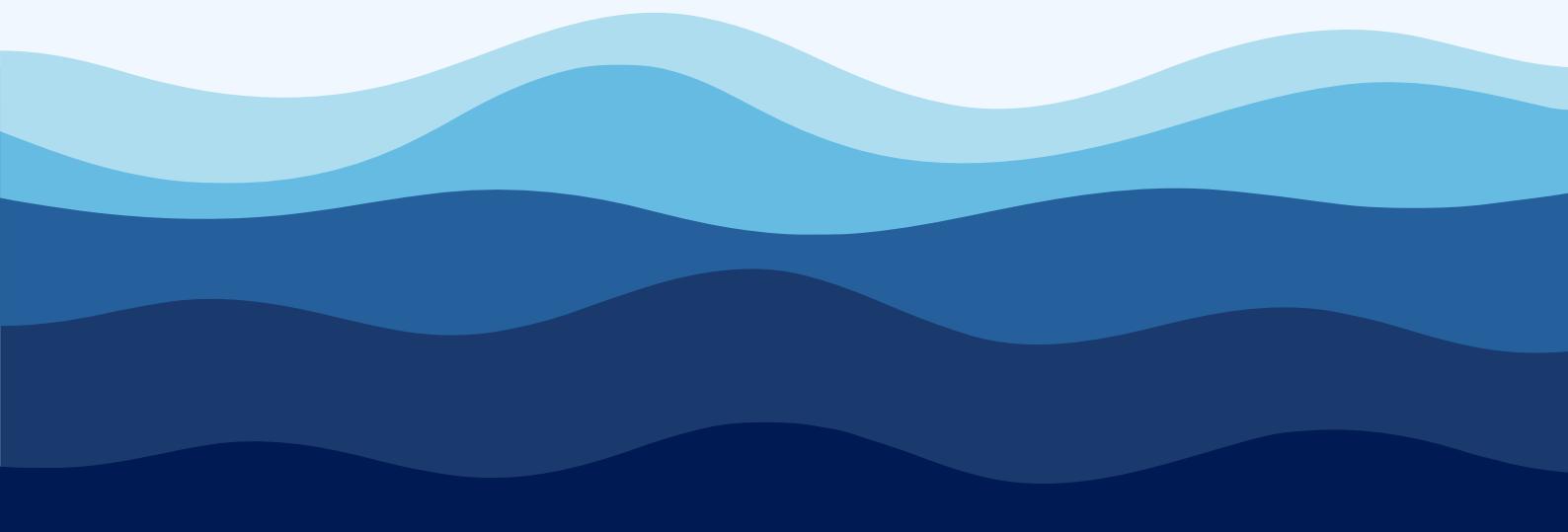# Fisheries Control and Enforcement – Detailed Rules on Base Amending Regulation (EU) 1224/2009

Feedback to the EU Commission

July 2025

About Us

The **DigitalTrade4.EU consortium** envisions a **seamlessly interconnected Europe** and **neighbouring regions** powered by harmonized standards for the digitalisation of trade documents and processes. By fostering the digital transformation of trade, we aim to promote economic integration, enhance cooperation, and ensure long-term trade facilitation across borders.

Our consortium is made up of **experts in their field**, including **107 full partners**—trade associations, logistics providers, shipping lines, banks and insurances, technology innovators, etc.—**from 17 European Union countries** (*France, Belgium, Netherlands, Austria, Estonia, Finland, Italy, Latvia, Spain, Germany, Sweden, Poland, Luxembourg, Lithuania, Slovenia, Denmark, Bulgaria*) and **22 non-EU countries** (*United Kingdom, Switzerland, Montenegro, Japan, Singapore, Hong Kong, Australia, New Zealand, India, Nepal, Canada, United States of America, Cameroon, Morocco, Egypt, Kenya, Pakistan, Nigeria, Brazil, Uzbekistan, Turkey, Ukraine*).

Our consortium is already **aligned with the fundamentals** of the **EU Competitiveness Compass**. Learn more:

1. How DigitalTrade4.EU Can Help Achieve the Objectives of the EU Competitiveness Compass (February 2025)
   https://www.digitaltrade4.eu/how-digitaltrade4-eu-can-help-achieve-the-objectives-of-the-eu-competitiveness-compass/

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1. Executive Summary

The transformation of the **European Union fisheries sector** is both a **necessity and an opportunity**, driven by a confluence of **regulatory, environmental, and economic factors**. As the EU strives to achieve the ambitious objectives set by the **Green Deal**, the **Digital Single Market**, and **international commitments to sustainable resource management**, the fisheries sector faces increasing scrutiny regarding its **environmental impact, transparency, and digital maturity**. **Traditional paper-based controls** and **fragmented information systems** can no longer support the scale and complexity of modern fisheries supply chains, nor can they provide the assurances demanded by **consumers, regulators, and global trading partners**.

This document presents a **holistic and forward-looking set of proposed amendments** to the **EU Delegated Regulation on Fisheries Control and its Annexes**. These amendments introduce and strengthen requirements for **Digital Product Passports (DPPs)**, **interoperability with the eIDAS 2.0 digital identity framework**, **mandatory use of Legal Entity Identifiers (LEI/vLEI)**, and the adoption of advanced technologies such as **blockchain**, **AI-based monitoring**, and **IoT-enabled traceability**. The proposals are designed to **enhance the accuracy and timeliness of reporting**, **reduce opportunities for fraud**, and **foster a culture of compliance and innovation** throughout the fisheries value chain.

Additionally, this report includes a **Digital Trade & Capital Markets Integration Roadmap** specifically tailored to fisheries, outlining **best practices** and **actionable recommendations** for the effective deployment of **digital trade enablers** and **data-driven solutions**. The roadmap highlights how **harmonised digital tools**—already gaining traction in other sectors—can **improve efficiency**, **reduce administrative burdens**, and create new opportunities for **market access**, **sustainable finance**, and **risk-based oversight** in the fisheries sector.

The overall vision articulated here is one where **EU fisheries become a global benchmark for sustainable and digitally integrated supply chains**. By **modernising regulatory requirements**, adopting **interoperable digital infrastructure**, and supporting all actors—including **SMEs and small-scale fisheries**—the EU can **safeguard marine resources**, **ensure fair competition**, and **enhance consumer and market trust**. These proposals lay a **robust foundation** for the fisheries sector to thrive in a rapidly evolving **digital and environmental landscape**.

2. Introduction

The **European Union fisheries sector** has long been a cornerstone of **food security, economic vitality, and cultural heritage** across coastal communities. In recent years, however, the sector has faced increasing pressures from **overfishing, climate change, shifting consumer expectations**, and a rapidly evolving **regulatory environment**. **Global markets and consumers** now demand **verifiable evidence** of **sustainability, legal compliance, and ethical sourcing**. Meeting these expectations requires a **step change** in how **information is generated, shared, and validated** along the entire fisheries value chain.

In response to these challenges, the EU has adopted a series of **strategic initiatives**—ranging from the **Green Deal** and **Biodiversity Strategy** to the **Digital Single Market** and **Data Governance Act**—aimed at transforming industries through **digitalisation and sustainability**. For fisheries, this means embracing **state-of-the-art digital solutions**, from **end-to-end traceability and electronic documentation** to **advanced analytics and interoperable data platforms**. The adoption of **digital product passports, eIDAS 2.0-compliant digital identities**, **real-time monitoring**, and **blockchain-based traceability** is now recognised as essential to ensuring the sector's **competitiveness, compliance, and long-term viability**.

Yet, despite significant progress, **gaps remain**. Many fisheries operators—especially **small-scale and SME actors**—still rely on **outdated systems** or face **barriers to digital adoption**. **Regulatory frameworks**, while evolving, do not always keep pace with **technological innovation** or **market needs**. **Fragmented data systems** impede effective monitoring, create compliance bottlenecks, and increase the risk of **fraud or misreporting**. To address these issues, the present document proposes a set of **targeted amendments** and a **digital roadmap** that align the fisheries sector with leading **international practices** and emerging **EU legal requirements**.

By presenting **concrete legal language, clear justifications, and a sector-specific digital trade roadmap**, this document aims to equip **policymakers, regulators, and industry stakeholders** with practical tools to accelerate **digital transformation** in EU fisheries. The goal is to foster a **resilient, sustainable, and innovative sector**—one that protects **marine resources**, empowers **responsible operators**, and delivers **trustworthy, traceable products** to consumers and global markets alike.

3. Expectations from the Commission's Side: The Objectives

The European Commission expects Member States and stakeholders to **modernise the fisheries control framework** in line with key EU priorities:

- **Enhance digitalisation and interoperability**: All actors and systems must operate seamlessly within a **trusted digital ecosystem**, reducing paperwork, errors, and administrative costs.

- **Improve traceability and transparency**: Supply chains should provide **end-to-end visibility**, from catch to market, ensuring **food safety and sustainability claims** are credible.

- **Streamline compliance and enforcement**: **Data-driven, risk-based monitoring** should replace manual, paper-based processes, optimising resource use and improving the detection of non-compliance.

- **Support social and environmental sustainability:** Reforms must promote the viability of **small-scale fisheries**, **fair competition**, and progress toward EU **climate and biodiversity targets**.

- **Align with the EU's Digital Single Market and Green Deal**: Adoption of **harmonised digital standards and reporting practices** is essential for **cross-sectoral and cross-border consistency**.

4. Proposed Amendments to the EU Delegated Regulation on Fisheries Control and its Annexe

4.1. Fisheries Digital Product Passport (DPP) Requirement

Regulation Text Proposal, Title III – CONTROL OF MARKETING, after Article 12 ("Marking of lots of fishery and aquaculture products"), or as a dedicated Article (e.g., Article 12a)**:**

All lots of fishery and aquaculture products falling under Chapter 3 of the Combined Nomenclature shall be accompanied by a Digital Product Passport (DPP) on base (EU) Regulation 2024/1781 (Ecodesign for Sustainable Products Regulation) in accordance with internationally recognised standards. The DPP shall include traceability information, relevant ESG (Environmental, Social, Governance) data, and be made available in a digital format accessible throughout the supply chain.

Justification: Digital Product Passports are becoming the EU standard for traceability and ESG data. Their use ensures end-to-end transparency, prevents fraud, and aligns fisheries with the EU Green Deal and Digital Single Market. DPPs facilitate reliable tracking from vessel to market, simplify compliance, and unlock new trade and finance incentives. Introducing mandatory DPPs supports consumer trust, streamlines regulatory controls, and strengthens the global competitiveness of the EU fisheries sector.

4.2. eIDAS 2.0 Digital Identity and e-Signature Requirements

Regulation Text Proposal, Title II – CONTROL OF FISHERIES, Chapter II ("Fishing logbook, prior notifications, transhipment declarations, and landing declaration"), as an additional paragraph in Article 7.**:**

All electronic documents, notifications, and data transmissions required by this Regulation, including fishing logbooks, catch certificates, prior notifications, transhipment and landing declarations, shall be signed and exchanged using secure digital identity and electronic signature solutions compliant with (EU) Regulation 2024/1183 (eIDAS 2.0).

Justification: eIDAS 2.0 provides a secure, EU-wide digital identification and trust framework, ensuring legal recognition for electronic signatures and transactions across all Member States. This not only increases trust and enables seamless cross-border recognition, but also greatly reduces the risk of forgery, manipulation, and administrative errors. The adoption of eIDAS 2.0 compliant solutions streamlines regulatory workflows and reduces the burden on both authorities and operators. This supports harmonized implementation of digital fisheries systems and facilitates efficient, paperless administration.

4.3. Real-Time, Automated Fisheries Monitoring and AI-based Risk Analysis

Regulation Text Proposal, Title IV – SURVEILLANCE AND INSPECTION, Section 1 or 2, e.g., after Article 18 or in ANNEX I.**:**

> *Member States shall deploy real-time monitoring and analytics systems, including artificial intelligence or machine learning tools, to support vessel tracking, quota management, and detection of irregular or illegal, unreported and unregulated (IUU) fishing activities. Such systems shall be integrated with national fisheries control and reporting infrastructures.*

Justification: AI and real-time analytics empower authorities to detect non-compliance and illegal fishing instantly, optimize resources, and enable risk-based inspections. Manual or paper-based monitoring can no longer keep up with the complexity and scale of modern fisheries operations. Advanced data analytics improve transparency, deliver targeted enforcement, and minimize administrative overhead. This helps protect fish stocks, supports sustainability goals, and ensures that responsible operators are not disadvantaged by those who violate the rules.

4.4. Blockchain/Distributed Ledger for Catch Certificates and Supply Chain

Regulation Text Proposal, Title III – CONTROL OF MARKETING, as an addition to Article 11.:

> *Catch certificates and associated traceability data shall be recorded and verified, wherever feasible, using secure distributed ledger technology, such as blockchain. The*

use of such technology shall ensure the immutability, interoperability, and real-time verifiability of all key supply chain information.

Justification: Distributed ledgers provide tamper-proof, time-stamped records that prevent manipulation or loss of data, significantly reducing the risk of fraud. They allow for interoperability between different systems and stakeholders, both within and outside the EU, and can streamline audits and compliance verifications. Using blockchain for certificates and traceability increases confidence among authorities, market actors, and consumers in the authenticity of fishery products. This enhances the EU's reputation for food safety and sustainability on international markets.

4.5. Tiered Compliance and Simplified Digital Reporting for Small-Scale Fisheries

Regulation Text Proposal, Title II – CONTROL OF FISHERIES, as a dedicated Article (e.g., Article 7a) or a paragraph within reporting-related Articles**:**

Member States shall provide simplified digital reporting templates and proportionate compliance requirements for micro and small-scale fisheries operators, in order to ensure their effective participation and reduce administrative burdens. These templates and requirements shall be developed in consultation with relevant stakeholders.

Justification: Small-scale fisheries often face disproportionate administrative burdens and lack the resources to implement complex digital systems. Simplifying compliance requirements and providing user-friendly digital tools will encourage their active participation and help preserve coastal community livelihoods. This approach ensures that all fisheries operators, regardless of size, benefit from the digital transition and improved market access. It also helps prevent informality and promotes inclusive, sustainable management of marine resources.

4.6. Integration of Fisheries Control with Customs and Tax Digital Systems

Regulation Text Proposal, Title III – CONTROL OF MARKETING, as a paragraph within or after Article 11.:

Member States shall ensure that fisheries control digital systems, including e-logbooks and catch certificates, are interoperable and linked with national customs and tax authorities' digital platforms, including the EU Customs Single Window, to enable automatic cross-verification and reduce administrative burdens for operators.

Justification: Connecting fisheries data with customs and tax systems ensures consistency and integrity of information throughout the supply chain. This integration reduces the risk of double reporting, accelerates clearance at borders, and helps prevent fraud and errors related to VAT or import/export procedures. Operators benefit from more efficient, streamlined workflows and authorities can deploy risk-based, automated controls more effectively. The result is a significant improvement in regulatory oversight and reduced administrative costs for both government and industry.

4.7. Mandatory Use of Digital Product Markings (QR codes/IoT) for Traceability

Regulation Text Proposal, Annex III ("Marking of fishery inspection means") and Article 12.**:**

Each lot of fishery and aquaculture products shall be marked with a unique digital identifier, such as a QR code, electronic chip, or similar machine-readable device, which enables direct access to traceability, compliance, and Digital Product Passport (DPP) data. Where appropriate, the marking solution shall leverage secure IoT devices and electronic seals (eSeals), as enabled under Regulation (EU) 2024/1183 (eIDAS 2.0), to guarantee the integrity and origin of data and to ensure that ownership and control of supply chain information can be validated at any stage of the process.

Justification: Machine-readable digital labels facilitate quick, error-free access to compliance and traceability data during inspection and throughout the supply chain. This innovation prevents counterfeiting, loss, or tampering with labels, and improves transparency for all market actors—including consumers. Inspectors, traders, and retailers can instantly verify key information, enhancing food safety, sustainability claims, and market confidence. It also helps automate reporting and enforcement, further reducing manual workloads and errors. Incorporating secure IoT technologies and eSeal services, as supported by Regulation (EU) 2024/1183 (eIDAS 2.0), allows for tamper-evident identification and automated, real-time tracking of goods throughout the supply chain.

4.8. Inclusion of DPP/ESG Data in Inspection and Observer Reports

Regulation Text Proposal, Annex I and Annex II (FISH-02.pdf): Add new sections or fields.**:**

> *Control observer and inspection reports shall include dedicated fields for Digital Product Passport (DPP) and ESG data, such as carbon footprint, sustainability certification, and compliance status, to ensure full traceability and support sustainability objectives throughout the supply chain.*

Justification: Adding DPP/ESG data to reports integrates sustainability and compliance into the core of inspection and monitoring activities, rather than treating them as separate issues. This ensures that the collection of data needed for future reporting or market access requirements is seamless and efficient. It also allows for improved analytics, more targeted enforcement, and transparency toward consumers and regulators. Including these fields prepares the sector for upcoming EU and global requirements on sustainability and ESG disclosure.

4.9. Integration with the eFTI Regulation and Digital Freight Data Ecosystem

Regulation Text Proposal, Title III – CONTROL OF MARKETING, after Article 11 or as a new standalone Article (e.g., Article 11a)**:**

> *All digital transmission and processing of transport and logistics information for fishery and aquaculture products, including catch certificates, landing declarations, and traceability records, shall be compatible and interoperable with the requirements and standards set out in Regulation (EU) 2020/1056 on electronic freight transport information (eFTI). Member States shall ensure that fisheries-related data flows are seamlessly integrated with eFTI platforms, enabling the reuse of existing ICT solutions and supporting the creation of a data-driven Single Market for logistics and fisheries.*

> *Where possible, operators shall use globally unique identifiers, such as the Legal Entity Identifier (LEI) or verifiable LEI (vLEI), for the identification of legal entities involved in the fisheries supply chain, ensuring trust and transparency throughout the EU and internationally.*

Justification: The eFTI Regulation establishes a harmonized digital ecosystem for freight information, offering significant efficiency gains for logistics and trade. By ensuring compatibility, the fisheries sector can benefit from the same paperless, integrated data flows as other goods, reducing duplication and administrative costs. Integrating fisheries information with eFTI makes supply chain operations more transparent and traceable, simplifies enforcement, and supports better risk management across borders. This forward-looking approach aligns fisheries management with broader EU digital and logistics strategies, reinforcing competitiveness and compliance.

4.10. Mandatory Use of LEI/vLEI for Organizational Identification in Digital Fisheries Systems

Regulation Text Proposal, Title I – GENERAL PROVISIONS, after Article 2 (Definitions) as a new Article (e.g., Article 2a)**:**

> *All legal entities and organizations participating in the fisheries and aquaculture supply chain, including but not limited to vessel operators, processing plants, exporters, and importers, shall be required to obtain and use a Legal Entity Identifier (LEI) or, where available, a verifiable Legal Entity Identifier (vLEI), for the purpose of digital identification in all electronic systems established under this Regulation. The use of vLEI credentials, compliant with ISO 17442-3, shall be mandatory for authenticating organizational identity, signing digital documents, and enabling cryptographically verifiable provenance across all digital transactions, data submissions, and smart contracts in the fisheries sector. Member States shall ensure the interoperability of their digital fisheries control systems with the global LEI/vLEI ecosystem and support the transition to vLEI-based digital trust frameworks as they become available.*

Justification: The LEI is already a global regulatory standard in finance and trade, uniquely identifying legal entities in a trustworthy, persistent manner. With the advent of vLEI, the fisheries sector can now benefit from cryptographically verifiable, role-based credentials that enable secure automation and cross-border digital trust. Mandating LEI/vLEI eliminates ambiguity in organizational identity, makes fraud or impersonation much more difficult, and enables robust, automated compliance, smart contracts, and interoperability with other EU

digital infrastructure. Adopting LEI/vLEI future-proofs fisheries for digital transformation and reinforces the EU's leadership in digital and sustainable trade.

4.11. Legal Enablement and Protection for Negotiable Cargo Documents (NCDs), including eBL

Regulation Text Proposal, Title III – CONTROL OF MARKETING; all sections covering trade, documentation, digitalisation, and legal equivalence of paper and electronic records:

All transport, trade and compliance documents required under this Regulation, including negotiable cargo documents such as bills of lading (including their electronic equivalents – eBLs) and any other digital or physical documents of title, must be accepted and processed in digital or electronic form in accordance with internationally recognised standards. Legal effect, transferability, and negotiability of these documents shall be ensured in line with the UNCITRAL Convention on Negotiable Cargo Documents (2025), the UN Model Law on Electronic Transferable Records (MLETR), and related EU frameworks. In the absence of an applicable international or national liability regime, the rights, obligations and liabilities of transport operators, consignors, consignees and holders under such documents shall be determined in accordance with the principles of the applicable international conventions and relevant national law.

Justification: The adoption of a uniform legal framework for negotiable cargo documents—including both traditional and electronic forms—is essential to support trade finance, multimodal transport, and the legal certainty of international transactions. The 2025 UNCITRAL draft convention fills a longstanding gap in cross-border trade by extending negotiability and documentary security beyond maritime bills of lading, facilitating both multimodal and unimodal shipments. To ensure genuine documentary security and legal certainty for all parties (including banks and cargo owners), the Regulation must require that minimum carrier liability and enforceable rights are maintained, drawing on international conventions and relevant national law where necessary. This ensures the continued trust and adoption of digital negotiable documents in fisheries, shipping and logistics sectors.

4.12. Harmonisation and Technology Neutrality in Digital Documentation

Regulation Text Proposal, General Provisions and all sections dealing with documentation, data exchange, and digital procedures:

> *All digital documentation and electronic records under this Regulation shall be governed by technology-neutral legal provisions, avoiding unnecessary prescriptive technical requirements, and be harmonised with global best practices to ensure interoperability across borders and between public and private actors.*

Justification: The DCSA report[1] stresses that technology neutrality and harmonisation are global best practices for digital documentation, reducing fragmentation and ensuring wide adoption. Jurisdictions that have adopted such approaches—explicitly allowing eBLs with technology-neutral language—have the highest uptake and the best business cases for digitalisation. This reduces costs, supports SME participation, and prevents the emergence of new digital silos or cross-border trade barriers.

4.13. Capacity Building, Awareness and Risk Management for Digital and Negotiable Cargo Documents

Regulation Text Proposal, Title V – IMPLEMENTATION AND TRANSITIONAL MEASURES; requirements for Member States and authorities**:**

> *Member States shall promote awareness, provide targeted training, and build capacity among authorities, operators, and financial institutions regarding the use, legal implications, and risk management of negotiable cargo documents—including eBLs and other digital documents of title. Member States should also develop guidance on best practices to avoid legal fragmentation and ensure that all stakeholders understand the interplay between the new international UNCITRAL NCD Convention, existing maritime conventions, and national law.*

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[1] DCSA. A report by DCSA, Overcoming legal and regulatory barriers to eBL adoption (May 2024)
https://dcsa.org/newsroom/overcoming-legal-and-regulatory-barriers-to-ebl-adoption

Justification: Successful implementation of digital and negotiable cargo documents depends not just on legal change, but on awareness and operational understanding among all actors. As highlighted by the UNCITRAL process and industry associations, there are real risks of legal uncertainty or conflicting interpretations unless authorities and users are proactively educated. Training and guidance help avoid disputes, protect vulnerable parties (notably SMEs), and ensure that benefits of digitalisation—such as faster trade, reduced cost, and better access to finance—are widely realized. This is especially critical as the 2025 draft NCD Convention introduces a flexible, "opt-in" framework, which will coexist with existing maritime conventions and national laws. Proactive capacity building ensures smooth transition and continued trust in both new and legacy trade processes.

4.14. Clarification of Interplay Between NCD Convention and Maritime Liability Conventions

Regulation Text Proposal, General Provisions (or a new Article under Scope and Legal Effect)**:**

In cases where negotiable cargo documents are used for transport that is wholly or partly by sea, the rights, obligations, and liabilities of all parties shall, in case of inconsistency, be determined in accordance with the relevant international maritime conventions (e.g. Hague-Visby, Hamburg, Rotterdam Rules) and applicable national laws. The provisions of the UNCITRAL NCD Convention or equivalent instruments shall apply only to the extent that they do not conflict with these existing maritime legal frameworks.

Justification: Key industry stakeholders have pointed out that the draft NCD Convention, while intended mainly for non-maritime and multimodal contexts, could unintentionally disrupt well-established liability and risk allocation principles in maritime transport. The shipping sector relies on predictable, harmonised rules for carrier liability and transfer of rights, which underpin the global system for trade finance, insurance, and cargo security. Explicitly stating in the Regulation that existing maritime conventions take precedence ensures legal certainty, prevents forum shopping and legal disputes, and preserves decades of reliable commercial practice in shipping and fisheries logistics. This clarity encourages broader ratification and adoption of both the NCD Convention and digital trade solutions.

5. Digital Trade & Capital Markets Integration Roadmap – Fisheries Sector Applications and Enablers

#	Enabler / Roadmap Element	Fisheries-Specific Application	Connection to Regulation	Key Digital Tools / Enablers (with fisheries relevance)	Expected Impact
1	**Digital Product Passport (DPP)**	End-to-end **traceability** of catch, origin, processing, and ESG data	Mandatory for all lots (Reg. Art. 12a); data included in inspection/ESG	DPP registry, QR codes, IoT tags, mobile DPP readers	**Transparency, food safety, ESG compliance, export market access**
2	**eIDAS 2.0 Digital Identity**	Secure digital **onboarding, authentication, e-signature** for all actors	Required for all digital submissions (Art. 7)	eIDAS wallets, qualified e-signatures, EU trust services	**Legal certainty, reduced fraud, cross-border process automation**
3	**Legal Entity Identifier (LEI/vLEI)**	**Unique, verifiable identification** of vessels, companies, plants, traders	Mandatory for all supply chain actors (Art. 2a)	LEI/vLEI credentials, ISO 17442-3, digital onboarding APIs	**Trust, KYC/AML automation, process integration, fraud prevention**
4	**Blockchain / Distributed Ledger**	Tamper-proof **recording of catch certificates, chain of custody, and trade documents**	Required for traceability & certificates (Art. 11)	Permissioned blockchain, smart contracts, hash-linked audit trails	**Data integrity, anti-fraud, interoperability, auditability**
5	**Negotiable Cargo Documents (NCD/eBL)**	Digital and legally valid **bills of lading** and other **negotiable documents of title**	Legal equivalence (UNCITRAL NCD Convention, MLETR, Art. 4.11)	eBL platforms, MLETR-compliant digital doc stacks, NCD APIs	**Faster trade finance, legal certainty, multimodal/maritime supply chain agility**
6	**eFTI Regulation Integration**	Single digital flow for **freight data**, linking fisheries to EU **logistics** ecosystem	Interoperability with eFTI required (Art. 4.9)	eFTI platforms, UBL/UN/CEFACT data models, Single Window APIs	**Borderless trade, regulatory automation, supply chain efficiency**
7	**AI/ML & Risk Analytics**	Automated, real-time **compliance monitoring, quota control, IUU detection**	Mandated for monitoring & analytics (Art. 18, Annex I)	AI/ML analytics platforms, data lakes, risk scoring dashboards	**Resource optimization, targeted enforcement, rapid fraud detection**
8	**Simplified Reporting for SMEs**	Tiered, user-friendly **digital reporting** for small-scale operators	Proportionate templates for SMEs (Art. 4.5)	Mobile apps, e-forms, API templates, pre-filled compliance checklists	**Inclusion, reduced admin burden, higher SME digital uptake**
9	**Customs & Tax System Integration**	Automatic cross-verification with **EU customs, VAT, and tax authorities**	Data-sharing via Single Window (Art. 4.6)	Customs APIs, EU Single Window, VAT compliance modules	**Reduced paperwork, faster clearance, fraud prevention**
10	**ESG Data Inclusion & Reporting**	Capture and verify **sustainability, carbon footprint, and certification data** in all processes	DPP/ESG data in all inspections/reports (Art. 4.8)	ESG data fields, sustainability certification APIs, dynamic dashboards	**Green finance, market differentiation, regulatory compliance**
11	**Capacity Building & Guidance**	Continuous **training, awareness, and best practices** for all stakeholders	Implementation & transition (Art. 4.12)	E-learning modules, workshops, multilingual guidance materials	**Smooth adoption, lower risk, legal certainty, stakeholder trust**
12	**Maritime Liability Clarity**	Clear legal alignment between **NCD Convention, maritime law, and national rules**	Explicit legal effect (Art. 4.13)	Legal interpretive notes, model contract clauses	**Legal certainty, risk mitigation, trust for banks and insurers**

6. Relevant Use Cases

This section outlines various use cases related to Digital Product Passports (DPPs) and their relevance to the broader goals of strengthening EU leadership in green-digital trade, as presented in the ***DPP4EU Conference Abstract Booklet (2025)[2]***. These use cases collectively demonstrate the versatility of Digital Product Passports (DPPs) in achieving the EU's twin green-digital transition. By enabling traceability, circularity, and compliance across sectors—they directly support regulations like the Ecodesign for Sustainable Products Regulation (ESPR) and the Corporate Sustainability Reporting Directive (CSRD).

6.1. Digital Battery Passport for Maritime Applications

Abstraction: The Digital Battery Passport (DBP) concept, as demonstrated by the "eWAVE" project, provides a standardized, blockchain-secured digital record of batteries used in maritime vessels. The passport tracks each battery throughout its lifecycle, from manufacturing and onboard installation to repurposing and recycling. It includes data on materials, safety, operational use, and recyclability, and ensures that all relevant parties—such as shipowners, operators, authorities, and recyclers—have access to accurate and up-to-date information.

Justification: Integrating DBPs into maritime operations enhances traceability, compliance, and safety for marine batteries. It streamlines regulatory reporting, supports the development of circular business models, and provides credible documentation to regulators and business partners regarding responsible battery use and disposal. This approach accelerates decarbonization and advances sustainability in the EU shipping sector.

6.2. Blockchain-Enabled Traceability for Circular Maritime Supply Chains

Abstraction: Maritime operators can leverage blockchain platforms to create digital product passports for key vessel components and materials. These digital passports serve as tamper-

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[2] DPP4EU Conference. Abstract Booklet (July 2025)
https://digipassforum.eu/wp-content/uploads/2025/06/DPP4EU-1.pdf

proof records, capturing data on origin, maintenance, material composition, repairs, and end-of-life processing. Automated verification and decentralized access facilitate efficient, transparent management of assets across the international maritime supply chain.

Justification: Blockchain-based traceability provides strong proof of compliance and chain-of-custody for maritime components. It reduces the risk of fraud, simplifies audits, and supports new business models such as component reuse and certified recycling. This strengthens regulatory trust, operational efficiency, and alignment with EU sustainability and transparency requirements.

6.3. AI-Driven Lifecycle Assessment and Carbon Footprinting for Ships and Fleets

Abstraction: By combining digital twins, IoT sensors, and DPPs, shipowners can continuously monitor operational data and perform lifecycle assessments (LCA) of vessels, as demonstrated by the Fluid 4.0 project (AI/IoT Digital Twins for LCA and carbon footprint in shipping). AI-driven analytics process real-time data on energy consumption, emissions, and maintenance needs, enabling proactive management of fleet sustainability and compliance with emissions regulations.

Justification: AI-powered lifecycle assessment enables ship operators to reduce carbon emissions, optimize maintenance schedules, and comply with evolving EU environmental standards. It also enhances transparency for ESG reporting and supports access to green financing. These capabilities help position the shipping industry as a leader in digital and sustainable logistics.

6.4. Harmonised Standards and Interoperable Passports for Shipping Equipment

Abstraction: Standardizing digital product passports for maritime equipment, as seen in projects like CLC-SDPP and CIRPASS-2 (Interoperable DPPs for equipment and machinery), enables consistent, interoperable data exchange among manufacturers, ship operators, ports, and authorities. Such passports ensure that essential compliance and lifecycle information travels seamlessly with equipment, regardless of brand or country of origin.

Justification: Interoperable DPP standards eliminate bottlenecks caused by incompatible systems, streamline port and customs procedures, and allow rapid response to safety or compliance issues. They future-proof shipping assets and enable a unified, digital European maritime market that is resilient and efficient.

6.5. Data Spaces and Decentralized Quality Infrastructure in Shipping

Abstraction: The maritime industry can use federated data spaces and digital quality infrastructure to integrate DPPs with certifications, conformity assessments, and regulatory data, as defined in QI-Digital project (Quality Infrastructure Data Spaces for maritime and industrial compliance). This creates a secure digital ecosystem where all stakeholders access real-time, verified information for compliance, safety, and quality assurance.

Justification: Decentralized quality infrastructure reduces compliance risks, administrative costs, and the potential for outdated or fraudulent documentation. It supports automated port inspections, efficient regulatory oversight, and readiness for future digital and sustainability regulations. This strengthens the overall resilience and competitiveness of the EU shipping sector.

7. Conclusion and Next Steps

The proposals outlined in this document represent a **strategic and future-oriented response** to the pressing challenges and opportunities facing the **EU fisheries sector**. By embedding **digitalisation, traceability, and sustainability** into the core of the regulatory framework, the EU can move beyond incremental improvements and achieve **systemic transformation**. The adoption of **Digital Product Passports, interoperable identity and signature systems, real-time AI monitoring, blockchain-enabled supply chains, and harmonised data platforms** will not only streamline compliance but also unlock new sources of value for the entire sector.

Successful implementation will require close **cooperation** between the **European Commission, Member States, national authorities, industry associations, and technology providers**. **Stakeholder consultation** and **collaborative piloting** of new solutions are essential to ensure that regulations are workable in practice and meet the diverse needs of large, small, and micro-operators across all EU regions. **Capacity building** and targeted support for **SMEs and small-scale fisheries** will be crucial to ensure **inclusiveness** and to prevent the **digital divide** from widening within the sector.

Looking forward, the next steps should focus on **launching pilot projects**, **updating digital infrastructure**, and building robust **feedback loops** to monitor progress and inform further regulatory refinement. **Continuous monitoring and reporting**—using the very digital tools and ESG data recommended in these proposals—will ensure that the regulatory framework remains **adaptive and fit for purpose** in a rapidly changing environment.

By taking **decisive action now**, the EU can solidify its **global leadership in sustainable and digital fisheries management**, setting a positive precedent for other sectors and jurisdictions. The path outlined in this document is **ambitious but achievable**. With strong commitment and coordinated action, the **EU fisheries sector** can become a **model for digital transformation and sustainable resource management in the 21st century**.

Appendix 1. EU Green-Digital Trade Leadership Roadmap (DigitalTrade4.EU, 2025)

#	activity	objective	indicative metrics	tools/enablers
1	EU-Singapore DTA & Expand DEPA Partnerships	Strengthen digital trade diplomacy in Asia through high-standard agreements.	- 5+ new digital trade agreements with key Asian partners (e.g., Japan, India, ASEAN) by 2030 - 15% increase in EU-Asia digital services trade by 2028	DEPA framework, EU-Singapore DTA, Global Gateway Initiative, eIDAS 2.0
2	Implement Digital Product Passports (DPPs)	Ensure traceable, sustainable supply chains aligned with EU Green Deal.	- 50% adoption of DPPs by 2030 - 20% reduction in supply-chain carbon intensity by 2030	EU Sustainable Products Initiative, CBAM incentives, UNECE Recommendation 49
3	Fund Secure Digital Corridors in Asia	Build interoperable digital infrastructure for EU-Asia trade.	- ~€2B allocated via NDICI-Global Europe - 10+ blockchain-based traceability pilots by 2027	NDICI-Global Europe, ASEAN digital customs systems, EU Customs Data Hub
4	Harmonize Digital Standards (MLETR/eIDAS 2.0)	Enable cross-border recognition of e-documents and digital identities.	- 90% mutual recognition of e-signatures by 2028 - 70% SME adoption of eIDAS wallets	MLETR framework, eIDAS 2.0, EU Transport Law updates, UN/UNECE protocols
5	Implement LEI and vLEI for Supply Chain Trust	Harmonise and simplify legal entity identification across borders	- 90% entity coverage with LEI by 2030; 50% vLEI use in customs and eFTI transactions	ISO 17442, vLEI, eIDAS 2.0, UNECE UID
6	Launch Green-Digital Trade Academy	Upskill SMEs and officials on DPPs and carbon accounting.	- 40% increase in SME participation by 2027 - 60% cost savings for SMEs	Erasmus+ grants, COSME programme, tiered compliance thresholds
7	Integrate ESG into Trade Finance	Link trade finance to sustainability metrics for cheaper capital access.	- €10B/year unlocked for green trade finance - 30% lower Scope 3 emissions by 2030	InvestEU guarantees, CSRD-aligned reporting, FinTech platforms
8	Enforce Platform Interoperability	Prevent vendor lock-in and empower SMEs.	- 100% compliance with CJEU rulings by 2026 - 50% reduction in platform dominance	Court of Justice of the European Union (CJEU) Case C-233/23, DEPA, eIDAS 2.0, Digital Markets Act (DMA)
9	Global Digitalisation Projects with EU Standards	Extend EU digital infrastructure and norms globally.	- 20+ co-funded projects by 2030 - 80% interoperability with EU systems	Digital Europe Programme, CEF funding, EU-Asia Digital Standards Taskforce
10	Advance UNECE Transparency Protocols	Globalize EU sustainability standards for supply chains.	- 100% alignment with UNECE Rec. 49 by 2028 - 30% reduction in greenwashing claims	UNECE CEFACT, W3C Verifiable Credentials, EU CBAM registry
11	Pilot CBAM-DPP Corridors	Link trade finance to verifiable ESG metrics for tariff incentives.	- 20% CBAM compliance cost reduction - 50% DPP adoption by 2030	IoT carbon trackers, CBAM rebate schemes, EU Customs Single Window

Table 2. The roadmap above, DigitalTrade4.EU's input to the European Commission's "International Digital Strategy" operationalises the recommendations outlined in this document. For instance, Activity 1 (EU-Singapore DTA & Expand DEPA Partnerships) directly supports the harmonisation of international digital standards, while Activity 8 (Global Digitalisation Projects with EU Standards) aligns with efforts to promote dual-use infrastructure globally. These activities collectively reinforce the EU's ability to leverage digital trade diplomacy as a tool for both economic growth and strategic security.