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TECHNOLOGY SOLUTIONS



*for Electronic Catch Documentation
and Traceability (eCDT)*

THE USAID OCEANS AND FISHERIES
PARTNERSHIP

USAID Oceans is a five-year, regional program that is working in partnership with the **Southeast Asian Fisheries Development Center (SEAFDEC)**, national and local governments across the Asia-Pacific region, private sector, and non-governmental partners to develop and implement electronic catch documentation and traceability (eCDT) systems to combat illegal, unreported, and unregulated (IUU) fishing, improve sustainable fisheries management, and address sector human welfare and gender equity concerns.



PHOTO: USAID OCEANS/F. MARUF

USAID Oceans supports bait to plate traceability across Southeast Asia.

THE USAID OCEANS AND FISHERIES PARTNERSHIP Technology Solutions for Electronic Catch Documentation and Traceability (eCDT)

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Connecting the Supply Chain



AT-SEA CAPTURE

- Pointrek/Inmarsat
- FAME



LANDING

- Trafiz



PROCESSING

- TraceTales



EXPORT

- TraceTales



IMPORT

USAID Oceans has worked closely with government, the fisheries industry, and technology partners to identify, design, and develop suitable tools to:

- establish connectivity in remote and at-sea areas;
- provide a mechanism for data collection and transmission through the entire supply chain; and
- provide value-added user benefits, such as communication, safety, and business tools.



DATA CAPTURE

Critical Tracking Events →

Traceability Data ·····→

As a seafood product moves through the supply chain, there are a series of **Critical Tracking Events** which mark critical points where the product changes hands and data can be captured. Each Critical Tracking Event has a set of corresponding **Key Data Elements**, the unique product data that establishes the *who, what, when, where, and how* for each product.

Given the complexities of seafood supply chains and the varying needs at each step along the chain, USAID Oceans is piloting a suite of traceability tools to connect and capture data throughout the supply chain.

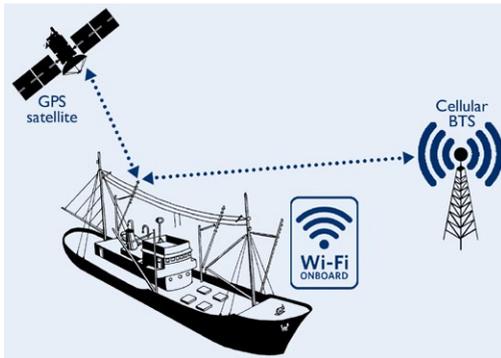
I. AT-SEA CAPTURE (Point of Catch)

Technology: **Pointrek/Inmarsat Two-Way Communication Vessel Monitoring System (VMS)**

For: **Large and Medium-Scale**

User: **Captain/Fisher**

Typically, VMS is used by government authorities and fleet owners to monitor vessel locations and activities. With technological advances, Pointrek's VMS functionalities have been expanded to include two-way communication and real-time catch reporting.



How it works:

Pointrek is a web-based application connected via Inmarsat satellite networks to monitor vessel speed, heading, distance; enable real-time electronic catch data reporting via an onboard mobile tablet; provide weather information; and offer two-way communication through onboard Wi-Fi connected to mobile devices for text/SMS messaging and email.



Capabilities:

- Hybrid satellite-cellular communication with auto switchover technology
- Catch Reporting app to enable data capture at sea
- Internal fleet monitoring and management functionalities, including geofencing and telemetry data
- Local Wi-Fi connectivity with limited internet connection for crew
- Person to person simple text communication (i.e., crew to family)
- Emergency and Distress Locator; Alerts and Broadcast



Technology: **Futuristic Aviation and Maritime Enterprises, Inc. (FAME) Vessel Transponders**

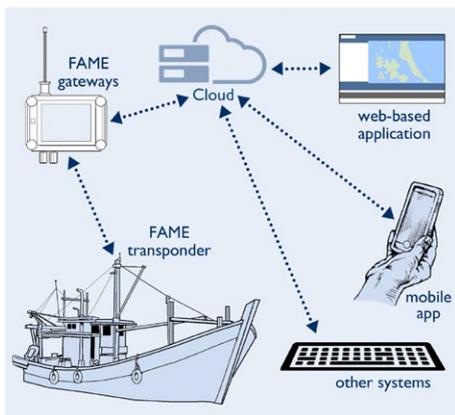
For: **Small-Scale**

User: **Small-Scale Fishers**

VMS technology is primarily deployed on larger fishing vessels (30 Gross Tons and up) as an enforcement and monitoring tool. FAME, a private company based in the Philippines, has developed small-scale vessel technology that enable small-scale fishers to participate in eCDT and enhance safety at-sea.

How it works:

FAME makes use of radio frequency to send and receive information through “gateways” that receive information from the vessel transponders and send data to a cloud server. Data can be sent up to 50 km offshore and can be further extended via mesh technology that allows transponders to provide connectivity to those within range. Personal communication, together with catch data, can be sent through the FAME transponders.

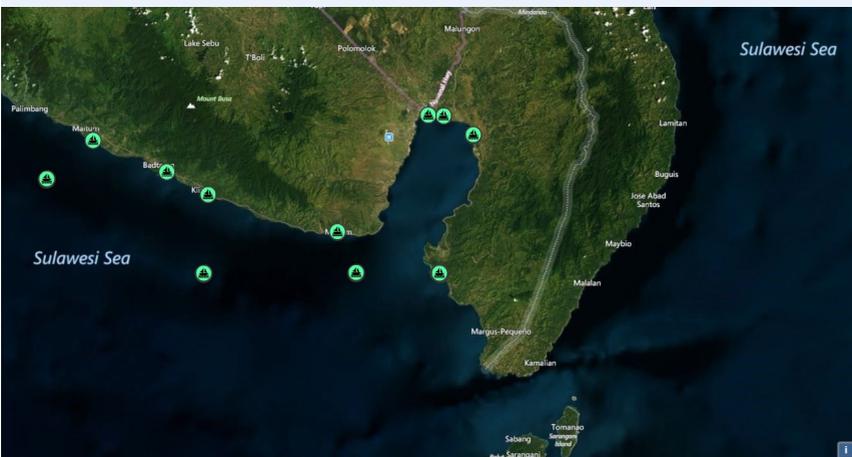


FAME also provides a dashboard through a web-based and mobile application that allows users to see details of each transponder and other related data in near real-time, anywhere. The dashboard also allows users to draw geofencing areas for remote areas or areas to prioritize, as well as generate custom reports with integrated graphs. FAME enhances fisher’s safety at sea through location tracking, an emergency distress button, and connectivity at sea through connected mobile devices.



Capabilities:

- Durability, customized for at-sea conditions, including dust and water-proofing, solar and wind-powered charging capabilities
- Increased at-sea fisher safety with integrated SOS button and location data sent to shore every 15 minutes
- Extended connectivity through mesh network technology, extending range beyond 50 km by bouncing the signal through other vessel transponders
- Secure and encrypted data transmission
- Ability to include telemetry data through connected sensors including cold storage temperature and fuel
- Ability to connect mobile device for increased ship-to-shore communication



FAME enables real-time vessel tracking to approved users, including families and fisheries managers.

2. LANDING

Technology: **Trafiz (Mobile Application)**

For: **Small-Scale**

User: **Buyer/Broker**

To address the unique needs and challenges faced by small-scale fishers in providing traceability data, USAID Oceans developed “Trafiz,” a mobile catch documentation application that enables the first buyer or fish supplier to collect and submit traceability data.



Receiving and Grading

Screenshot of the Trafiz app showing the 'Tambah Tangkapan' (Add Catch) screen. The screen displays a form for entering catch data, including a grid for grades (A, AA, AAA, B, C, CCC) and a 'Pilih Grade' dropdown. The current grade selected is '60A'. There is a '+ Tambah Ikan' button and a '+ Catatan' button at the bottom.

Delivery and Invoicing

Screenshot of the Trafiz app showing the 'Amir' (Invoice) screen. The screen displays a list of items with columns for item ID, weight, grade, and status. The items listed are: A180501 (10kg Grade A), A180502 (30kg Grade AA), A180503 (50kg Grade C), A180503 (20kg Grade A), and A180503 (50kg Grade A). There is a '+ Tambah Tangkapan' button and a 'Hitung (Rp. 5,000,000)' button at the bottom.

Loan and Payment

Screenshot of the Trafiz app showing the 'Hitung Ikan (Amir)' (Calculate Fish Invoice) screen. The screen displays a summary of the invoice, including the total value (Rp. 30,000), the net value (Rp. 40,000,000), and the loan amount (Rp. 20,000,000). There is a 'Masukkan Pengembalian Pinjaman' button and a 'Hitung (Rp. 1,000,000)' button at the bottom.

Trafiz supports catch reporting, as well as business functionalities that help small-scale buyers manage their business.

How it works:

Trafiz is an Android-supported mobile application for small-scale fish suppliers and buyers that provides a first data entry point for seafood products originating from small-scale fishers. Trafiz enables data collection at the landing site, allowing users to enter and submit catch data via a mobile device. Trafiz also provides value-added user benefits to encourage continued use. Trafiz enables users to track their business operations with custom reports on net profits, as well as a dedicated loan-tracking function.

Capabilities:

- Enables data capture at the point of landing
- Offers added-value business management tools, such as sales and loan management
- Complies with national and international (US, EU) government requirements for small-scale catch reporting
- Accommodates off-line and on-line environments, allowing users to capture and process transactions without connectivity, with data transmitted once the device is re-connected

3. PROCESSING

Technology: **TraceTales**

User: **Processing Company**

TraceTales, developed by USAID Oceans’ grantee Yayasan Masyarakat dan Perikanan Indonesia (MDPI), enables processing companies to capture data throughout the processing stage. With the system, processors can quickly and easily compile the information required by various national and international traceability requirements, thereby ensuring the company’s access to valuable export markets. TraceTales brings paper-based record keeping online for improved business and resource management.

How it works:

TraceTales can be accessed simultaneously by multiple workstations throughout the processing floor and management offices, allowing data entry from receiving, cutting, trimming, packing, loading, and shipping. Users can enter data quickly using touchscreen monitors and connected digital scales that eliminate input errors. The system provides print labels for each packaged box that can be scanned to access complete product information. TraceTales’ data is stored both on a local network as well as in a centralized database server for remote access.

TraceTales supports enhanced business management and analysis. From the data entered throughout the processing stages, the system creates summary data reports, including graphical data and Excel spreadsheets to support efficient decision making.



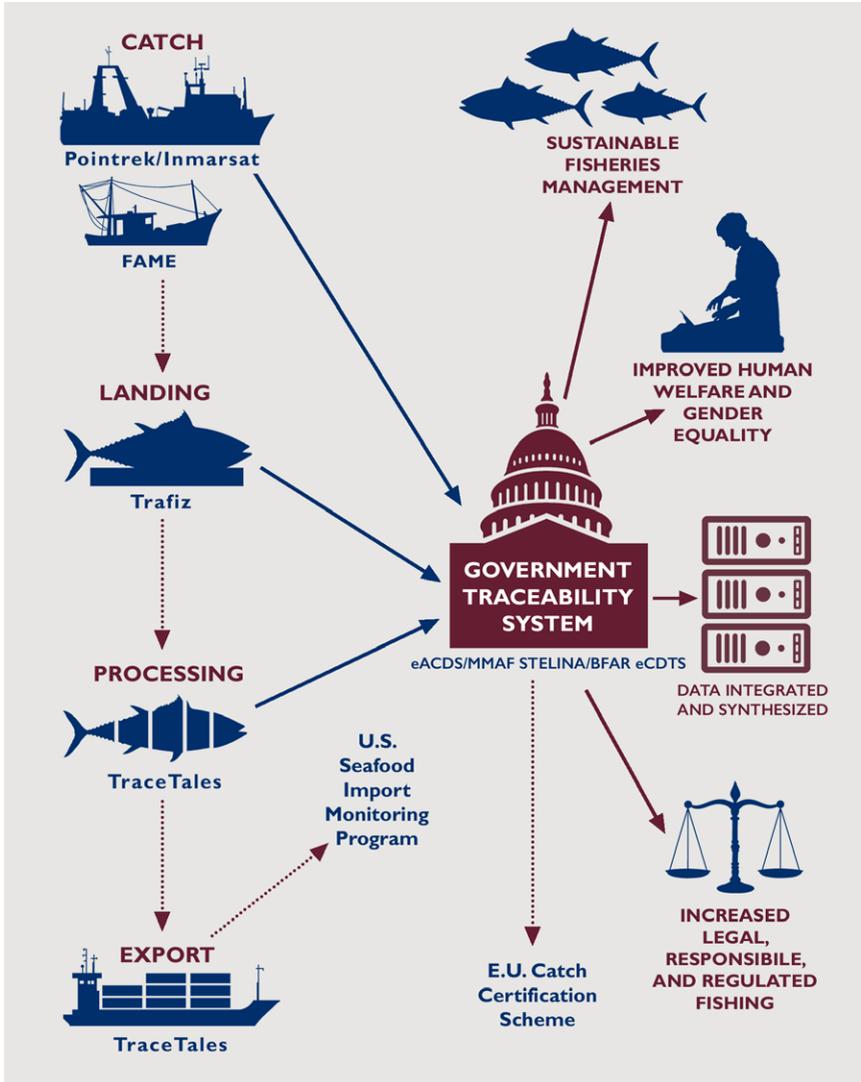
Capabilities:

- Data entry and management, from receiving through shipping
- Enhanced business analysis and decision making, particularly for by-product management and inventory management
- Graphic-based data analysis to assist in decision making
- Elimination of paper-based data collection, enabling continuous data collection and recording
- Product labeling with QR codes capturing detailed information on product origin

4. EXPORT/IMPORT

The data gathered throughout the supply chain, using USAID Oceans-supported technology, is used to meet national and international requirements for sale and export.

Behind each of the eCDT tools in the supply chain is a central database that houses and streamlines all the collected data. This database can also be connected to existing government databases to further sustainable fisheries management, human welfare, and other related initiatives.



USAID Oceans provides support to regional and national eCDT initiatives, including the SEAFDEC-developed Electronic ASEAN Catch Documentation Scheme (eACDS) and national eCDT initiatives of ASEAN member countries. USAID Oceans provides support to its partners for ongoing system design, development, and expansion. Examples of these initiatives include:

The Electronic ASEAN Catch Documentation Scheme (eACDS)

The eACDS was developed by SEAFDEC, in collaboration with the Fisheries Marketing Organization of Thailand, to serve as an effective management tool for enhancing the traceability of marine capture fisheries and preventing the entry of fish and fishery products from IUU fishing activities into the supply chain. The system enables supply chain actors to capture Key Data Elements throughout the supply chain through web and mobile-based database modules. The eACDS is a pre-developed, easy to use eCDT system that can be adopted by member countries and customized to meet national fisheries specifications.

Indonesia: Indonesia Sistem Telusur dan Logistik Ikan Nasional (National Fish Traceability and Logistic System, STELINA)

The Indonesia Ministry of Marine Affairs and Fisheries (MMAF) has developed an internal downstream traceability system that not only serves to bridge eCDT data capture solutions, but also integrates more than twelve existing fisheries management databases that are currently used by MMAF.

Philippines: Electronic Catch Documentation and Traceability System (BFAR eCDTS)

The Philippines' Bureau of Fisheries and Aquatic Resources (BFAR) has developed an internal traceability system, the eCDTS, to bridge small, medium, and large-scale eCDT data capture tools and to integrate existing national databases. The BFAR eCDTS also enables supply chain actors to enter data through web and mobile-based database modules in port, supporting the generation of nationally mandated certificates and documentation.

Data Standards

USAID Oceans has developed recommended data standards and requirements in close collaboration with national fisheries agencies, fisheries experts, standards organizations, industry partners, and members of the development community to guide the development and use of eCDT systems and their tools.

A set of robust key data elements (KDEs) is required for comprehensive bait to plate traceability that is effective in combatting IUU fishing practices as well as human rights and labor abuses. USAID Oceans' guide, **Data Requirements for Catch Documentation and Traceability in Southeast Asia**, details the “minimum” recommended KDEs to be captured within each link of the seafood supply chain and provides a summary overview of those required by predominant import markets and international organizations.

Sample Recommendations:

Producer KDEs (Point-of-Catch)

Category	Key Data Element (KDE)	Data Label (equivalent)	WWF Expert Panel on Legal and Traceable Wild Fish Products	KDE capture required for US SIMP	KDE capture required for EU Imports (EC 1005/2008)	KDE capture recommended under ACDS	Minimum KDEs recommended under USAID Oceans
Who	Event owner	Company or organization name				X	X
	Owner name	Company/fishing vessel owner name	X			X	X
Human Welfare	Owner sex	Sex					X
Who	Owner ID	Fishing license #; personal ID card	X	X	X	X	X
	Owner address	Company address		X		X	X
	Owner phone	Company phone			X		X
	Trading partner	Consignee					X
Human Welfare	Trading partner sex	Sex					X
Who	Vessel name	Name of fishing vessel	X	X	X	X	X
	Vessel size	Vessel type/tonnage (MT)	X			X	
	Vessel flag	Flag state of fishing vessel	X	X	X	X	X

For more information on recommended KDEs, including terms and definitions, please refer to USAID Oceans' full guide at seafdec-oceanspartnership.org/KDEManual.

Contacts and Resources

Technology Contacts

AT-SEA CAPTURE (POINT OF CATCH)

Pointrek

www.sisfo.net/pointrek

Contact: **Nirwan Harahap**

Email: nirwan@sisfo.net

Futuristic Aviation and Maritime Enterprises, Inc. (FAME)

www.fameph.com

Contact: **Arcelio J. Fetizanan, Jr.**

Email: junjun@fame.systems

Learn More! Scan to watch FAME's video.



LANDING

Altermyth

Trafiz developer

www.altermyth.net

Contact: **Dien Wong**

Email: dienw@altermyth.com

PROCESSING

Yayasan Masyarakat dan Perikanan Indonesia (MDPI)

TraceTales developer

www.mdpi.or.id

Contact: **Stephani Mangunsong**

Email: stephani@mdpi.or.id

Learn More! Scan to watch MDPI's video.

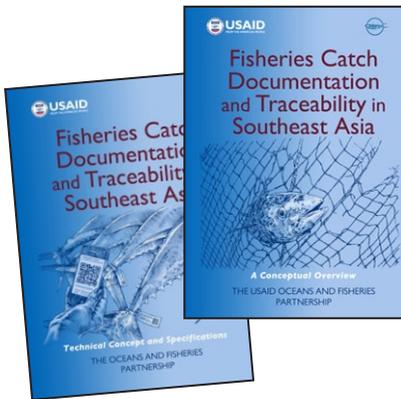


Resources

Program Video - Learn how USAID Oceans and its supported technology solutions are working to strengthen regional cooperation to combat IUU fishing, promote sustainable fisheries, and conserve marine biodiversity in the Asia-Pacific region. This video provides an overview of what eCDT technology is and the benefits it can bring to a range of partners—from local fishers to international consumers.



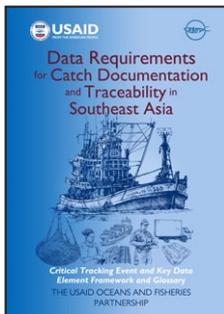
Learn More! Scan to watch USAID Oceans' video.



Fisheries Catch Documentation and Traceability in Southeast Asia Primers

- The “CDT101” provides a conceptual overview of USAID Oceans’ approach to eCDT, exploring Southeast Asia’s fisheries, technology, and partner landscape. The “CDT 201” provides a deeper, more technical look at the program’s technical approach and outlines specifications used for system design, testing, and implementation.

www.bit.ly/cdtprimers



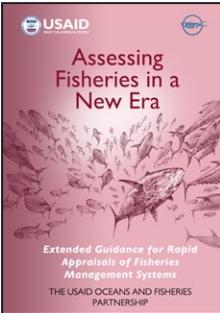
Data Requirements for Catch Documentation and Traceability in Southeast Asia

– This guide presents a framework for the critical tracking events (CTEs) and key data elements (KDEs) recommended for capture by eCDT systems, including those recommended for enhanced human welfare, with a glossary of terms, definitions, and intended uses of all relevant and required KDEs within a traceable, wild-caught seafood supply chain.

www.bit.ly/oceanskdeguide

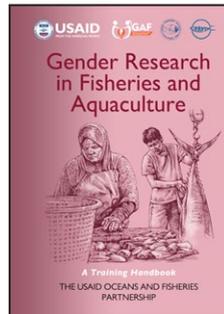
Research and Training Guides

Explore USAID Oceans' training and research guides, which provide guidance and tools for implementing fisheries development solutions that support sustainable fisheries, consider new technological advancements, and enhance the human aspects of fisheries. Visit www.bit.ly/oceansguides to download your copies and view additional available languages.



Assessing Fisheries in a New Era: Extended Guidance for Rapid Appraisals of Fisheries Management Systems provides new and extended guidance on appraising fisheries management systems that make use of new technology advancements and acknowledge the human and gender-related aspects of fisheries.

Gender Research in Fisheries and Aquaculture: A Training Handbook can be used to build team's understanding of gender equity, its importance in development, and practical tools and research methodologies that can be used to obtain valuable information about the human dynamics of fisheries.



Transformational Fisheries Development: Simplified Steps for Public Sector and Industry Engagement provides step-by-step guidance for identifying, evaluating, and implementing partnerships between the public and private sector to greatly enhance eCDT and other fisheries development ventures.

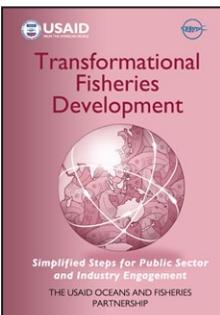




PHOTO: USAID OCEANS/F. MARUF

USAID Oceans' partner pilots FAME technology aboard his fishing vessel in General Santos City, Philippines.

ABOUT USAID OCEANS

USAID Oceans is five-year, regional program that is a partnership between the U.S. Agency for International Development, the Southeast Asia Fisheries Development Center (SEAFDEC), and a network of international, regional and national public and private sector partners. USAID Oceans-developed and supported traceability tools are being piloted in two learning sites of General Santos City, Philippines and Bitung, Indonesia, to provide best practices, lessons learned, and de-risked, tested technology to its regional partners across Southeast Asia.

For more information, visit www.seafdec-oceanspartnership.org/traceability-tools or contact info@oceans-partnership.org

The USAID Oceans and Fisheries Partnership
www.seafdec-oceanspartnership.org