منظمة الأغذية والزراعة للأمم المتحدة | 联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Organización de las Naciones Unidas para la Agricultura y la Alimentación

COORDINATING WORKING PARTY ON FISHERY STATISTICS

Intersessional Fishery Subject Group Meeting

Swakopmund, Namibia 25-27 February 2015

Global standard for operational fisheries data exchange

Author: DG Mare

This document cannot in any circumstances be regarded as the official position of the European Commission. It is intended solely for those to whom it is addressed.

Subject: Global standard for operational fisheries data exchange

The Directorate General for Maritime Affairs and Fisheries of the European Commission embarked in 2010 on the Integrated Fisheries Data Management Programme (IFDM). One core objective of this programme is to build a highly performing, cost effective and agile global data exchange system for fisheries control and management.

Technically, the approach combines several measures:

Standardisation: Parties involved in fisheries control and management are exchanging massive amounts of data on vessel positions, electronic logbooks, sales notes, vessel and licence data, scientific data etc. This has historically grown, leading to a patchwork of different terminologies, codes, and data elements exchanged using different formats such as NAF, CSV, and XML.

IFDM seeks to standardise within the UN/CEFACT group of the United Nations, all data exchange messages related to fisheries operations. The final outputs of UN/CEFACT standardisation are XML Schema Definitions (XSD) compatible with modern standards for data exchange over the internet.

Moving towards one terminology and one format brings huge benefits. The potential is that one unique, complete and independent library is created covering all data elements used for fisheries management. This drastically simplifies the composition of new messages for new data exchange needs, and ensures that data is well understood, without any need for translation, by all actors involved.

To keep it manageable, the development of standards has been split into logical domains. For some domains, such as VMS (vessel monitoring system) and aggregated catch reporting the standard has already been published by UN/CEFACT.

A special case is the FLEET standard, developed by a joint EU-FAO working group ensuring that the standard will be compatible with both the requirements of the Global Record of Fishing Vessels, refrigerated Transport Vessels and Supply Vessels (Global Record) and the EU Fleet Register.

Standards are in the making for electronic logbooks and licence requests. Working groups are studying other topics such as data exchanges for bluefin and tropical tuna.

When developing standards, there is not only attention for the data elements, but also for identifying correct code lists, and for defining the business rules to which data and data exchanges have to correspond.

System development: To facilitate the introduction of the data exchange standards, a start was made with an open source software suite. The first development focused on creating configurable and secure software for exchanging any data. This software, called transportation layer (TL) can be installed by each party, thus creating a secure and configurable network between parties' IT systems.

Of course, being able to send and receive data is only one aspect. There is also a huge need for storing, analysing and visualising incoming data. New modules are being added

to the TL for e.g. viewing and analysing VMS messages and electronic logbooks, handling licence requests or managing vessel data.

The long term ambition is to let this grow towards becoming an open source community that supports fisheries management by supplying a coherent set of interoperable IT solutions.

Central services: A network with one language for data exchange, allows for the creation of central services, or IT systems, and avoid that each party has to build such IT system for its own purposes.

Typical examples are a master data register as single source of all code lists, and the context in which these need to be used, and a Fleet Register giving access to vessel data to the whole network.

Considering that the Transportation layer software is fully configurable, parties such as RFMOs, could bring central services on-line configured for their own needs without creating confusion with similar services of other parties.

For instance:

- The Global Record, managed by FAO and updated by the individual countries, could become the central source for disseminating vessel data publicly for any stakeholder. This would not prevent an RFMO from receiving vessel data from its contracting parties.

- A global organisation such as FAO could have a central role for the provision of master data services to facilitate harmonisation among code lists.

Business community: The combination of standards, software and central services could provide a flexible (and complete) solution for fisheries data exchange, and data use. However, this can only be the case if all the above is used in practice.

The standardisation process would benefit from the active involvement of other countries or parties such as RFMO. **FAO, RFMO, individual countries and expert groups are invited to participate in the standardisation work.**

For efficient and effective data exchange, as cornerstone for fisheries control and management, this community should also define an optimal business architecture excluding double reporting, assess individual data needs, provide input for software development, and decide on a roadmap for implementation. All parties are invited to participate in this effort.

Annex: Logical domain breakdown

In UN/CEFACT Terminology, this standardisation effort is known as project P-1000. It contains several sub-domains which interact to each other by using elements defined in other sub-domains. The coherence between those domains is ensured by the "harmonisation phase", which is an essential step of the standardisation process.

The following sub-domains have already been identified:

- Vessel: The vessel domain contains all information related to the identification and the description of the vessel itself.
- Licences: Includes national as well as international licences and authorisations
- Inspection: the inspection domain contains all data related to inspections.
- Vessel Position: Contains all data exchanges related to the position of the vessel.
- Fishing trip: Contains all data related to a fishing trip.
- Landing: The landing domain includes all data concerning landings of fish. A transshipment is considered as a special "landing" involving a second vessel and is also included in this domain.
- Sales: The sales domain includes all data concerning first sales of fish.
- Transport: The transport domain includes all data concerning transportation of fish between landing and first sale
- Aggregated Catch Data Report: This domain describes the catch data, which was originally gathered from vessels by Flag States, which is aggregated and exchanged with International parties.

The general approach for each one of these domains is very similar (and as far as possible identical). The biggest difference between domains is the actual business content.

The various domains will be detailed in separate documents such as:

P1000 – 1; General principles (this document)
P1000 – 2; Vessel domain
P1000 – 3; Fishing trip domain
P1000 – 4; Landing domain
P1000 – 5; Sales note domain
P1000 – 6; Transport domain
P1000 – 7; Vessel Position domain
P1000 – 8; Inspection domain
P1000 – 9; Licence domain
P1000 – 10; Master data register domain
P1000 – 11; System domain
P1000 – 12; Aggregated Catch Data Report domain

Note: This list is not exhaustive.

Annex: State of play UN/CEFACT standards

General Principles (GP) *	Basics entities & behaviour of all FLUX standards	JUN-2014 (v1)
Vessel Position *	VMS messages.	JUN-2014 (v1)
ACDR *	Aggregated Catch Data Report domain.	JUN-2014 (v1)
Vessel **	Information for fleet register.	DEC-2014 (v1)
MDM *	Master Data Management For retrieving Codes Lists from a Master Data Register	DEC-2014 (v1)
Sales **	Sales note; Take-over note & Transport document.	JUN-2015 (v1)
FLAP **	Fishing Licenses; Authorisations & Permits	JUN-2015 (v1)
Fishing Activity **	Fishing Vessel Logbook	DEC-2015 (v1) ?
Inspection Report	Electronic inspection reports	DEC-2015 (v1) ?

* Operational in the EU.

** Expected to be operational in 2015 – 2016 time span

European Commission

CWP meeting

Walvis Bay, Namibia, 25-27 February 2015

Francky Callewaert

Fisheries

AGENDA ITEM 7.4

STRATEGY TOWARDS STANDARDISATION/HARMONISATION OF FISHERIES OPERATIONAL DATA

Francky Callewaert

Agenda

1. Introduction
2. Standardisation
3. Technology
4. State of play
5. Business community
6. Roadmap?

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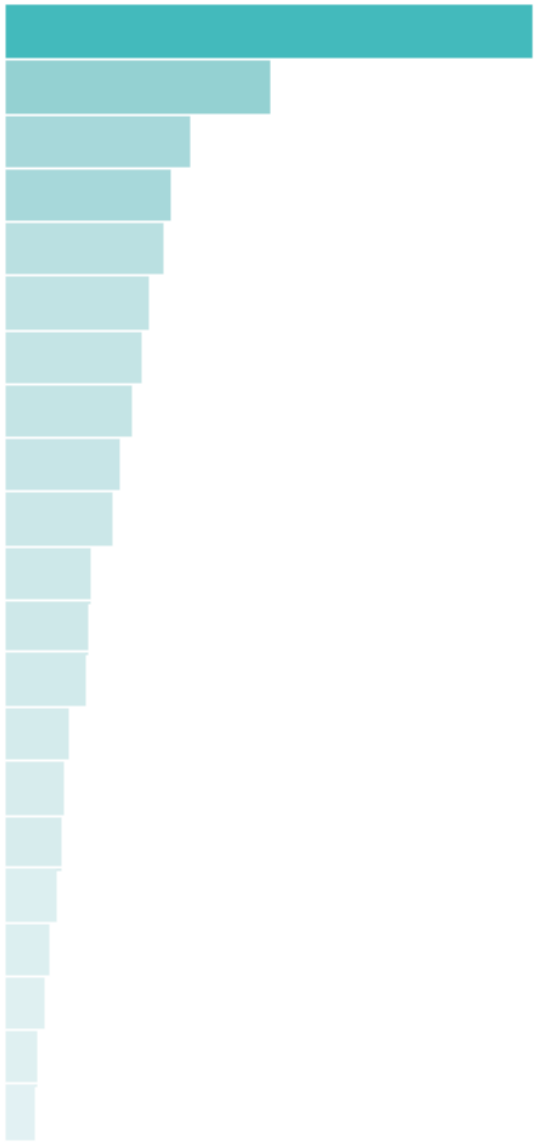
Introduction

Total catches of world's leading producers (2011)

(volume in tonnes live weight and percentage of total)

China	16 046 114	17.02%
Peru	8 254 261	8.75%
Indonesia	5 713 101	6.06%
United States	5 162 997	5.47%
EU-28	**4 889 188**	**5.18%**
India	4 301 534	4.56%
Russia	4 261 503	4.52%
Japan *	3 848 955	4.08%
Chile	3 466 945	3.68%
Myanmar	3 332 979	3.53%
Vietnam	2 502 500	2.65%
Norway	2 433 811	2.58%
Philippines	2 363 679	2.51%
Thailand	1 862 151	1.97%
South Korea	1 761 785	1.87%
Bangladesh	1 600 918	1.70%
Mexico	1 571 437	1.67%
Malaysia	1 378 799	1.46%
Iceland	1 154 199	1.22%
Morocco	964 704	1.02%
Taiwan	903 892	0.96%



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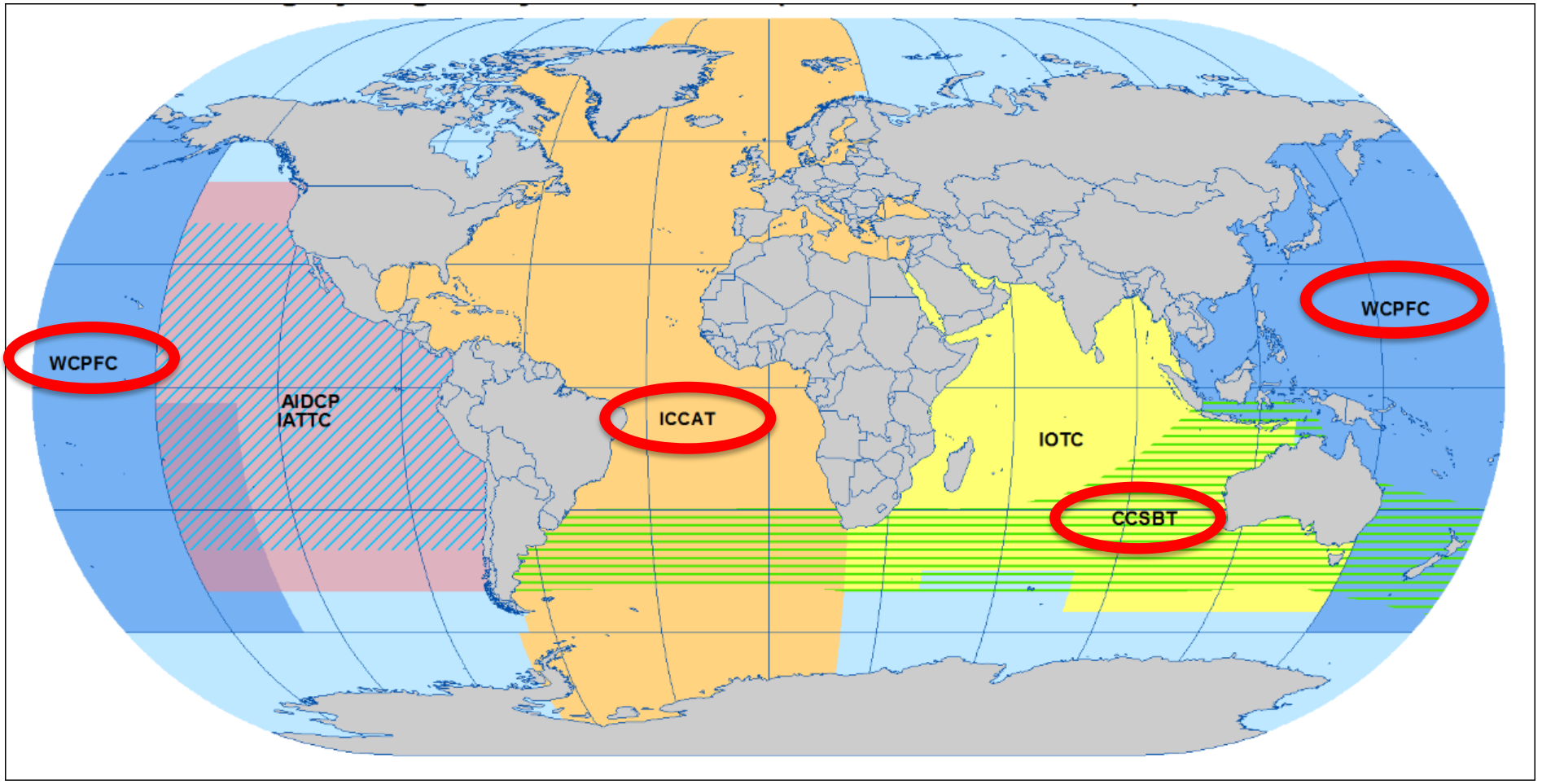
Tuna RFMOs



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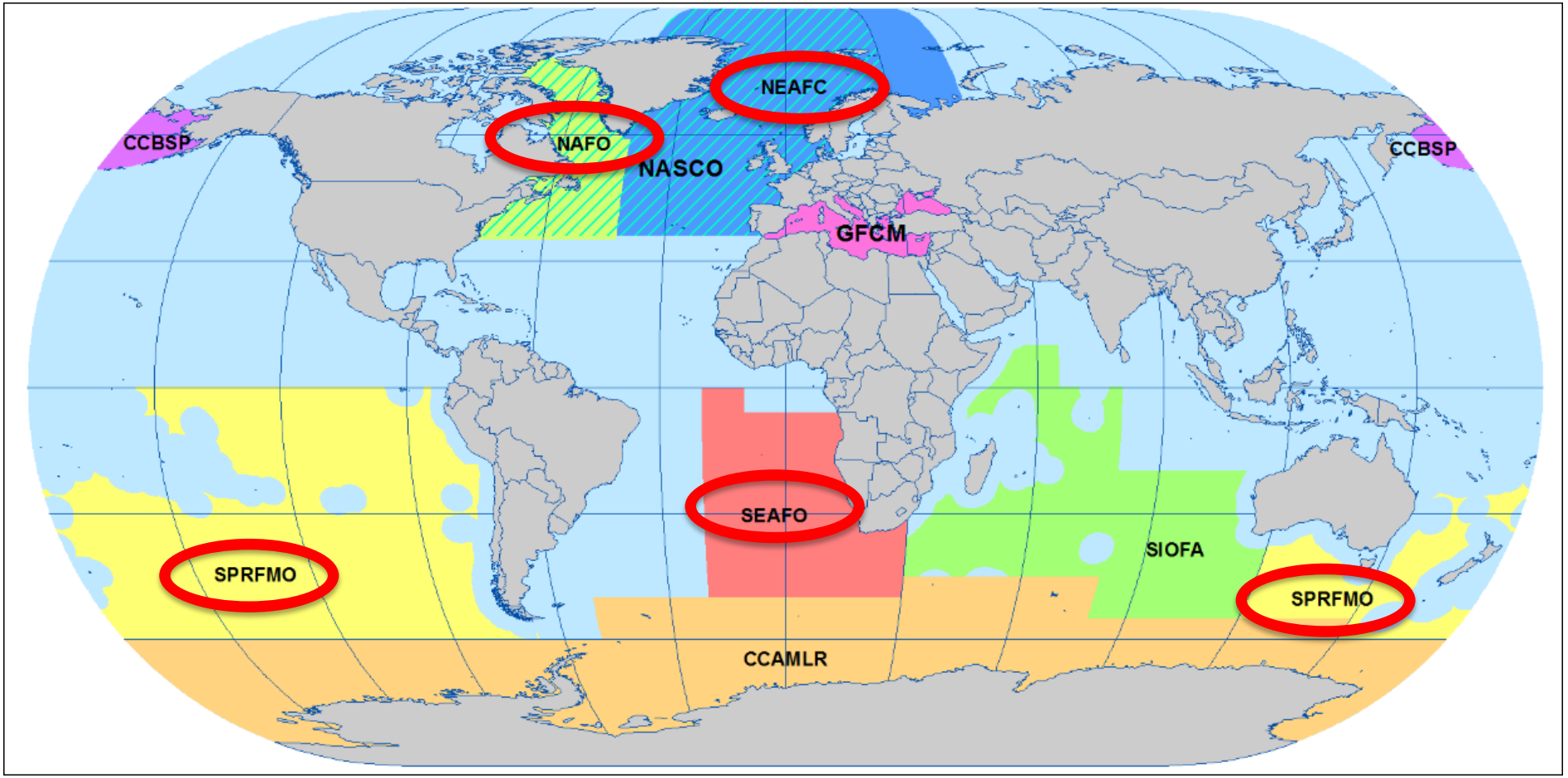
Non-Tuna RFMOs



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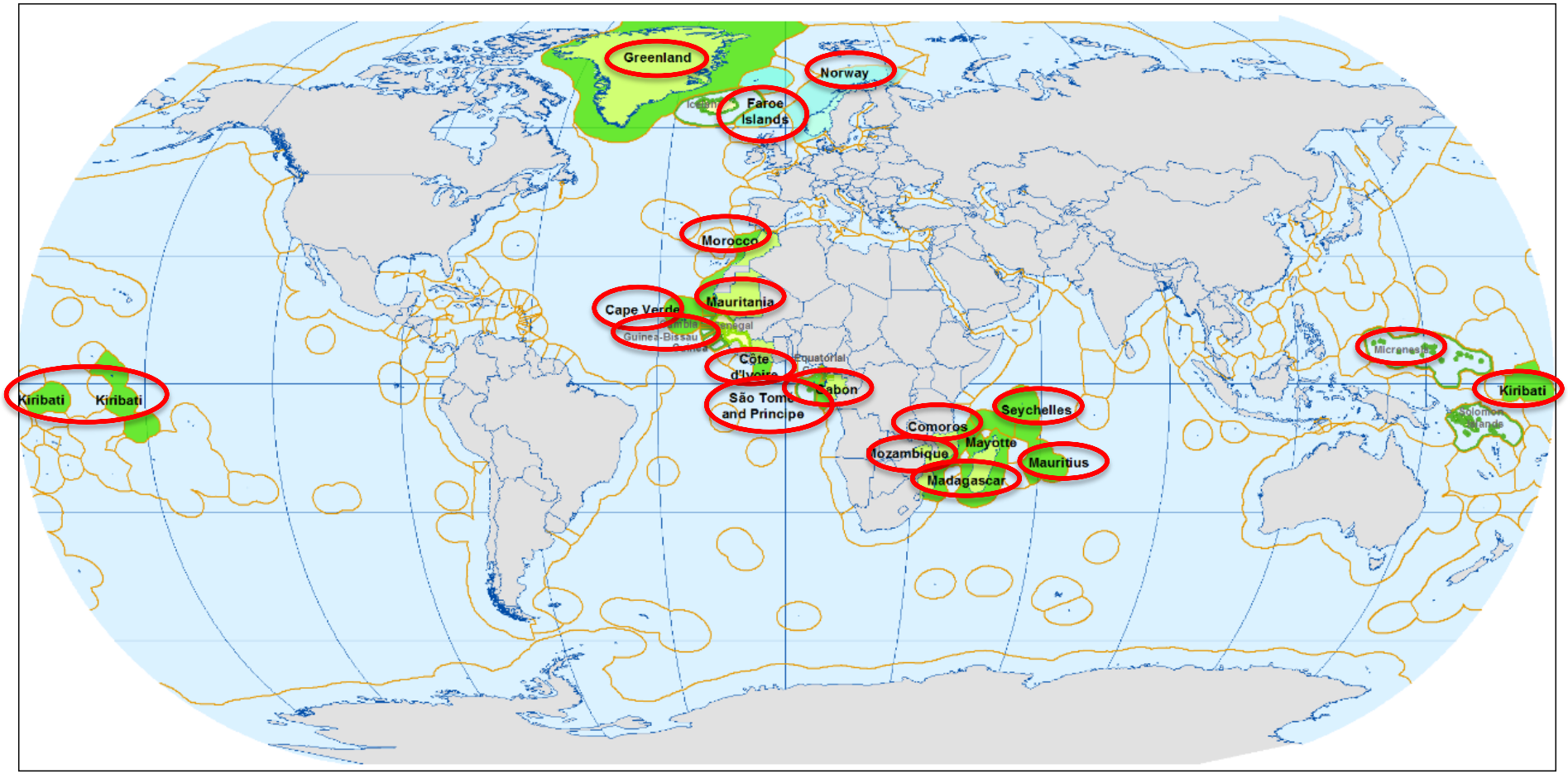
SFPAs and agreements



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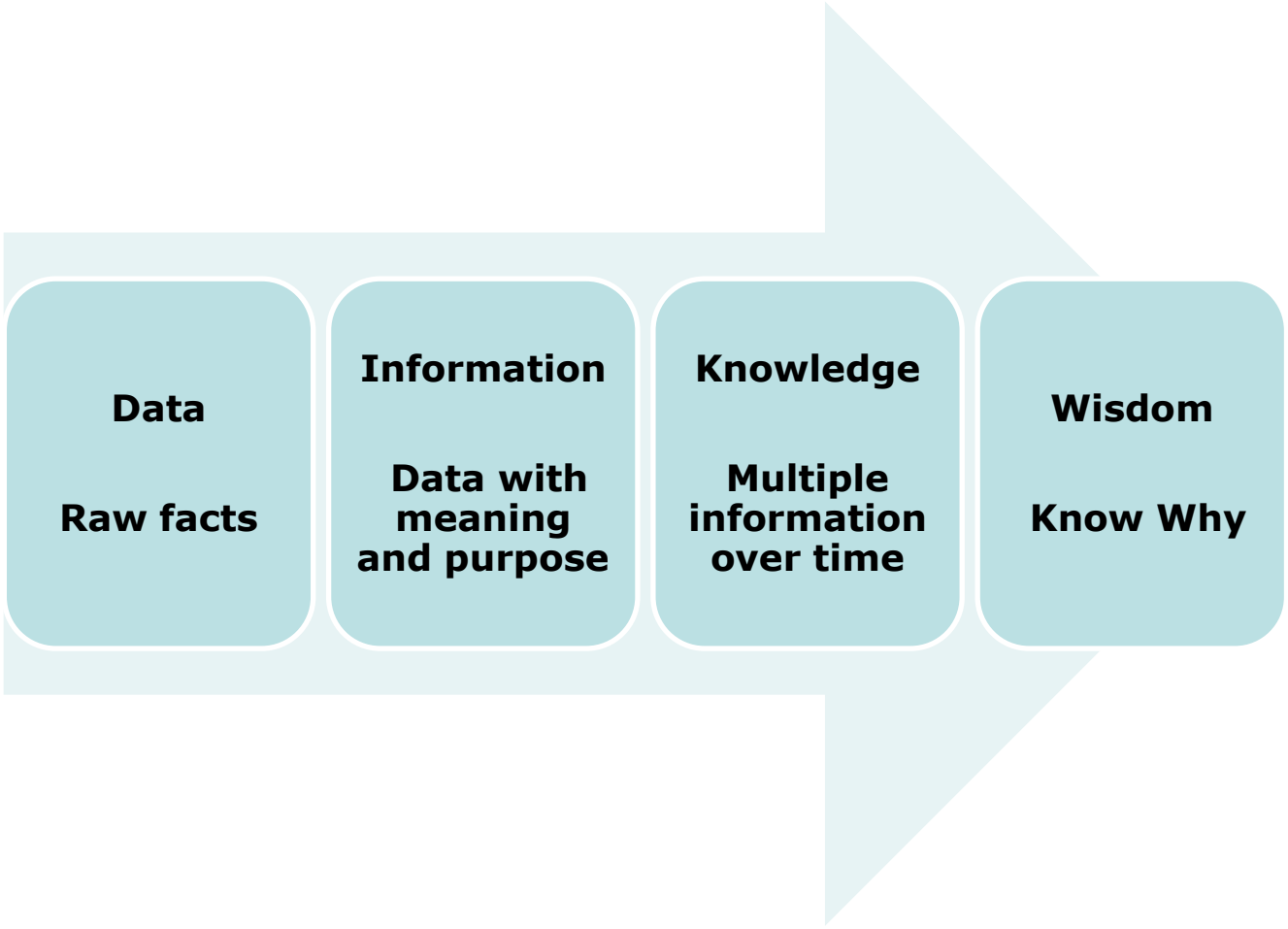
Reporting requirements

- Vessel data
- Licence data
- Position data
- Catch data
- Gear data
- Landing data
- Sales data
- Scientific data
- Economic data

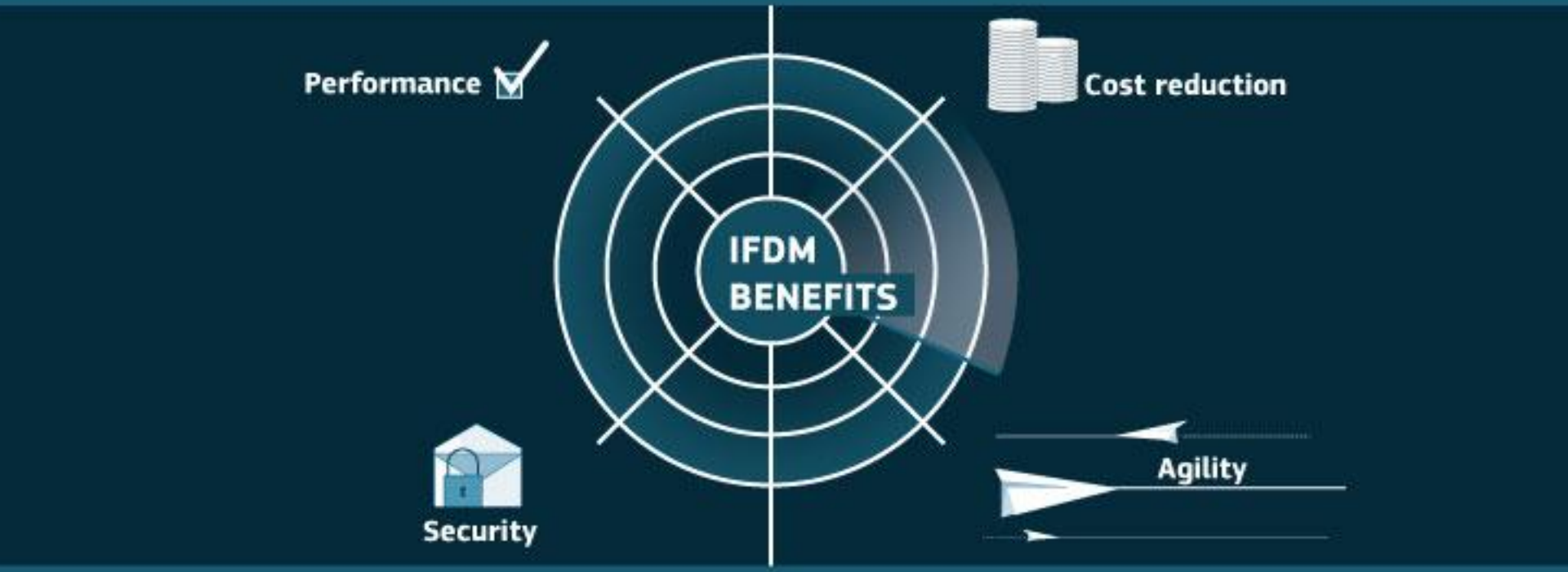
- Frequency
- Aggregation
- Format
- Availability
- Codes
- Deadlines
- …

- Cost
- Quality

Why is data important?

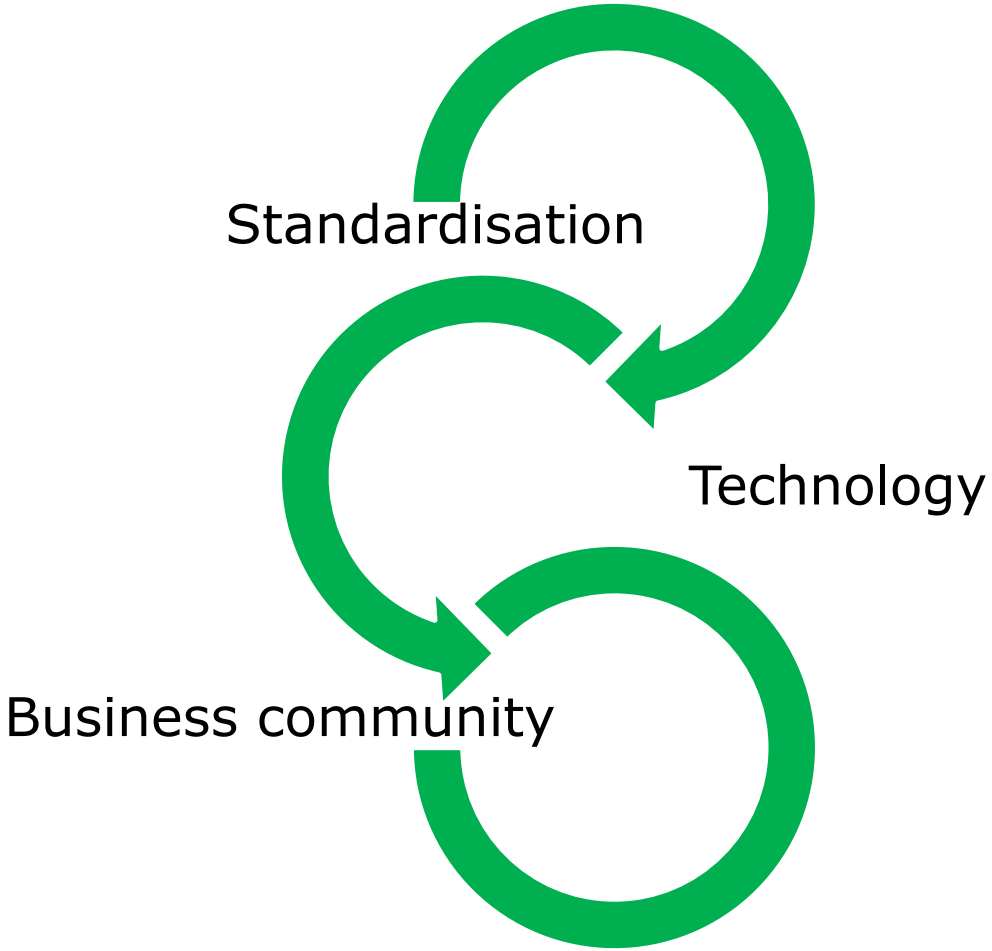


The IFDM programme goal



Deliver high quality data
In the most effective way

The approach



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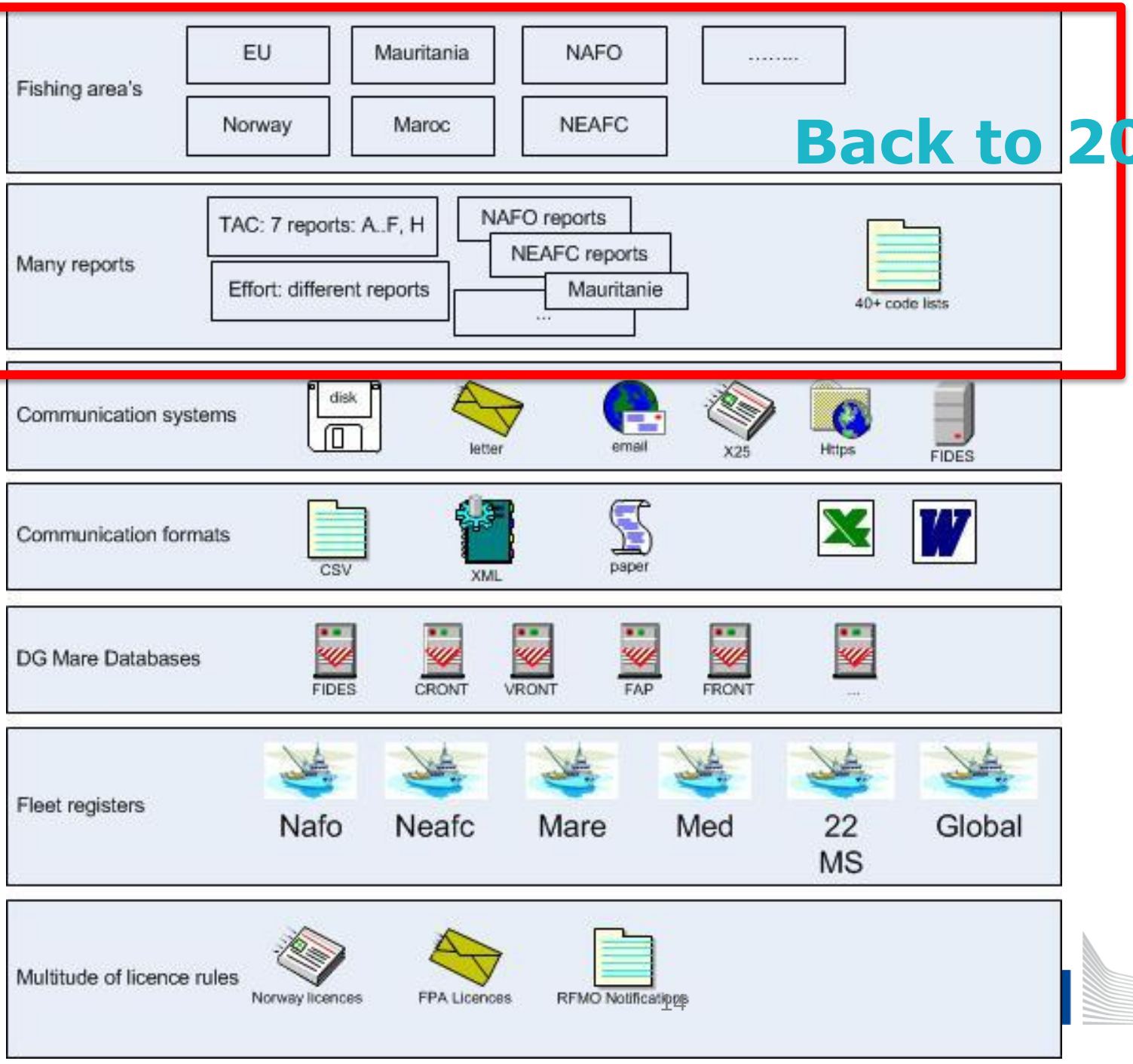
Standardisation



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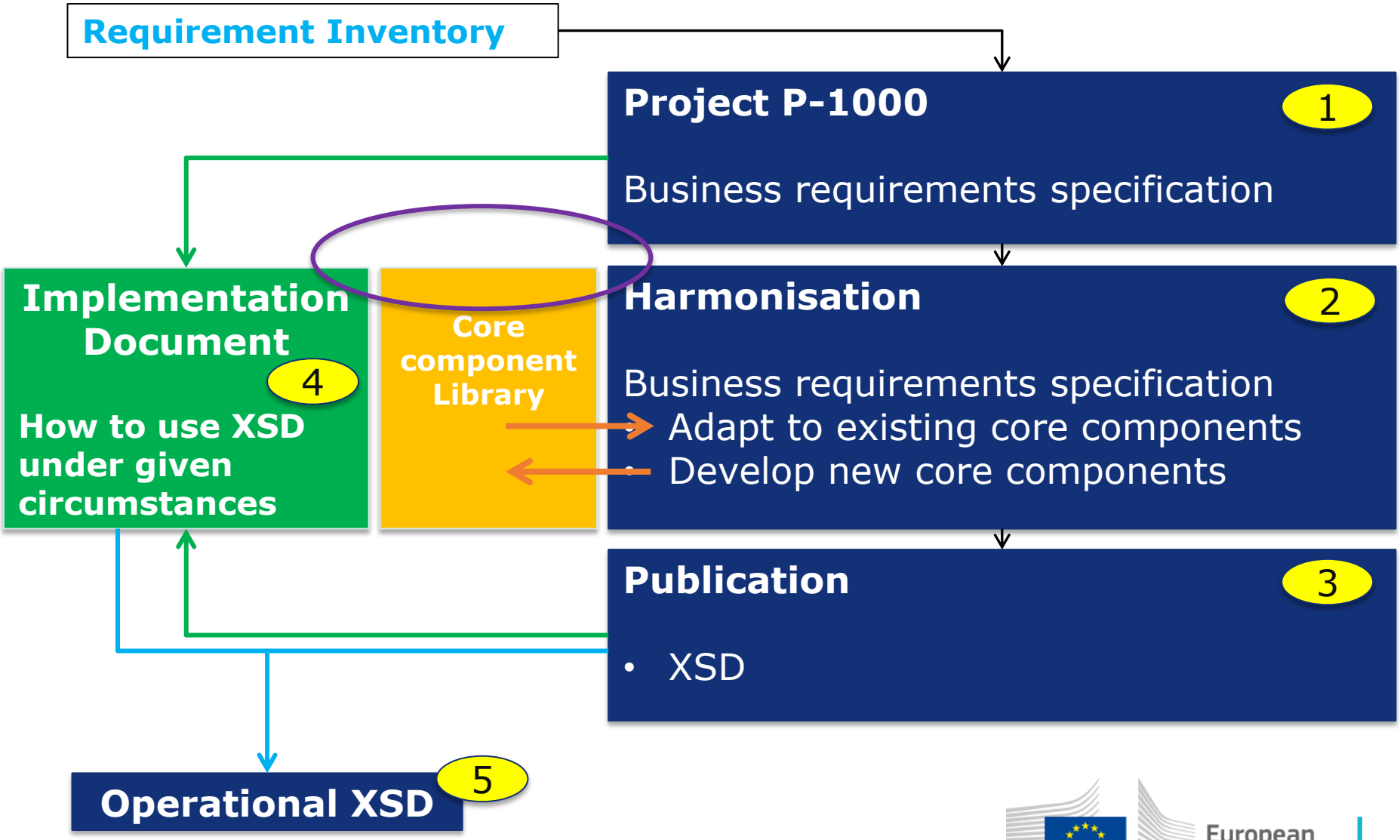
UN/CEFACT standardisation

- **Neutral and world-wide**
- **Related area's move in same direction**
  - Health and food safety / traceability
  - Customs
- **Output fits web based technology**
  - UML, XML, XSD
- **Huge library of core components (15 000+)**
- **Reasonably flexible and fast process**
- **Independent quality review**

The process in a nutshell



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Summary

- **UN/CEFACT standard and XSD**
  - Toolbox
  - As complete as possible (inventory of all needs)
  - Global
- **Implementation documents**
  - How to apply – part of – the toolbox
  - Specific circumstances

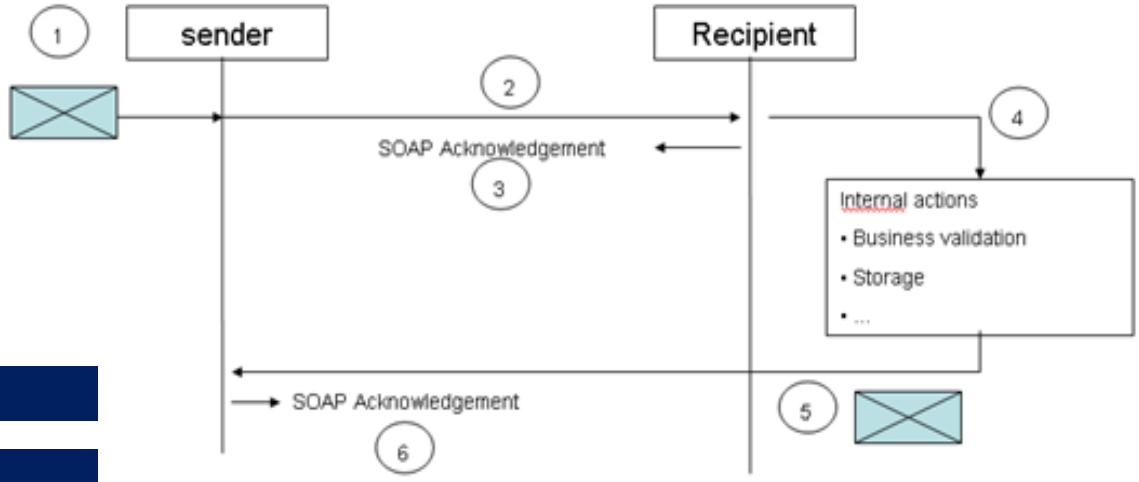
Available

Advanced

Starting

Structure for fisheries

- General principles
  - VMS
  - Fishing activities
    - Bleu Fin Tuna
    - Tropical Tuna
  - Landings
  - Sales notes
  - Vessel data
    - Licences
  - Aggregated catch
  - Master data



- GUID
- Stateless
- Synchronous exchange
- Asynchronous process
- Store and forward
- Exception handler embedded

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Ex. Vessel domain

- **Cooperation with FAO**
  - Compatible with Global Fleet Register
- **Business Requirement specification ready (+/-)**
- **Harmonisation starts in summer**

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Standards status

Name	Description	Date of delivery	Next delivery
General Principles (GP)	Basics entities & behaviour of all FLUX standards	JUN-2014 (v1)	JUN-2015 (v2)
Vessel Position	VMS messages.	JUN-2014 (v1)	JUN-2015 (v2)
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Fishing Activity	Fishing Vessel Logbook		DEC-2015 (v1) ?
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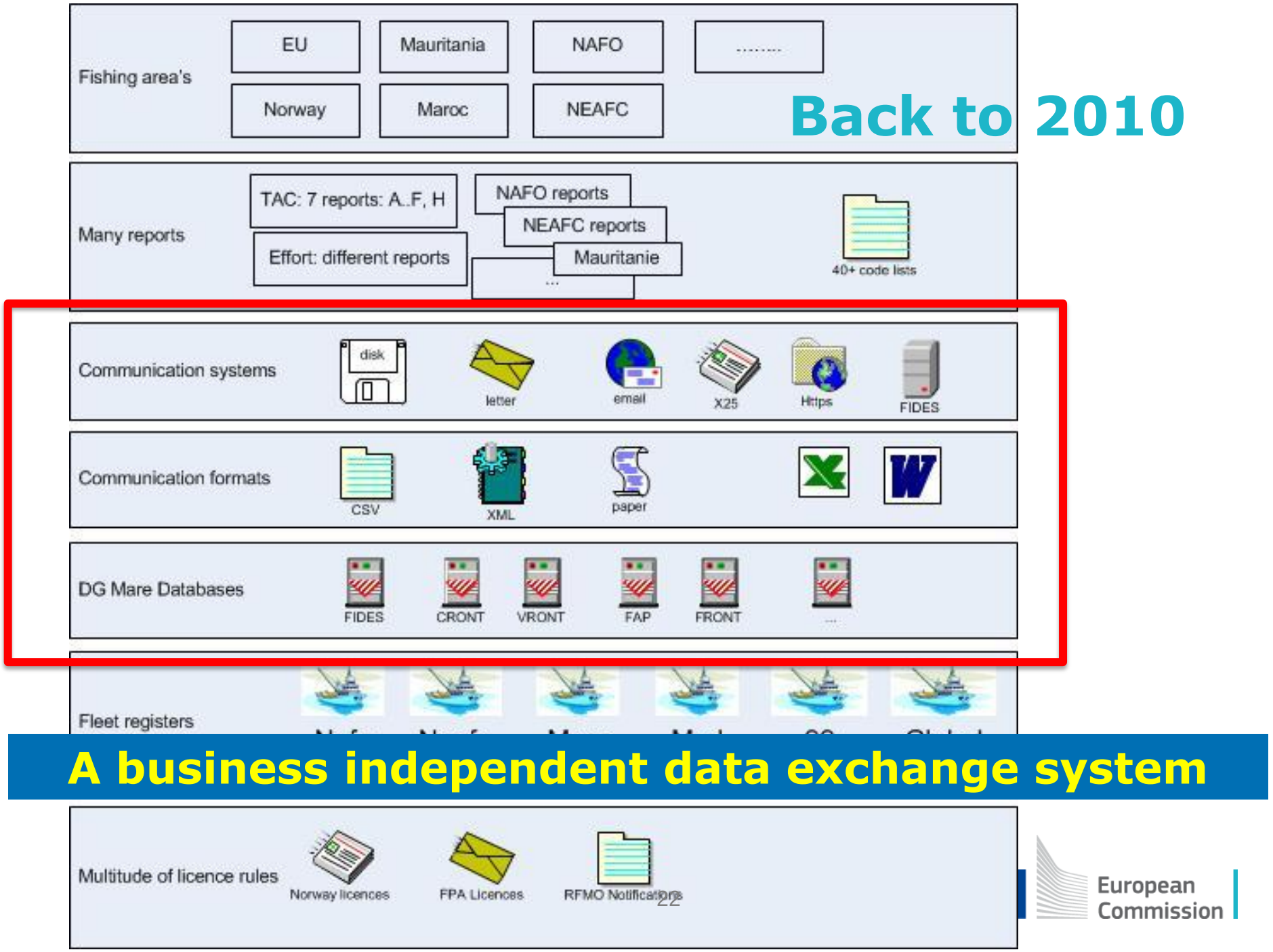
Technology



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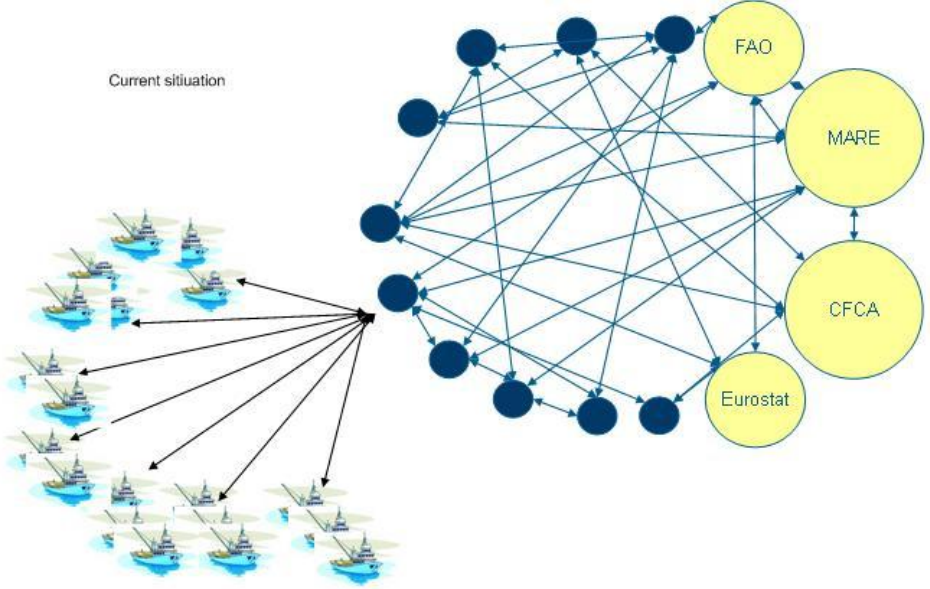

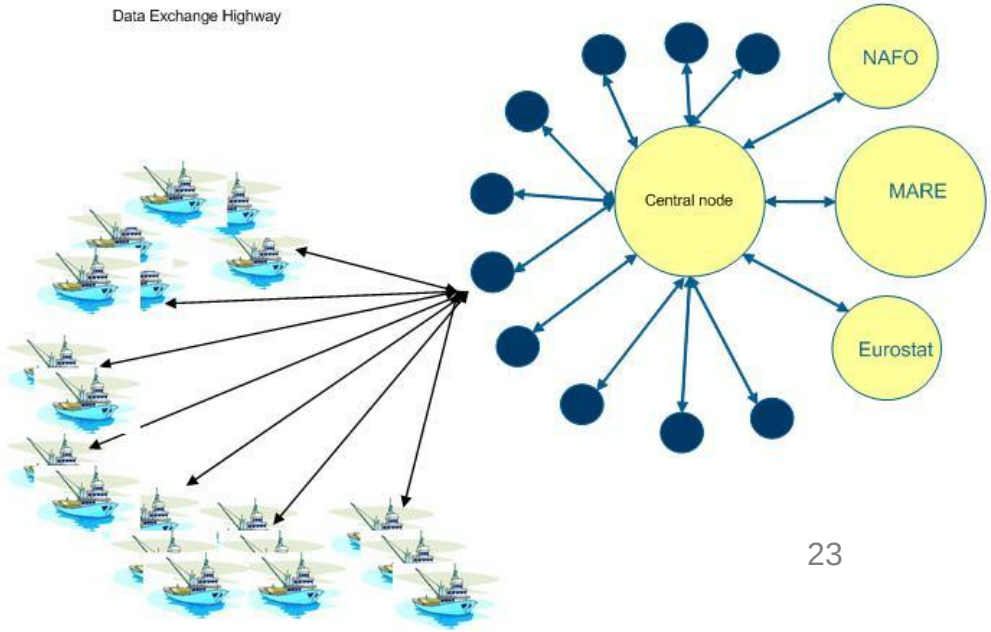

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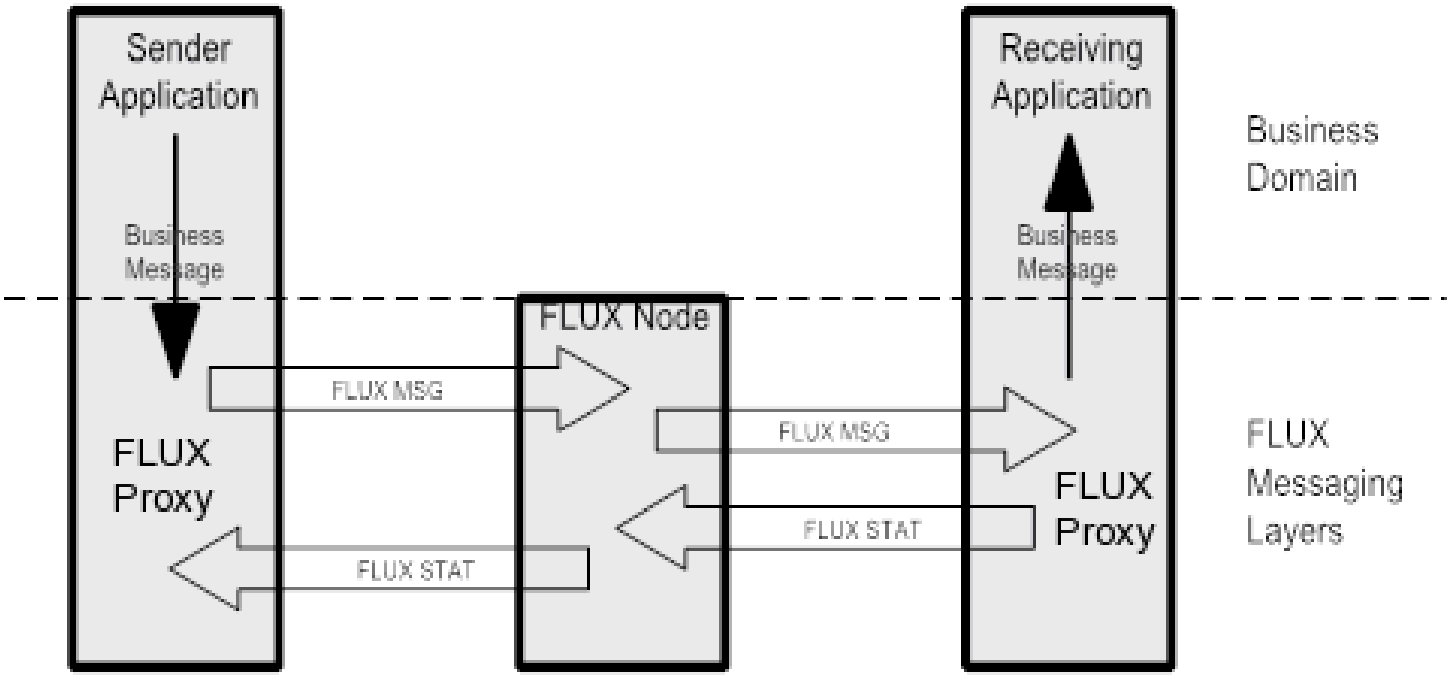
Transportation Layer

- **Configurable software**
  - Based on SOAP
  - Including workflows for handling exceptions
  - "Bridge" to link local IT systems with the TL
- **Protocol called "The envelope"**
  - Set of parameters determining the behaviour of the software
  - Can contain any well formatted XML business content
  - Content unaware

Envelope

Data Element	Code	Mandatory/ Optional	Description
From	FR(*)	M	Address of the envelope originator Endpoint.
Operation number	ON(*)	M	Unique Operation Number generated by the system
Address	AD	M	Address of the envelope destination Endpoint.
Data flow	DF	M	Data flow name
Message time out	TODT	M	The Message Timeout given as an XSD DateTime (UTC). Indicates the time limit which the business content is considered to be expired.
Acknowledge of receipt	AR	M	Boolean indicating if an Acknowledge-of-Receipt (STAT) is expected by the originator Endpoint.
Contact persons	CT	O	Space-separated list of e-mail addresses of contact persons
Verbosity level	VB		verbosity level telling which type of events need to be reported by e-mail
Time out	TO		Indicates the synchronous timeout value in seconds.

Workflow



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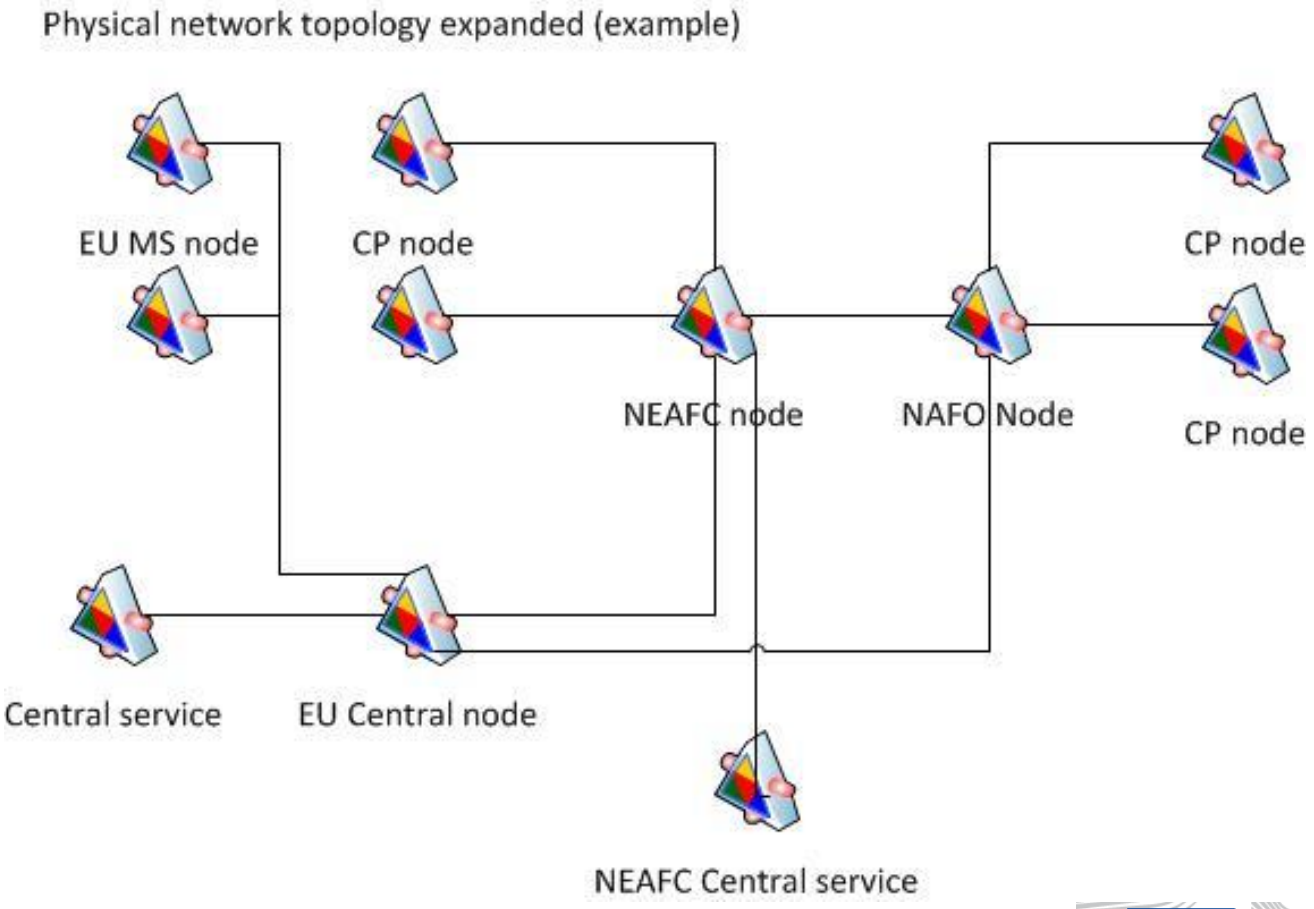
Network example

FLUX TL based network: Physical topology



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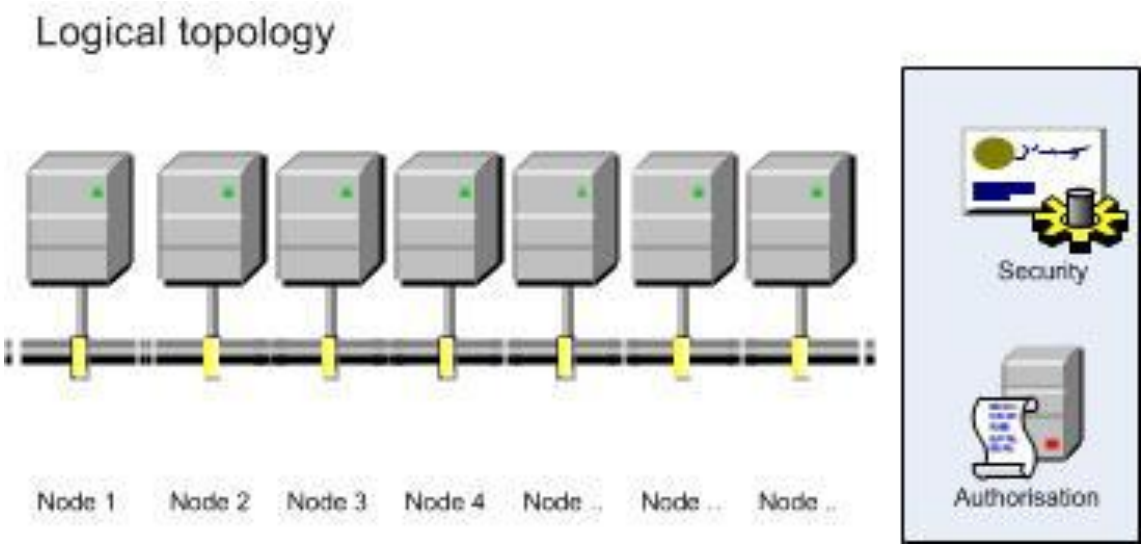
Logical topology



Physical topology becomes "unimportant"

- Configuration can be adapted to new needs
- Data flows can be optimized
- Network can organically grow

Each node can be configured according to its role

- Load balancing between instances
- Automated data flow optimisation

State of play

- **TL V1.2 operational in DG MARE and 12 (+) EU MS**
  - Aggregated Catch Data reports
- **TL V1.5 available since June**
  - Bug fixes
  - Performance increase
  - VMS ready
    - *VMS bridge*
    - *NAF-XML-NAF transposition*
- **Agreement with Norway to use TL**
- **Agreement with Faroe Islands to test TL**

Benefits

Standardised data exchange platform

- Can grow "organically"
- IT decoupled from business
- Cost reduction
- Flexible and configurable
- Simplification

Could become a world standard

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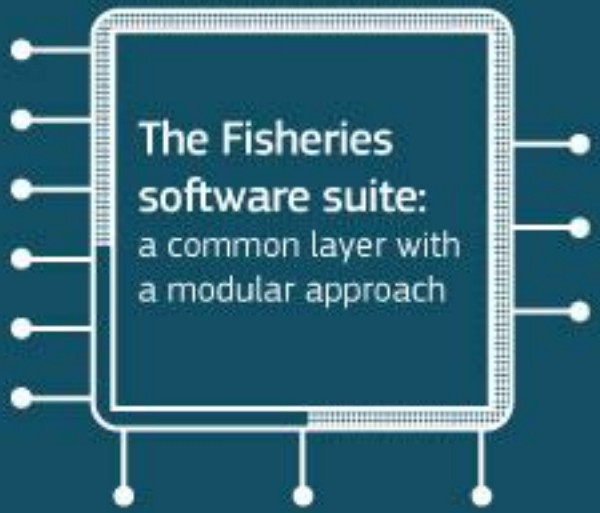
Reminder

An "email" system for computers

One data exchange platform for all data exchanges

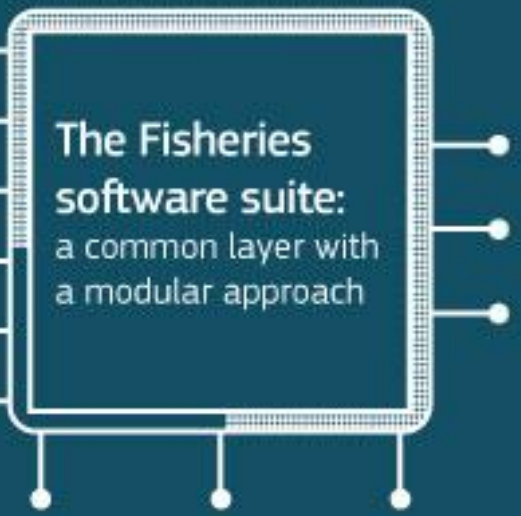
1. Single envelope, parameters tailored for each data flow
2. Bridges to local IT systems
3. Envisaged to connect whole community

Next phase


The Fisheries
software suite:
a common layer with
a modular approach

A module
for each aspect of the **IFDM programme**:

- Electronic recording and reporting system (ERS)
- Vessel Monitoring System (VMS)
- Licence Workflow
- FLEET Project
- Aggregated catch data reporting
- Master Data Register (MDR)



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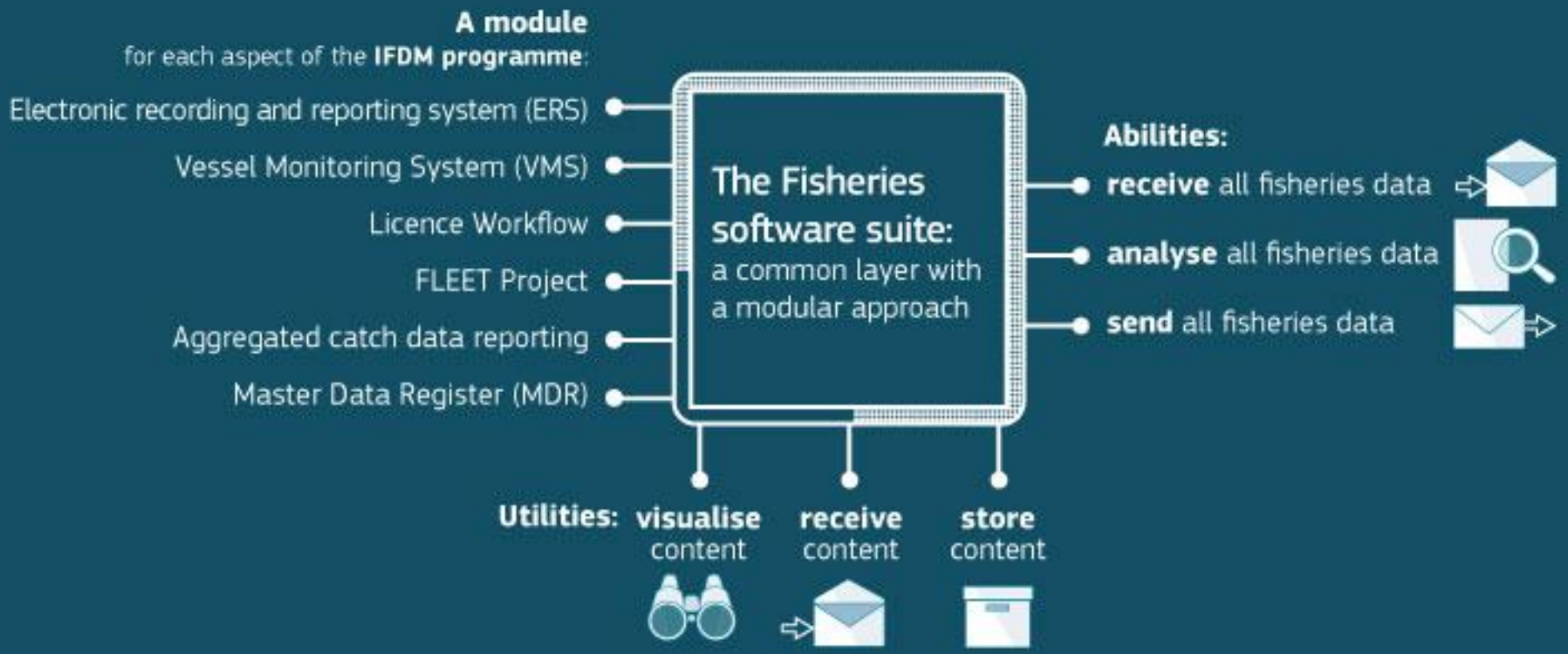
The Fisheries software suite:
a common layer with a modular approach

Abilities:

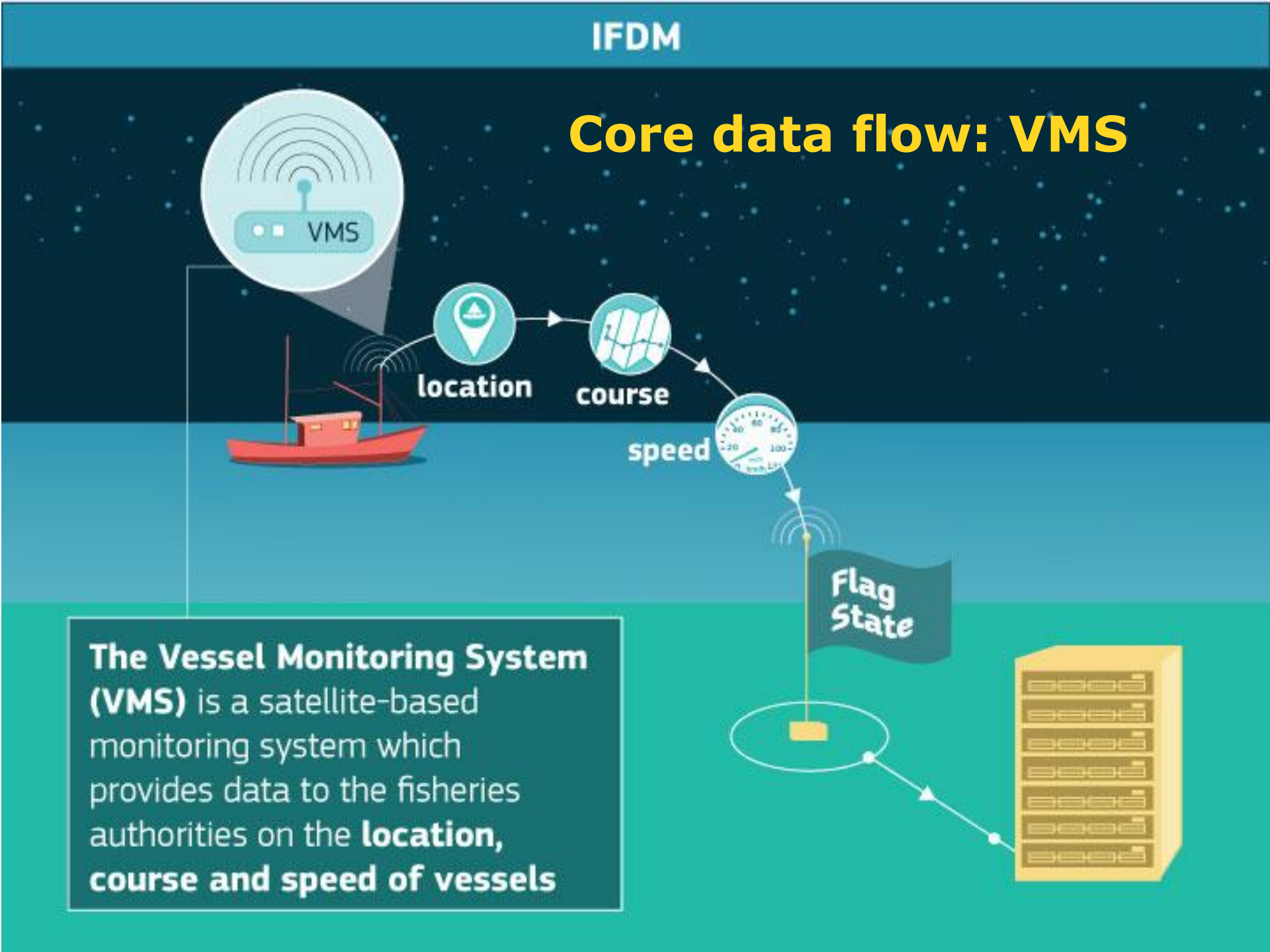
- **receive** all fisheries data
- **analyse** all fisheries data
- **send** all fisheries data


A module
for each aspect of the IFDM programme:
Electronic recording and reporting system (ERS)
Vessel Monitoring System (VMS)
Licence Workflow
FLEET Project
Aggregated catch data reporting
Master Data Register (MDR)
The Fisheries software suite:
a common layer with a modular approach
Abilities:
receive all fisheries data
analyse all fisheries data
send all fisheries data
Utilities:
visualise content
receive content
store content

State of Play

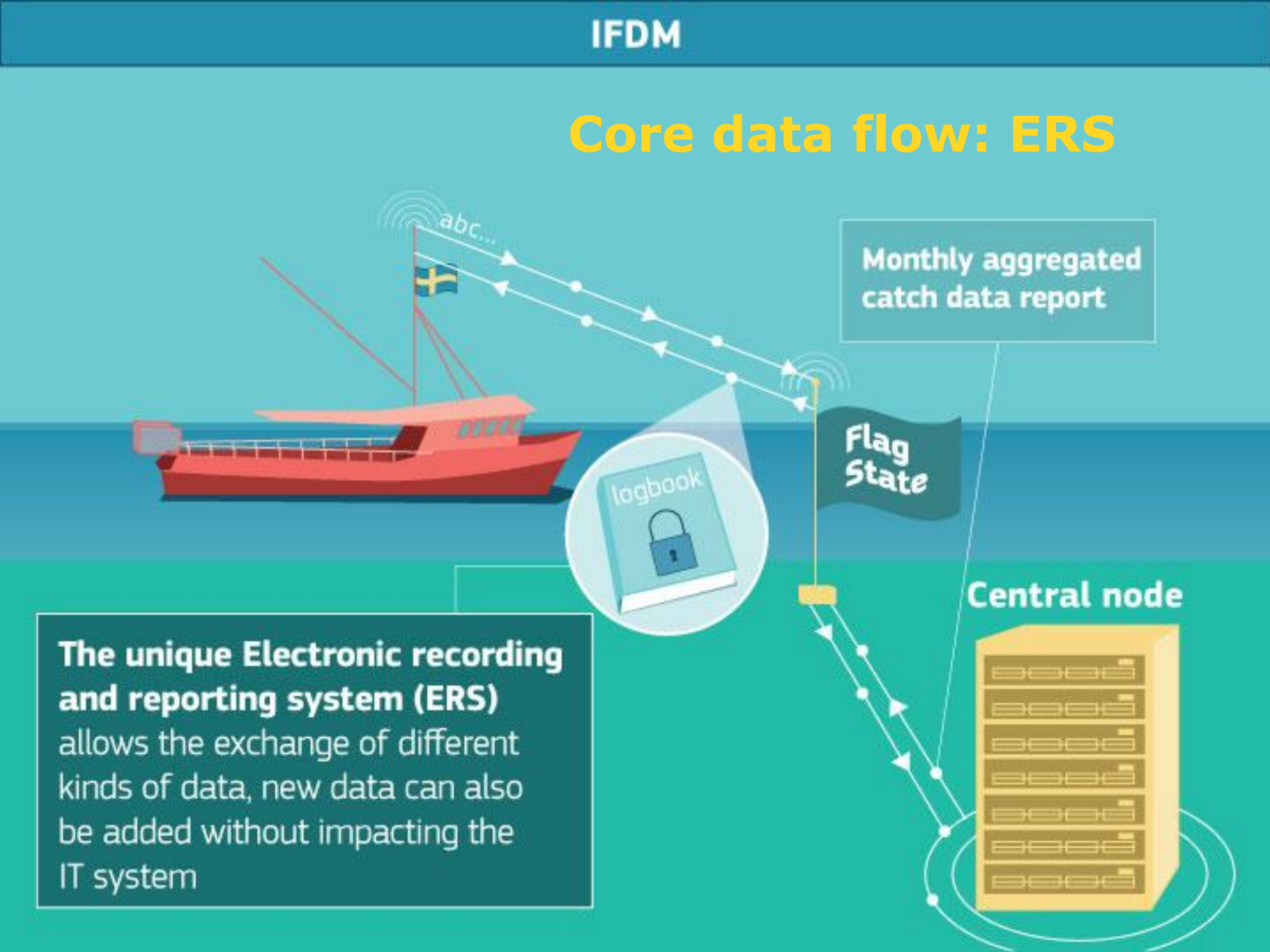
How it works

Core data flow: VMS

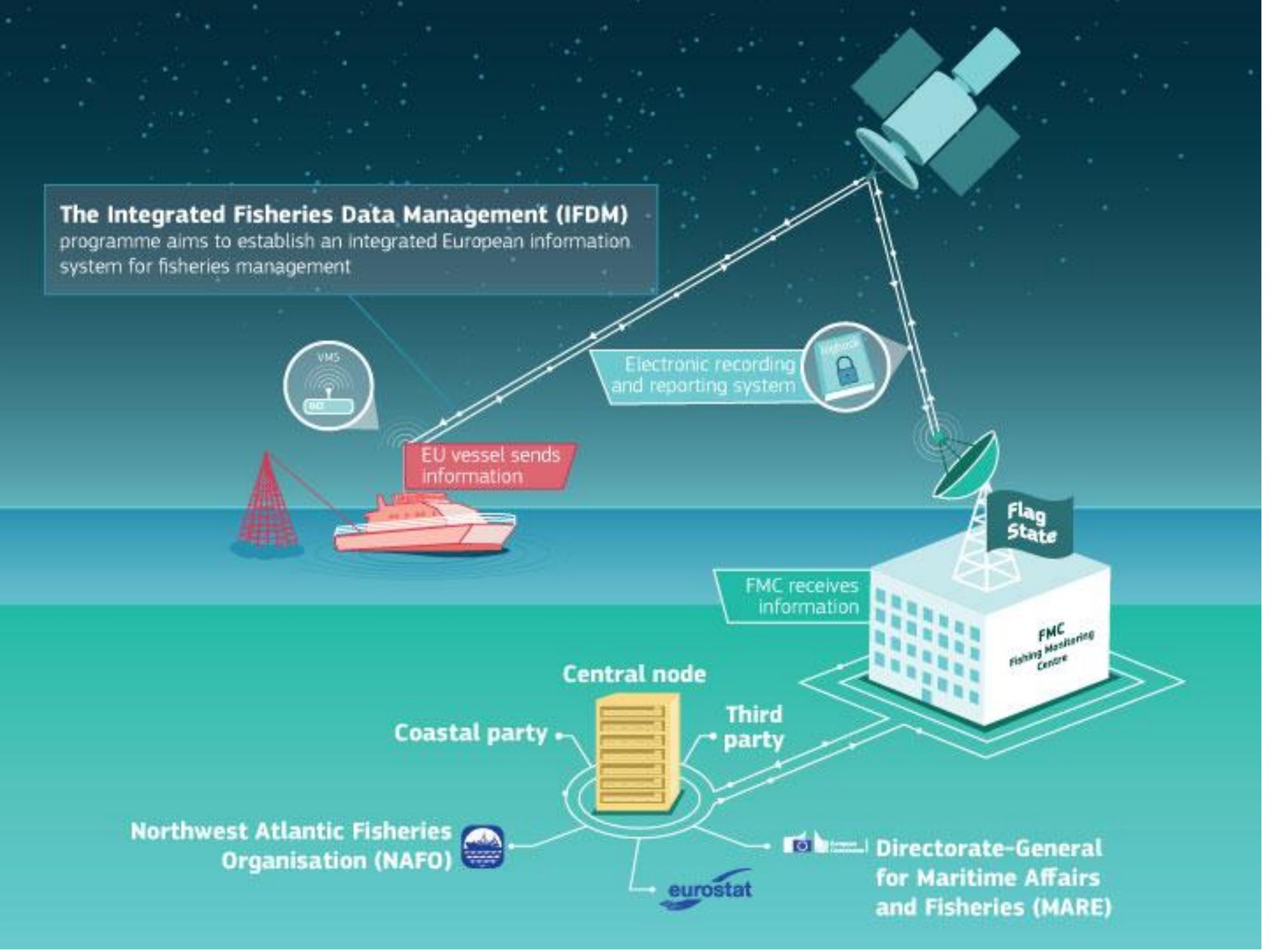


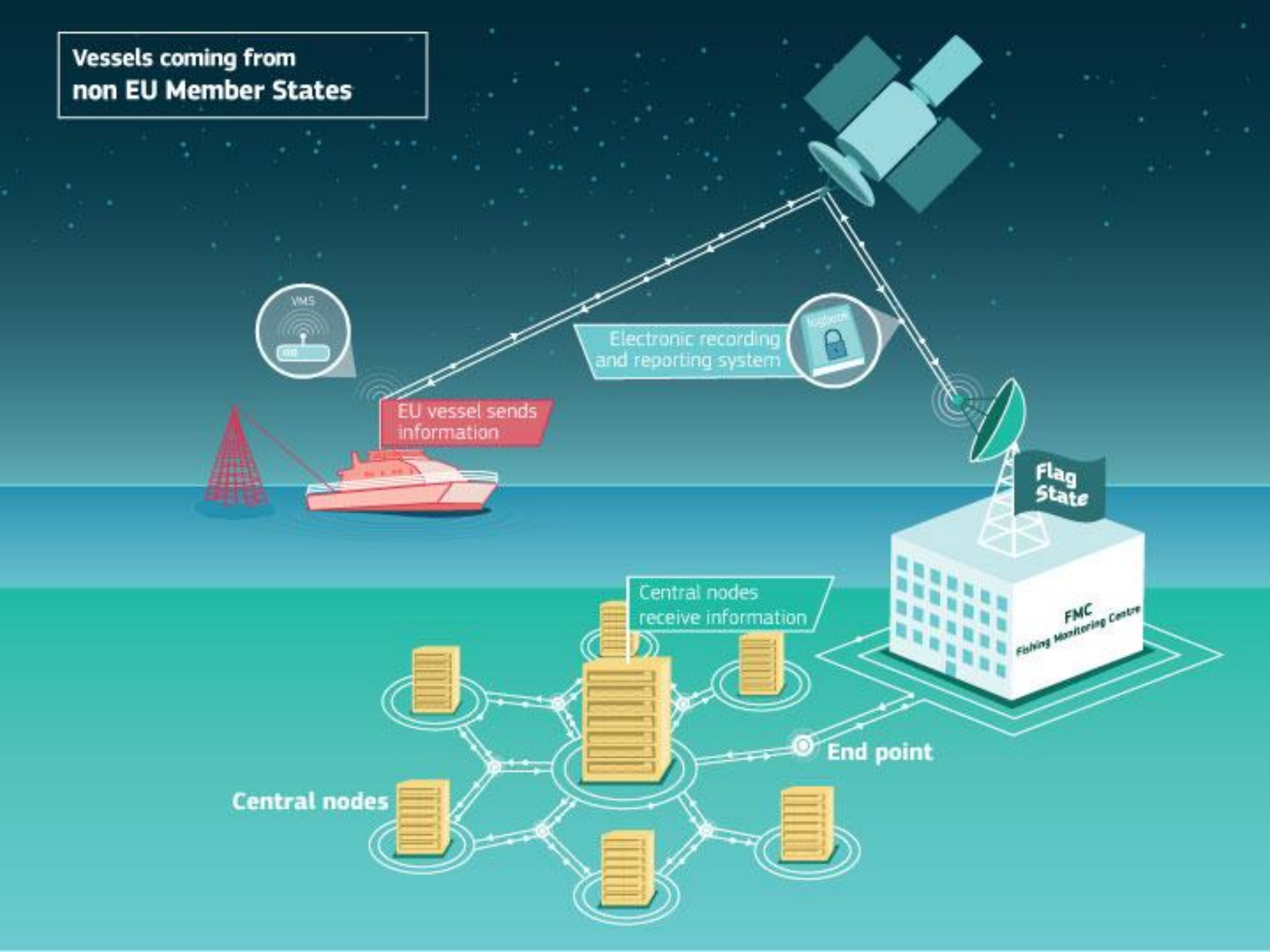
The Vessel Monitoring System (VMS) is a satellite-based monitoring system which provides data to the fisheries authorities on the **location, course and speed of vessels**

Core data flow: ERS



The unique Electronic recording and reporting system (ERS) allows the exchange of different kinds of data, new data can also be added without impacting the IT system

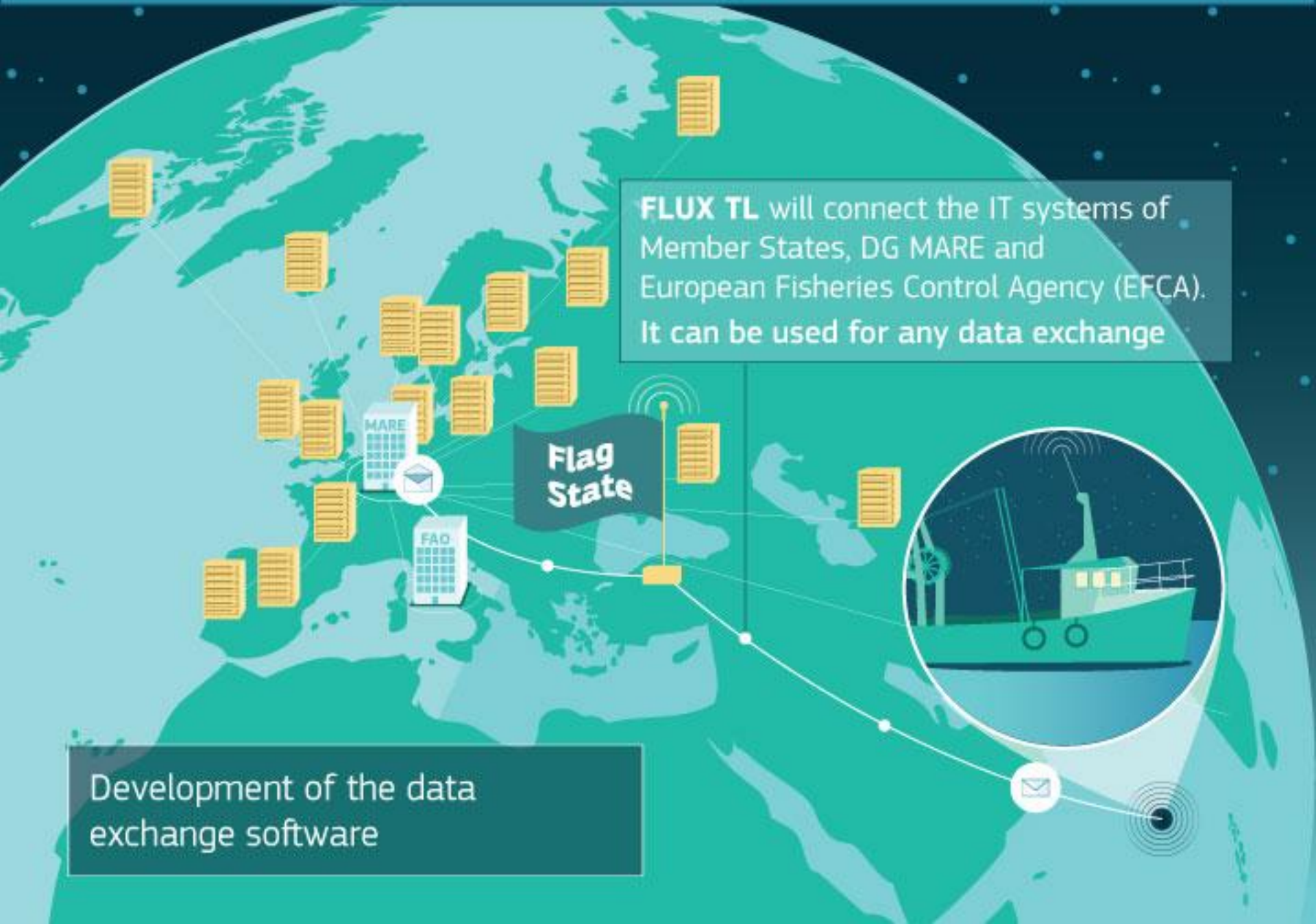

The Integrated Fisheries Data Management (IFDM)
programme aims to establish an integrated European information system for fisheries management
VMS
Electronic recording and reporting system
EU vessel sends information
Flag State
FMC receives information
FMC
Fishing Monitoring Centre
Central node
Coastal party
Third party
Northwest Atlantic Fisheries Organisation (NAFO)
eurostat
Directorate-General for Maritime Affairs and Fisheries (MARE)


Vessels coming from
non EU Member States
VMS
Electronic recording
and reporting system
EU vessel sends
information
Flag
State
FMC
Fishing Monitoring Centre
Central nodes
receive information
End point
Central nodes

IFDM

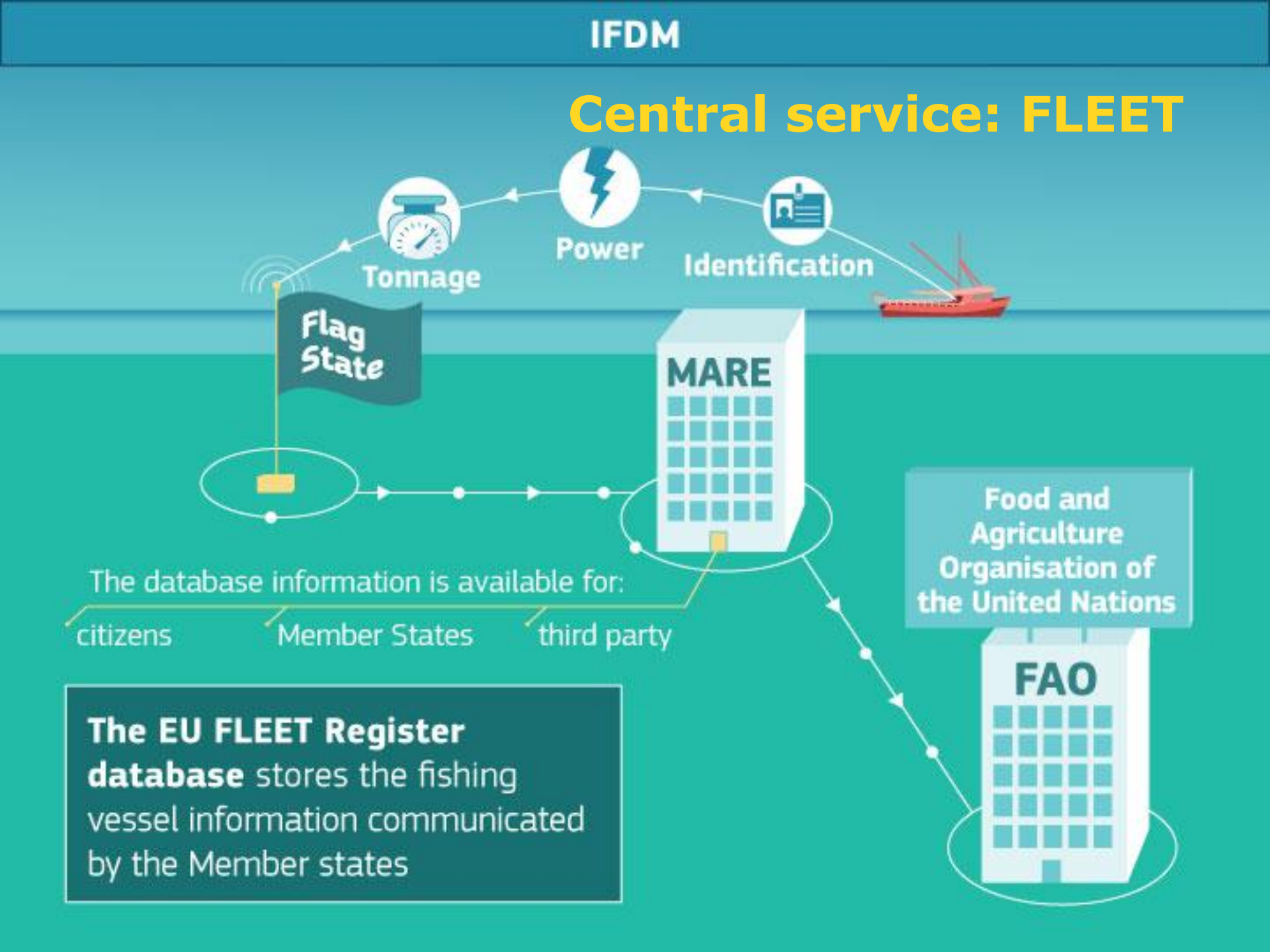
FLUX TL will connect the IT systems of Member States, DG MARE and European Fisheries Control Agency (EFCA).

It can be used for any data exchange



Development of the data exchange software

Central service: FLEET



IFDM

Central service: MDR

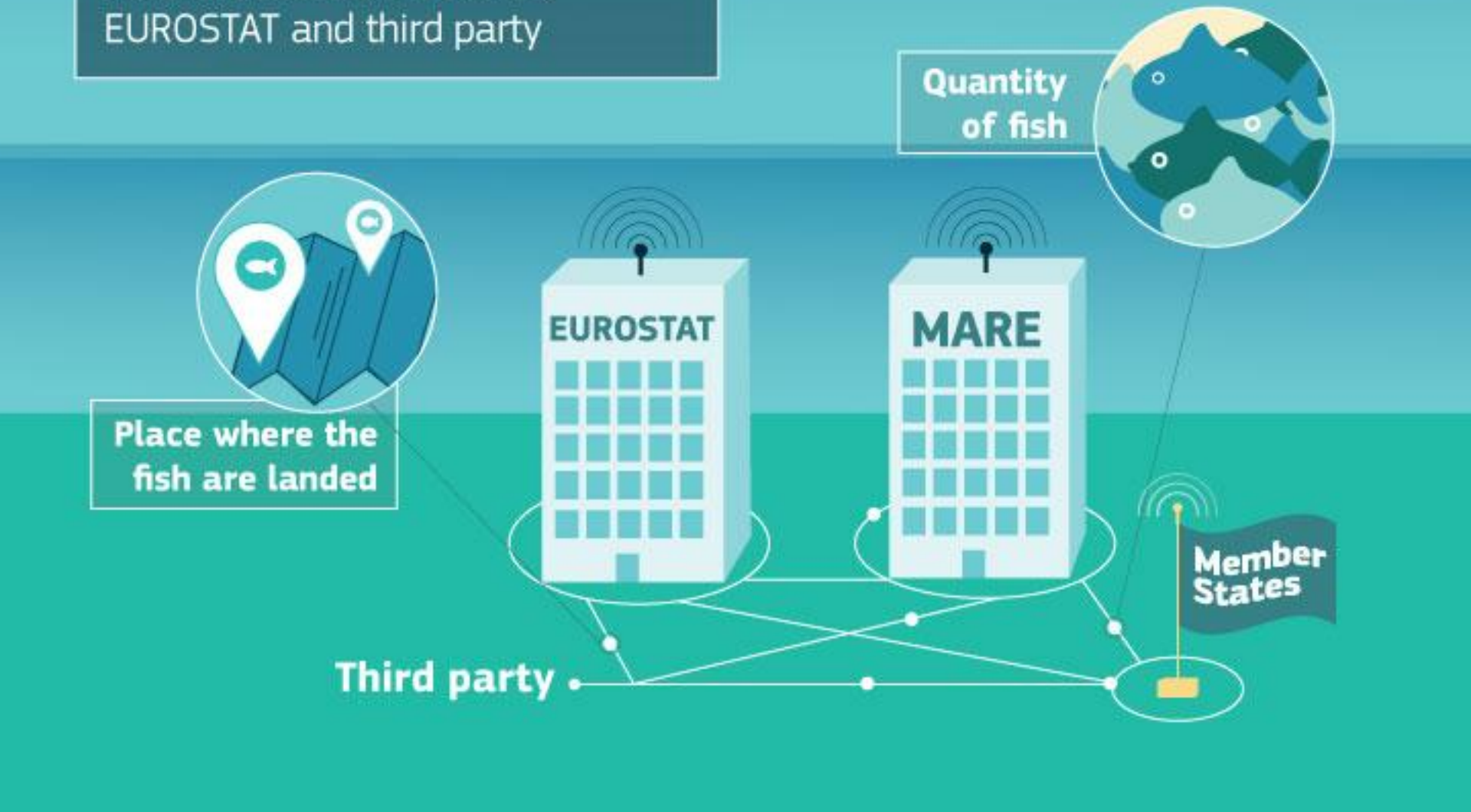
The Master Data Register (MDR) is a central service database with code lists

in the Future
there can be several central services managed by different parties

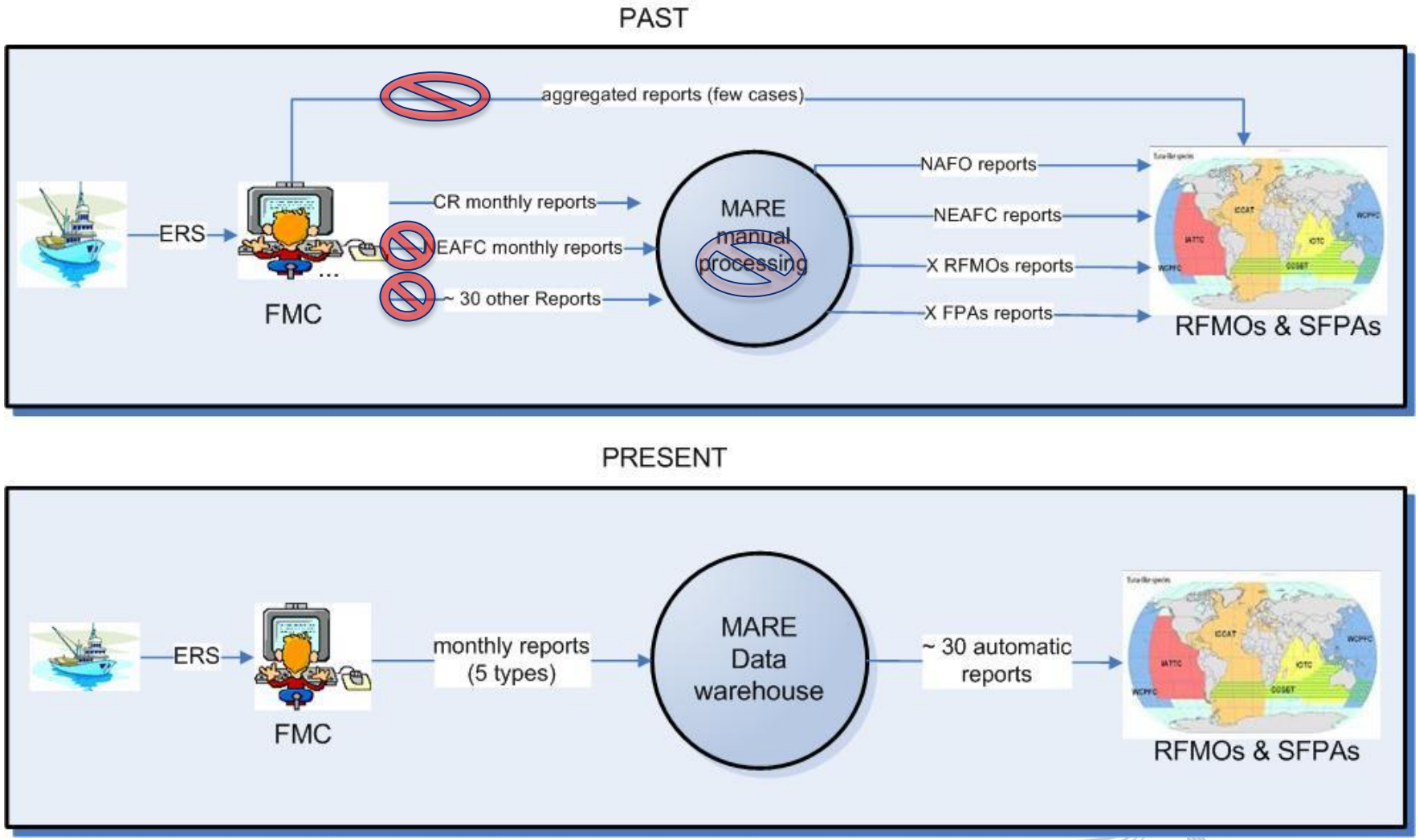
IFDM

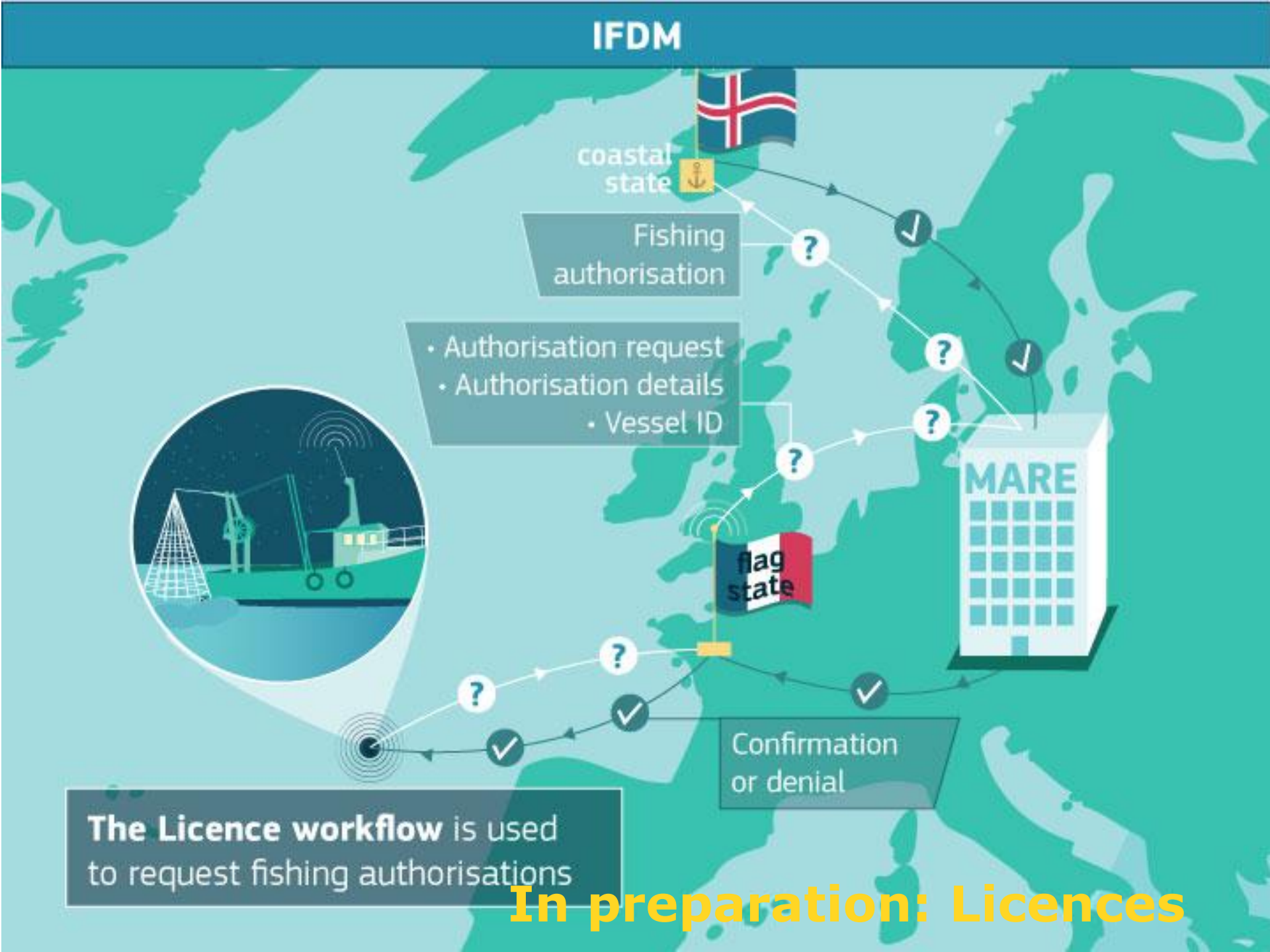
Aggregated Catch Data Reporting is exchanged between Member States, DG MARE, EUROSTAT and third party

Central service: ACDR



ACDR – benefits




IFDM
coastal state
Fishing authorisation
• Authorisation request
• Authorisation details
• Vessel ID
MARE
flag state
Confirmation or denial
The Licence workflow is used to request fishing authorisations
In preparation: Licences

Business community

Please join

Roadmap?

On offer 1

First condition

- Operational FLUX Transportation Layer in RFMO or third country

Fully operational

- Vessel data of EU vessels active in the waters of the third party.
- Aggregated catch reports in XML format of EU fishing activities in the waters of the third party.
- A code lists master data register

On Offer 2

Spring 2015

- The VMS positions of EU vessels fishing in the waters of the third party
- EU-ERS v3.1 messages of vessels active in the waters of the third party

Autumn 2015 onwards

- VMS viewer software

From 2016

- **Complete software suite compatible with UN/CEFACT standards for fisheries:**
  - Receiving/requesting/sending all data
  - Receiving/sending aggregated catch reports
  - Visualising VMS and ERS
  - Analysing and reporting on fishing activities
  - Receiving/Requesting/Visualising vessel data
  - Treating fishing authorisation requests

Main limitations

- **Transportation Layer installed (4 months)**
- **2-4 months to activate a data flow**
  - VMS
  - ACDR
  - MDR
  - Vessel data (temporary)
- **Ready for**
  - Vessel data (standardised)
  - Licences
  - Electronic logbooks

For extra information

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- **IFDM deliverables:**

https://circabc.europa.eu/w/browse/9d6098eb-e128-45ae-a4ca-5703b31d8257

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