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The Oceans and Fisheries Partnership (USAID Oceans)

MALAYSIA CDT GAP ANALYSIS AND PARTNERSHIP APPRAISAL



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Cover Photo: Community members from Kelantan meet with USAID Oceans to discuss community-based fishing organizations.

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ACRONYMS AND ABBREVIATIONS

ACDS	ASEAN Catch Documentation Scheme
ASEAN	Association of Southeast Asian Nations
BFAR	Bureau of Fisheries and Aquatic Resources
CDT	Catch Documentation and Traceability
CDTS	Catch Documentation and Traceability System
CT	Coral Triangle
CTEs	Critical Tracking Events
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security
eACDS	Electronic ASEAN Catch Documentation Scheme
EAFM	Ecosystem Approach to Fisheries Management
eCDT	Electronic Catch Documentation and Traceability
eCDTS	Electronic Catch Documentation and Traceability System
FAME	Futuristic Aviation and Maritime Enterprises, Inc.
FIS	Fisheries Information System
FMA	Fisheries Management Area
ICT	Information and Communications Technology
IUU	Illegal, Unreported and Unregulated (fishing)
KDEs	Key Data Elements
LKIM	Fisheries Development Authority of Malaysia
MAMPU	Malaysian Administrative Modernisation and Management Planning Unit
MAQIS	Malaysian Quarantine and Inspection Services
MOA	Ministry of Agriculture
MOH	Ministry of Health
NGO	Non-governmental Organization
NPOA	National Plan of Action
PPP	Public-Private Partnership
RPA	Rapid Partnership Appraisal
SEAFDEC	Southeast Asian Fisheries Development Center
USAID	United States Agency for International Development
USAID Oceans	USAID Oceans and Fisheries Partnership Activity
VMS	Vessel Monitoring System

EXECUTIVE SUMMARY

The USAID Oceans and Fisheries Partnership (USAID Oceans) is a five-year regional program working in partnership with the Southeast Asian Fisheries Development Center (SEAFDEC) to strengthen the sustainability of Southeast Asia's fisheries and enhance fisheries management through electronic catch documentation and traceability (eCDT). As such, USAID Oceans is assisting the Malaysia Department of Fisheries (DOF) through targeted technical support to strengthen its capacity to implement an electronic catch documentation and traceability system (eCDTS). Currently, a majority of the administration's catch documentation is manual and paper-based, although there are a number of initiatives already in place to digitize elements of catch documentation in the country. The data collected is still largely managed under various databases housed across different ministries, with much room for further consolidation and integration.

DOF Malaysia expressed interest in collaborating with USAID Oceans to assess its current implementation of catch documentation and traceability (CDT) through a gap analysis, rapid partnership appraisal, and development of a road map for implementing an eCDTS that will support the country's compliance with U.S. and EU market requirements in the near term and other importing country requirements in the long-term. This appraisal presents key findings and recommendations, based upon consideration of the existing drivers towards eCDT from a socio-economic, policy and technology perspective, complemented with a rapid assessment of relevant private sector themes around eCDT. Key findings acknowledge the building blocks already in place within Malaysia's seafood sector that could immediately be harnessed for implementation of an eCDTS.

Finally, the assessment presents possible pathways for the Government of Malaysia, as well as its partners, towards setting up a comprehensive national eCDTS. These recommendations are clustered as near-term (zero to six months), short-term (six to twelve months), mid-term (one to two years), and long-term (two to three years), and range from the pursuit of a joint study paper between the DOF and the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU), harnessing electronic traceability solutions for a robust eCDTS, collaborating with USAID Oceans on possible public-private partnership opportunities, codifying CDT officially within policy and regulations, and leveraging eCDT as an opportunity to engage and dialogue with industry towards sustainable fisheries management beyond just export compliance.

I. INTRODUCTION

The U.S. Agency for International Development (USAID) Oceans and Fisheries Partnership (USAID Oceans) is a five-year activity that strengthens regional cooperation to combat illegal, unreported and unregulated (IUU) fishing and conserve marine biodiversity in the Asia-Pacific region. USAID Oceans seeks to improve integrated fisheries management, focusing on priority species that are vital for food security and economic growth and under threat from IUU fishing and seafood fraud. To improve transparency in the seafood supply chain, USAID Oceans supports the development and implementation of electronic Catch Documentation and Traceability Systems (eCDTS). To support its objectives, USAID Oceans engages a variety of fisheries stakeholders to form new partnerships among governments, regional institutions, and the private sector.

As part of its mission, USAID Oceans is assisting the Malaysia Department of Fisheries (DOF) through targeted technical support to strengthen its capacity to implement an eCDTS. Currently, a majority of the administration's catch documentation is manual and paper based, although there are a number of initiatives already in place to digitize elements of catch documentation in the country. The data collected is still largely managed under various databases housed across different ministries, with much room for further consolidation and integration.

DOF Malaysia expressed interest in collaborating with USAID Oceans to assess its current implementation of CDT through a gap analysis, rapid partnership appraisal, and development of a road map for implementing an eCDTS that will support the country's compliance with U.S. and EU market requirements in the near term, and other importing country requirements in the long-term. USAID Oceans is also working with DOF and industry stakeholders to identify and develop strategic public-private partnerships (PPPs) that can support eCDTS implementation, sustainable fisheries management and improved human welfare in Malaysia's fisheries sector.

I.1 Objectives

Recognizing that DOF has already begun to address IUU fishing through catch documentation and traceability (CDT) over the last few years, the aim of this assessment was three-fold:

1. Assess the status of the existing CDT system in Kuala Lumpur and Kelantan, Malaysia (as a sample site) to determine any gaps and issues that may hamper the full implementation of traceability of fisheries products in the entire supply chain, including surrounding issues related to gender and human welfare;
2. Complete a Rapid Partnership Appraisal (RPA) for Malaysia to identify a select number of high-impact PPPs in Kuala Lumpur and Kelantan, Malaysia, as appropriate; and
3. Recommend a roadmap for addressing the gaps in Malaysia's current CDTS and transitioning towards a full eCDTS.

I.2 Methodology

USAID Oceans has developed recommendations and standards for eCDT systems that are fully transparent, sustainable and comply with national and international market requirements. As outlined in USAID Oceans' *Fisheries Catch Documentation and Traceability in Southeast Asia: A Conceptual Overview (CDT 101)* and *Fisheries Catch Documentation and Traceability in Southeast Asia: Technical Concept and Specifications (CDT 201)*¹, the shift towards a fully compliant eCDTS requires supply-chain wide transformation that takes the best of the current

¹ <https://www.seafdec-oceanspartnership.org/resource/cdt101/>, <https://www.seafdec-oceanspartnership.org/resource/cdt201/>

system and migrates key data elements (KDEs) from critical tracking events (CTEs) into an efficient, secure, and transparent data management platform. Figure 1 describes this shift.

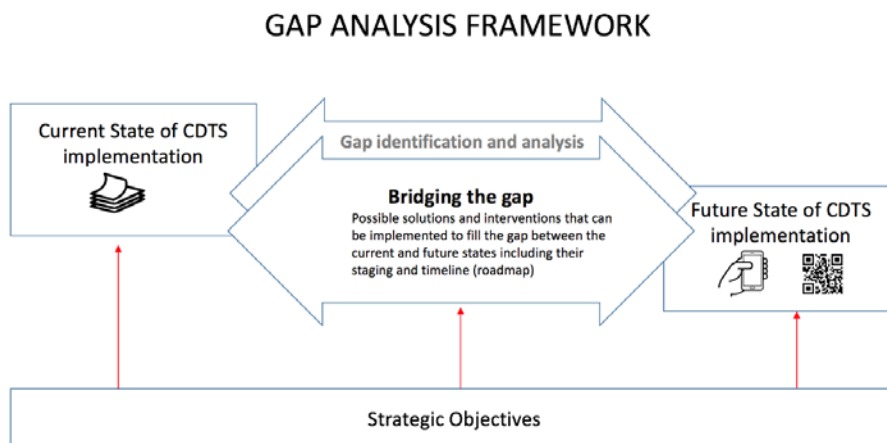
Figure 1. A graphical representation of current versus future data capture across a generic seafood supply chain in Southeast Asia, as recommended by USAID Oceans

Seafood Supply Chain	At sea capture (small scale; >4 to <30 MT)	At sea capture (medium scale; >30 MT)	Port	Buyer/Broker	Shipper (land or boat; domestic)	Processor (1 st , 2 nd etc.)	Shipper (air or ship; export)
Current: Typical data capture method (not integrated across supply chain)							
	None, or paper	None, or paper	Paper or electronic	Paper or electronic	Paper	Paper and electronic	Paper and electronic
Who	Captain	Captain	Company and Port Authority (government)	Buyer/Broker (company or agent)	Shipper (company)	Processor (company)	Shipper and Export Authority (government)
Data/Document Type	Logbook and Captain's certificate	Logbook and Captain's certificate	Catch certificate / document	Purchase order	Manifest or delivery order	Raw material, batch ID; finished good ID	Certificate of Origin; Packing list; Health certificate; Bill of lading
Future: Data capture method via USAID Oceans' CDT System (integrated across chain)							
	Mobile data collection device; pushed to DEX*	Mobile data collection device; pushed to DEX	Mobile data collection device; pushed to DEX	Data submission into DEX; cloud storage	Data submission into DEX; cloud storage	Data submission into DEX; cloud storage	Data submission into DEX; cloud storage
CDT data submission method							
	Cell or satellite	Cell or satellite	Cell or WiFi	Internet	Internet	Internet	Internet

*Data Exchange (DEX)

In the conduct of this gap assessment, “gap” refers to the space between the present state (“where we are”) and the target state (“where we want to be”). It could also be viewed as a “needs assessment” or “need-gap analysis” in that challenges and opportunities are presented alongside priorities and timeframes to bridge the gap towards current capabilities and an ideal eCDTS (Figure 2).

Figure 2. Gap Analysis Framework



Source: USAID Oceans Gap Analysis Framework

To ensure consistency, the study closely followed the same approach used by USAID Oceans to conduct CDTs gap assessments in General Santos, Philippines; Songkhla, Thailand; and Hanoi and Nha Trang, Vietnam. The gap assessment and rapid partnership appraisal was conducted over the course of three months from February to April 2018, through discussions with over 60 stakeholders from government, civil society, and industry actors. A follow-up Validation Workshop was held in October 2018 to complete the research process. The following activities were conducted to inform the gap assessment and rapid partnership appraisal:

- **Desktop Research and Team Discussions.**

Research was conducted on CDT-related policies and initiatives in Malaysia. This was complemented by a series of internal technical discussions within the USAID Oceans team on related developments at the ASEAN level and across other learning sites relevant to Malaysia. This helped establish the parameters for the gap assessment as well as provide the relevant policy and ecological frameworks for consideration under the assessment.

- **Gap Assessment Workshop.** USAID Oceans convened several high-level representatives from DOF, the Ministry of Agriculture, Malaysian Quarantine and Inspection Services (MAQIS, Malaysia Maritime Enforcement Agency, Ministry of Health (MOH), Customs, Malaysian Administrative Modernisation and Management Planning Unit (MAMPU), Ministry of Science, Technology and Innovation (MOSTI), Fishermen Development Authority (LKIM), and other relevant agencies, including NGOs such as WWF, on February 21-23, 2018, to map out current platforms, protocols, issues, challenges and opportunities related to CDT, as well as identify practical pathways forward.
- **Field Visits.** On February 26-28, USAID Oceans observed landing activities and catch documentation-related processes in Kelantan, Malaysia as supervised by the DOF and Fisheries Development Authority of Malaysia. Several discussions were also facilitated with industry stakeholders from the fishing, processing, and exporting segments of the value chain.
- **Focus Group Discussions (FGDs).** Complementing the Gap Assessment Workshop and the Field Visit, several FGDs were facilitated with specific offices and divisions under various ministries to run-through some key initiatives and relevant information communication technology (ICT) programs, as well as with industry to identify concerns and areas for possible collaboration. The discussions generated key insights on the current political and economic environment informing interest towards eCDT in Malaysia.
- **Analysis and Report Writing.** Following the research and engagement outlined above, USAID Oceans processed all inputs for discussion and action planning.
- **Validation Workshop.** Lastly, USAID Oceans held a Validation Workshop on October 8, 2018, to validate, refine, and finalize the CDT Gap Assessment and Rapid Partnership Appraisal, as well as secure commitments from relevant ministries on how they intend to take onboard the findings and recommendations of the report.



(Top) USAID Oceans' team with Malaysia government agencies consulted during the Gap Assessment Workshop; (Bottom) USAID Oceans and workshop participants map out current CDT platforms.

1.3 Limitations

All lines of inquiry, data collected, and information processed under this assessment is focused on CDT-related matters. To maintain its focus, this report does not dive into country-level statistics or sectoral profiles as these can be found elsewhere in the literature. Where key statistics are relevant they are discussed and processed in relation to CDTS. The assessment is also inherently limited to secondary review (desk study), with information and inputs gathered and validated largely from the gap assessment workshop.

1.4 Organization of the Report

This report is organized into four principal sections:

- **Baselining Malaysia's current CDTS** maps out Malaysia's current capabilities informing CDT within Malaysia;
- **Rapid Partnership Appraisal** provides an overview of private sector CDT engagement;
- **Key Findings** presents the most significant insights generated over the course of the assessment critical towards understanding the various challenges and opportunities surrounding eCDT in Malaysia; and
- **Recommendations** presents a very practical roadmap on which aspects of Malaysia's eCDTS-readiness should be prioritized for further development as the country continues its journey towards establishing a full eCDTS.

2. ASSESSING MALAYSIA'S CURRENT CDTS

Any attempt to establish a baseline for a country's CDT capacity requires a clear understanding of the overarching socio-economic factors, policy context and the available technologies influencing government and industry uptake. Malaysia is no exception to this rule. Based on a rapid review of secondary literature, it would appear that the country's unique trading position in the ASEAN region as well as its distinct political history demands that special attention be given towards Malaysia's own CDT journey to acknowledge specific motivations, restrictions and challenges. As such, this report breaks down the current landscape enabling catch documentation in the country, from socio-economic, policy and technological perspectives.

2.1 Socio-economic Drivers for CDT

Based on the Annual Fisheries Statistics of the Department of Fisheries Malaysia (2016), the value of Malaysia's capture fisheries was RM10.26 billion, which included fishing activities representing 132,305 fishermen and 53,190 vessels that landed close to 1.6 million metric tons of fish (Table 1).

Table 1. Number of Fishermen, Vessels, Landing Volume, and Value of Malaysia's Capture Fisheries by Zone

Fishing Gear	Zone A Traditional, Anchovies Purse Seiner	Zone B Purse Seiner, Trawler (0-40 GRT)	Zone C Traditional, Purse Seiner, Trawler (40-70 GRT)	Zone C2 & C3 Traps, Purse Seiner, Trawler, Long Liners	TOTAL
Fishermen	79,513	20,844	16,821	15,127	132,305
Vessel	44,586	5,757	2,027	820	53,190
Landing (MT)	440,447	360,035	394,878	379,087	1,574,447
Value (RM)	4,012,407,061	2,101,710,873	2,303,083,240	1,759,030,937	10,176,232,112

Source: Annual Statistic 2016 DOF

Trawlers and purse seiners contribute to 75% of all capture fishing efforts in the country, with the remaining 15% from traditional fishing methods. According to the DOF², tuna represents merely 5% of the total marine catch in Malaysian waters, highlighting a multi-species industry.



The Kelantan Fish Port, as observed through USAID Oceans' field visits.

Over the last decade the contribution of Malaysia's fisheries sector to its gross domestic product has largely stayed within 1 to 2%³, largely owing to the nation being a net importer of fish, both from capture fisheries and aquaculture. Notwithstanding, the sector has been consistently cited as a good source of foreign exchange, it continues to be challenged in terms of keeping up with the growing demand for seafood in-country. Per capita consumption of fish continues to rise with growing population trends and increasing affluence. This is further compounded by a significant amount of high-value fish species such as shrimp and tuna being Exported, which has traditionally been addressed

through the import of fish from neighboring countries like India and China.

Based on 2007 statistics⁴, Malaysia's fisheries import-export could be described as diverse, and unlike its neighbors in the region, it does not necessarily cater to the EU market (Table 2).

Table 2. Malaysia's Import Sources and Export Destinations

Import Sources	%	Export Destinations	%
China	21	US	24.5
Thailand	19.8	Singapore	13.2
Indonesia	15.1	Italy	9.3
Vietnam	8.6	Japan	7.2
Myanmar	5.1	China	6.2
India	4.8	Australia	5
Others (US, Taiwan, Pakistan, Japan, Norway)	25.6	Others (e.g., Korea)	34.6

Source: FAO (2007), *Fishery and Aquaculture Country Profiles*

These statistics indicate that Malaysia's significant dependence on several Asian countries for its seafood supply—trading partners which may or may not have robust control mechanisms for catch documentation—may potentially affect Malaysia's competitiveness and compliance to regulations set or soon to be set by its top export destinations. From a trade perspective, eCDT therefore becomes relevant as it addresses this economic reality and facilitates smooth flow of traceable seafood from its importing partners to its export destinations. This point is further explained in Section 4.

2.2 Policies Informing the Current CDTs

The conservation, management, and development of capture fisheries in Malaysia is governed under the Fisheries Act of 1985 (Act 317). The law outlines a rule-based approach for fishing within Malaysian waters that requires an application and maintenance of the correct license and observance to strict zoning in accordance to the operating license. The intent of the law is to manage and limit fishing efforts across Malaysia

² DOF (2014). Malaysia National Report to the Scientific Committee of the Indian Ocean Tuna Commission for 2014

³ FAO (2008). Contributions of fisheries and aquaculture in the Asia and the Pacific Region

⁴ FAO (2007). Fishery and Aquaculture Country Profiles.

through the control of license allocations per vessel and gear type, across zones (Figure 3). In so doing, the law also empowers the DOF with a range of powers to create and implement supporting regulations, and the Malaysia Maritime Enforcement Agency (MMEA) to enforce those regulations.

Figure 3. Zoning under the Fisheries Act of 1985 (Act 317)



Note: for West Coast Peninsula only referring to Kedah, Penang, Perak and Selangor coastal areas only. Source: DOF

While CDT is not directly mentioned under this law, the Act's emphasis on licensing and zoning have significantly influenced how the DOF has, over the years, prioritized capacity building and digitization around these two facets, specifically resulting in the use of sophisticated e-licensing systems and real-time vessel monitoring systems (VMS), respectively. It is also worth noting that, according to interviews, the Fisheries Act is currently in the process of being considered for amendment, with traceability being a key feature of the draft revised law. At the time of writing, no new licenses were being issued by the DOF.

Various other legislation and regulations have put in place to establish controls for related dimensions of fisheries management, import and export, health and safety and complement the Fisheries Act, as summarized in Table 3. In addition to these laws and regulations, the Ministry of Agriculture (MOA) and

DOF released a *National Plan of Action (NPOA) for the Management of Fishing Capacity in Malaysia* in 2015. It outlines in detail the country's strategies to achieve its objective of an *efficient, equitable, and transparent* fisheries sector. The choice to prioritize these three characteristics is of particular interest as it lends very well to the intent and spirit of CDT, which is discussed in subsequent report sections.

Table 3. Malaysia's Registration and Regulations on Fisheries Management, Import and Export, and Health and Safety

Legislation	Regulation	Intent	Responsible Agency
Malaysia Fisheries Act of 1985	Fisheries Regulations 1976	Establishes rules for Sarawak Maritime activities	DOF
	Fisheries Regulation 1980	Prohibited Methods of Fishing	
	Fisheries Regulations 1985	Licensing of Local Fishing Vessels	
	Fisheries Regulations 1994	Prohibited Areas	
	Fisheries Regulation 1999	Control of Endangered Species of Fish	
	Fisheries Regulation 2009 & 2010	Quality control of fish for export to EU	
Lembaga Kemajuan Ikan Malaysia Act 1971 (Act 49)	Fish Marketing Rules 2010 Lembaga Kemajuan Ikan Malaysia (Fisheries Complexes, Fisheries Harbours, and Fisheries Landing Jetties) Rules 2010 Lembaga Kemajuan Ikan Malaysia		Fisheries Development Authority of Malaysia (LKIM)

	(Recognition of Fish Landing Site for Fish Export to The European Union) Regulation 2010		
Malaysia Quarantine and Inspection Services Act 2011	Regulation 2013	Registration of Importers, Exporters and Agents	Malaysian Quarantine and Inspection Services (MAQIS)
		Issuance of Permit, License and Certificate	
		Quarantine Procedures	
		Fee and Charges	
Food Act of 1983	Food Regulations 2009 Issuance of Health Certificate for Export of Fish and Fish Products to EU	Issuance of Health Certificate for Export of Fish and Fish Products to EU	Ministry of Health (MOH)
		Fish Product Hygiene Standards	
	Food Hygiene Regulations 2009		
	Food Irradiation Regulations 2011		
	Food Analysis Regulations 2013		
Food Compounding 2017			

Source: USAID Oceans Analysis

The NPOA delineates the roles of various agencies in the implementation of anti-IUU fishing regulations. These regulations range from managing the issuance of fishing gears and licenses, registration of fisherfolk, zoning based on tonnage and gears used in vessels, conservation and rehabilitation of critical marine ecosystems, prohibition of destructive fishing methods and gears, and the imposition of specifications for trawl nets, among others. For this assessment’s purposes, these were validated over through the Gap Assessment Workshop with the lens of IUU fishing, and in broad categories, the responsible agencies are categorized in Table 4.

Various agencies are involved in implementing anti-IUU fishing regulations across Malaysia, with several policies being enforced by multiple agencies and therefore several key responsibilities falling outside the scope of DOF. While DOF may have been seen, prior to this assessment, as the traditional focal point for anti-IUU fishing efforts—and by extension CDT—the reality is that different agencies have developed their own resources, capacities, and processes to address IUU fishing, often to varying degrees of sophistication. This applies to CDT as well.

Table 4. Regulatory Theme and Responsible Agencies

Regulatory Theme	Responsible Agencies
Combatting IUU / Enforcement	MMEA, DOF, Marine Police
CDT / Industry Engagement	DOF, LKIM, MAQIS, MOH, Customs, Marine Department
EAFM / Fisheries Management Planning	DOF
Fisheries Information Systems	DOF, LKIM, Marine Police, MMEA, Customs
Social Welfare	LKIM, DOF
Gender	Ministry of Women, Family and Community Development
Labor	Ministry of Human Resources

Source: USAID Oceans Analysis

On the positive side, this dynamic has allowed responsible agencies to hone their expertise into their specific anti-IUU domains and invest in systems to collect and manage related data. On the negative side, this has led to a siloed approach to fisheries management in regard to the collection, management and sharing of data, with the existence of multiple, and to some degree, redundant databases limiting efficient transactions within government and with industry.

To demonstrate, USAID Oceans has broken down how these various responsible agencies and their diversity of mandates, programs, and requirements form part and parcel of what is the current CDT regime in Malaysia. Table 5 presents and maps out a typical “customer journey” for operators across fishing zones and export

destinations and the varying requirements and government touchpoints this customer-company must comply with to complete its transaction.

Table 6 describes these requirements in further detail in accordance to the relevant agencies overseeing them while also attempting to provide an estimate of how much these agency-specific requirements form part of the whole customer journey. DOF-related requirements represent close to 40% of the whole compliance regime around catch documentation, however it is worth noting that requirements outside DOF, particularly from LKIM, MAQIS, and Customs, comprise 50% of the total process. While these are only broad estimates, what this indicates is a broad if not tedious spread of documentation and obligatory transactions imposed upon company-clients. Company responsibilities aside, this begs the question of whether or not there are overlaps between the data being collected by the multiple agencies, if there have been efforts to streamline cross-department requirements, and what the opportunity costs as well as the potential gains are in terms of increasing the efficiency of the whole cycle.

Focus group discussions with government stakeholders revealed that while agencies view the current system to be “working,” they agree that improvements could be made to enhance customer experience, reduce redundancies, and translate documentation into data and analytics that can be actively used for fisheries management across the board. Building from this realization, the role of an “omnibus” CDT policy defining how different agencies will organize their processes and data was highlighted as a priority by the same government stakeholders. It was also shared by a number of MOA officials that there is fortuitously a policy and technological precedence to such a directive, referring to how the Customs Ministry recently established a one-stop-shop system for imports and exports linking various government agencies. Many of those who participated in the assessment agreed that this initiative should be treated as a possible model for government attempts to establish a cross-Ministry eCDTS.

Table 5. A Typical “Customer Journey” for Operators Across Fishing Zones and Export Destinations, and Requirements and Government Touchpoints

Seafood Supply Chain / Responsible Agency	At-sea Capture (small scale)		At-sea Capture (commercial)			Port			Transit *pass through only	Trans-shipment *break bulk	Importer *land or boat for domestic use	Buyer/ Broker	Processor	Exporter
	A	B	C	C2	C3	A/B	C2	C3	A-C3	A-C3				
DOF	License		License AIS	License VMS	License VMS Hygiene maintenance	Prior notice of landing > 6 hrs before	Prior notice of landing > 6 hrs before LOV	Prior notice of landing > 6 hrs before Annex I Logbook emailed					Catch Certificate Application (for EU)	
LKIM						Prior notice of landing > 6 hrs before e-declaration form to avail of cash and fuel incentives	Prior notice of landing > 6 hrs before	Prior notice of landing > 6 hrs before		Trading license	Trading license	Trading license e-purchase form		
MAQIS									Approval from DG	Transit Form	Import permit (via dagang.net)			Export Permit (via dagang.net)
Customs									K8 Form	K6 Form	K1 Form			K2 Form
Marine Department											Port Clearance Certificate			Port Clearance Certificate
MOH													Health Certificate (for EU and others)	

Source: USAID Oceans Analysis

Table 6. Requirements by Government Agencies

Agency	Requirement	Description of Information Collected	% of whole journey
DOF	License	Valid license to operate vessel	37.5 (9/24)
	AIS	Automatic Identification System for basic vessel location identification, required as minimum identifier for commercial vessels	
	VMS	Vessel Monitoring System for advanced vessel location identification, required for C2 and C3 Zone operators	
	Hygiene Maintenance	Hygiene should be maintained and documented as such while at sea	
	Prior Notice of Landing	6 hour advance notification prior to arrival at port	
	Landing of Vessel	Catch landing declaration	
	Annex I	Catch landing declaration required for EU export	
	Logbook	Detailed log of fish caught and location and gear used while at sea	
	Catch Certificate Application for EU	Completed application required for EU export	
LKIM	Prior Notice of Landing	6 hour advance notification prior to arrival at port	16.6 (4/24)
	e-Declaration Form	Catch landing declaration for small-scale fishers wishing to avail of fuel and cash subsidies	
	Trading License	Valid license to operate fishing business	
	e-Purchase Form	Form identifying seafood related purchases from landing vessels	
MAQIS	Approval from Director General	Letter request and approval for transit through Malaysia port (for pass through only)	16.6 (4/24)
	Transit Form	Form describing items for transshipment and will be broken bulk	
	Import Permit	Valid import permit (under dagang.net)	
	Export Permit	Valid export permit (under dagang.net)	
Customs	K8 Form		16.6 (4/24)
	K6 Form		
	K1 Form		
	K2 Form		
Marine Department	Port Clearance Certificate (for importer)	Clearance document for the bringing in of goods into a port	8.3% (2/24)
	Port Clearance Certificate (for exporter)	Clearance document for exiting with goods from a port	
MOH	Health Certificate for EU HACCP for Non-EU	Certificate required for EU export	4.4 (1/24)

Source: USAID Oceans Analysis

2.3 Existing Technologies Enabling CDT

USAID Oceans' assessment reviewed Malaysia's government-supported, existing technology platforms that support the catch documentation and its related data and analytics across the bureaucracy. Building from Table 5, Tables 7 and 8 present the various technology platforms, both working and in development, housed under different agencies that manage KDEs across CTEs in the seafood supply chain. In this evaluation, technology platforms are defined as systems with working databases that store, organize and process data. These tables include information shared by participants over the course of the assessment and deemed as relevant by stakeholders, they are by no means exhaustive.

Table 7. Functions of Technology Platforms per Agency

Technology Platform	Function	Remarks
e-Lessen	Public-facing platform for the application and management of vessel licenses, which includes crew manifests. Repository of all valid and invalid licenses operating across zones.	
MFVR	Government-facing aggregator and viewing tool for license, AIS/VMS, and landing related data across zones	
eSMPP	Government-facing VMS and landing record	
e-Logbook	Digital clearinghouse for all logbooks	Coming soon
Catch Certificate Application Modules	Public-facing e-application for catch certificates, tailored to EU requirements	Discontinued due to logistics issues
e-Declaration Database	Government-facing platform and database of all voluntary declarations of landings	Majority of information is collected manually by LKIM from small scale vessels availing of fuel and cash subsidies
e-License Database	Public-facing platform for the application and management of trading licenses. Repository of all valid trading licenses for sellers but mostly buyers, with some information on transaction histories	
Port In/Port Out System	A platform monitoring all port in and port out movements in Malaysian ports	Coming soon
Dagang.net	Public-facing platform, considered to be the premier trade hub and “one-stop-shop” for all of Malaysia’s import-export activities, manages a database of all valid import and export permits and relevant activities	Outsourced to 3 rd party IT firm for management
iMAQIS	Internal application streamlining MAQIS operations	Coming soon
U-Custom	Public-facing “one-stop-shop” to manage customs related requirements and transactions, with planned linkages to all agencies with touchpoints with customs (eg. inbound and outbound products)	Coming soon
FEXOC “Official Food Management System for Export to EU”	Public-facing platform managing applications for health certificates required for product export to EU	
FOSIM “Food Safety System of Malaysia”	An all-encompassing platform addressing all trade and food safety requirements in Malaysia	Coming soon












Source: USAID Oceans Analysis

USAID Oceans’ analysis noted 13 major technology platforms across the Malaysian bureaucracy that directly collect and manage information related to CDT in the country, eight of which are live and five which are in development. According to USAID Oceans’ conducted interviews, only the data collected within the platforms mentioned under DOF and to some degree the MOH are interconnected to each other for data sharing and cross-analytic purposes. This ultimately indicates that the processes, protocols, IT infrastructure, personnel and other resources falling under each database are distinct, despite the high likelihood that the data being collected across them are redundant. This siloed approach to data collection across the supply chain was a recurring theme across several discussions around CDT in Malaysia.

Notwithstanding this, it is equally important to point out that practitioners and observers engaged in USAID Oceans’ assessment emphasized the relative sophistication of these systems. They also noted that the systems are largely geared towards supporting evidence and science-based decision making, policymaking, and day-to-day operations around fisheries management as opposed to just facilitating compliance to the import requirements of Malaysia’s primary international export markets.

Table 8. Technology Platforms per Agency along the Seafood Supply Chain

Seafood Supply Chain / Responsible Agency	At-sea Capture (small scale)		At-sea Capture (commercial)			Port			Transit *pass through only	Trans-shipment *break bulk	Importer *land or boat for domestic use	Buyer/ Broker	Processor	Exporter
	A	B	C	C2	C3	A/B	C2	C3	A-C3	A-C3				
DOF	License		License AIS	License VMS SPVC2	License VMS	Prior notice of landing > 6 hrs before	Prior notice of landing > 6 hrs before LOV	Prior notice of landing > 6 hrs before Annex I						
	MFVR									Logbook emailed				
LKIM						Prior notice of landing > 6 hrs before e-declaration form to avail of cash and fuel incentives	Prior notice of landing > 6 hrs before	Prior notice of landing > 6 hrs before		Trading license	Trading license	Trading license e-purchase form	Catch Certificate Application (for EU)	
						Port In/Port Out								
MAQIS									Request letter to DG	Transit Form	Import permit (via dagang.net)			Export Permit (via dagang.net)
Customs									K8 Form	K6 Form	K1 Form			K2 Form
Marine Department											Port Clearance Certificate			Port Clearance Certificate
MOH													Health Certificate (for EU and others)	

 e-Lessen	 eSMPP	 e-Logbook (coming soon)	 e-license application	 FEXOC & FOSIM (coming soon)
 MFVR	 e-Declaration	 iMAQIS (coming soon)	 dagang.net	 Catch Certificate Modules (discontinued)
	 Port in/Port Out System (coming soon)		 U-CUSTOM (coming soon)	

3. INDUSTRY ENGAGEMENT IN CDT - RAPID PARTNERSHIP APPRAISAL

USAID Oceans conducted a Rapid Partnership Appraisal to evaluate private sector's engagement in CDT initiatives and to identify limited-effort, high-impact partnership opportunities. USAID Oceans interviewed a number of companies during a Kelantan site visit that represented the capture, processing and export segments of the supply chain. Key themes identified from these interviews are presented in this section.

3.1 Familiarity with CDTs

Many of the companies interviewed relayed that the concept of CDT is still largely “foreign” to them. The only exposure these companies have had with eCDT, according to them, has been largely limited to the e-license program under DOF; the upkeep of automatic identification systems (AIS) or VMS for commercial vessels; manual but very basic traceability efforts such as stock tracking as required by their buyers for the processing sector; and the completion of export and import permits through MAQIS-operated *dagang.net*.

It is worth noting that companies interviewed consistently emphasized that eCDT, beyond those examples mentioned, has so far only been relevant to “big companies that export tuna to the EU”—which at least for Kelantan and the majority of other fish ports in Malaysia is not a major market. When asked whether or not they see value in digitizing their CDT to improve the way these companies transact with government, there was a sense of openness that was tempered with questions on cost implications and the availability of internet connectivity. Some companies responded to the same question by saying this is something they have “outsourced to third party agents already,” highlight their perception that digitization will only have a limited impact on them.

Additionally, during an interview with a processing company in Kelantan who supplies fish (e.g. re-packed mackerel from India) to a chain of local hospitals, it noted that in the event of a possible food safety incident within its supply, their manual traceability efforts would likely not be able to trace the stock in question to facilitate a recall. While alarming, this is somewhat representative of the “minimum compliance” attitude that several companies interviewed exhibited, highlighting the need to demonstrate a clear business case and value add of eCDT for companies that goes beyond compliance to basic requirements.

3.2 Third Party Agents

Due to the seafood supply chain's numerous transactional requirements, many companies hire third party agents. In some cases, these agents have official accounts within the aforementioned technology platforms to transact on behalf of their client companies. This dependency on agents is particularly salient for processors with the intent of exporting, where in the agents complete requirements and manage the company's relationship with government on the company's behalf. This presents both a challenge and opportunity for government to work with both companies and third-party agents to develop a responsive eCDT system as a means to optimize the transaction process while meaningfully engaging and learning from industry towards improved compliance that provides value for businesses.

3.3 The Role of Private Jetties

Another observation made by the assessment team during its site visit to Kelantan relates to how private jetties in adjacent areas to the port serve a very particular purpose for commercial fishing vessels, its crew, and

the broader supply chain. It was revealed by DOF that over 222 registered private jetties operate across Malaysia under government oversight. These continue to grow as a result of the demand for serviced docking areas able to cater to vessels which have completed activities on government ports, and for vessels needing to conduct restocking, repairs, or provide resting facilities for its crew in anticipation of their next fishing expeditions. The latter is particularly important as these jetties serve as pseudo-halfway homes for foreign crew (e.g. usually of Vietnamese or Thai origins for Kelantan), overseeing their welfare while they are still employed as foreign crew under Malaysian vessels. At least for the jetty visited in Kelantan, which at the time was servicing close to 100 vessels, there were provisions for sleeping quarters.

That said, and mindful therefore of their diverse role along the supply chain, jetties can conversely be positioned as hubs for capacitating and engaging vessels around eCDT, complementing government efforts. While such an arrangement should be explored further, the Kelantan site visit raised the possibility of having jetty owners and operators provide guidance and trainings on compliance to eCDT, hosting a “help desk” manned by a relevant government representative to address queries on eCDT and assist foreign workers, or for government to leverage these jetties as an opportunity to cluster specific vessels and address their needs and concerns around CDT and beyond.

3.4 Support for Government CDT Programs

As noted previously, industry generally seems very willing to support government programs for eCDT and has already been supportive to related programs, such as ongoing compliance to the e-licensing program. In the example of Kelantan, DOF shared that it is now embarking on a technology pilot to embed QR codes onto 10 vessels operating in the C2 zones to facilitate easier validation and inspection of landing documents. This coincides with 20 other vessels DOF is piloting with the technology for Pahang and Johor. In this case, the boat owners of these pilot vessels have been very supportive and willing to participate in the said pilot, partially to show good faith to DOF, but also to “pioneer” new ways of doing CDT.

Industry members expressed interest in a more streamlined CDT system, with one particular exporter sharing her hope that one day a true “one-stop-shop” for fisheries related requirements can be realized so as to reduce the time expended in filling up forms, hiring agents, and to reduce the current number of individual systems. Nevertheless, channeling industry willingness towards a streamlined approach to CDT within government is a complex and ongoing process.

3.5 Small-scale Fisheries

There is also the question of small scale fisheries and how these feed into the discussion of eCDT. At least during the site visit to Kelantan, while there are established community-based fisheries organizations present supervised under the *myKP* program, it is very unclear as to how these connect to commercial operations so much more to export activities, if at all. The closest documentation government has on such activities may be found in the e-declarations that are voluntary supplied by small scale fishers to LKIM if they wish to avail of cash incentives. But beyond this, it is not clear as to how supply flows out of this segment and intermingles with its commercial counterparts—a phenomenon that is not unusual to Southeast Asian capture fisheries. In terms of technologies, mobile phones are widely used, as well as CB radios to correspond between the community-based fisheries organizations and the local government. The strong organizational capacity of these groups, complemented by a solid experience of harnessing basic technologies, can be easily harnessed for capturing basic information around supply flows from the small scale/informal markets to the large-scale/formal markets relevant to CDT. Additionally, such information can be treated as input towards designing more comprehensive and inclusive fisheries management policies that can form part of a CDT scheme.

3.6 Labor and Welfare

As previously mentioned, this assessment had limited exposure to labor and welfare issues except to observe that a majority of purse seine vessels employ Thai nationals, and trawlers Vietnamese nationals. During the visit to the private jetty, Thai workers could be seen doing recreational activities in the port area as they waited for their next departure. The owner of the jetty mentioned that Malaysian vessel owners have been generally good when it comes to complying with government rules on the hiring and treatment of foreign workers. He also shared that nearby shops within the port area allow foreign workers to purchase basic necessities, without necessarily violating the limitations of their work visas.

3.7 Tok Bali, Kelantan Trade Dynamics

A recurring item of discussion during both visits to Kuala Lumpur and Kelantan was how Thailand significantly influences market decisions within Malaysia's seafood supply chain, likely due to ongoing trade relations, proximity, and access via land. It was shared to the assessment team by a number of operators and processors that almost all of its processed neritic tuna and mackerel are exported to Thailand. In Kelantan, there is a well-known Thai company that was mentioned as the exclusive buyer of a specific species of catch. During discussions with stakeholders in Kuala Lumpur, they shared that for a majority of ports in Malaysia, raw catch is immediately sold to Thai buyers with very minimal processing, if at all, in Malaysia due to pre-arranged transactions that would have Thailand serve as the processor and packager of the finished product. This is somewhat challenging for both government and industry who wish to capture more of this value before the supply is shipped out of Malaysia.

3.8 Government-led CDT Partnerships at the National and Community Level

Assessment interactions with the private sector indicated that industry expects government to lead partnerships with them to help navigate their participation in an CDTS and, eventually, a robust eCDTS. The prospect of implementing a fully digitized eCDTS was a cause of some excitement among some companies interviewed as it gave them the impression that something similar to the very popular *dagang.net* could be developed for fisheries catch documentation and could also complement their internal efforts to improve operations and IT processes.

The Malaysian government take advantage of this window of opportunity to channel industry's enthusiasm for partnerships towards a streamlined government approach to CDTS. Partnership recommendations are included in Section 5.

4. KEY FINDINGS

After assessing the existing drivers for eCDT from socio-economic, policy, and technology perspectives and conducting a rapid assessment of relevant private sector themes around CDT, the assessment team also conducted a validation workshop with key government stakeholders to solicit responses and reactions to the assessment results. Through this workshop, an exercise was conducted to identify the positive and negative forces for eCDT (Annex III), as well as to determine the pro-active steps that can be taken to influence the uptake and success of a prospective eCDTS. Key findings that resulted from these assessments include:

There is a desire to establish eCDT in Malaysia as a means to improve fisheries management and consolidate government efforts around catch documentation. Government stakeholders were

very clear about their motivations for establishing CDT and supporting efforts towards an eCDT. Contrary to the initial assumption that compliance to the EU or US markets is the sole purpose of conducting CDT, there appears to be a genuine appreciation of how an eCDTS can serve as a powerful aid for the Malaysian government to right-size fisheries efforts, properly enforce its laws and regulations, guide research and development, and improve its day-to-day operations as well as long-term sector planning efforts. Additionally, officials remarked that notwithstanding EU or US requirements, the Malaysian government has every intention to position its CDTS as a one-stop-shop industry-facing platform for all domestic and international movement of seafood goods—an ambitious order, but nonetheless characteristic of the government's desire to maximize the usefulness of such an investment.

There is a wealth of ongoing initiatives that can serve as the building blocks for an eCDTS. This assessment has confirmed that there are indeed several sophisticated systems already in place to manage data across several CTEs along the seafood supply chain in Malaysia (See Figure 5 and Table 7). These platforms range from electronic systems tailored for commercial vessels, incentive schemes targeted towards small scale fishermen, and business-oriented databases that manage import-export permits and track seafood purchases across the supply chain.

There are various KDEs already being collected that can be organized for eCDT. The Malaysian government, through the aforementioned agencies, has existing programs and platforms in place that cover a robust selection of KDEs along several CTEs. In many cases, these KDEs are collected more than once through different forms managed by different agencies with very limited scope for data sharing. The low-hanging opportunity of consolidating and organizing these existing electronic platforms under one eCDTS is not lost on the Malaysian government, especially in light of what the government calls a precedent in the form of *dagang.net* and the upcoming U-CUSTOM system.

The current approach to CDT is very compartmentalized within government and needs to be streamlined. To reiterate, there are an average 20-24 forms and processes required across six agencies to complete a typical seafood export transaction for the EU or the US. Furthermore, these forms are currently housed in eight separate technology platforms. In most cases, there are overlaps and redundancies in the data being collected. Such compartmentalization might have been the indirect effect of the lack of an overall policy mandate to organize CDT efforts within the country, and a perception that agencies treat and manage information very differently from their peers, which may not necessarily be the case when it comes to CDT. As a result, industry has complied with the aid of professional third-party agents who manage the whole process on behalf of their clients. While not necessarily detrimental to CDT, this reliance on third party agents may reduce the value of establishing a CDTS or eCDTS to facilitate a transparent and effective partnership between industry and government.

As eCDT, let alone CDT, across fisheries in Malaysia is not yet officially mandated or streamlined under policy, a number of notable challenges still prevail. These include the social acceptance of CDT among small-scale fishers and small commercial companies, a lack of clarity on the benefits or rewards from CDT implementation, challenges inherent with validating landed fish including scheduling for instance, not understanding industry's "willingness to pay" for eCDT adoption, the issue of ownership of data and eCDT platforms, the blind spot of current CDT practices on the interplay between commercial and domestic supply/local and foreign consumption, limited intra-agency data sharing protocols, and redundant data collection practices, among others.

While there are several challenges in moving towards eCDT, there are also various opportunities that can be leveraged. These include the aforementioned integration of all Customs-related documentation under the upcoming U-CUSTOM System as well as the reconfiguration of the dormant Catch Certification Application Modules to assist in retooling or consolidating various related databases housed under the different agencies. But perhaps most importantly, it was revealed to the assessment team that there are serious plans being discussed under the DOF to begin requiring some form of catch certificate for all Malaysian seafood exports, regardless of destination. As the DOF wishes to stay ahead of developments, it wishes to kick-start a process where industry can be steered towards capacitating itself towards meeting such

requirements via a Malaysia catch certification scheme. This creates a compelling case towards establishing an eCDTS to serve as a clearinghouse for all relevant transactions and documentations. Additionally, it was also disclosed by government stakeholders that any effort to establish an eCDTS to support the work of multiple government agencies would have to be approved and technically managed by the MAMPU—a government body attached to the Prime Minister’s office tasked with organizing and managing all IT-related government initiatives. This creates a particularly unique opportunity to facilitate high-level government buy-in for eCDT; see Section 5.

SEAFDEC’s Electronic ASEAN Catch Documentation Scheme (eACDS) was identified as a potential platform to kick-start the process of developing Malaysia’s eCDTS. Throughout the assessment, SEAFDEC presented its ongoing efforts to develop a pan-ASEAN electronic catch documentation system to serve as a minimum common denominator across ASEAN that can ultimately facilitate the exchange of key information for these various countries’ requirements and respective eCDTS. With pilots in Vietnam and Brunei, a rich dialogue has been set up through this initiative between a number of key ASEAN countries to establish common KDEs and CTEs that can be consolidated and standardized for the purpose of more seamless and responsive intra and inter-regional trade. Operationally, the eACDS already provides working front-end (e.g., mobile and web) and back-end IT infrastructure that could be positioned as a learning tool by Malaysia as it seeks to solicit more internal discussions about its requirements for an eCDTS and its eventual scale-up in-country. Granted, however, Malaysia would need to develop a clear blueprint towards incorporating the eACDS as part of its overall effort towards an eCDTS to ensure clear lines of responsibility and ownership.

An appropriate pilot site capable of demonstrating the value add of an eCDTS should be identified, with the potential to run parallel pilots in Kelantan and another site to be determined, possibly Sabah or Sarawak. Kelantan demonstrates the workings of a port that closely coordinates the needs between government and industry and has the potential to serve as a good eCDTS pilot site. It would be valuable to also consider running a parallel pilot in Sabah or Sarawak to demonstrate an eCDTS’ application in other regions in the country and to create a clearer business and government case for an eCDTS. The implementation of parallel pilots across diverse geographies and port scenarios can facilitate richer learning opportunities and influence a critical mass for eCDT, including helping to address logistical concerns and attract potential partners upstream and downstream stakeholders (e.g., technology companies, investors).

5. RECOMMENDATIONS

In closing, this assessment now presents possible pathways for the Government of Malaysia, as well as its partners, to consider with the objective of “bridging the gap” in terms of setting up a robust eCDTS in the country. These recommendations are clustered as near-term (zero to six months), short-term (six to twelve months), mid-term (one to two years), and long-term (two to three years).

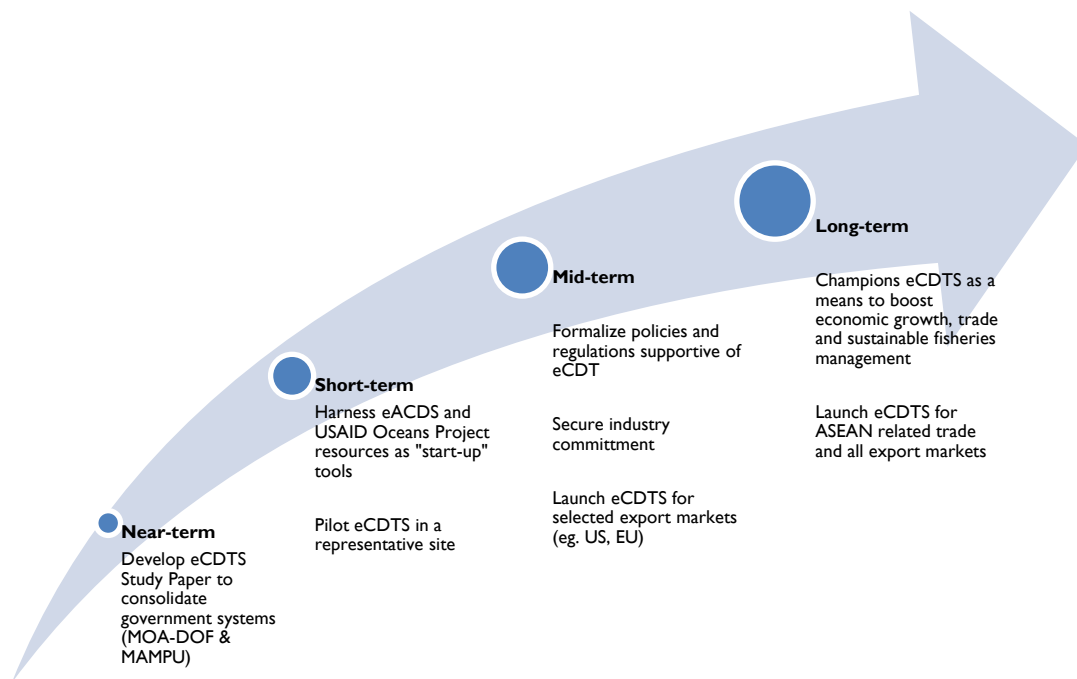


Figure 4. Recommended eCDTS roadmap for Malaysia

5.1 Near-Term Recommendations

Develop a “Study Paper” led by MOA-DOF, with the support of MAMPU, to design an “eCDTS roadmap” for Malaysia with clear technical and operational steps towards consolidating the various relevant electronic platforms and initiatives within government and outlining the requirements, ownership, and roles and responsibilities of government and industry associated with the system. The Study Paper can also consider possible technology partnerships.

The DOF, via MAMPU, voiced its willingness to actively engage with ongoing and future discussions towards an eCDTS. It also revealed that the concept outlined for it is strikingly similar in nature to dagang.net and the planned U-Custom System, and as such, should be relatively straightforward. In terms of next steps, and so as to unlock the resources and technical expertise of MAMPU for such an endeavor, it is recommended that DOF kick-off a process within its IT Committee to submit a motion to the MOA for the DOF to develop a joint Study Paper with the MAMPU to outline the proposed scope, functions, features, and architecture for the proposed eCDTS. As the Study Paper is developed, discussions around government ownership, budgets, roles and responsibilities, and roll-out can be discussed in parallel. It is also recommended that the Study Paper outlines a range of scenarios or phases whereby an eCDTS can be rolled-out first as a function of consolidating multiple government platforms, then on a pilot basis in parallel ports (e.g. Kelantan and/or Kuantan Pahang), then towards a wider application for exports to the EU or US, then for other foreign markets, then finally scaling-it up to include all domestic consumption, as appropriate. Once the Study Paper is approved, DOF and MAMPU can then work in earnest towards developing the system. In parallel, both DOF and MAMPU can also consider scoping for potential technology partners who may be willing to provide resources in-kind if and when the align with the government’s objectives. Such resources could include, for example, the provision of free or lower cost bandwidth for small-scale fisherfolk wishing to use eCDTS, incentive schemes for airtime/SMS credit for pilot participants, or government entering into an arrangement with telecommunication firms to support data exchange and transfer under eCDT, particularly for last-mile or remote areas.

Harness the electronic ASEAN Catch Documentation Scheme (eACDS) and USAID Oceans’ support as public-private partnership opportunities to kick-off Malaysia’s eCDT efforts, with the possibility of setting up a pilot in Sabah. The opportunity presented by SEAFDEC to position its eACDS as a “plug-and-play” system should also not be underestimated. As the DOF kicks off its own formal processes

to set-up a robust eCDTS, the eACDS can be leveraged as a learning tool or platform that can help capacitate government stakeholders on CDT as well as build a business case for both government and industry to consider around the role an eCDTS can play in facilitating more efficient transactions between government and industry and improving trade with the ASEAN more generally. Adopting the eACDS also presents a relatively low-cost investment on the part of Malaysia as the back-end and front-end support for the eACDS is already in place with simultaneous live case studies in Brunei and Vietnam to learn from. Having the eACDS as the baseline for Malaysia's eCDTS will facilitate seamlessly data exchange with other countries in ASEAN that are increasingly starting to request Catch Certificated for any fish imported from other ASEAN Member States. To maximize its value for Malaysia's journey towards an eCDTS, the eACDS can also be positioned as the initial platform that is piloted in a representative port like Sabah, where in this case, the eACDS would be "de-risking" Malaysia's future investment into the sector by explicitly addressing the unknowns inherent to such an intervention, testing various approaches, and validating market interest within a live environment, all the while limiting government exposure to financial and political risk. For such a pilot, a "public-private partnership" (PPP) can be set up between DOF or LKIM and willing industry players such as large commercial operators with vertically integrated or non-vertically integrated operations. This PPP could establish a safe test environment for government and industry to trial different approaches towards acceptable eCDT, with industry providing regular input and offering their fleets and supply chains as case-studies for the application of an eCDTS. Private jetties can also be considered as potential partners.

The DOF can also take advantage of ongoing efforts under the USAID Oceans program to "underwrite" the risk inherent with deploying a new technology such as eCDTS. Specifically, USAID Oceans' relationships with various industry users, technology providers, and other ASEAN government partners can help shorten the learning curve of the Malaysia government by presenting use-cases, live demonstrations among other learning sites, pathways for implementation, visibility on possible technology providers and solutions, policy innovations and ultimately lessons learned and best practices. In this regard, USAID Oceans can advise and help broker eCDT-relevant partnerships for the Malaysian government. Annex II outlines some of the technologies USAID Oceans is currently piloting across learning sites that can be immediately tested or deployed for Malaysia.

5.2 Mid-Term Recommendations

Support efforts to formalize policy and regulations that establishes the eCDTS as a platform to improve fisheries management and demonstrate market leadership on seafood traceability beyond compliance. It is clear that in order to orchestrate Malaysia's journey towards an eCDTS, policies and regulations must be put in place to properly align fisheries sector interests, requirements, and processes with the country's broader objectives of sustainably managing its oceans and maintaining its competitiveness at the global stage. A number of immediate policy initiatives should be prioritized, including the ongoing effort to amend the 1985 Fisheries Act to include language on traceability as well as the very laudable initiative being launched within the DOF to design policy that would begin slowly requiring CDT and catch certification for all seafood exports. Furthermore, as Malaysia strives to make its seafood supply chain 100% traceable through an eCDTS, the massive amounts of data and information collected under this initiative should be harnessed towards improving fisheries management, including for instance ramping up efforts to introduce tailored policies at a Fisheries Management Area (FMA) level. Such an ambitious program would certainly represent market leadership on the part of Malaysia and could easily be packaged to the country's advantage as such trailblazing is sorely needed within the ASEAN seafood sector and is in high demand within the global investment spaces. Similar to the US, a "trusted trader program" could be set up under regulation that incentivizes industry to participate in eCDTS (beyond just mere compliance), where upon demonstration by an operator of a good record of compliance, government can streamline or "fast-track" transactions for such operators or provide other value-added services (such as eligibility to global market linkage programs). Such a program could be designed and communicated as a direct invitation for industry to partner with government on eCDT.

5.3 Long-Term Recommendations

Harness an eCDTS as a means to engage in meaningful dialogue with industry and the ASEAN towards boosting economic growth, advancing the trade interests of the country, and championing biodiversity. Industry engagement is critical, thus an eCDTS should be treated only as a tool or a means to an end, which is to improve Malaysia's fisheries management and boost its sustainable seafood trade, among others. The Government of Malaysia should leverage global interest towards traceability to position accordingly and engage with industry as a meaningful partner in economic growth and biodiversity conservation. The data collected by an eCDTS, as well as the improved transactions facilitated by the system on behalf of industry, should be leveraged as an impetus for constant dialogue between government and industry towards win-win solutions into the future.

In support of this recommendation, USAID Oceans provides documented, site-based learning and downloadable technical resources that can support Malaysia's eCDTS implementation. Specifically, USAID Oceans can share its experience, best practices and knowledge from its ongoing implementation of eCDTS in other learning sites (e.g., Philippines and Indonesia), facilitate Learning Exchanges and convene annual Technical Working Group Meetings, and invite relevant stakeholders from Malaysia to participate in workshops and meetings during the program's third and fourth year.

ANNEX I. GAP ANALYSIS FIELD STUDY

CDT Gap Assessment Schedule/Agenda

Date	Time	Activities	Venue	
MON 19 February 2018		Coordination Meeting with DOF Team	Meeting Room, Level 2, Planning & Development Division Department of Fisheries Malaysia	Local land transport will be provided by DOF
TUE 20 February 2018	8.45 am	Depart from Hotel to Department of Fisheries Malaysia office		
	9.00am-12.30pm	Oceans Team coordination (CDT, PPP, lead consultant, in country consultants): <ul style="list-style-type: none"> - Introduction to OFP - Background knowledge - Study Framework - Survey tool - Work coordination among the team 	Arowana Hall Level 6, Precinct 4, Wisma Tani, Putrajaya	<u>Agencies</u> <ol style="list-style-type: none"> 1. Ministry of Agriculture and Agro Based Industry (MOA) 2. Department of Fisheries Malaysia (DOF) 3. Department of Malaysian Quarantine and Inspection Services (MAQIS) 4. Ministry of Health Malaysia (MOH) 5. Malaysia Maritime Enforcement Agency (MMEA) 6. Department of Customs Malaysia 7. Marine Department of Malaysia 8. Ministry of International Trade and Industry (MITI)
	12.30pm-2.00pm	Lunch	Arowana Hall Department of Fisheries Malaysia Level 6, Precinct 4, Wisma Tani, Putrajaya	
	2.00pm-4.30pm	Focus Group Discussion with DOFM TWG Malaysia CDT Strategic Objective <ul style="list-style-type: none"> - Discussion on DOF Malaysia strategic Objective in traceability (DOF) - Existing national plan related to SFMP (DOF) - Regulation (DOF, MAQIS, MOH, CUSTOM, LKIM) - DOF Malaysia Organisation Structure and Chain of Command (DOF) - Inter-coordination with other agencies (MOA) - Fisheries Management Structure (DOF) - Stock Assessment (DOF) - CDTs or e-CDT's Roadmap (DOF, OCEAN TEAM) 	Arowana Hall Department of Fisheries Malaysia Level 6, Precinct 4, Wisma Tani, Putrajaya	<u>Agencies</u> <ol style="list-style-type: none"> 1. Ministry of Agriculture and Agro Based Industry (MOA) 2. Department of Fisheries Malaysia (DOF) 3. Department of Malaysian Quarantine and Inspection Services (MAQIS) 4. Ministry of Health Malaysia (MOH) 5. Customs Malaysia (CUSTOM) 6. Malaysia Fisheries Development Authority (LKIM)
WED	8.45 am	Depart from Hotel to Department of Fisheries Malaysia office		

Date	Time	Activities	Venue	
21 February 2018	9.00am-1230pm	Focus Group Discussion with Capture Fisheries related Agencies within DOF Malaysia. Study DOF Malaysia existing processes and procedures of current catch documentation scheme and traceability form point of catching to landing <ul style="list-style-type: none"> - Registration, licensing and permit (DOF) - Port in port out procedure (LKIM) - Logbook (DOF) - Landing: declaration, inspection (LKIM, MAQIS) - Movement document (LKIM, MAQIS) - Catch Certificate (DOF) - Data sharing or access from public via API (DOF) - Report, data analysis, statistic, BI (DOF) - Foreign Fishing Vessel (DOF) - Malaysia flag fishing vessel outside Malaysia water (DOF) 	Arowana Hall Department of Fisheries Malaysia Level 6, Precinct 4, Wisma Tani, Putrajaya	<u>Agencies</u> <ol style="list-style-type: none"> 1. Ministry of Agriculture and Agro Based Industry (MOA) 2. Department of Fisheries Malaysia (DOF) 3. Department of Malaysian Quarantine and Inspection Services (MAQIS) 4. Ministry of Health Malaysia (MOH) 5. Department of Customs Malaysia 6. Malaysia Fisheries Development Authority (LKIM) 7. Technology/service/ solution provider
	12.30pm -2.00pm	Lunch	Arowana Hall Department of Fisheries Malaysia Level 6, Precinct 4, Wisma Tani, Putrajaya	
	2.00pm-4.30pm	Focus Group Discussion with downstream agencies <ul style="list-style-type: none"> - Landing to export process and procedure (LKIM) - National Single Windows (MITI) - Point of integration between fishing and processing company's system and process with government system and process (i.e: Catch Certificate, Certificate of Origin, Health Certificate, Export Declaration, etc.) (DOF, MAQIS, LKIM, MOH) 	Arowana Hall Department of Fisheries Malaysia Level 6, Precinct 4, Wisma Tani, Putrajaya	<u>Agencies</u> <ol style="list-style-type: none"> 1. Ministry of Agriculture and Agro Based Industry (MOA) 2. Department of Fisheries Malaysia (DOF) 3. Department of Malaysian Quarantine and Inspection Services (MAQIS) 4. Ministry of Health Malaysia (MOH) 5. Malaysia Fisheries Development Authority (LKIM) 6. Ministry of International Trade and Industry (MITI) 7. Technology/service/ solution provider
THU 22 February 2018	8.45am	Depart from Hotel to Department of Fisheries Malaysia office		
	9.00am-12.30pm	Focus Group Discussion with Surveillance Department and Information Center (MCS) Study the current ICT system and facility in DOF Malaysia <ul style="list-style-type: none"> - Background (DOF) - Catch Documentation scheme walkthrough (DOF) - Facility Observation (DOF) - VMS Center (DOF) 		<u>Agencies</u> <ol style="list-style-type: none"> 1. Ministry of Agriculture and Agro Based Industry (MOA) 2. Department of Fisheries Malaysia (DOF) 3. Enforcement Agency (MMEA) 4. Marine Department of Malaysia

Date	Time	Activities	Venue	
		- Country ICT Masterplan (DOF)		5. Technology/service/ solution provider
	12.30pm-2.00pm	Lunch		
	2.00pm-4.30pm	SEAFDEC- e-ACDS Briefing Dr Somboon Siriraksophon Focus Group Discussion with Private Sector and Fisheries Association - Current state of implementation internal CDTS among companies - Understanding business drives and challenges in implementing CDTS Technology and services provider in CDTS	Arowana Hall Department of Fisheries Malaysia Level 6, precinct 4, Wisma Tani, Putrajaya	
MON 26 February 2018	9.00am-12.30pm	Commercial Port Visit, observation on fishing landing, discussion with port authorities - Port in port out activity and procedure, interviews and observation of government staff in performing CDT related daily work (i.e inspection, approval certification (MAQIS, LKIM, PPN Kelantan))		
	2.30pm-4.30pm	Visit and interview fishing companies, processors, exporters (PPN Kelantan)		
TUES 27 February 2018	9.00am-12.30pm	Small-scale or community Port visit, observation on fish landing, discussion with port authorities, Port in Port out activity and procedure, interviews and observation of government staff in performing CDT related for small scale (PPN Kelantan. LKIM)		
	2.30pm-4.30pm	SEAFDEC- e-ACDS Briefing Dr Somboon Siriraksophon		

ANNEX II. EXISTING TECHNOLOGY AND SOLUTIONS FOR TRACEABILITY

E-ACDS

The ACDS (ASEAN Catch Documentation Scheme) was developed to provide a common regional catch documentation scheme, serving as a tool for combating IUU fishing and enhancing international and intra-regional trade of fish and fisheries products from the ASEAN Member States.

The draft ACDS was developed in 2014 and was circulated to ASEAN member countries in early 2015, with regional work ongoing to finalize and implement the scheme. On 27 December 2016, SEAFDEC signed an MOU with Fish Market Organization (FMO) of Thailand for collaboration on development and promotion of electronic system of the ASEAN Catch Documentation Scheme (e-ACDS).

The development of the e-ACDS is a regional effort of SEAFDEC and the ASEAN Member States (AMSs) toward improving traceability of marine capture fisheries and preventing the entry of fish and fishery products from IUU fishing activities into the supply chain. To proceed with the task of ensuring the applicability of e-ACDS in the region, the SEAFDEC Council in 2016 agreed to pilot test the e-ACDS in Brunei Darussalam. On 3 April 2017, the e-ACDS was first launched for pilot testing in Brunei Darussalam during the 49th Meeting of the SEAFDEC Council.

Results of the pilot testing in Brunei Darussalam could serve as basis for expanding the application of e-ACDS in USAID Oceans' expansion sites during Year 3 (2018). Relating to the ongoing development and testing of e-ACDS, assessment studies of the implementation of catch documentation and traceability (CDT) have been conducted in several expansion countries. Inputs from those studies, as well as lessons learned from learning sites in Philippines and Indonesia, is a first step in the path to properly plan the design, development, and implementation of the e-ACDS in Vietnam and Malaysia.

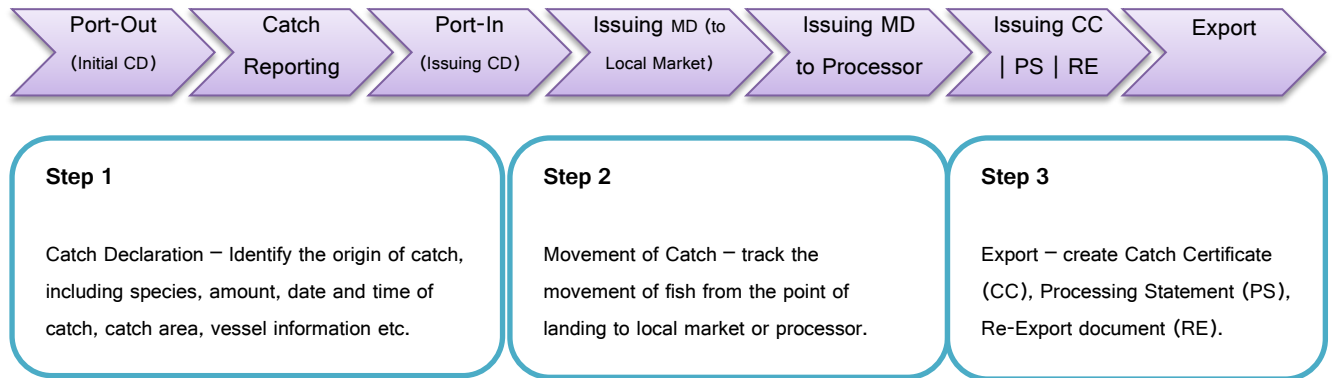
e-ACDS workflow

The whole e-ACDS traceability process can be broken down into 7 steps, which can be viewed as a representation of a sequence of operations.

The 7 steps of e-ACDS workflow can be simplified and grouped into 3 major steps which are:

1. Catch Declaration
2. Movement document (MD) or Marine Catch Purchasing Document (MCPD)
3. Catch certificate and Export

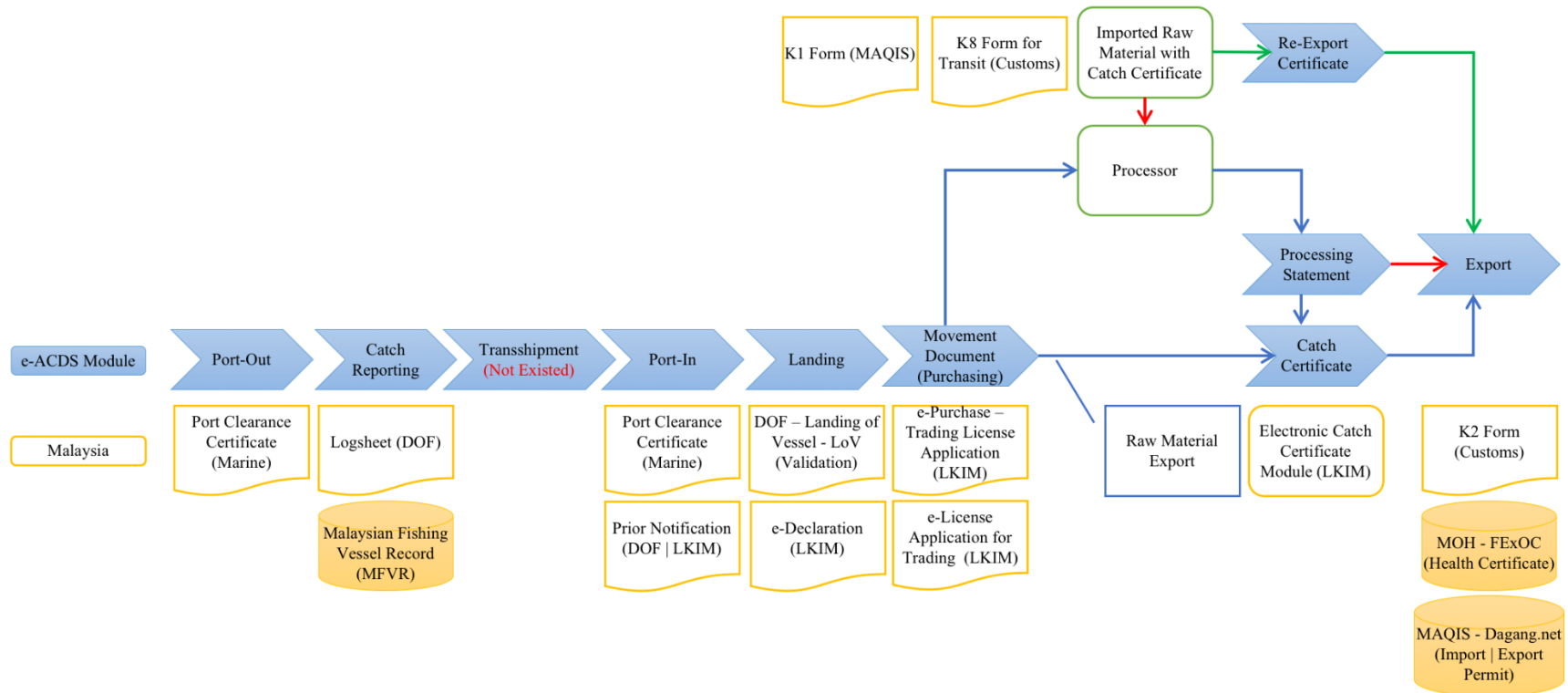
e-ACDS Traceability Workflow



List of tables in e-ACDS Database

1. Fishing Vessel Registration
2. Fishing License
3. Fishing Vessel Owner
4. Fishing Gear
5. Fish Port
6. Fishing Zone
7. Fish Species (Local Name, Scientific Name, ASFIS Code)
8. HS Product Code
9. Fish Buyer
10. Fish Processor
11. Importer | Exporter

Mapping of Current CDT Process in Malaysia with e-ACDS Modules



FAME – Small Scale Fishers Tracking and Communication Device

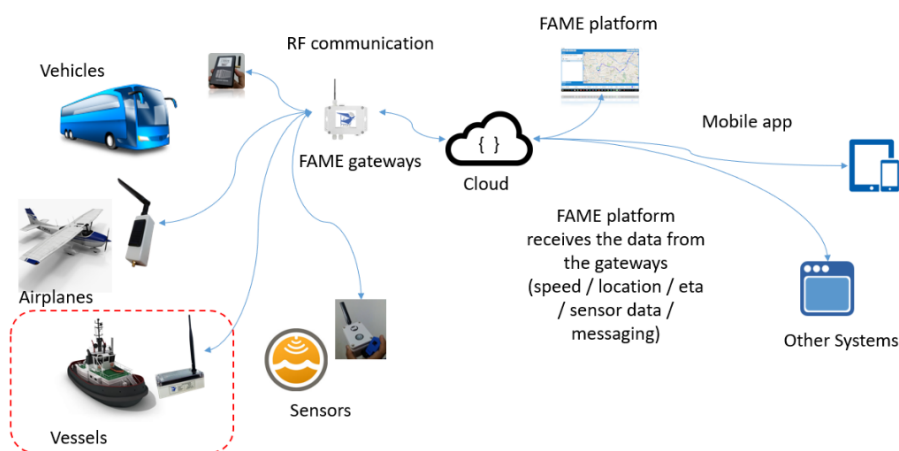
Increasingly, electronic monitoring (EM) systems on fishing vessels can combine position tracking, as seen in Vessel Monitoring Systems (VMS), with integrated telemetry (i.e., gear sensors), catch reporting, fleet management, crew communications, video capture, and other data analytics. The implementation of VMS technology in fisheries is in its infancy in Southeast Asia, and it is primarily deployed on larger fishing vessels (30 Gross Tons (GT) and up), if at all, as an enforcement tool for National Fisheries Regulators and Regional Fishery Management Organizations for Monitoring, Control and Surveillance (MCS). Driven by increasing customer and import market traceability and transparency requirements, for both the fish and the workers, future development of EM technologies will need to include other services (i.e., catch reporting/logbook, electronic monitoring, crew communications, labor reporting, geo fencing, emergency response, etc.), while also addressing the costs and incentives to be commercially sustainable and scale across smaller commercial fishing vessels that dominate fisheries in Southeast Asia.



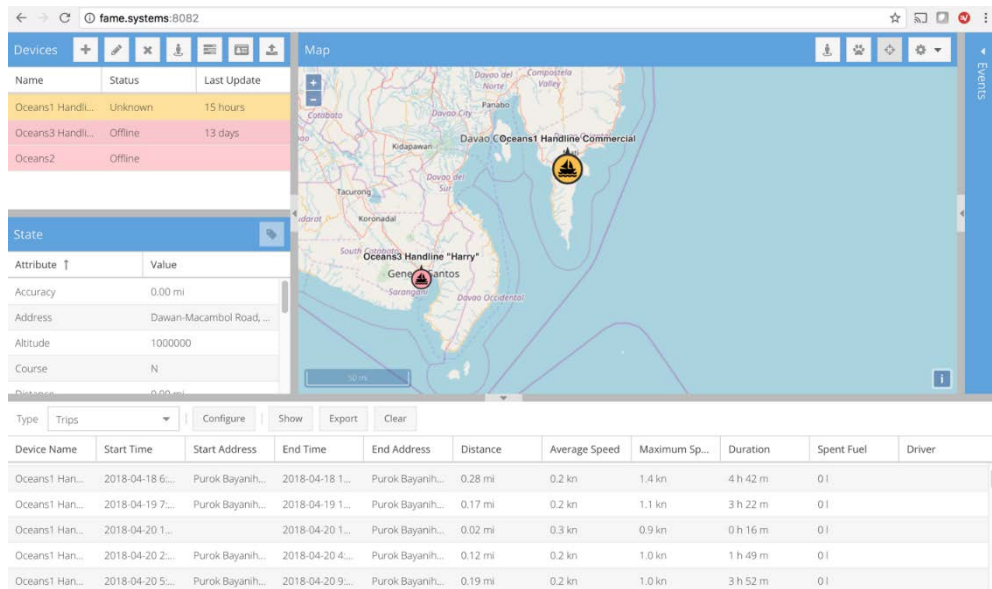
Futuristic Aviation and Maritime Enterprises, Inc. (FAME), a private company based in the Philippines, is the leading provider of small-scale vessel trackers and monitors that also serve as communication devices. FAME has deployments across the Philippines specifically in the MIMAROPA Region, Visayan Region and General Santos. FAME makes use of radio frequency to send and receive information, and its gateways receive the information from transponders and sends to the cloud. Telemetry data can be sent up to 50 km offshore and can be further extended via mesh technology between the transponders, as once the

vessel/device is out of range, but within range of another vessel equipped with a FAME transponder, the data can still be sent to a gateway. Personal communication, together with telemetry data can be sent through the FAME transponders.

How FAME works



FAME also provides a dashboard through a web and mobile browser-based application, allowing users to see details of each transponder and other related data in near real-time, anywhere. The dashboard also allows users to draw geofencing areas for remote areas or areas to prioritize, as well as generate custom reports with integrated graphs. FAME users can also receive notifications (alerts) both to fishers at-sea and users on-shore. Fishermen can use their mobile phones with USB On-The-Go (OTG) or Bluetooth to send and receive messages without mobile phone tower connectivity. Their platform is fully customizable and has been modified to incorporate USAID Oceans required KDEs.



USAID Oceans and FAME are collaborating and leverage resources to support the testing, improvement and expansion of vessel tracking and monitoring solutions as well as catch reporting on small-scale vessels at sea in the Philippines. USAID Oceans and FAME have enhanced existing software (e-logbook, fleet management) while assisting with system integration and interoperability with BFAR to provide seamlessly electronic catch reporting.



Beneficiary	Benefits
Fishers and their families	Fisherfolk ability to communicate beyond the cellular coverage by sending text message Full information whereabouts (the fisher location) Emergency alert (both ways) Able to supply to EU and US where the required traceability data exists
Suppliers and middlemen	Fisherfolk can coordinate with their middleperson on the catches and make any necessary preparation (i.e arrival, amount of cash prepared, transport, cold storage booking) Able to provide catch data that is required by government or market including LGU's Auxiliary Invoice, EU Simplified Form, US SIMP Aggregated form Maximizing CPUE through fishing activity coordination by analyzing fishing trip and catch data history
Boat owners	Asset and fleet management Fishing activity coordination Historical performance analysis
Government Agencies	Compliance Data for Sustainable Fishery Management Program Emergency response Geo-fencing to manage MPAs and borders Community based surveillance and monitoring
Processing Companies	Improve competitiveness at point-of-catch Able to provide data to meet market requirements (EU and US SIMP) More data for supply chain coordination

Technical specification for at-sea devices

- IP66 rating (dust and water prove)
- Integrated SOS button and Distress switch
- Can even reach farther if thru line of sight
- Mesh Network capability to extend the range beyond 50 km by bouncing the signal through another vessel transponder
- Solar and wind powered; Uses low power long range technology
- Pilots and Sea Captain's Secondary Radar
- Sending location data in preset interval, default 15 minutes
- Secured data transmission encrypted
- Send telemetry data through connected sensors including cold storage temperature and fuel
- USB OTG connection (option Bluetooth or/and NFC)
- Catch reporting complies with government requirement
- Chat and messaging including to SMS gateway (carrier charge might apply)
- Alerts indicator (ideally a blinking light at the transponder showing that there is important message in mailbox mobile application)

Technical specification for at land application

- Mobile chat / messaging application for family member
- Mobile tracking application for authorized user (family member / boat owner)
- On shore control application
- Dashboard for monitoring at sea devices
- Report and analytic module
- Alerts management
- API for integration with other system including BFAR, LGU and companies
- Cloud based
- Integrated SOS button and Distress switch

Trafiz – Supplier Application

USAID Oceans has studied that small-scale fishers (SSF) have many challenges in providing traceability data and that the first buyer or fish supplier is the best candidate to submit traceability data. As such, USAID Oceans has developed “Trafiz,” a mobile catch documentation application.

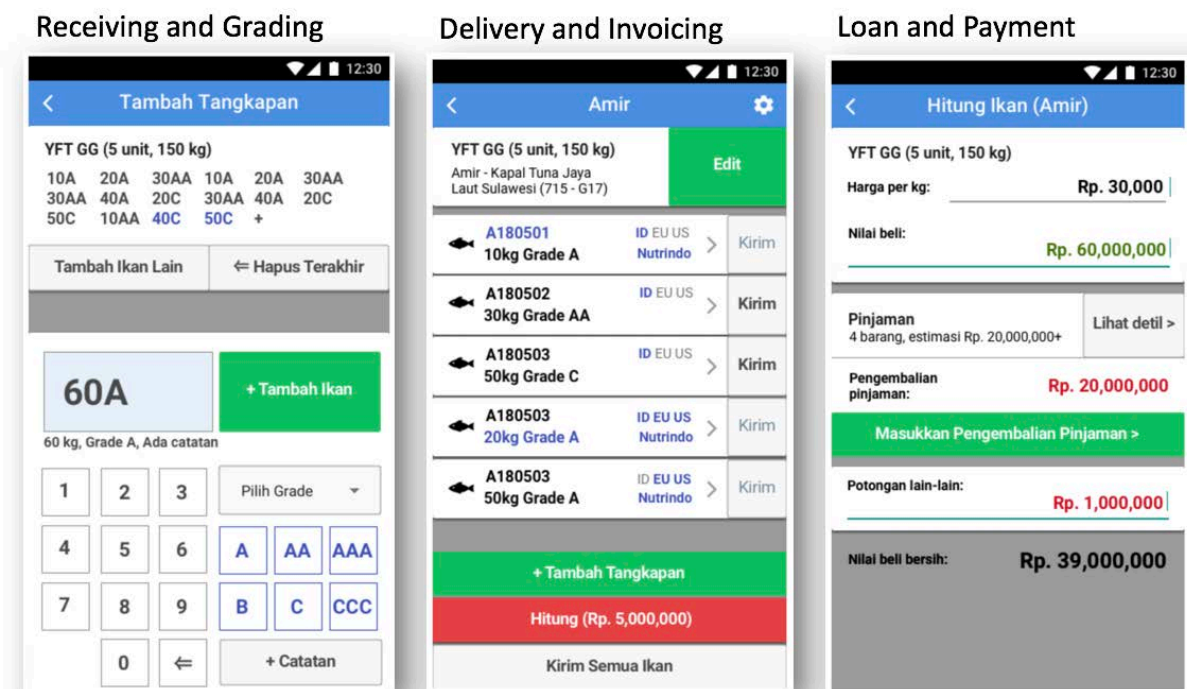
Trafiz is an Android mobile application for small-scale fish suppliers that will serve as the first data entry point in an eCDTS. The application will be implemented as an electronic data recorder for small-scale fish buyers and brokers at a certain landing point.

USAID Oceans has commissioned a software developer to provide application development and support services. The application will be first tested and implemented in the Indonesia learning site of Bitung, with expansion to other regional partners to follow. Trafiz and its source code will be released as an open source tool using public domain and GNU GPL licensed.

Trafiz is designed to:

- Capture data in the chain from fishing vessel to fish supplier in ports where the fish is landed.
- Provide a tool for supplier to record catch report, sales and loan management.
- Provide ability to pass the data down to the next party in the value chain.
- Provide ability to support compliance in the government requirement in small scale catch reporting.
- Provide ability to comply with us seafood import monitoring program (US SIMP) requirements for small-scale harvest events (model aggregated form).
- Provide ability to comply with EU requirements for catches obtained by small fishing vessels (EU simplified form).
- Enable work in off-line and on-line environments where users can still capture and process the transaction without connectivity.

The Trafiz user interface will be similar to the following screen prototype wireframes:



Inmarsat Pointrek – Two-Way Marine Vessel Monitoring System

A two-way vessel monitoring system (VMS) is a two-way communication system that, unlike traditional VMS, allows command center or shoreside users to send messages onboard of vessel. Depending on airtime costs and bandwidth, the communication can be in the form of text, email, alert, control signal or even video chat.

Typically, VMS is used by government authorities as an instrument to track locations, monitor activities and movement of fishing vessels. Also, fleet owners use VMS as a tool for fishing fleet management. With technological advances, more and more VMS functionalities have been expanded to enhance the original tracking capability of traditional VMS including two-way communication, real-time catch reporting, etc.

Pointrek is a vessel monitoring system with AIS data integration. Alongside a GPS tracking system, Pointrek also offers users low cost two-way communication when at sea. Sisfo developed Pointrek as a web-based application which can connect via Inmarsat's satellite networks and can be used to monitor the movement of vessels, including data such as: speed, heading, distance, weather information and two-way communications (which are essential for safety and connecting with people on land).

In partnership with USAID Oceans, Pointrek VMS is being tested in Indonesia to provide real-time VMS and electronic catch data (e-logbook) via handheld device (tablet). The system offers person-to-person (P2P) communication from ship to shore through onboard Wi-Fi connected mobile devices via text message, email, and conventional SMS technology.

Benefits of two-way VMS to fleet owners:

- Provide capability to address operational messages to:
 - enhance of fishermen safety;
 - improve fisheries efficiency;
 - manage fish stock and monitor catch;
 - receiving variety telemetry data through connected sensors;
 - monitor and manage control of fishing vessels;
- Boost crew morale with email access or messaging capability to communicate with family and friends.

Benefits of two-way VMS to the government:

- Enable a fisheries authority to directly change the reporting rate of a VMS unit or send the VMS unit an order to provide an immediate positional update of a vessel;
- Enable a fisheries authority to send quick notice to the vessel when approaching prohibited area or marine protected area;
- Improve compliance and data quality, current version of Pointrek catch reporting application is capable to produce logbook that meet regulatory requirement
- Provide a way for a fisheries authority to communicate directly, via text or email.

Inmarsat Pointrek VMS Features:

- Conforms to IMO Long-Range Identifications and Tracking Regulation;
- Show detailed fleet information, such as location, speed, heading, ship ID;
- Ship data can be accessed through any computer connected to the Internet;
- Worldwide satellite coverage;
- Web-based application with multiple layer map, including Google Map, OpenStreetMap and other additional tools;
- Ship log, history, and import data to ease reporting;
- Panic button for emergency;
- 24/7 customer support;
- Two-way communication enables real-time communication between vessel-to-vessel or shore-to-vessel.

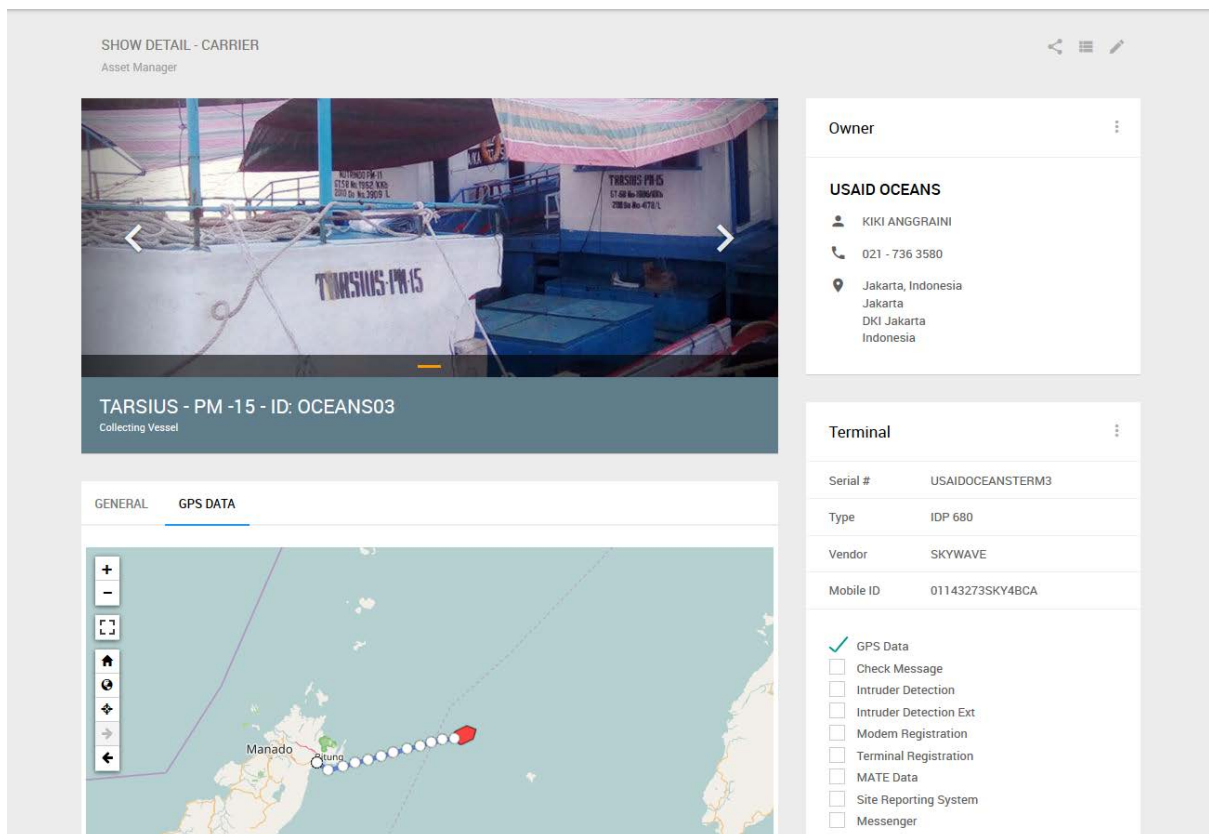
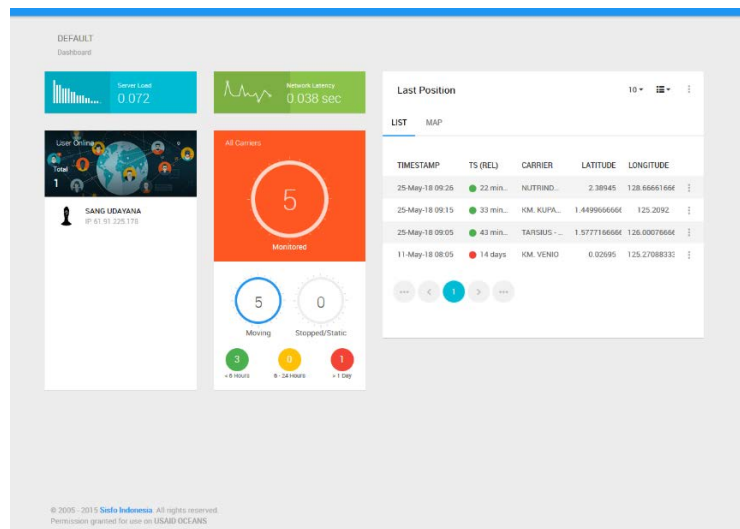
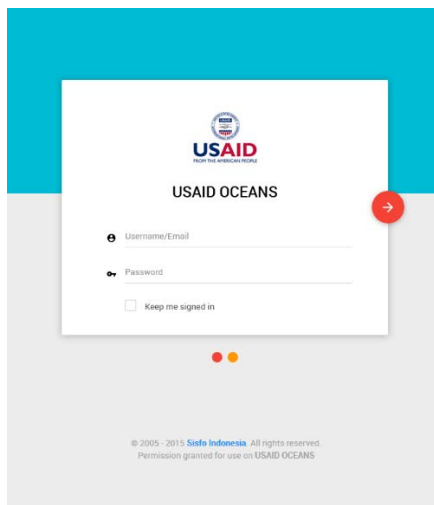
VMS unit installation: The unit consists of an outdoor satellite communication terminal and two main indoor units – central processing unit and power supply (shown below).



E-logbook application for catch at sea reporting (shown below)



Pointrek web login and web dashboards:



Movement of vessel, showing location, direction and speed

ANNEX III. STAKEHOLDER VALIDATION WORKSHOP FORCE FIELD ANALYSIS

POSITIVE FORCES AND RECOMMENDATIONS FOR eCDTS

<p>Internal momentum within government towards eCDTS is high.</p>	<ul style="list-style-type: none"> • Organize workshops, review sessions to align objectives, activities, and progress. • Bring MAMPU in as a lead organizer of cross-department collaboration. • Generate study papers, which include discussions on a cost-benefit study and the formation of a technical working group and task force to focus on eCDTS. • Leverage and align new policy thrusts related to eCDT. • Coordinate and harmonize with government initiatives towards a Single Window for all trade related transactions, including applying best practices.
<p>There is a strong desire for paperless/reduced paperwork.</p>	<ul style="list-style-type: none"> • Organize communication drives across government and industry on the potential of eCDTS to streamline processes and reduce red tape.
<p>Small-scale fisheries can benefit from eCDTS advancement.</p>	<ul style="list-style-type: none"> • Bundle eCDTS as a means to provide small-scale fisherfolk with access to financing and other forms of partnerships.
<p>Leverage and enhance implementation of UN Sustainable Development Goals and Convention on Biological Diversity.</p>	<ul style="list-style-type: none"> • Communicate linkages between eCDTS to commitments to UN Sustainable Development Goals and Convention on Biological Diversity. • Enhance stakeholders' awareness.
<p>Greater market interest for eCDTS.</p>	<ul style="list-style-type: none"> • Facilitate dialogues with industry to validate government and business case for eCDTS and solicit inputs to tailor eCDTS to benefit both public and private sector. • Identify possible industry champions and “first movers” for eCDTS.

NEGATIVE FORCES AND RECOMMENDATIONS FOR eCDTS

<p>Gaps in infrastructure— hardware and software.</p>	<ul style="list-style-type: none"> • Explore business models to test eCDTS technologies with the private sector to ensure practical, cost-effective implementation.
<p>Lack of Funding.</p>	<ul style="list-style-type: none"> • Leverage donor initiatives. • Secure support from national budget.
<p>Low appreciation from government and industry stakeholders due to perception of eCDTS being too complex.</p>	<ul style="list-style-type: none"> • Organize workshops and trainings for key personnel. • Conduct industry-specific awareness drives. • Leverage social media.
<p>Limited government capacity, specifically staffing to implement design, roll-out, and monitor eCDTS.</p>	<ul style="list-style-type: none"> • Secure mandate to develop and implement eCDTS. • Organize systematic ramp-up of government efforts to secure funding and resources for eCDTS. • Support program roll-out of eCDTS across ministries and departments.