

Summary of Digital Technology in Marine and Fisheries Information Based on Android Application, named “Laut Nusantara”

At present mobile phones which used to only function as communication equipment evolved into multi-functional smart devices (smartphones), one of its function is navigation. The use of information technology is not only among millennials, but also known by various groups of the wider community, including fishermen. The use of smartphones by fishermen has become commonplace.

On that basis, the Marine Research and Observation Center in collaboration with PT XL Axiata Tbk provides technological innovations that can help fishermen in accessing a variety of marine and fisheries information. The innovation was realized in the form of an Android system-based application. The application was given the name “Laut Nusantara”. Laut Nusantara phase 1 application was launched on 10 October 2018 by Mrs. Susi Pudjiastuti as the Minister of Marine Affairs and Fisheries Republic of Indonesia in Jembrana, Bali.

Through the Laut Nusantara application, users can use the features presented as follows:

1. Fishing Area Prediction

Information on the prediction of pelagic fish areas comes from the Marine Research and Observation Center. Users are given choices according to the vessel capacity and fishing operations commonly carried out by fishermen, namely coastal area, special water and sea.

2. Sea Weather Condition

Weather information presented wind direction, wind speed, and wave height in all Indonesian waters. Information on sea weather conditions is processed by the Marine Research and Observation Center based on National Center for Environmental Prediction (NCEP) forecasting data.

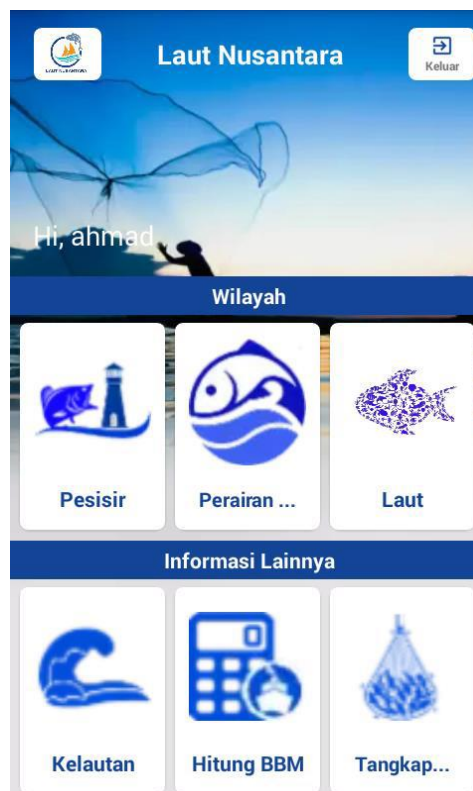
3. Fish Price Information at the Port

Fish price information related with availability current information of fish price on every fish port in Indonesia. The fish price data is sourced from the Fisheries Port Information Center data, the Directorate General of Fisheries, the Ministry of Marine Affairs and Fisheries so the latest updates data do not originate from this application.

4. Estimated of Fuel Oil

Estimated fuel estimation is needed if fishermen want to go to the prediction location of the fishing area and certain desired location. The calculation of this simulation is based on the type of vessel engine, vessel speed, and distance traveled by not considering sea conditions such as flows, waves, tides, and wind.

Laut Nusantara application can be operated through various type/brand of mobile phone that have touch screen feature. This application has been registered in Google Play Store, so users will easy to download and install. At the first-time users run Laut Nusantara application, users are required to fill in their identification in accordance with the Identification Card and Mobile Number. After that, users can choose which services they need. Below is the appearance of application home page



This application has 2 main menus namely Areas and Other Information. In each area category has different scope of map information on fishing area prediction (PPDPI) such as:

- Coastal area is a representation of PPDPI Fishery Port arranged and intended for traditional fishermen (one day fishing) ones operate not too far from coastal areas, mainly fishermen who using vessel <30 GT.
- Special water is a representation of PPDPI territorial special waters composed for the region of the sea intersect with conservation areas where there is an area not allowed for fishing activity.

- c. Sea is a representation of PPDPI National compiled and intended for fishermen with capacity > 30 GT with area prediction to the high seas or ZEEI.

The other main menu is Other Information which has the following features:

- a. Marine feature is intended for shipping safety during fishing operations and can display sea weather information.
- b. Estimated of Fuel Oil feature is used to calculate the estimated fuel needs before sailing
- c. Fish Price Information feature is contained information on fish production of a whole fishing port in Indonesia include type and amount and price of fish at trader level.

Until April 2019, Laut Nusantara application has download reached more than 10,000 people and the socialization among fishermen will be continue. In 22 April 2019 Laut Nusantara phase 2 was officially launched by the Mayor of Denpasar, Ida Bagus Rai Dharmawijaya Mantra in the presence of Denpasar City Fishermen on Dream Island Beach, Mertasari, Denpasar. Hereby 3 main additional features on Laut Nusantara phase 2:

1. Navigation is additional feature on the map to help users estimate the distance, travel time, and fuel estimation to reach their destination. The user can choose several pointers as a destination for capture.
2. Feedback is additional feature on the map as a user tool in assessing services in the form of pointers that have been provided by Laut Nusantara application. This feature can be used if the user's position is 25nm from the pointer. Responses can be given in 2 form of 2 there are Good/Bad choices illustrated by the Thumbs Up icon and the Thumbs Down icon.
3. Unit Conversion is additional feature that can help users to set settings for machines and units of distance that they understand. Users can specify the type of machine, time unit, and distance unit according to what they want when using this application.

In addition, there are several additional mobile features, namely:

1. Satellite View is additional features on the map, provide a more detailed view via satellite imagery so that it helps the Fishermen to see sea conditions more clearly.
2. Search is additional features on the map, help users to find out the location of the desired City, Port and Island.
3. Amount of Fish is new feature that can help users to save data about the fish catches during shipping.
4. FAQ is new feature in the form of a collection of questions about how to use the Laut Nusantara application and its answers.

In 29 August 2019, the Marine Research and Observation Center launched Laut Nusantara phase 3 which has additional features like Vessel Tracking System and SOS. Laut Nusantara application is currently utilized by more than 15 thousand users. Socialization regarding this application is conducted by roadshow to fishermen area because it is felt to be more effective so the fishermen can learn how to use the application directly.