INNOVATIVE DIGITAL SOLUTION:
Supporting fisheries management and catch documentation data analysis

INTRODUCTION

The USAID Oceans and Fisheries Partnership (USAID Oceans) is working to strengthen regional cooperation to combat illegal, unreported, and unregulated (IUU) fishing, promote sustainable fisheries, and conserve marine biodiversity in the Asia-Pacific region. In line with these objectives, USAID Oceans has awarded an Ecosystem Approach to Fisheries Management (EAFM) Grant to the Mindanao State University Naawan Foundation for Science and Technology Development, Inc. (MSUNFSTDI) to **design an innovative digital solution (IDS) to use electronic catch documentation and traceability (eCDT) data to improve fisheries management in the Philippines** (GR006-MSUNFSTDI).

Under the grant, MSUNFSTDI is developing an easy-to-use, practical, digital scheme to support catch documentation and traceability (CDT) for municipal/small-scale and commercial tuna fisheries in Sarangani Province and General Santos City, Philippines. Specifically, the grant objective is to build, test, and deploy an IDS that rapidly and intuitively provides real-time information to inform and enable novel and adaptive fisheries management activities backed by data-driven decision-making.

INNOVATIVE DIGITAL SOLUTION (IDS)

The IDS MSUNFSTDI created is an android mobile-based application built using the architecture depicted in Figure 1. The application uses an application programming interface (API) to "talk" to various other CDT databases and sources of information (e.g. Bureau of Fisheries and Aquatic Resources/BFAR's eCDT system, logsheets, private-sector technologies for small-scale fishers).

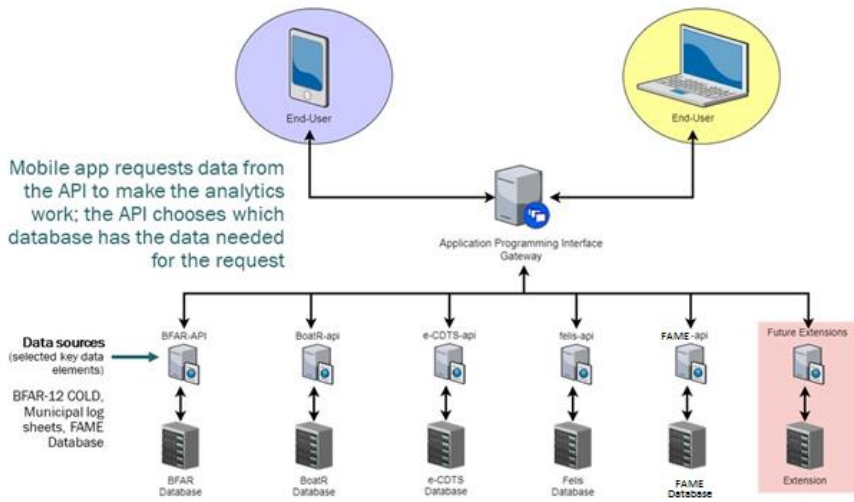


Figure 1. IDS application architecture

The application is designed for five levels of users:

1. National government (BFAR)
2. Industry/commercial fishers
3. Researchers and academe
4. Local Government Units and non-governmental organizations
5. Small-scale fishers

Each user will have a different level of access, with BFAR being the primary user with full access to data. When users log in, they will be brought to the welcome screen from which they will choose which feature they want to use (Figure 2). Under this grant, the IDS was tested using eCDT data from the Sarangani Bay and Celebes Sea (FMA 3) in Southern Mindanao, Philippines.

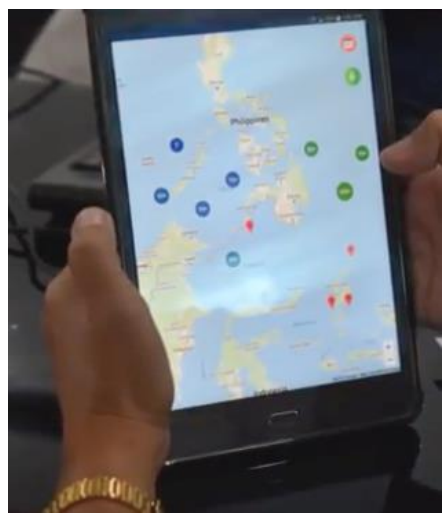


Figure 2. Map visualization (Photo Source: BFAR 12/J. Padro)

DATA ANALYTICS AND VISUALIZATION

The application's two major features are map visualization (Figure 3) and data analytics (Figure 4). Figure 3 shows a visualization of fish catch distribution within a specified data range based on the locations of the fishing vessels at the time of catch. Figure 4 shows charts and graphs available for data analysis and reporting purposes.

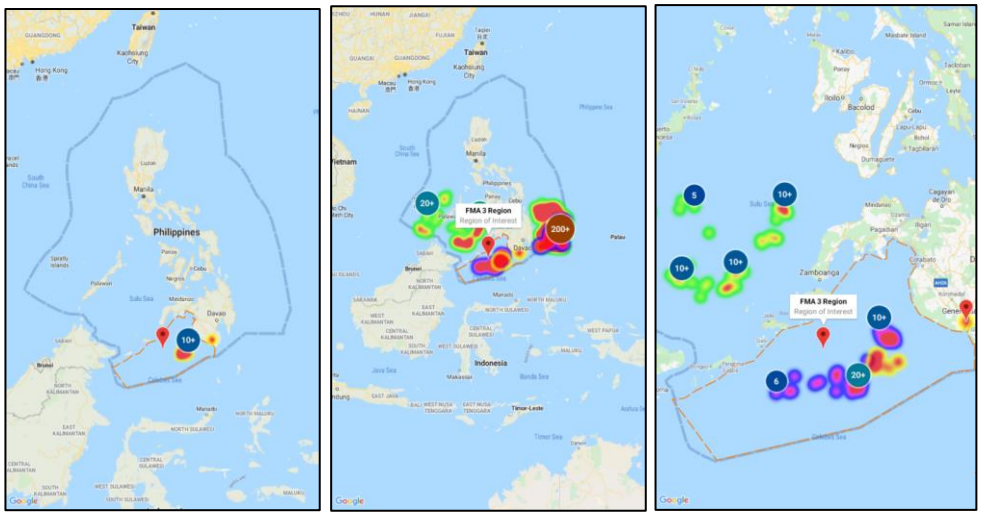
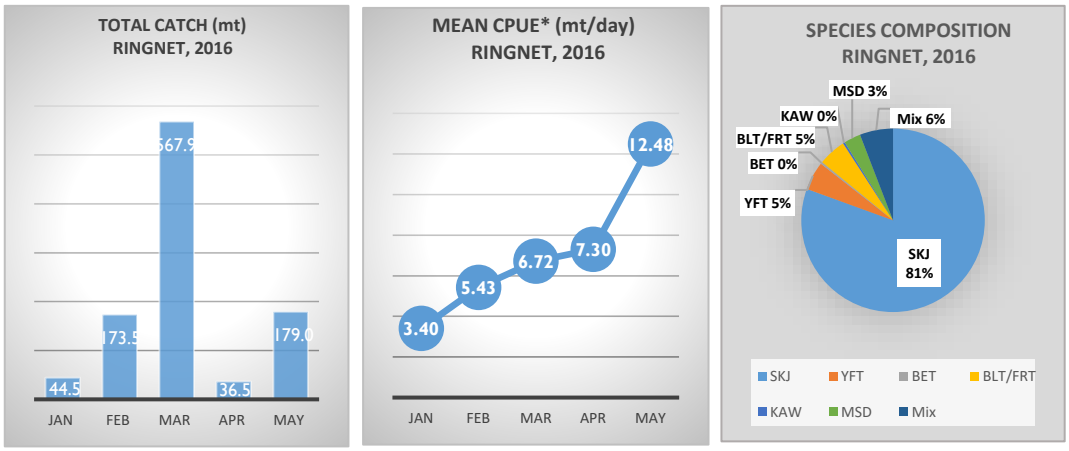


Figure 3. Visualization of fishing activities of hand line (left) and all gears (middle and right) within the Philippine economic exclusion zone.



**catch per unit of effort*

Figure 4. Data analytic visualization

USING DATA FOR SUSTAINABLE FISHERIES MANAGEMENT

It is envisioned that the IDS can use analytics and visualizations of eCDT data to inform development of management practices and policies. Fisheries management interventions such as closed seasons, harvest control rules, and other strategies can support EAFM plan implementation in FMAs. In addition, linking eCDT data with the National Stock Assessment Programs will provide more robust evidence-based guidance for managing FMAs, including considerations of other fisheries, fishing gears, and fish species.

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