRIREP system which will form the basis for the submission to IMO for amending the ADRIREP system. Furthermore, EMSA supported the EUREKA Consortium in the definition of the technical solutions aiming at reducing excessive administrative burden and unnecessary duplication of data collected by the current ADRIREP system.

2.   Objective

The objective of this document is to present the technical solutions based on the business requirements agreed by the stakeholder group. This document forms the basis for drafting the technical specifications for amending EMSA's Integrated Distribution Report (IRD) service and the national/local systems of countries participating in ADRIREP.

3.   Ship Reporting System (SRS) in the Adriatic Sea (ADRIREP)

3.1   Objectives and demonstrated need for the modernised system

The existing ADRIREP system is based on the ship's navigation and communication means, as well as the coastal states capabilities available in 2003.

Since 2003, when ADRIREP was adopted, the technology for ships monitoring at sea has improved; however, ADRIREP still requires vessels to report information via VHF at established points/lines which, to a big extend is an outdated method for gathering information from ships. The technological improvements in the field of maritime surveillance, makes unnecessary the multiple reporting of the same datasets, as some reported data is already available at the AIS – and NSW/SafeSeaNet systems.

The main objective of amending ADRIREP is to automatize the reporting from ships, as much as possible, reducing ships administrative burden and improving navigation monitoring using modern technologies and tools. It is also crucial to expand the scope of ADRIREP by involving all countries of the region (Albania, Bosnia and Herzegovina and Greece) improving the safety at sea in the whole Adriatic Ionian maritime region.

3.2 Technical solutions for modernised ADRIREP

The below requirements are based on the Business Requirements document and the discussions of the stakeholder group on modernisation of ADRIREP. Some of the features specified in this document are already implemented in the EMSA's IRD service while others will have to be developed. The document presents possible options of technical solutions at national/local level.

3.2.1 High-level requirements

The modernised ADRIREP will be based mainly on the IRD electronic reporting. The traditional reporting through VHF voice communications as well as through other means of communication offered by the particular CST receiving (e.g. e-mail, MF/HF, Inmarsat) should be considered as backup ship reporting option. The CST station receiving the report shall confirm reception to the ship, using the same communication means (i.e. a report received electronically will be acknowledged electronically. If voice communications will be selected by ship the confirmation will be sent by the CST using the same communication means).

The below figure presents the context diagram for ship reporting in the modernised ADRIREP:
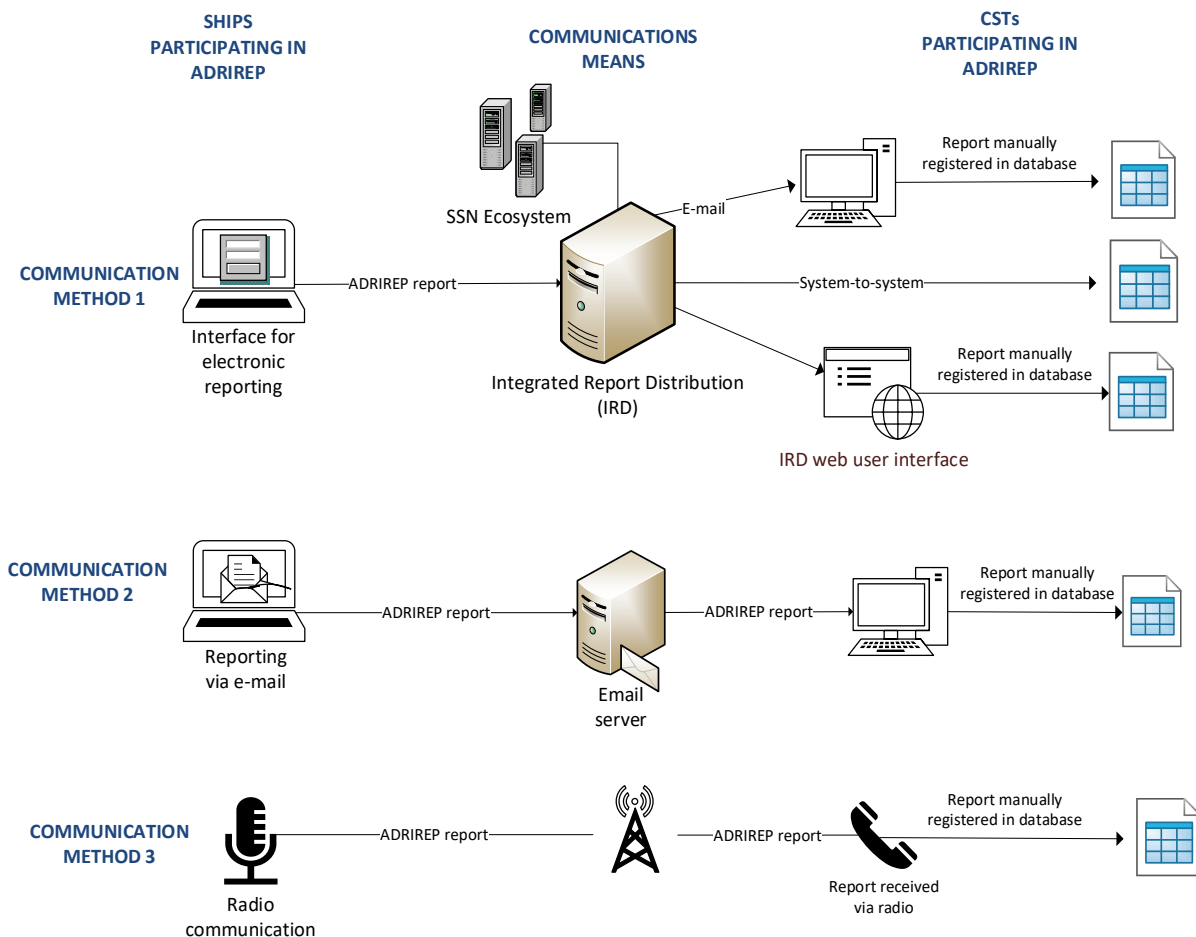

Figure 1   Context diagram for ship reporting in ADRIREP

3.2.2   Interface for electronic ship reporting to ADRIREP

According to the Business Requirements document, ships participating in ADRIREP shall submit reports by electronic means using the EMSA's IRD interface[1], as a primary mean of reporting. The defined reporting process is reflected to the following set of Technical Requirements (TR):

TR1: A dedicated interface for ship reporting to ADRIREP will be created in the EMSA's IRD.

TR2: Every ship participating in the ADRIREP will be granted a dedicated username and password to log into the system.

TR3: A dedicated access link (URL) will be created for easy access to the interface.

TR4: When creating a report, ships will have access to information already available in the SSN Ecosystem for their ship. This data can be re-used and updated for drafting the report (i.e. report pre-filled with information already available in SSN).

TR5: Ships will have access to the reports previously submitted as well as to the responses received from the CSTs.

TR6: Ships will have the possibility to compile a new report based on the reports that were previously sent (i.e. new report pre-filled with the information from the report previously sent – Re-use option).

TR7: Ships will have the possibility to update/complement the reports that were previously sent (i.e. after submitting the report a ship will still have possibility to update it – Update option).

TR8: Every report will have its unique ReportID. When a report is updated, it will be registered under the same ReportID as the initial one. All versions of the report will be available (i.e. report is not overwritten in the database but a new record is created).

TR9: Ships will specify the type of the report (First Report, Position Report or Final Report). When creating a new report, it will be automatically classified as a First Report. When updating a report, it will be possible to keep it as an update of the First Report or change its type to Position Report or Final Report.

TR10: Ships will select/specify to which CST of ADRIREP the report should be addressed. The list of CSTs will be predefined and available in form of the dropdown list.

TR11: Ships will have the possibility to prepare a draft of the report, save it and submit at the later stage.

TR12: Ships will have the possibility to attach files to the report (if needed).

TR13: Ships will have the possibility to draft the report in an off-line mode (used in cases such as when there is no Internet access) using Excel spreadsheet. After connecting to Internet, it will be possible to upload this spreadsheet and submit the report.

TR14: The form for ADRIREP reporting will automatically verify if the inserted data complies with the business rules for each attribute and if mandatory information is inserted. In case of sending a report non-compliant with the defined business rule, the system will send back to the ship an error message indicating source of the problem.

---

[1] EMSA's IRD service includes an interface for ship data providers allowing them to submit and consult VTS/MRS reports and receive authorities' responses. This service is hosted and maintained by EMSA. The reports can be delivered to end users through a web user interface (via EMSA's portal), system-to-system interface (SOAP and REST protocols) and via e-mail.

TR15: The following business rules will be implemented for data to be reported in ADRIREP by electronic means:

Designator	Data to be reported	Business rules:
	SRS system:	Possible values: ADRIREP
	CST	Possible values: *The list of CSTs interacting with the ships in the ADRIREP will be available.*
	Type of report	Possible values: - FR – First report - PR – Position report - ER – Final (exit) report
A	Ship	- Ship's name - IMO – seven-digit number - MMSI – nine-digit number - Call Sign – combination of digits/letters - Flag – two letter country code
B	Date/time (UTC) of the report	A 6 - digit group giving date of month (first two digits), hours and minutes (last 4 digits)
C	Present position	A 4 - digit group giving latitude in degrees and minutes suffixed with "N" or "S" and a five-digit group giving longitude in degrees and minutes suffixed with "E" or "W"
E	Course	A three-digit group giving the course in degrees
F	Speed	A two-digit group giving a speed in Knots
G	Port of departure	LoCode of port of departure
I	Destination and estimated time of arrival	ETA in UTC expressed as in B above, followed by LoCode of port of destination
L	Route information	Will be used on a voluntary basis by ships sharing their voyage plan in electronic format.
O	Draught of the vessel	Vessel's draught expressed by a four-digit group indicating centimetres
P	Cargo information	The general category of hazardous cargo as defined by the IMDG, IBC, IGC, IMSBC Codes and MARPOL Annex I.
T	Agent	Ship agent or Cargo agent
U	Size and type	Ship's type codified as in the AIS message expressed by 2-digits. Deadweight, expressed by: - 6 digits group indicating tonnes/ gross tonnage, - 6 digits group indicating tonnes/ length overall, - 3 digits group indicating meters/ and breadth, - 3 digits group indicating meters. Example: U/317/020000T/030000T/150M/045M
W	Total number of persons on board	The total number of crew and other persons on board
X	Miscellaneous	Any other relevant information, including: - Bunker fuel details (characteristics and estimated quantity), - Navigational Status, - SATCOM (ship's satellite communications available), - Brief details of incidents (if any).

TR16: After submitting the ADRIREP report the ship will receive an automatic confirmation from the system that the report was sent successfully.

TR17: The manual response from the Authority will be visible to the ship via the ship reporting interface.

TR18: The reports submitted to ADRIREP CST by electronic means shall be stored in the IRD repository and available on-line for the period of 6 months.

3.2.3 Granting access to ships for electronic reporting interface

The IRD Graphical User Interface (GUI) for ships shall be used to submit reports to the CST, consult and update existing reports and consult CST responses to these reports. Through IRD, the ships will have access to information available about their ship in the SSN Ecosystem and can re-use it when creating new report. Every ship reporting in ADRIREP shall be authenticated by username and password.

Access to the IRD interface will be granted by the National Competent Authority of the country of the port of destination, upon the ship's request[2]. The ship shall request the IRD access credentials:

a. at least twenty-four hours prior to the first entry into the ADRIREP area; or
b. at the latest, at the time the ship leaves the previous port, if the voyage time is less than twenty-four hours; or
c. if the port of call is not known or it is changed during the voyage, as soon as this information is available.

The received credentials will be re-used every time when participating in the ADRIREP system and creating new reports for ADRIREP.

The following technical requirements (TR) were identified:

TR19: A dedicated website/application will be created when a ship representative may create a request for access to the interface for electronic reporting.

TR20: A website will be created as a standalone application

TR21: A ship representative requesting access will have to provide the following information using request form available on the website:

- Requestor (Ship captain/Ship Agent/Representative of company)
- Ship's company name
- E-mail
- Phone
- Ship's IMO
- Ship's MMSI
- Ship's call sign
- Ship's name
- Ship's flag
- Port of destination at the time of request

TR22: E-mail will be automatically sent by the website/application to the requestor confirming that the request was registered successfully.

TR23: All registered requests will be stored in the database. Apart from the information listed in the TR21 there will be also information about request ID, date and time of the request, its status (i.e. Registered/In Progress/Granted/Declined) and authority dealing with this request.

TR24: The statuses of the request will be implemented as follows:
- Registered – this status is automatically given when request is submitted and registered in the database.
- In-Progress – this status is given when the request is sent to the authority and authority starts working on the creation of the user (status is manually assigned by the authority).
- Granted – this status is selected by the authority once the access is issued and provided to a ship.
- Declined – this status is selected by the authority if access cannot be granted. There can be various reasons (e.g. incorrect data provided in the request, not existing ship, etc.)

TR25: E-mail requesting creation of new user will automatically be sent to the responsible authority of country of the port of destination.

---

[2] Until otherwise agreed, the ADRIREP countries participating in SSN will issue the IRD access credentials for ships on behalf of ADRIREP countries not participating in SSN.

TR26: The authority will have access to the application where all requests will be stored and will have possibility to change the status of the request.

TR27: The Authority receiving the request will ensure that the ship's company already exists in the Central Organisation Database (COD). Otherwise, the ship's company will be created in COD by the authority receiving the request.

TR28: The user access will be created by authority in the EMSA's Identify Management (IdM) system where the information provided in the request form will be inserted.

TR29: When defining a new password for accessing the IRD, the user shall select a password which shall

- be at least 9 characters long,
- have at least 1 uppercase character,
- have at least 1 lowercase character,
- have at least 1 number,
- shall not be one of the last 3 recently used passwords,
- characters shall be:
  @!()$^*-_=+#~?,.|abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ 0987654321

Passwords shall also comply with the following security rules:

- User has to change password in his first login and at least once every 90 days:
  - If not changed before 90 days, the password will expire and the user will have to execute the change before accessing the EMSA's Maritime applications,
  - The user shall be warned by email or when logging in during the 10 days prior to password expiration.
- If an incorrect password is provided 5 times in a day (for the same user) the account shall be locked for 3 hours.

TR30: The user access (username) will be linked to a ship in the EMSA's IRD (one account per ship).

TR31: Authorities responsible for granting access for ships will have possibility to consult all active accounts and export the list of users from the EMSA's IdM.

3.2.4　Registration of reports received from the ship

The authority receiving ADRIREP report shall confirm its reception, register it, and share it with other CSTs participating in the ADRIREP system.

The following technical requirements (TR) were identified:

TR32: The ADRIREP reports will be registered/stored by the CST receiving it:

    a. in the national/local system of the CST and then transferred via S2S to EMSA's IRD[3].
    b. directly in the EMSA's IRD (solution to be used when S2S connection between national/local system and IRD is not yet ready)

TR33: EMSA's IRD will have a central repository/storage of all reports received by the CST in the ADRIREP.

TR34: ADRIREP reports provided using interface for electronic ship reporting will be automatically stored in the EMSA's IRD and made available to the CST using the following methods: S2S, e-mail and web user interface of IRD.

TR35: EMSA's IRD web user interface will have a functionality for authorities to register/store ADRIREP reports received by other means of communication than interface for electronic reporting.

TR36: EMSA's IRD system to system interface will have a service for authorities to register ADRIREP reports directly from their national/local system.

---

[3] Technical developments are required at national/local level.

TR37: EMSA's IRD will have a feature in its administrative interface to trace all the reports registered/stored by CST to IRD.

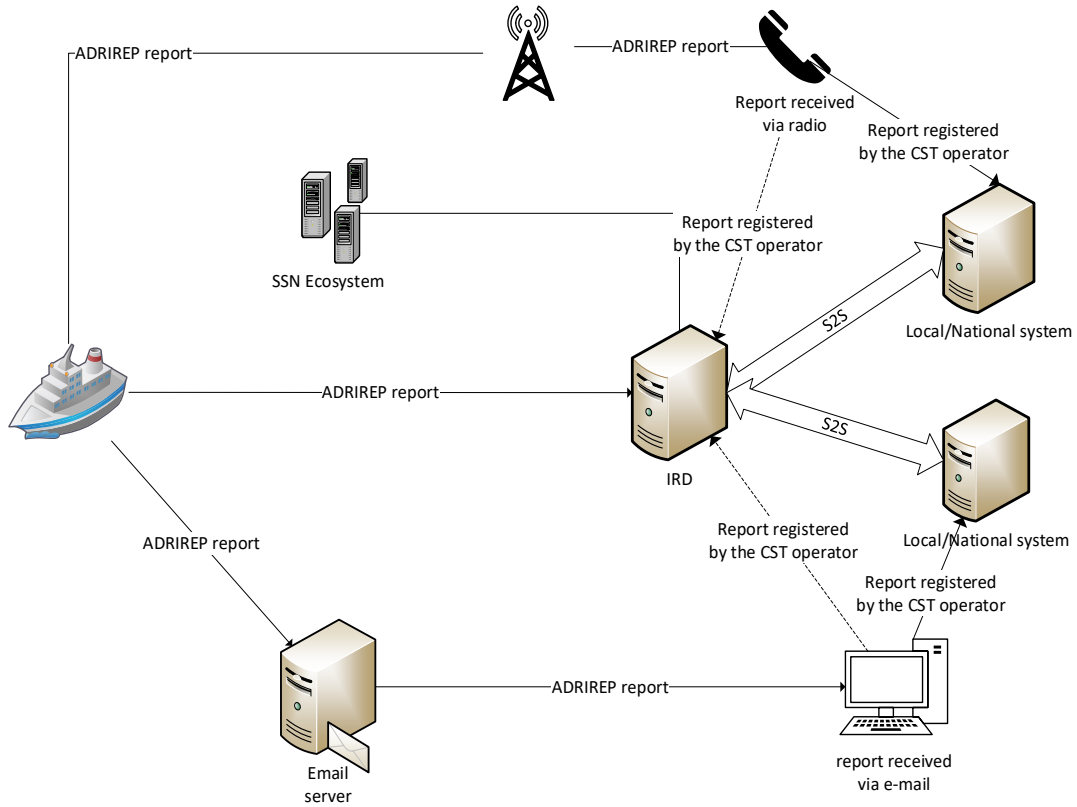The below figure presents the context diagram for data storage in the modernised ADRIREP:

Figure 2   Context diagram for data storage in the modernised ADRIREP

3.2.5   Reports sharing between the competent shore-based authorities

According to business requirements the reports provided by ships will be distributed to other competent shore-based authorities (CSTs) by the CST operator, following the reception confirmation.

The following technical requirements were identified:

TR38: The EMSA's IRD will have a feature to share reports registered in IRD with other CST.

TR39: The reports will be shared by EMSA's IRD using the following options: e-mail, system to system communication. In addition, since EMSA's IRD will act as a central repository all reports may be consulted using web user interface of the IRD.

TR40: The list of CSTs will be configured in the IRD under ADRIREP system with information on the preferred option for receiving shared reports (see TR39).

TR41: EMSA's IRD system to system interface will have a feature in the service for authorities registering reports from their national/local system to indicate if the report should be shared.

TR42: Sharing of the reports may be triggered as follows:
   a.   Manually – the operator must click on the button "Share report" in the EMSA's IRD web user interface.
   b.   Automatic:

- o the report is shared automatically once the report is Accepted by the CST (i.e. Authority Response with the status = Accepted is provided[4]).
- o the report is shared automatically when CST registering report received by other means of communication than IRD request it (i.e. use of specific attribute in the S2S interface).

TR43: EMSA's IRD will have a feature in its administrative interface to trace all the reports shared and information if they were received by other CSTs (only for system2system sharing).

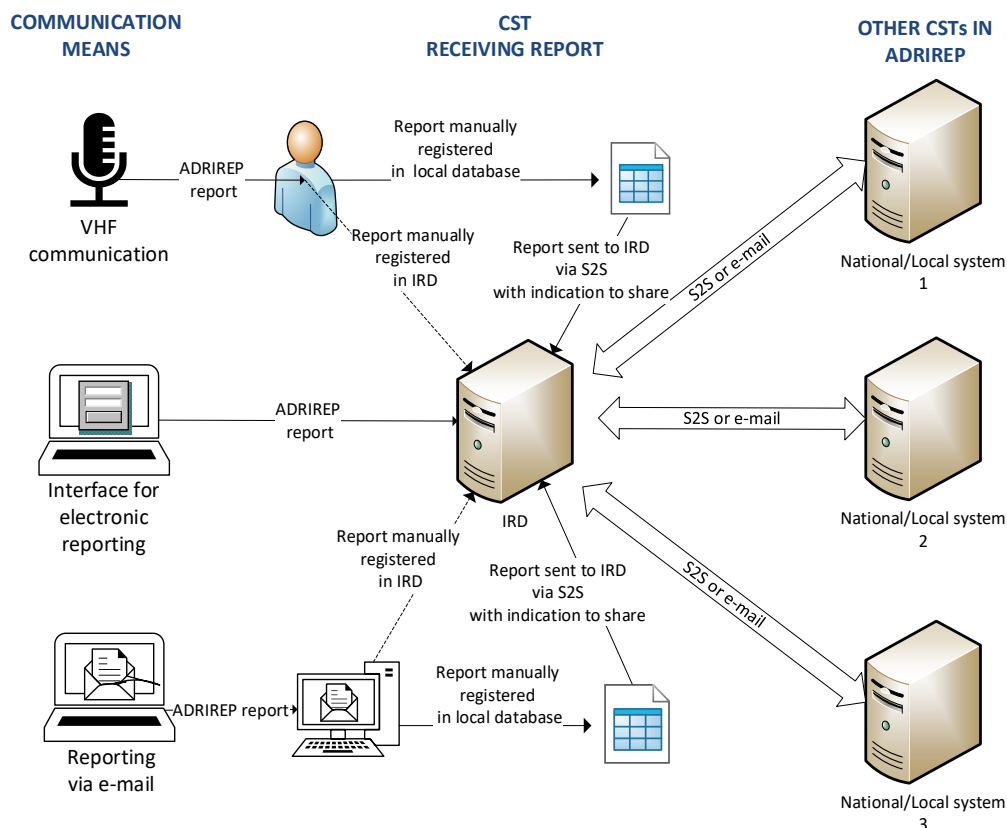The below figure presents the context diagram for reports sharing in the modernised ADRIREP:

Figure 3   Context diagram for reports sharing in ADRIREP

3.2.6   Authority Response for the reports received by electronic means (IRD and e-mail)

The reception of reports delivered via IRD will be confirmed by the CST operator, using the "active" confirmation procedure in IRD.

The Authority Response shall be provided using the same communication means which were used for reporting. The reception of the report received via e-mail will be confirmed by e-mail.

For the reports provided using EMSA's IRD the following technical requirements will be needed for the Authority Response:

---

[4] Authority Response can be generated in the EMSA's IRD web user interface or reported from the national/local system using the system-to-system communication.

TR44: The Authority Response feature will be developed in EMSA's IRD.

TR45: CST receiving the report provided via IRD will provide response via IRD web user interface or via system-to-system[5].

TR46: The Authority Response will contain the following information:
- Status (Accepted or Rejected),
- Comment (Free text field to provide an additional information to the ship),
- Possibility to attach the file.

TR47: The Authority Response will be sent and visualised to the ship via the interface for electronic ship reporting. The IRD system may be also configured to send an e-mail to the ship once the Authority Response is provided.

TR48: EMSA's IRD web user interface will have a feature in its administrative interface to trace all the authority responses provided by the CSTs.

3.2.7   Sharing of ADRIREP information with other Member States via SSN

The VTMIS Directive requires that MRS reports received by the CST are shared with other Member States via SSN.

TR49: The ADRIREP reports will be communicated to Central SSN using the national/local system of the CST connected to national SSN/NSW.

TR50: EMSA's IRD web user interface will have a feature for non-SSN participating countries to report MRS report to SSN directly from the IRD web user interface (i.e. Report to SSN functionality[6]).

TR51: EMSA's IRD web user interface will have a feature in its administrative interface to trace all the reports shared by non-SSN participating countries with SSN.

3.3   Technical developments in IRD for EUREKA project

The EMSA's IRD is currently in the transition stage from proof of concept to an operational service. There are various technical and operational/legal actions which need to be executed by EMSA together with Member States participating in the "facilitation of ship to shore reporting" working group.

As indicated in the approval of phase 1 of the TA, no technical developments in IRD which are exclusively for EUREKA project are planned during Phase 1 and therefore no relevant technical implementation costs were spent by the EUREKA project in that phase.

Such activities are foreseen in Phase 2 and will form part of the next request for technical assistance. This chapter provides list of requirements that should be developed by EMSA for EUREKA project:

a. Interface for electronic ship reporting:

1. Ships will specify the type of the report (First Report, Position Report or Final Report). When creating a new report, it will be automatically classified as a First Report. When updating a report, it will be possible to change its type to Position Report or Final Report.
2. New attribute SATCOM will be added under the designator X.

b. Granting access to interface for electronic ship reporting:

1. A dedicated website/application will be created when a ship representative creates a request for access to the interface for electronic reporting.
2. A website will be created as a standalone application

---

[5] Technical developments are required at national/local level.
[6] Adding this functionality to the EMSA's IRD requires the prior approval of the HLSG.

3. A ship representative requesting access will have to provide the following information using request form available on the website:
   - Requestor (Ship captain/Ship Agent/Representative of company)
   - Ship's company name
   - E-mail
   - Phone
   - Ship's IMO
   - Ship's MMSI
   - Ship's call sign
   - Ship's name
   - Ship's flag
   - Port of destination
4. E-mail will be automatically sent by the website to the requestor confirming that the request was registered successfully.
5. All registered requests will be stored in the database. Apart from the information listed in the point 3 above there will be also information about request ID, date and time of the request and its status (i.e. Registered/In Progress/Granted/Declined).
6. The statuses of the requested will be implemented as follows:
   - Registered – this status is automatically given when request is submitted and registered in the database.
   - In-Progress – this status is given when an authority starts working on the creation of the user (status is manually assigned by the authority.
   - Granted – this status is selected by the authority once the access is issued and provided to a ship.
   - Declined – this status is selected by the authority if access cannot be granted. There can be various reasons (e.g. incorrect data provided in the request, not existing ship, etc.)
7. E-mail requesting creation of new user will automatically be sent to the responsible authority of country of the port of destination.
8. The authority will have access to the application where all requests will be stored and will have possibility to change the status of the request.

c. Repository of the reports in ADRIREP:

1. The ADRIREP reports will be registered by the CST receiving it:
   - in the national/local system of the CST and then transferred via S2S to EMSA's IRD .
   - directly in the EMSA's IRD (solution to be used when S2S connection between national/local system and IRD is not yet ready)
2. EMSA's IRD will have a central repository of all reports received in the ADRIREP.
3. EMSA's IRD web user interface will have a functionality for authorities to register ADRIREP reports received by other means of communication than interface for electronic reporting.
4. EMSA's IRD system to system interface will have a service for authorities to report ADRIREP reports directly from their national/local system.
5. EMSA's IRD will have a feature in its administrative interface to trace all the reports registered by CST to IRD.

d. Reports sharing between the ADRIREP CST:

1. EMSA's IRD will have a feature to share reports registered in IRD with other CST.
2. The reports will be shared by EMSA's IRD using the following options: e-mail, system to system communication. In addition, since EMSA's IRD will act as a central repository all reports may be consulted using web user interface of the IRD.
3. The list of CSTs will be configured in the IRD under ADRIREP system including information on the preferred option for receiving shared reports (see point 2 above).
4. EMSA's IRD system to system interface will have a feature in the service for authorities registering reports from their national/local system to indicate that the report should be shared.
5. Sharing of the reports may be triggered as follows:
   - Manually – the operator must click on the button "Share report" in the EMSA's IRD web user interface.
   - Automatic:

- the report is shared automatically once the report is Accepted by the CST (i.e. Authority Response with the status - Accepted is provided[7]).
- the report is shared automatically when CST registering report received by other means of communication than IRD request it (i.e. use of specific attribute in the S2S interface).

6. EMSA's IRD web user interface will have a feature in its administrative interface to trace all the reports shared and information if they were received by other CSTs (only for system2system sharing).

e. Sharing of ADRIREP information with other Member States via SSN[8]:

1. EMSA's IRD web user interface will have a feature for non-SSN participating countries to report MRS report to SSN directly from the web user interface (i.e. Report to SSN functionality).
2. EMSA's IRD web user interface will have a feature in its administrative interface to trace all the reports shared by non-SSN participating countries with SSN.

The above consist high-level requirements which will have to be translated into detailed technical specification. This task should be executed in Phase 2 of the TA.

---

[7] Authority Response can be generated in the EMSA's IRD web user interface or reported from the national/local system using the system-to-system communication.
[8] Adding this functionality to the EMSA's IRD requires the prior approval of the HLSG.