



Maritime Transportation Information System

Route capacity measurement and
fleet franchising optimization





Philippine Maritime Industry

Major contributions of the maritime industry to the Philippine economy



Trade

90 percent of our trade is through the sea



Travel

72.1M passengers carried by sea vessels in 2017



Transport Services

\$2.28B and **\$4.8B** worth of services in exports and imports, resp. in 2017



Tourism

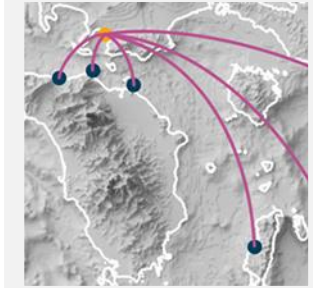
Contributes **12.7 percent** to the total Philippine GDP

Maritime Transportation: Challenges



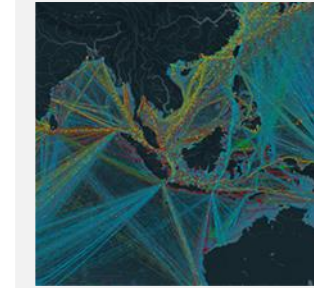
Structure

The Philippines, being an archipelago, is very much **dependent on an efficient maritime transport system** that enables the inter-island movement of people and goods.



System

There is a lack of an existing framework that will **analyze the needed number of routes and their respective capacities** automatically.



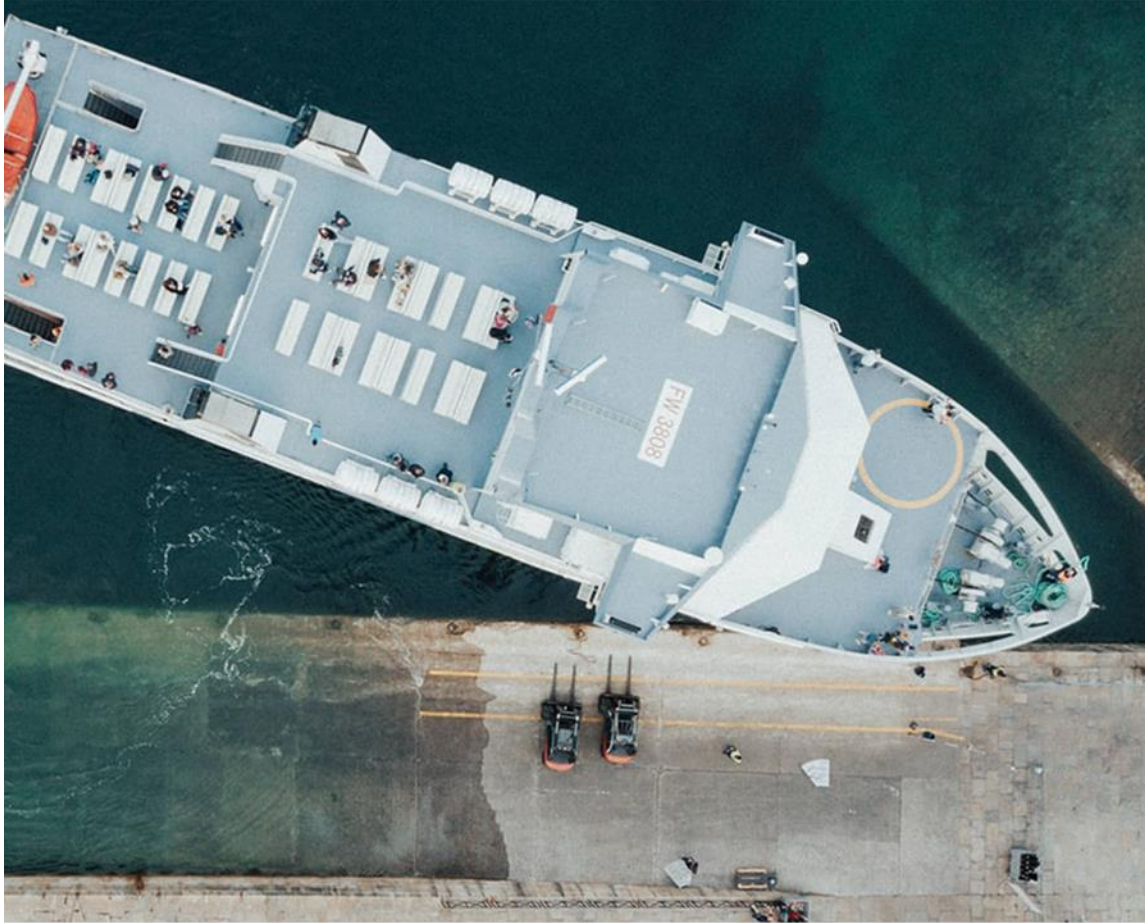
Scientific

There is a need for an **effective data-driven approach** for understanding and forecasting maritime traffic in the Philippines.



Maritime Transportation Information System

MARIS aims to develop and design a modular software and other related tools for an effective route capacity measurement system, as part of MARINA's modernization plan for the Philippine maritime industry.



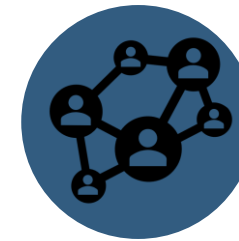
Overview

Demand is analyzed to estimate the fleet size and characteristics required per route.



Route System

Modeling the maritime linkages and ports in the Philippines



State Estimation

Determining the demand for both passenger and cargo



Rationalization

Utilizing control and optimization techniques



Current Implementation

Models are designed in preparation for the network-wide maritime rationalization.



Singular Route

Initial scope covers the Batangas – Calapan route



Data-oriented

Maritime route and port database have been developed



Practical Metrics

Utilization rate and profit per vessel trip for cost-benefit analysis

- This project is in collaboration with **Maritime Industry Authority** (MARINA) and **Philippine Ports Authority** (PPA) with respect to the development and validation.
- This project is funded by **Department of Science and Technology – Philippine Council for Industry, Energy and Emerging Technology Research and Development**.



Collaborations

Stakeholders and End-users

navis

Maritime route rationalization with fleet optimization

Features:

- Ship, Port, Route, and Trip Database
- Fleet Supply Management
- Profitability Criteria
- Cost-Benefit Analysis
- Metrics Visualization Reporting





Future Developments

Network-wide maritime route rationalization and port capacity optimization



Scalability

RCM for multiple linkages and trip chains



Port Utilization

Optimizing portcalls for full utilization of port berths



Reports

Customized reports generation for shipping companies and regulators



Integration

Incorporate [navis](#) to a maritime cyber-physical system

ITS Lab is a **multidisciplinary** group under the UP National Center for Transportation Studies that aims to **unify academic efforts** in the field of intelligent transport.

The group currently focuses research and development in the following:

- **Traffic Management System**
- **Traveler Information System**
- **Vehicle Control System**

Hilario Sean O. Palmiano, DEng

Laboratory Head



About ITS Lab

Intelligent Transportation Systems Laboratory

Projects



Development of a Localized Traffic Simulator (LocalSIM)
Project Leader: Hilario Sean O. Palmiano, DEng



Cyber-Physical Transportation System (CPTS)
Project Leader: Adrian Roy L. Valdez, PhD



Maritime Transportation Information System (MARIS)
Project Leader: John Justine S. Villar, PhD

Implementing Agencies



Cooperating Agencies



Funding Agencies



The Team

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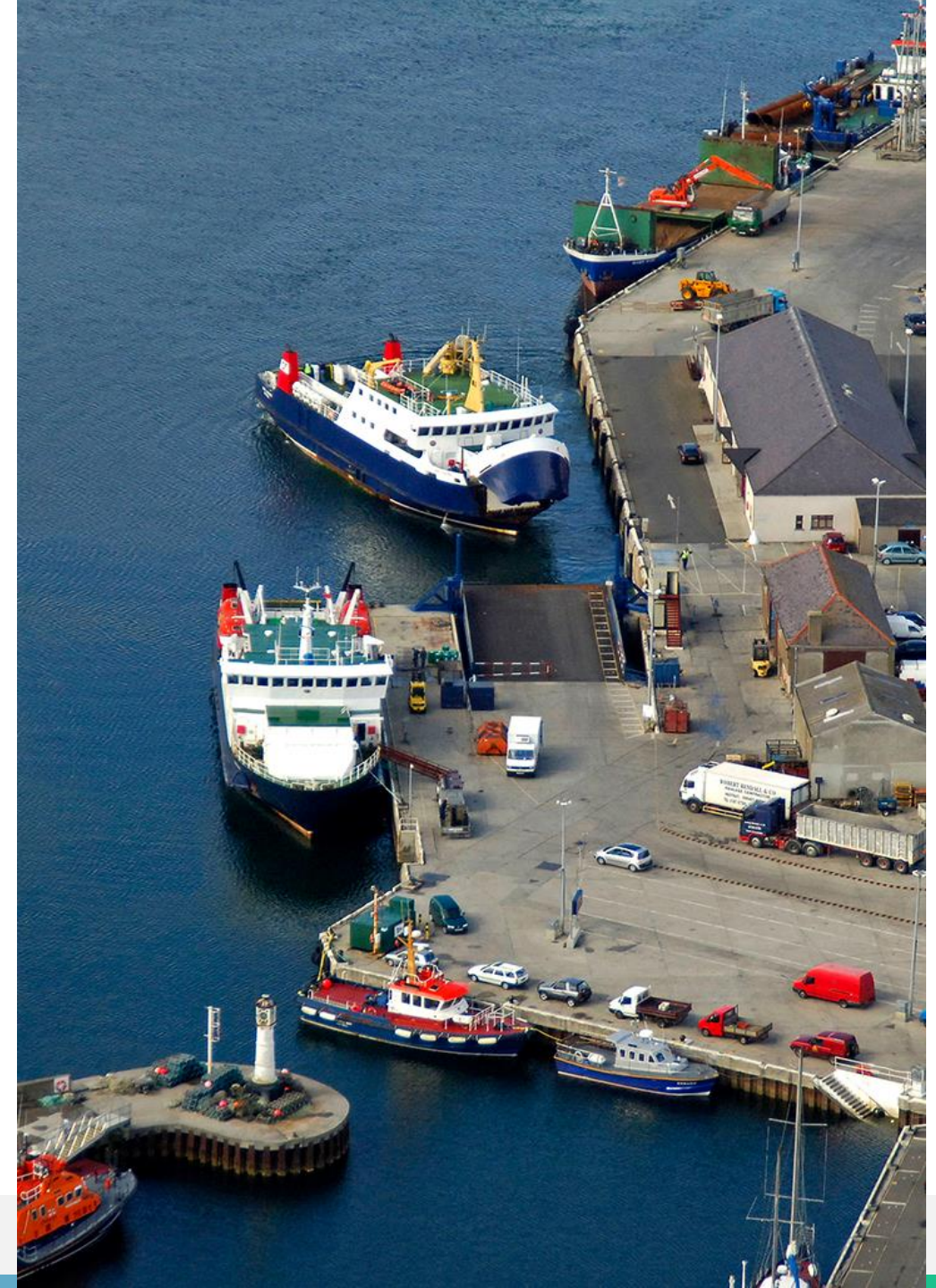
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The Philippine maritime industry plays a crucial role in inter-island connectivity for inclusive economic growth and sustainable development of the country.





There is an urgent need to create an environment that utilizes **innovative, integrated** and **intelligent** systems to upgrade and modernize maritime operations.

It is now time to implement such systems in our country.





Thank You

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