FISH-X

FISH-X HYBRID CONFERENCE AT WWF EUROPEAN POLICY OFFICE

"THE DIGITAL TRANSITION: NEW TECHNOLOGIES TO SUPPORT SMALL-SCALE FISHERIES"

27 September 2023

Co-funded by the European Union

Summary Report

Fish-X Hybrid Conference "The Digital Transition: New Technologies to Support Small-Scale Fisheries"

Wednesday, September 27, 2023 – 09:00 to 17:00 CEST

Lead Author

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This project has received funding from the European Union's Horizon Europe programme under grant agreement No 101060879.

This conference was organised over a full day by the EU-funded Fish-X project at WWF European Policy Office in Brussels whose purpose was to "believe in a common responsibility to foster sustainable fisheries and marine biodiversity". All presentations of the speakers are available online. The conference was attended by 80+ participants (including 35 in person and 45 remotely) from EU institutions, fisheries advisors from permanent representation of Member States to the European Union, national ministries for agriculture and fisheries, research institute, civil society organisations, advisory councils on fisheries management, producer organisations and the fishing industry. The conference's objective sought to explore the development of technology tools, matching small-scale fishers' needs, which complies with EU fisheries regulatory framework. To kick off the conference and to prepare the ground for later panel discussions and breakout sessions amongst Fish-X and invited fisheries experts, the conference started with the welcoming remarks by Dr. Antonia Leroy, WWF and a keynote speech by MEP Clara Aguilera.

Welcoming remarks: Dr. Antonia Leroy, Head of EU Ocean Policy at WWF European Policy Office and moderator of the conference

Dr. Antonia Leroy thanked everyone for participating in the conference, whether online or in person, to explore the future of digital fisheries in a way that it supports sustainable fisheries management, empowers fishers and drives a fair and just digital transition for everyone. Technology shall be a tool towards a desirable future. With the political momentum given with the soon-to-be-adopted law on EU Fisheries control, the Fish-X project plays a key role in paving the way for the digitalisation of small-scale fishers together with increasing marine knowledge.

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Keynote speaker: MEP Clara Aguilera, Rapporteur of the revised EU Fisheries Control Regulation, Spain, Socialist & Democrats (video message)

Clara Aguilera emphasised the importance of the EU Fisheries Control Regulation as a major political outcome for which the Fisheries Committee of the European Parliament showed strong support. The final text will be voted on October 17, 2023, in the plenary session. She highlighted the push by this forthcoming regulation to digitalise all the fishing sector by 2030, including small-scale fisheries which were exempted until now. Two of the main aims are to achieve the full traceability of fishery products and to simplify the catches' reporting for fishers, thanks to a mobile application used to declare catches and to geolocalise vessels.

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Morning panel discussion: How can digitalisation support SSF management in compliance with EU rule of law?

Yves van Poeke, Head of Unit on Data Management at the DG Mare, kick-started the discussion by explaining the role of the EU Commission in facilitating data sharing between Fisheries Monitoring Centres in Member States and outside the EU. In this regard, the standardisation of data and data exchange is crucial, notably by using the UN/FLUX standard (Fisheries Language for Universal Exchange) and the FLUX-TL Transportation Layer. The OceanStore project, revamping the Commission's fisheries data ecosystem and underlying applications, delivering common features for all FLUX domains and services to the Member States, was presented notably in response to the challenges stemming from the revised EU Control Regulation.

Michèle Dubrocard, Legal Officer at the European Data Protection Supervisor, shed light on the legal aspect of data sharing and data processing. Personal data should be handled with specific care and their processing should comply with the provisions laid down in the General Data Protection Regulation (GDPR) applicable as of May 25th, 2018. Fisheries data may be considered as personal if related with the identification of a natural person. In that case, the following principles should apply: lawfulness, fairness and transparency; purpose limitation; data minimisation; accuracy; storage limitation; integrity and confidentiality; accountability.

Fabian Reith, Fish-X Coordinator, provided a comprehensive overview of the Fish-X project, highlighting the relevance to focus on small-scale fishers that often lack sufficient visibility. As digitalisation can help to bridge that gap, Fabian stressed the importance of collaboration with fisher's by starting three use cases conducted to test the Vessel Monitoring System (VMS) on site. As part of the support for digital transformation, the main outputs of Fish-X are related with the processing of the collected VMS data through a dataspace, and later analysed and made visible by a cartographic user interface, called an Insight platform. Finally, a traceability platform will be set up to enable a transparent mapping of a seafood product from harvest to the plate.

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Marta Cavallé, Secretary General of the Low Impact Fishers for Europe (LIFE) Platform, expressed her satisfaction towards the revised EU Fisheries Control regulation which presents a holistic perspective by including recreational fishers within its scope. She highlighted the importance of using the initial period of Control regulation to co-develop and test thoroughly the digital tools, and the need for fishers to not only be providers of data but also owners and users of it. Also, Marta Cavallé emphasized the fact that monitoring and tracking of vessels at sea will make SSF more visible in the attribution of quota and marine spatial planning. However, it is now more a matter of implementation and digitalisation shall not substitute a proper compliance by Member States to the EU Fisheries regulation.

Hrvoje Čeprnja, Project Officer for fisheries and aquaculture at WWF Adria, who is a member of the Fish-X consortium, focused on the opportunities for SSF (i.e. safety, marine spatial planning, fight 'paper fishers' who live out of subsidies and not for their fishing activities), the requirements for the digital transition to happen (i.e. inclusivity and participation, capacity building, affordability, user friendly) and the relevance of civil society in making this change happening (i.e. enhancing SSF knowledge, trust building, technical assistance).

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Morning Breakout Sessions

All four breakout sessions had a duration of 50 minutes and were attended by in person and remote participants. Each breakout session was structured as follows: short introduction by the moderator, brainstorming on three main questions and a wrap-up of the discussion. Those in person responded out loud while online participants could use an online board to write their feedback on this Miro Board.

PURPLE SESSION: Onboarding SSF in the digital transition: what are the challenges?
Moderator: Laure Guillevic (WWP EPO)
Supporting Fish-X partners: Raquel Pereira and Nicolas Blanc (Sciaena), Immanuel Virdi (Ourz), Hrvoje Cprenja (WWF-Adria)

Background information: Laure Guillevic provided some contextual elements outlining the topic of the session: "Onboarding SSF in the digital transition: what challenges?". First of all, she described what SSF means from an EU regulatory perspective[1] while highlighting that SSF encompasses a complex and multi-faceted reality across the EU and worldwide. Furthermore, she defined the digital transition as the "integration of digital technologies into everyday life"[2] that can "generate novel opportunities that will accelerate the transition to more efficient and

[1] Small-scale coastal fishing is carried out by marine and inland fishing vessels of an overall length of less than 12 metres and not using towed fishing gear, and by fishers on foot, including shellfish gatherers. That sector represents nearly 75 % of all fishing vessels registered in the Union and nearly half of all employment in the fisheries sector" EMFAF Regulation (EU) 2017/1004

[2] https://www.sciencedirect.com/science/article/abs/pii/S0024630118305557?via%3Dihub

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sustainable activities"[3] to better understand how this could be applied to SSF. Finally, she added a layer by giving the reference of the Declaration on Digital rights and principles[4] that can be used to define what a just and desirable digital transition could look like and what principles it should entail. It should also be remembered that one of the objectives of the digital transition is to support achieving sustainability, known as the "green transition", which shall be the ultimate common goal.

Applied to the Fish-X project, the digitalisation of SSF includes the installation of Vessel Monitoring System (VMS) beacons on SSF vessels that collect geolocalisation data to be processed through a dataspace, analysed, and displayed in a marine portal called the Insight Platform. On top of that, an emphasis is placed on seafood traceability with the development of a dedicated application. However, this last tool was not covered by this session.

Thereafter, Nicolas Blanc and Hrvoje Čeprnja detailed the progress of the field work in Portugal and Croatia underlining the resistance and the acceptance they have faced when approaching fishers. Different reactions can be noticed between the two places. In Croatia, fishers are more reluctant to install tracking devices due to the fear of losing "their" fishing grounds and of having additional administration work. The political context is not perceived as being supportive towards the fishing sector, on the contrary, fishers anticipate more fishing area closures and other restrictions. Whereas in Portugal, fishers are more open to participate in the use case and they see this as an opportunity to be more visible and to have geolocalisation data to be heard at the time of discussing new potential aquaculture sites, wind farms and mapping marine protected areas (MPAs) for example to protect their fishing grounds.

Therefore, the breakout session intended to dig how the digital transition can support small-scale fisheries and to identify their current challenges to engage in this way and how these

[3] https://www.sciencedirect.com/science/article/pii/S2468550X22001010

[4] https://digital-strategy.ec.europa.eu/en/library/european-declaration-digital-rights-and-principles

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could be overcome. Ultimately, this shall help the Fish-X consortium to better frame the issue at stake and to co-design digital products that are fit for SSF use.

What are the benefits of SSF going digital?

Based on the feedback received, the main benefits for SSF to go digital can be summarised as follows:

Reduce administrative burden	with automatically generated reports and simplified procedures.
Empower fishers	who will have ownership over the data they produce and how to use it. It will enable them to be more visible to defend their rights (i.e. in marine spatial planning.
Improve fisheries management	thanks to high quality data and traditional ecological knowledge to be inputted into decision-making processes.
Increase seafood traceability	that will bring more transparency and potentially higher value for the seafood products.
Boost safety at sea	
Increase market access	with increased seafood's market value with direct sale.

What are the main challenges?

Losing control over data	because of leaks, weak control system, unaware of where the data goes, and fear that this will uncover fishers' fishing ground.
Aging of the fishers	which impacts generational turnover and the capacity to change habits.
Flaws in the tools' design	due to possible bias reinforcement towards SSF by artificial intelligence, lack of data interoperability.
Digital literacy	which is not part of the fisheries main skills, so fishers do not grasp the full potential of digitalisation.

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Costs	of digital tools acquisition, maintenance, renewal and subscriptions.
Top-down enforcement	that can be perceived as unfair, with little involvement of the sector in the decision and little level-playing field across EU Member States. A feeling that measures are more on the control side than on the monitoring side.
Inadequation with the nature of the fishing sector	with the fact that there is little internet connection at sea and that technology tools are too complex to be used on board.

How to overcome these challenges? How to make digital solutions fit for SSF?

Education and capacity-building	to foster digital literacy at maritime schools together with proposing dedicated trainings to professionals.
Build trust	by being very clear and transparent about the use of the data, going in the field to meet with fishers and to speak the same language in order to build a connection and reciprocal understanding. Engaging with fishers' representatives shall facilitate the process.
Demonstrate the benefits	for and to fishers and showcase the multifunctionality of the digital tools, i.e., for Marine Protected Areas, for fishing rights etc.
Co-develop tools	that shall be fit for SSF, meaning simple and user-friendly, adapted to the fishing sector and its constraints, which shall result from a consultation of the first concerned.
Institutional support	through finances and regulatory measures.

Next steps: The use cases will run until August 2024, therefore the narrative will benefit from the breakout session's inputs to build trust and reassure the fishers. In addition, this feedback will be shared more widely within the consortium for the next activities such as the series of workshops, the development of the digital technologies and the policy recommendations.

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GREEN SESSION: Fisheries data exchange: what are the limitations?
Moderator: Marcel Louwers (north.io); Sarah Gebauer (north.io)
Supporting Fish-X partners: Jean-Pierre Cauzac (CLS)

Additional information: Marcel Louwers explained the basic process and procedure of the breakout session and roughly explained the concept of a Data Space to build a common understanding among participants.

A Data Space can be defined as a federated and sovereign data sharing and management with an open infrastructure, based on common policies, rules and standards. The development of the Fish-X Data Space is ongoing as it is scheduled to run until May 2025.

The breakout session is therefore intended to gather information on the status regarding the exchange of data and to identify initial requirements and needs of prospective users.

In this regard, three questions were asked to the participants by the moderator to initiate a discussion.

How do you exchange data right now and what would you expect in a data space in this regard?

Based on the feedback received, the mentioned data formats can be summarised as follows:

FTAP/	SAS/	Kafka	E-Mail | Excel-File→Flux→naf (ups/ batch)	Big query/ SQL
Spreadsheet (historical, yearly, e.g.)	JSON	CSV	TIFF	

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The query of the formats and the resulting discussion showed that despite existing data management systems, insecure and inefficient data formats such as email and others have not yet been phased out.

What information would you need to become a member of the Fish-X dataspace?

Participants expressed that the following information would help them decide whether a membership of the Fish-X data space might be appropriate:

- Basic information about the **Gaia-X** initiative, its principles and functioning.
- **Transparency about information distribution**. Information must be distributed meaning that silos are not built by placing control in the hands of one company.
- **Decision making**
- Information on the **benefits** of using a Data Space and **providing data** to the EU/ EU-authorities.
- **Incentives** regarding the usage of the Fish-X Data Space.
- Information regarding **data access and its costs.**

Information on **how a data space can help optimize the flow of data and information.** How does a data space help when the data flow is blocked?

How do you control the quality of data? What would help you there?

- An **automated check** of the data status.
- The possibility to run **analysis** after changes (automated and manually)
- The possibility to run manual **error checks**.
- Multiple steps possible instead of just one quality measure
- Replay ability (quality measure can be repeated)
- The possibility to run **deep inspections** and to **compare** data with each other.

Next steps: This breakout session only allowed a slight scratching of the surface. The information and discussion were nevertheless of great importance for the project and its

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further steps, as this is the only way to identify and consider the requirements and needs of the later users. The information and findings will be taken into account in the further course of the project and deepened in further workshops and formats.

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Afternoon panel discussion: The digital transition as a tool for sustainable fisheries management

Luca Marsaglia, Fisheries Analyst at Global Fishing Watch (GFW), highlighted GFW's vision according to which transparency can drive fair, productive and sustainable ocean governance. To do so, Global Fishing Watch can contribute to map some SSF activities with optical and satellite imagery to protect their rights. Through several ongoing projects, Global Fishing Watch team in Europe produces technical outputs presented to international fora such as the Regional Fisheries Management Organisation (RFMO) to advise decisions of fisheries management measures.

Zoi Konstantinou, Policy Officer for the Digital Twin of the Ocean at DG Mare, delivered a video message to detail the objectives of the Mission 'Restore our Ocean and Waters', which seeks to protect and restore marine ecosystems, prevent and eliminate marine pollution and drive climate-neutral activities. She also provided key elements of the European Commission's Vision for the European Digital Twin of the Ocean (EU DTO). The EU DTO will provide the technical prerequisites to consolidate the wealth of European marine knowledge: data from satellites and in-situ through Copernicus Marine, EMODent and other sources, models and tools, Artificial Intelligence and more. The objective is to facilitate the use of this knowledge for environmental protection, effective policy making and sustainable development of the Blue Economy, through the assessment of what-if-scenarios. The first prototype version of the core infrastructure will be delivered by the end 2024, while a fully operational DTO is expected by 2030.

Kate Larkin, Head of Secretariat of the European Marine Observation and Data Network (EMODnet), presented the unified EC marine data service which offers a diverse range of pan-European marine environmental and human activities data to support marine and maritime professionals and society. Its objectives are to collect and aggregate in situ marine data collected by Europe's Ocean observation community and make these data accessible in a standardised and harmonised way, providing integrated pan-European data layers. EMODnet also hosts the Marine Spatial Plans of EU Member States, and produces fully open access

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marine data products e.g. the European-wide Bathymetry digital terrain model, the EUSeamap for seabed habitats and vessel density composite maps. EMODnet is also working with the Copernicus Marine Service to deliver the technical backbone infrastructure and common data lake for the EU Digital Twin Ocean (in 2023-2024 via the Edito-Infra project).

Jean-Pierre Cauzac, Strategic Project Manager at CLS (Collecte Localisation Satellites), is a member of the Fish-X consortium. CLS processes and designs satellite-based solutions and delivers vessel monitoring solutions with the NEMO beacons for instance, which are used in the Fish-X use cases, but also proposes electronic reporting system and favorability maps showing distribution of certain fish species. CLS is in charge of the development of the Fish-X Insight platform which will collect and aggregate VMS data while removing sensitive information and will display SSF activities (automatic detection of fishing and non-fishing, fishing time coupled with fishing effort per statistical area).

Aimée Leslie, Conservation Director at WWF-Peru, shared her experience in implementing the project Trazapp in Peru to develop an Electronic Catch Documentation and Traceability System (eCDT) for SSF. After having looked at the whole supply chains of fisheries, the system was developed with different user entries adapted to each of their needs. Leslie emphasizes the need for the interoperability of the data to foster data sharing and the openness and replications of the system. She pointed out that fishers should have a say about how data is shared and used to increase trust among stakeholders.

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Afternoon Breakout Sessions

ORANGE SESSION: EU ocean2fork: How to foster seafood traceability
Moderator: Immanuel Virdi (OURZ)
Supporting Fish-X partners: Raquel Pereira and Nicolas Blanc (Sciaena), , Hrvoje Cprenja (WWF-Adria), Fabian Reith (TMT)

Overall objectives of the session were defined beforehand as follows: To highlight the importance of traceability in the fisheries sector (especially SSF) and emphasize the role that traceability play for the consumers of seafood products; To outline fundamental information regarding traceability (common def., benefits, drivers, barriers, etc.); To present the approach of Fish-X towards to topic of traceability in terms of the development of the traceability platform; To gather valuable feedback / insights with regards to the conception of the traceability platform / app

General structure

The session started off with an introductory presentation by Immanuel Virdi (OURZ, Fish-X consortium member) dealing with the concept of traceability in the context of fisheries in general as well as highlighting its importance for SSF. The presentation put special focus on the perspective of SSF as well as of the final consumers of seafood products. Additionally, the presentation outlined the specific approach which is applied in the Fish-X project to develop a traceability solution (platform & app), taking the specific needs & requirements of all relevant stakeholders into account.

Preliminary synthesis of results

Topic 1: Data & Consumers	
Guiding questions:	Apart from the legally required information, which information do you deem to be of particular relevance for stakeholders along seafood supply chains?; Focus on the final consumers of seafood products: Which information do you think would be of most importance to the

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	consumers and why?; How can this information be best displayed / communicated to ensure informed purchasing decisions?
Preliminary synthesis of results:	Full traceability form boat to plate should be aspired; questions regarding fairness & sustainability of products; which fishing gear was used is of high interest; stock status; safety indicators; carbon footprint of a given product; awareness campaigns for consumers; QR code solution to display information.

Topic 2: Benefits of traceability	
Guiding questions:	Based on your personal experience and the input received throughout this conference, please discuss the potential benefits of traceability. Focus on SSF as well as on the final consumers of seafood products.; In your opinion, how can these benefits be best achieved?
Preliminary synthesis of results:	Access to markets; reduce/ prevent IUU; increase trust; prevent greenwashing & false claims; fair & transparent value chains; co-management & co-creation of any solution is a must.

Topic 2: Barriers of traceability	
Guiding questions:	Based on your personal experience and the input received throughout this conference, please discuss the potential barriers of traceability. Focus on SSF as well as on the final consumers of seafood products.; In your opinion, how can these barriers be best overcome?
Preliminary synthesis of results:	Diversity of data formats; lack of trust; false reporting/ declarations; lack of incentives; increased effort; different interests of involved parties/ actors; costs/ affordability; collaboration is key to overcome challenges as well as clearly outlining the relevant benefits for all stakeholders.

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Topic 3: Importance of collaboration	
Guiding questions:	In your opinion why is collaboration a crucial factor in achieving effective seafood traceability for SSF?; Discuss the role of different stakeholders and what is needed to ensure successful collaboration?
Preliminary synthesis of results:	Generation of trust is the most important factor (between actors but also towards consumers); increase impact/ positive transformation; share knowledge; align goals and interests.

Conclusion

Overall, the breakout session was very successful and both groups of participants generated valuable insights that will be further analysed and incorporated into the ongoing progress of the project. In this sense an aggregation of all notes and comments brought forward throughout the discussion will take place in order to create content related clusters, which will be used for the general development of the traceability solution but also to give guidance and direction to future stakeholder engaging activities.

YELLOW SESSION: To tailor Insight Platform & Dataspace for sustainable fisheries management

Moderator: Jean-Pierre Cauzac (CLS)

Supporting Fish-X partners: Sarah Gebauer and Marcel Louwers (north.io), Marcus Wiemann (EUTECH)

Objectives

This breakout session was the first opportunity we had since the start of the Fish-X project to really enter into a technical discussion about the design of the Insight platform and related data to be displayed.

The session came at the right moment, after the panel discussion where other marine portal initiatives were presented (Global Fishing Watch, EMODnet), and where Jean-Pierre Cauzac CLS introduced the Insight web portal. He explained on a few schematics how fisheries data sets (e.g. vessel positions) can be received, processed, anonymized, aggregated and

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distributed into the Insight maps, ensuring that the data providers (fishers in this example) remain assured of their data ownership and control their usages. Following this introduction, the main objective of the breakout session was to conduct a co-design exercise to clarify the potential usages, and taking benefit of the variety of participants, each with experience in other cartographic web portals, to recommend the best suited user interfaces.

General structure

The rules of the co-design exercise were made to involve simultaneously the participants in the room and those attending online. On the walls of the room and on a Miro board shared on the monitor, we could see four boxes of questions. The participants were divided also in four groups so Group 1 would start by question box 1 and then move to the next question box 2, Group 2 starts with question box 2 etc.
The four boxes of questions were addressing the following main topics:

Share experience of using fisheries statistics

These questions aimed at collecting user cases, extracts of real-life situations where participants had to collect and analyse fisheries data of different types, organized according to four categories: control data, fish captures and landings, environmental data, others. The idea was to learn more about the potential usages of the future Insight platform. Responses were such as:

Data used: VMS, catch logs, sales notes, environmental designations (zoning?), environmental parameters (salinity, water temperature, tides).

The contexts of use are monitoring and control, marine spatial planning, adaptive co-management. Some mentioned their experience in getting data outdated for their intended use.

Insights on what makes a good user interface

These questions were used to collect user preferences, an important input when designing a user interface, in addition to taking inspiration of similar existing web portals.

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As background maps, we received classic requirements for terrain and marine charts with bathymetry and delimited areas (e.g., Marine Protected Areas contours).

The question that received the most detailed ideas was about the data sets to be displayed: VMS, AIS, satellite images for detection of vessels, catch data (collected from electronic reports), ports and onshore fisheries infrastructure, and environmental maps.
The timescale of data sets was important for the design and dimensioning of computer resources. Several web sites tend to aggregate data on very broad time periods (per year). Here we were asked for daily data sets.

Data sources

Insight will display data collected from various sources, in particular from the SSF vessels. With this box, we addressed detailed needs such as collection of sensors to report fishing gear in/out, water sensors (temperature and salinity), catch logs, predation events (when fish caught in net has been damaged by other fish and loose its market value). Some proposed accessing satellite image vessel detections, CCTV and fishers' interviews.

Which indicators to be displayed in Insight

This box can have a significant impact on the data processing depending on indicator complexity. For instance, during the panel session it was mentioned that fishing time does not have the same impact on fish for a large-scale vessel and a small-scale vessel, so it is important not to create confusion when showing maps of fishing times. Indicators such as species captured, bycatch, fishing effort by area or high-resolution fishing effort, spatial trends, seasonality were of interest.

Conclusion

This co-design session came at the right moment after several webinars and meetings where we heard of existing challenges in small scale fisheries data collection and processing. The ideas collected during the breakout session and during the panel discussions are very useful to CLS, as we are now in the functional specification and design of the Insight platform. The fact that the participants were willing to contribute over a full working day is a positive sign, and the Fish-X project is gaining credibility.

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We now need to translate these ideas into our Insight design and analyse how data sources and indicators can be processed to support the SSF.

Finally, Fish-X is well synchronised with other initiatives to develop governance of marine data storage on sovereign clouds for European institutions, such as new infrastructures for the Digital Twin Ocean (EDITO-Infra), for the EMODnet data portal of the DG Mare, etc. The presence of producer's associations also gave us the opportunity to take contacts for further exchanges, so that the opinions of fishers are put in the balance.

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Concluding remarks: Laure Guillevic, Ocean Policy Officer at WWF EPO

With the finally agreed EU Fisheries Control regulation, a lot more fisheries data coming from SSF vessels will have to be collected, stored and processed. This shall be done in compliance with GDPR with regards to personal data, and to be compatible with EU standards to exchange data (Gaia-X, Flux, NAF). This will soon be in the hands of the Member States to lawfully enforce the regulation. Thanks to this new generated data, a greater understanding and visibility of the SSF shall be made possible in order to meaningfully manage fish resources and to have a seat at the table where the political decisions are taken.

Next steps:

In addition to upcoming workshops on digitalisation with maritime authorities and SSF in autumn 2023, the Fish-X project invites interested stakeholders to express interest in joining its online exhibition with a stand, so as to take advantage from visibility, networking, and presentation of success stories.

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