

CISE ROADMAP STEP 2

GAP ANALYSIS

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2 Executive summary

Each time maritime surveillance authorities cannot access relevant information across sectors and borders with the appropriate speed or cannot access it at all, they face an 'information gap'. Without such gap they could operate more efficiently.

To identify the extent of such information gap in the field of EU maritime surveillance, the 'Technical Advisory Group' (TAG) on the Integration of Maritime Surveillance i.) established an inventory of maritime surveillance relevant information already existing across sectors and borders (over 500 data elements, grouped into 90 data sets), ii.) identified the different user community(ies)¹ generating or owning each of these 500 data elements and iii.) identified the gap between cross-sectoral demand for such information and its current supply.

This above analysis reveals the following:

- **Additional data access represents between 40% and 90% of total data deemed useful per User Community.**
- **Currently 45% of the 90 identified types of data sets are collected by more than one actor.**
- **Out of the data currently exchanged between UCs, 80% are not readily accessible in full.**
- **National ownership of data is by far predominant.**
- **The additional demand concerns all User Communities.**

These results show a gap of 40% to 90% between supply and demand for additional data exchange across the various user communities (sectors). A significant part of the data demand expressed here aims at improving the completeness of the collection of data already exploited be it on a permanent or occasional basis. These figures reflect the statistics on the different types of data exchanged, not on the volume of information exchanges.

This gap points towards a significant margin to improve the effectiveness of maritime data exchange across sectors and borders in the EU.

3 Purpose of gap analysis

The Roadmap towards establishing the Common Information Sharing Environment ('CISE')² for the surveillance of the EU maritime domain foresees, under its Step 2, that an inventory of all maritime

¹ User communities are defined by their sectoral functions.

² Communication from the Commission to the Council and the European Parliament on a Draft Roadmap towards establishing the Common Information Sharing Environment for the surveillance of the EU maritime domain COM(2010)584 final.

surveillance relevant data across sectors and borders throughout the EU be established ('Mapping of Data') and that the gap between present cross-sectoral data demand and supply be analysed (Gap Analysis).

The Technical Advisory Group (TAG) on the integration of maritime surveillance carried out that work. The TAG identified over 500 relevant data elements (grouped into 90 data sets) which constitute a **representative but not exhaustive list**, and found that all user communities need to complement the data they already avail of today by an additional 40% to 90% of data from partner authorities.

The purpose of the present document is to assess this Gap. The other steps of CISE will investigate the legal conditions for exchanging these data and the technical implications.

4 Data Collection Criteria

4.1 Sources and underlying conventions

The present analysis is based on the information provided by TAG members. TAG members are national experts respectively representing all seven CISE user communities across the EU (border control, customs, defence, fisheries control, general law enforcement, marine environment and maritime safety & security), representatives of relevant EU Agencies and bodies (EMSA (maritime safety), Frontex (border control), EEA (environment), EFCA (fisheries control), Europol (law enforcement), EDA (defence) as well as representatives from two dedicated maritime surveillance pilot projects 'BluemassMed' and 'MARSUNO' carried out by Member States.

Each sectoral TAG member gathers the best sectoral information through a network of expert colleagues from the same sector in all Member States. This is to provide the necessary assurance that TAG members provide their sector's opinion in a reasonably representative manner for the whole EU. This nevertheless also means that specific national divergences are not being taken into account for the present exercise. The information underlying the present Gap analysis therefore reflects an average situation across the EU that ought to be regularly updated.

4.2 Data Mapping

The TAG compiled a representative but non exhaustive inventory of all types of maritime surveillance relevant data across sectors and borders within the EU and combined it, in a table, with respective sector supply and cross-sectoral demand for such data.³

The TAG proposed to structure these Data in **3** main “**Data Categories**”:

- A. Maritime Traffic Data
- B. Maritime Space Data and

³ The version used for this analysis is labeled: Maritime Data Supply-demand 24-1-2012 Edited

- C. Maritime Events Management Data

Each category is subdivided in up to 10 **data groups**, mainly organised according to the duration of information (i.e. fast changing, semi-permanent, permanent). Data groups are subdivided in 90 **data sets containing altogether 500 data elements** to be considered **illustrative** of what might be accessed through CISE. Such data collection is likely to change over time due to the evolving needs and to the increased maritime awareness offered by CISE.

The following example may illustrate:

| | Data type | |
|----------------|---|----------------------|
| C | SECTION C – Maritime Events Management | Data Category |
| C.6 | Maritime Law Enforcement | Data Group |
| C.6.1 | Maritime Illegal migration | Data Set |
| C.6.1.1 | Suspicious ship Track | Data Element |
| C.6.1.2 | Suspicious ship Course | Data Element |
| C.6.1.3 | Suspicious ship Speed | Data Element |

Further to the above mentioned data mapping, the TAG associated all the data elements (lines) with two broad columns: 'Data Supply' to identify who generates/owns each data element and 'Cross-Sectoral Data Demand' to identify who needs additional data across sectors and borders.

4.2.1 Section A: Maritime Traffic Data

The table distinguishes the data from their degree of permanency/refresh rate:

- Group A1 **Ship Positional Data** refer to the instant knowledge of the position of the ship. The position update comes either from **reports** (A.1.1) sent by the ship (hence the need to detail the various types of ships as they are not subject to the same reporting obligations), or from **non-cooperative detection systems** (A.1.2) of ships (visual sightings, radars, sonar, electro-optic systems, electromagnetic support measures...). It includes data on the **ship activity** (A.1.3) when it might vary at any time (fishing ships)
- Group A2 **Ship Voyage Data** refer to information valid for a whole journey from a port to the next (route, goods, equipment and people on board) and only updated when a change or a new voyage occurs. It is recognized that Customs Data relate to the whole journey of goods and are not limited to the considered ship voyage; however it remains a convenient way to access it in the context of maritime surveillance.
- Group A3 **Ship Data** refer to permanent information on the ship: physical characteristics, ownership, operations, features allowing visual identification, historic data generally found in large databases.
- Group A4 **Logistic Data** allow including information on the goods on the initial and final journey before boarding/ after disembarking. This information cannot be anymore managed from the ship identifiers, but from the goods themselves (container number etc)

- Group A5 **Other non permanent infrastructures at sea** allows to manage the information on rigs, cages etc which are not ships but not either permanently chartered artifacts.

4.2.2 Section B: Maritime Space Data

This section of the matrix is dedicated to the data geo-referenced to the sea floor (in the general meaning of marine charts) irrespectively to the passing of ships: hydrographic data, meteo-oceanic data, biological resources, sea bed data etc. again with different degrees of permanency.

4.2.3 Section C: Maritime Events Management Data

This section investigates the compilation of data required to manage any event at sea calling for institutional attention: safety, law enforcement, pollutions, natural disasters etc... To manage the maritime situation awareness, it is common to augment the information attached to a ship position, in order to retrieve it at any time e.g. from a click on the ship's latest position. For the present analysis, this enhanced information is **no more referred to as ship position** but as **enhanced information for situation management**, even if it is filed as extensions to the positional data.

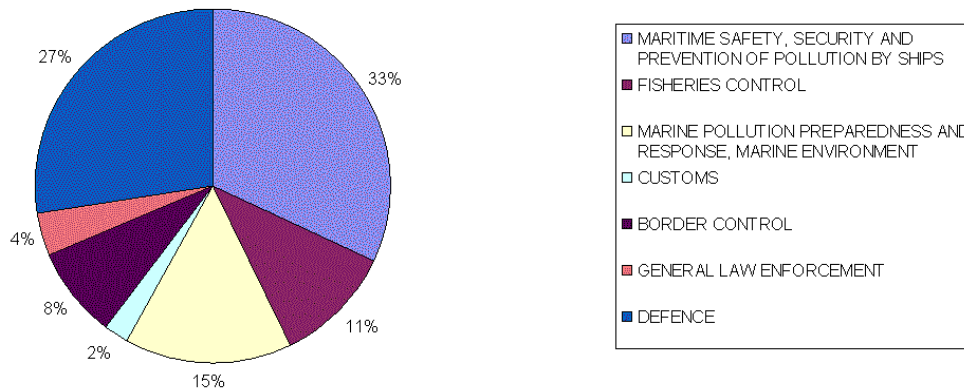
4.3 Supply

'**Data Supply**' refers to Data already owned/generated or currently availed of by each sectoral user community.

Data Supply is subdivided into all seven User Communities as well as in national, regional and EU levels.

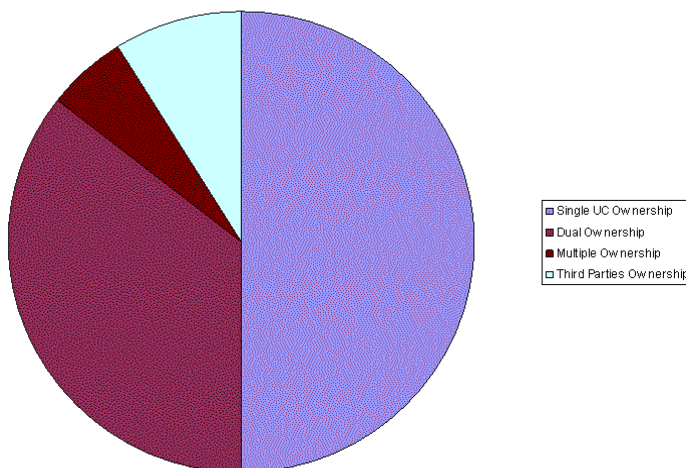
- “**National**” means that the data is generated ('O') or availed of ('X') at national level.
- “**Regional**” means that the data is generated ('O') or availed of ('X') at regional level, i.e. by cooperation of States in the same region.
- “**EU-level**” means that the data is generated ('O') or availed of ('X') by EU Agencies or by Member States sharing it on the basis of legislation or official agreements. The same for other international bodies including a large number of EU Member States (e.g. Nato).

Current ownership per User Community



The above picture shows that some communities currently own more maritime surveillance relevant data than others, but every community has data that can be used by others. Indeed 'maritime safety and security' generate 33%, 'defence' 27%, 'environment' 15%, 'fisheries' 11%, 'border control' 8%, 'general law enforcement' 4% and 'customs' 2% of data available in the EU.

Single versus multiple data ownership

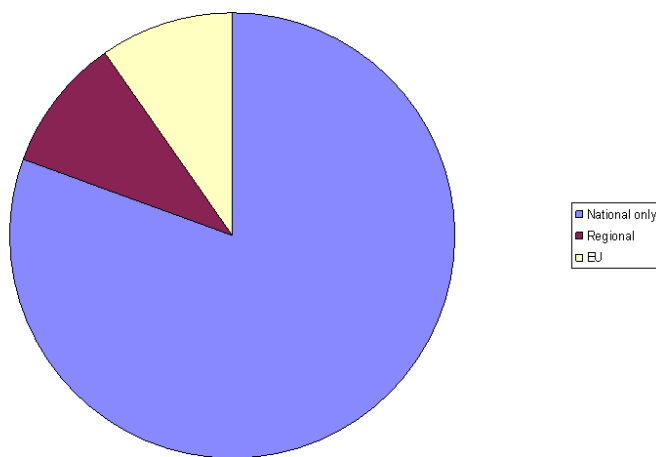


Multiple data ownership is frequent: about 45% of the data sets are collected by more than one user community. For example "Persons on Board Data" (section A.2.4) appear partly "owned" by the Maritime Transport Community (UC1) or the Fishery Control Community (UC2), but also the Border Control Community (UC5).

In this graph, “Third Parties” means data provided by other User Communities not explicitly represented in the TAG (e.g. Civil Protection authorities). This reflects the fact that the management of the Maritime Domain must include the continuity with the inland stakeholders (environment, security, response to natural disasters...)

It is also important to note that, through different agreements, either voluntarily or imposed by international treaties or legislation, some data are provided by non EU Countries. However is not taken into account at this stage.

National, regional, EU Ownership



National data ownership is by far predominant.

4.4 Demand

'Data Demand' refers to the request from the seven user communities to access data from other user communities within the general pool of 500 identified data elements (grouped into 90 data sets).

Most of the 90 data sets triggered demands from various user communities to receive the data through CISE. Additional needs represent between 40% and 90% of total data necessary per sector.

How this demand for additional data is spread over sectors is explained in the following section.

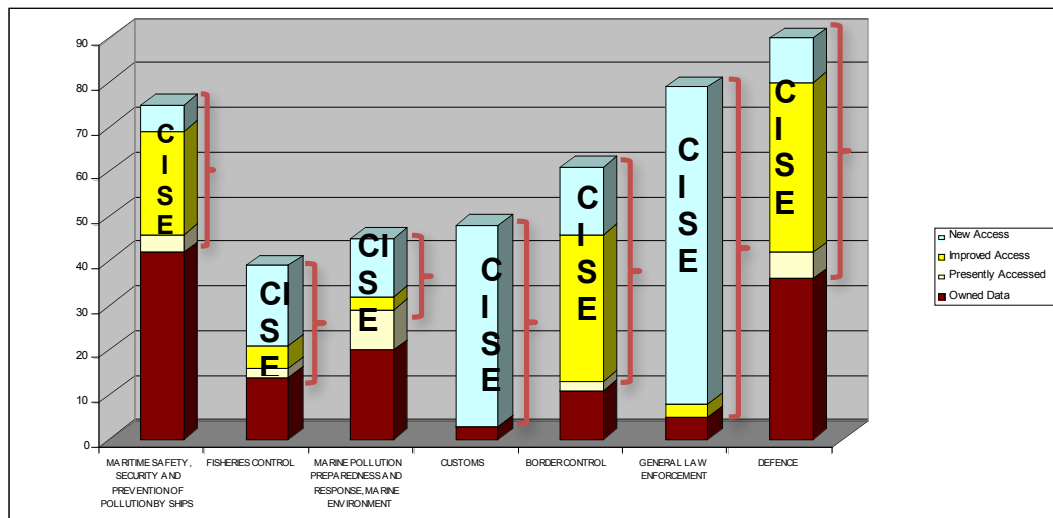
4.5 Gap Analysis

Based upon the cross correlation of the data provided by the different communities and organized in the matrix described in the previous paragraphs, it has been possible to understand what are the needs perceived by the different communities, i.e. what data are requested to improve the efficiency of their work, but they presently do not have or they have in an incomplete way.

The following picture <explains the y axis> shows what is, for the different communities the:

- 'A'. Top (blue): newly requested cross-sectoral data.
- 'B'. Upper center (yellow): data partially exchanged.
- 'C'. Lower center (light yellow): data currently received by other user communities.
- 'D'. Bottom (dark red): presently owned/generated data.

Summary GAP Table



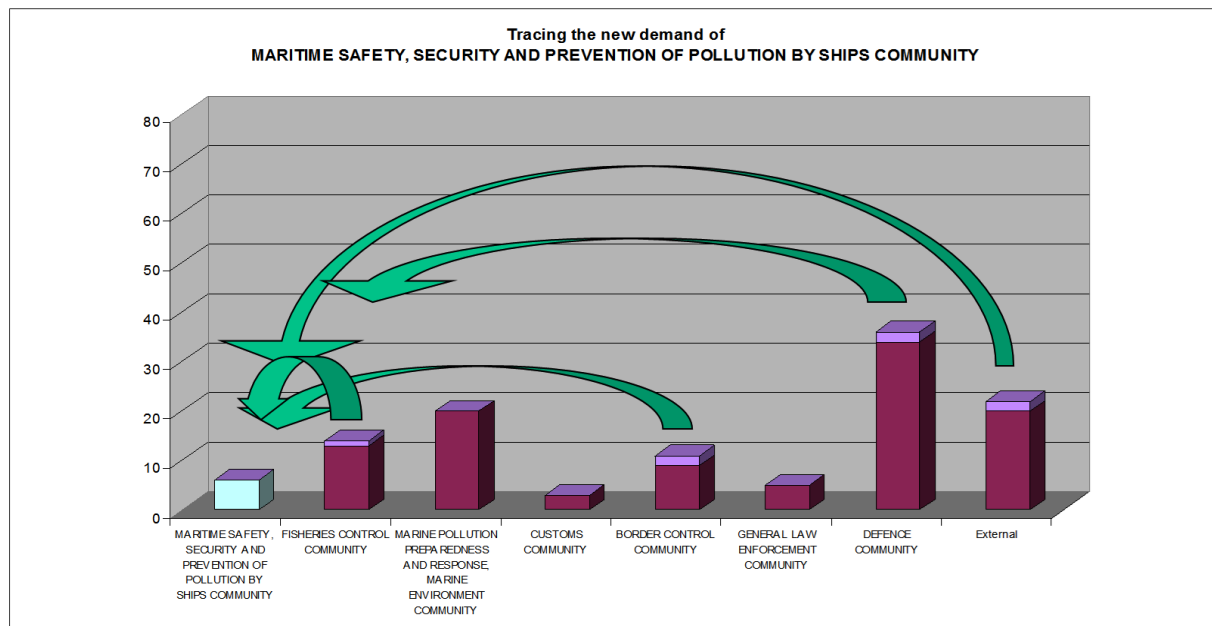
The upper center (yellow) part of each bar represents

The upper center (yellow) part of each bar represents the need for an improved access; i.e. such data are, presently, partially exchanged or owned, but the indication coming from the Users Communities shows that there is still a need to improve the completeness of the collection of data already exploited.

Another view required to specify CISE is a further analysis of this data demand through CISE in terms of data flows from current owners to satisfy this still unsatisfied demand.

4.5.1 Analysis of the blue section only – new access data flow

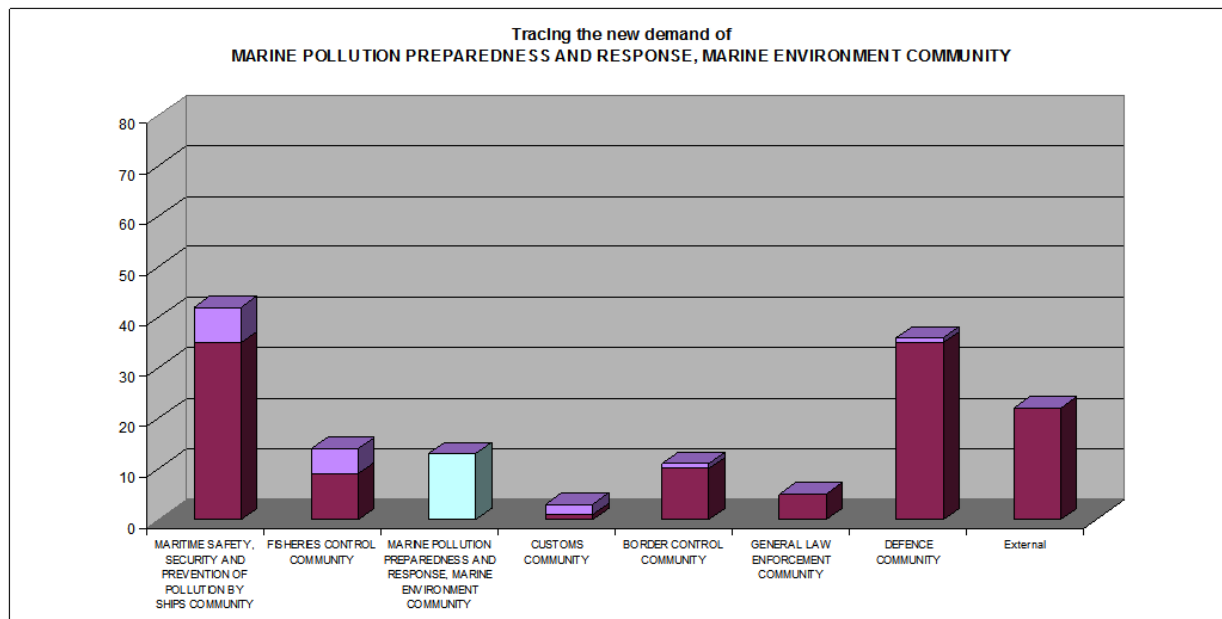
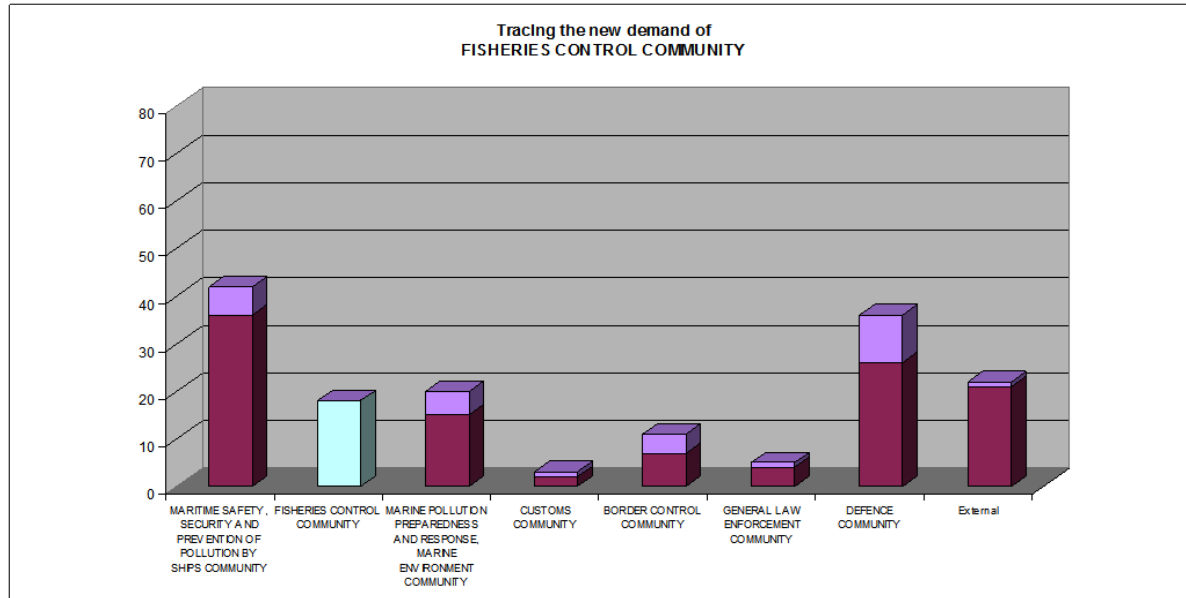
The following series of flow charts illustrate the cross-sectoral contributions to be implemented through CISE to satisfy the new demand for data of each user community.

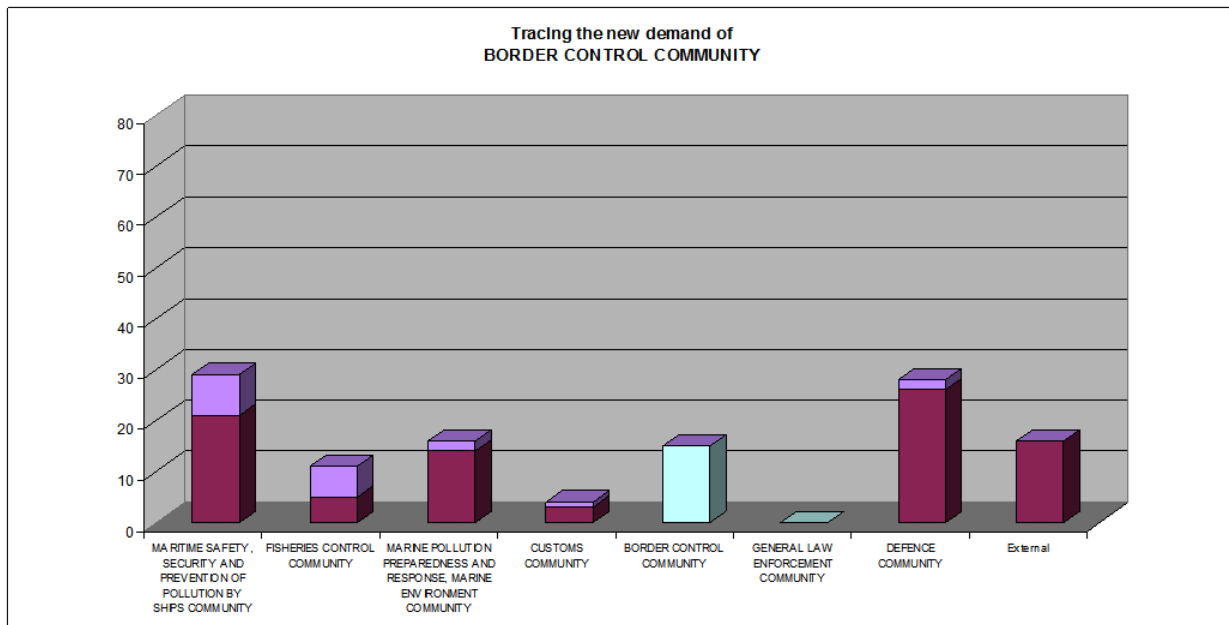
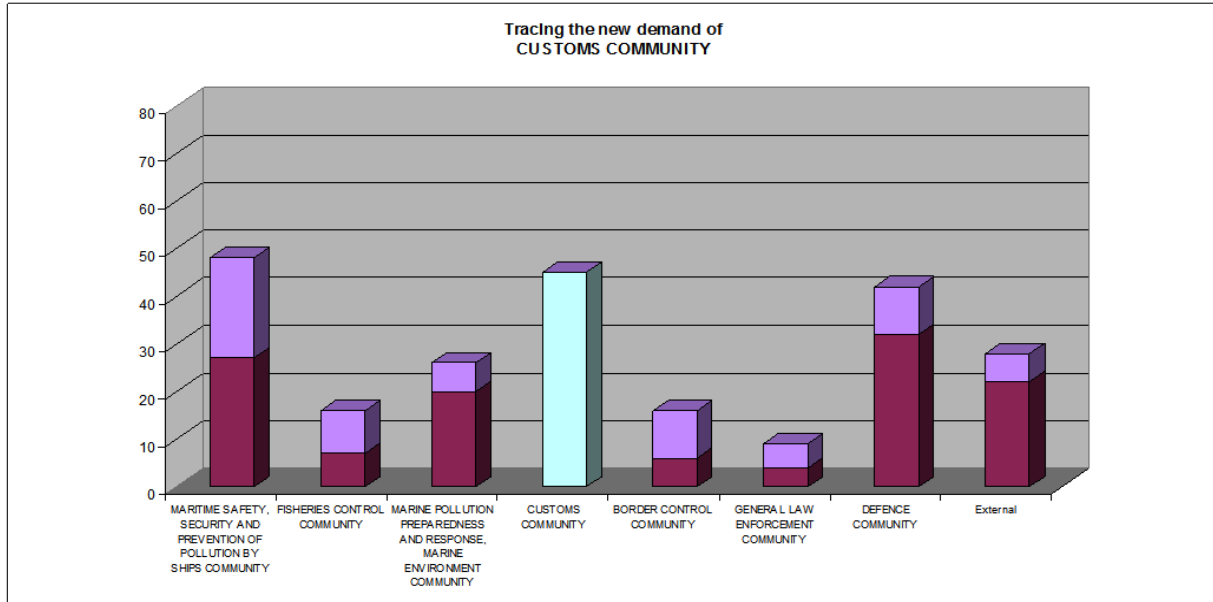


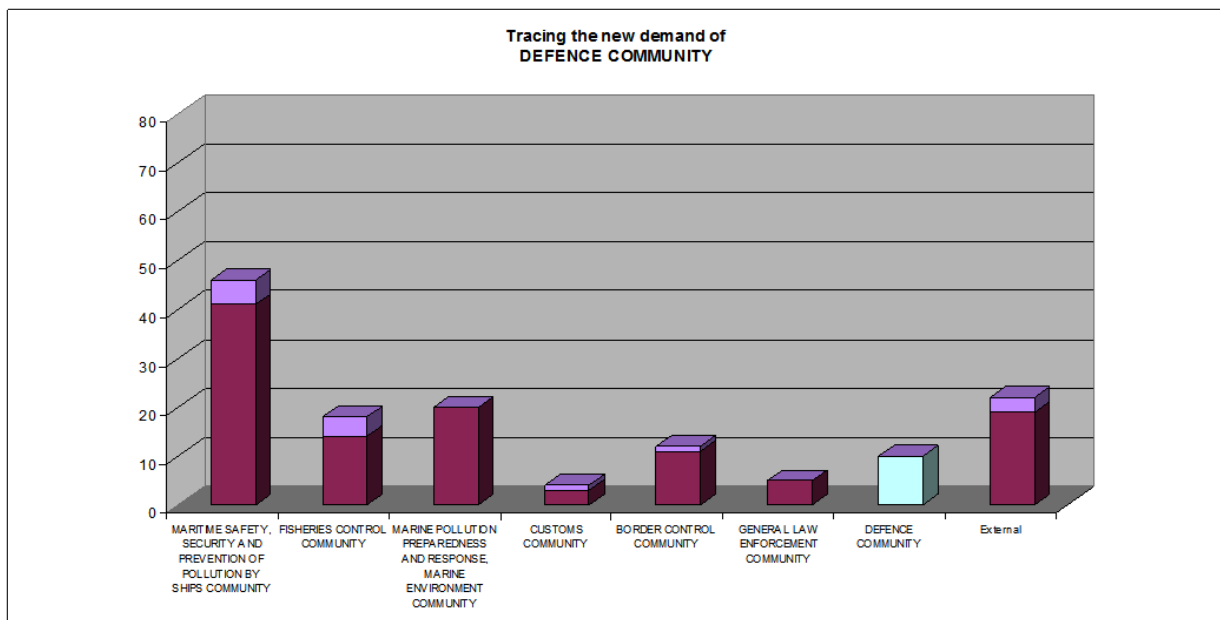
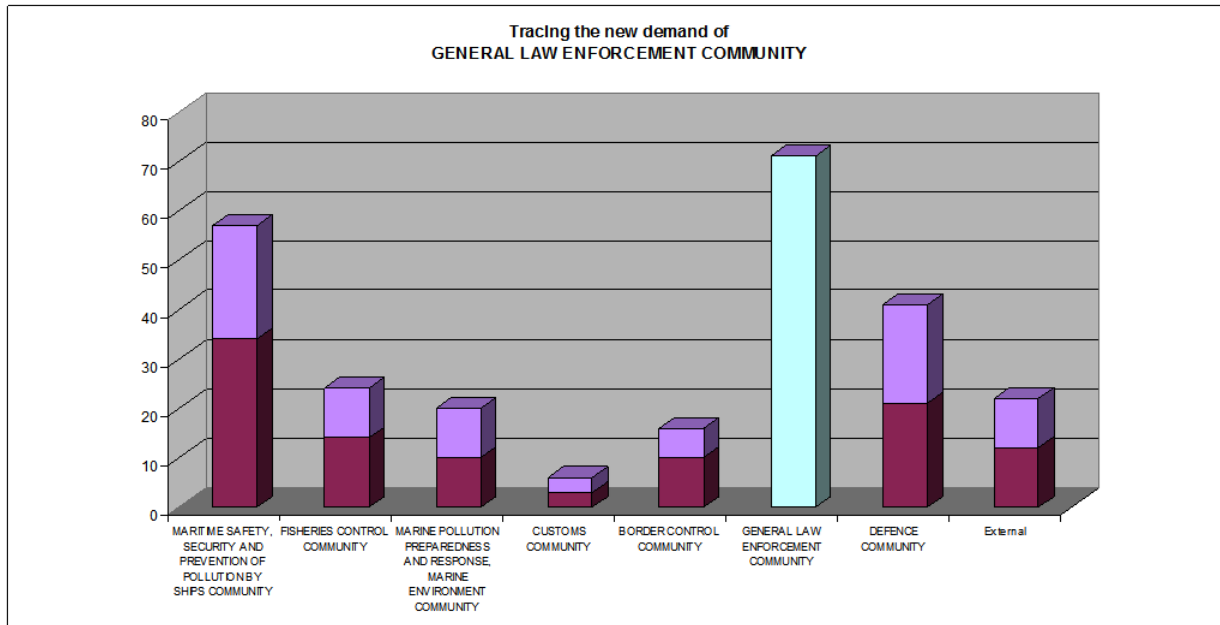
In the above picture we consider the need of data of the Maritime Safety, Security and Prevention of Pollution by Ships Community (UC1): the first bar (blue) shows the amount of data needed by such community, while the violet portion of the other bars show who will supply such data and what portion of the total amount of data (dark red) owned by each community will have to be made accessible to satisfy the new demand of UC1.

It has to be considered that, for some communities (eg customs and law enforcement), the demand to access further data might be on a fairly occasional situation, rather than on a daily basis.

In the next pictures, the same type of information is provided for the different UCs.







Even if each graph is distinct, it comes out as general features that every UC is asked to contribute, without concentrating the onus of the new demand on any specific community.

This confirms the intrinsic cross-sectoral character of CISE compared to all on-going sectoral information sharing infrastructure developments. In the same time, it comes with the underlying complexity of overcoming the full issue of disparity of legal conditions for access, legacy in terms of data models, heterogeneity of taxonomy, totally distinct use of data in the concepts of operations etc. inherent to any totally transverse initiative, while these issues are easy to solve in the context of sectoral cooperation.

It is interesting to consider that the analysis of the data flows from current owners to satisfy this still unsatisfied demand has shown that such flows are rather balanced, i.e. there is not a single supplier of data because every community requires some additional bit of information and there is no community that has nothing to provide to the others. It comes out as general features that every UC is asked to contribute, without concentrating the onus of the new demand on any specific community.

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5 Conclusion

The above analysis reveals the following:

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