



<b>FIRMS Steering Committee Meeting</b>
<b>Ninth Session</b>
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<b>A role for FIRMS in the iMarine initiative</b>
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*The iMarine initiative has involved / been presented to a number of FIRMS members through outreach events and development of applications (e.g. VME-database, NEAFC/ICES VMS data transfer, Chimaera portal, Tuna Atlas, mobile Apps for observer on board). This initiative promotes and contributes to the development of Metadata standards, policies and best practices for data exchange and sharing, and operates a platform for scientific collaborative work in the field of the EAF. Questions were raised by those RFBs involved in iMarine regarding the sustainability of the initiative, and its governance.*

*The White Paper on iMarine sustainability is here shared as information document, and can be used to trigger feedback from FIRMS members who might wish to consider how FIRMS might benefit from this initiative, and which role FIRMS or its Members could take in its governance.*

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## 1. What is iMarine

The sustainable management of fisheries and conservation of marine living resources through the ecosystem approach is a societal issue of global dimension. More and more complex sets of data are needed to support evidence-based decision making and adaptive management, a challenge that no single institution or country can address in isolation. The European Union's programme for e-infrastructures and data infrastructures has been the pathway to integrating data services and tools in a seamless way, increasingly at large scale.

Under this programme, iMarine (<http://www.i-marine.eu>) is a data management infrastructure which offers a set of specialized products addressing fisheries and the ecosystem approach. Unlike organizational (or enterprise) systems, iMarine is an infrastructure which operates across systems administrative boundaries. While being fundamentally distributed, its overall coherence builds on the existence of a central conductor. As community cloud solution with a global remit, it offers Virtual Research Environments (VREs) tailored to the collaborative science needs of the fisheries and ecosystem approach community.

The iMarine Data Infrastructure also offers data services for seamless access to a wide spectrum of data including species data, geospatial data, statistical data and semi-structured data from multiple data providers and information systems. The data catalogue contains predominantly global data sources covering the Physical oceanography, Biodiversity, Fishery resources, and Fisheries domains. They represent a comprehensive array of data types and authoritative sources – governed and managed by different Communities of Practices, that are currently difficult to access from a single infrastructure. Bringing these together removes the expensive effort to establish these links, enables to combine the data in harmonized datasets, and eventually results in a broad range of data services.

The infrastructure ensures that computational resources, specific tools, and data services are open to many different actors and complementary initiatives. With a long-term vision for providing the comprehensive data management solutions required to support the full policy cycle of the ecosystem approach to fisheries at a global scale, iMarine proposes a public partnership centred business model.

## 2. Involvement of RFBs in the iMarine initiative

RFBs, essentially FIRMS partners, have been involved in the iMarine initiative through various application services:

<b>Application</b>	<b>Description</b>	<b>Involved RFB</b>
VME-database	A Report manager for the collaborative editing and dissemination of VME Fact Sheets	NAFO, SEAFO, CCAMLR, GFCM, NEAFC, SPRFMO
NEAFC2ICES VMS data transfer	A VRE which facilitates the access of (ICES) scientists to Vessel Transmitted Information (VTI) and Vessel Activity records stored on the source (NEAFC) server, in compliance with confidentiality policies.	NEAFC, ICES

Vessel activity analyser	The accessed data can be more systematically processed into key geospatial products, that combine information on vessel activity and environmental conditions, so that a better understanding of the impact of spatial distribution of fishing effort and related catch over the resources can be obtained, and consequent management measures adopted.	
<a href="#">Chimaera portal</a> AppliFish	Create web-portals (e.g. Chimaera) or mobile applications (e.g. AppliFish) to disseminate integrated information  The service is based on annotation and indexing tools to enable the portal as a distributed service seamlessly accessing information and data scattered in three independent source information systems (FIRMS, Statbase and WioFish).	SWIOFC
Tuna Atlas	Define, improve and persist data workflows for the collation, pre-processing, analysis, and dissemination in standard formats of fisheries statistical data (e.g. Catch and Effort, Vessel Density). The data are easily shared, stored in statistical data repositories using SDMX, and projected on maps	IOTC
Mobile Apps for observer on board	Enables a data manager to define the assets to use in a smartphone application aimed at collecting field data: <ul style="list-style-type: none"> <li>- forms to use in a smartphone application</li> <li>- applicable reference data</li> <li>- back-end data exchange</li> <li>- additional integration services (maps, statistics, etc...</li> </ul>	CCAMLR, SEAFO
Master Data Management: Code lists management and mapping	<ul style="list-style-type: none"> <li>- dissemination of versioned standard codelists such as species, gear types, etc...</li> <li>- services for organizations involved in fisheries data management to register, or upload their own code lists;</li> <li>- a service to support the mapping among code lists;</li> </ul>	

In the BlueBRIDGE project which will exploit and further strengthen the iMarine platform, new capacities are proposed, of direct relevance to FIRMS partners

<b>Application</b>	<b>Description</b>	<b>Involved RFB</b>
Global Record of stocks and fisheries	Provide scientists with a collaborative and effective production environment for a comprehensive global reference set of unique stocks and fisheries identifiers to support regional or global policy making related to status and trends	All FIRMS partners

	of fishery resources, and responsible trade and consumption practices	
Regional Database supporting stock assessment and fisheries management	Provide scientists with a collaborative and flexible environment for stock assessments and population modelling, with facilities to swap model output to larger modelling frameworks to achieve ecological- and food-web based biological assessments	WECAFC, BOBLME

These developments were driven by the project IT partners under the guidance of the iMarine Board. Few RFB partners (ICES and NEAFC) were active members of the iMarine Board. Others, involved through outreach events, have become members of the iMarine extended Board (ICCAT, SEAFO, GFCM...)

### 3. A governance model for long term sustainability

Whereas the iMarine results demonstrate that the technology is mature, that users who were involved are convinced about the benefits, and that real interest was raised among the community, the challenges are shifting to policy issues with the imperious requirement to identify a governance model ensuring long term sustainability. During the last year of the iMarine Project, a white paper for iMarine sustainability has been elaborated by the project consortium, and published under the title "[Sustaining iMarine: a Public Partnership led Business Model](#)".

This proposed partnership is literally an Enterprise. It is supported by a White Paper which describes how such a partnership would ensure various sources of income to create, deliver and capture value. This business model allows for global coverage, open technologies, knowledge transfer, inclusive networks and sustainable development. It develops a mission statement for the partnership and assesses a baseline business model, considered along with growth scenarios. The main principle underlying the business model is the voluntary contribution of resources by institutional stakeholders. Public institutions will be responsible for maintaining the core infrastructure and the services they have a stake in, while other partners, including private companies can provide specific functionalities and support services which will also generate income to iMarine. All infrastructure partners are committed to complying with the iMarine policies (e.g. data access and sharing policy, legal interoperability, terms of use and privacy policy, technology security & confidentiality arrangements, community Best Practices & Guidelines). This includes a commitment to developing and maintaining the infrastructure by sharing resources on fair terms. The public partnership relies on the principle that Members, among which key user representatives, expect to gain benefits from collaboration. While seeking to realize the benefits, the partner institutions commit to contributing according to their capacities. The **benefits** for users are identified in the Business Model:

- Facilitated access to a comprehensive Data catalogue: allows integrated analyses, data quality improvements, packaged information products;
- New capacities become available: facilitated access to consume high performing computing resources, harmonization services, cross-domain scientific collaboration through Virtual Research Environments, BigData to Science;
- Increased cost efficiencies: cloud hosting solution; software solutions are pooled and reused; development time and cost significantly reduced; access a range of services that an organization alone is not able to provision for its users.

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The **public partnership** thus relies on the principle that users expect to gain benefits from collaboration. While seeking to realize the benefits, the partner institutions commit to contributing according to their capacities, while ensuring that the efforts and contributions remain in balance with the foreseen user benefits.

With the upscaling which such initiative has to face while bringing multiple layers and competencies together, there is a need to set up an appropriate governance mechanism:

- preserving the existing community partnerships and networks and building on their existence;
- introducing a coordination entity enabling governance cutting across those layers with a public mandate; the lead is for a Public partnership;
- relying on specialized agencies for marketing and infrastructure services, with a mix of public and private partners; the additional need is for public-private partnership.

Hence there is a clear recognition of the need to plan “from the very outset” for a role of industry in the partnership and for the future growth of the partnership, in order to expand the footprint of the iMarine solutions and gain a wider outreach and recognition

Eventually, the White paper concludes on the **need for a Public led partnership business model**, which embeds the proposed partnership in the commercial and policy environment, including:

- An SME work force able to "sell" the iMarine platform and to provide technical support/capacity building, plus the required flexibility to respond to the demand and to offer the broad range of functions and expertise required.
- An SME work force provider of IT services with an interest in commercializing either the generic iMarine services, or solutions to specific and highly specialized needs.
- A legal entity (either an existing entity, or new one) representing the partnership, set up as non-for-profit organization, with the capacity to sign contracts and take on financial commitments.
- An effective and strategic representation of "senior users", which could take the form of an Advisory Board.
- Depending on the scope, declared commitments to GMES, EEA, GEOSS, EMODNET, MSFD, INSPIRE, FISHERIES.

With this model in mind, and the identification of the required functions, the White paper has assessed the **Costing** of such enterprise on the basis of the current baseline operations.

At the end of the iMarine project, the objective is to ensure **baseline operations** thanks to in-kind contributions of the core agencies:

- The D4Science infrastructure will be supported by CNR until at least 2016;
- The Advisory iMarine Board is planned to be launched as an instituted community Partnership, with core EA strategic partners;
- Services delivered to early adopter customers, invoiced for the development costs only;
- Manpower available through some current FAO and CNR framework contracts;

Beyond the baseline, the ambition is to step into a **real growth scenario**, based on:

- a not-for-profit Management entity;
- Stakeholders involvement in Steering and Advisory Boards;
- Contractual arrangements with SMEs;
- Membership fee to access selected resources;
- SME Innovation Voucher.

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In order to ensure that the initiative responds to the community needs, it is key to organize the **community governance**. Rules would be:

- Need for a core group of institutional partners, which should play active roles in their respective area, take leadership in their respective sub-community and represent their group;
- A Secretariat should be set-up;
- One meeting per year – travel a priori funded by member agencies;
- Thematic sub-groups can be created on-demand - Projects can support the activities of these thematic sub-groups;

The community governance takes shape through an Advisory Board, which will promote:

- comprehensive public data catalogue;
- practices facilitating harmonization and sharing;
- sharing and reuse of community software and expertise;
- use of iMarine platform – assure outreach and broker role (channel business opportunities)

Technology partners (public) will ensure:

- Continuous upgrade of the infrastructure through addressing IT research challenges
- [Short term] infrastructure maintenance
- Organize SMEs involvement

Technology partners (private) will be the engine of growth:

- Provide industry standards infra operations
- Organize Open Source community for core software maintenance
- Exploit platform services, contributing income generation
- Consulting services at interface between IT and community

#### **4. Questions for FIRMS partners**

FIRMS partners are expected to provide guidance to help further shape the proposed business model through debating on the following questions:

1. What is your opinion on iMarine? Relevance to FIRMS? Relevance to your institution?
2. How to best organize community Governance structure?
3. What role can your organization play in this model?