Naval Education and Training Command (N8) Spearheads Capacity Building In Geographic Information System (GIS) Technologies

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The challenges and responsibility confronting the Philippine Navy have never been more acute. Thanks to the recent developments in the West Philippine Sea. With these developments comes the realization that demands appropriate action for the Navy to modernize and upgrade not just in terms of hardware and materiel but in decision-making tools as well.

The Philippine Navy is already hard-pressed with maintaining the security of its more than seven thousand islands and 36,289 km of coastline, which is one of the longest in the world. Coupled to this challenge is the new 220-mi limit stipulated in the Exclusive Economic Zone (EEZ) of the United Nation Convention of the Law of the Seas (UNCLAS) of 1985. The United Nation (UN) also requires countries to put emphasis on maintaining marine ecology. Additionally, new heightened tensions have developed in the Scarborough Shoals demanding further vigilance on the part of the Navy.

With these additional challenges, the Navy has to find new and novel approaches that can produce objective information to support intelligent decisions. It is a common knowledge that the best hardware and equipment are of no use, if informed decisions are lacking from planners and strategists.

The use of geographic information systems (GIS) is timely and relevant. GIS is a fairly recent computerbased decision-making tool that has seen wide applications in a large variety of settings in industry, government, and organizations. Its usefulness and uniqueness is the integration of geographic space in decision-making analysis. The Philippine Navy can enhance its goals and thrusts and increase its relevance through the application of GIS in decision making that pertains to general naval operations and other non-traditional tasks such as safeguarding the archipelago's marine ecology and disaster and rescue operations. GIS is now widely applied in an array of transportation systems as well as in naval base operations and management and naval troop deployment.

The Philippines, being highly archipelagic, is most ideally suited for GIS analysis in order to define the optimum activity given a set of extremely limited logistical resources. These resources not only include hardware and the software to process data, but also the skilled manpower to operate the hardware, to produce and analyze the data, and to recommend logical actions.

Sensing the urgency of the situation, the Naval Education and Training Command (N8) has embarked on GIS capacity building for its personnel. A Filipino GIS expert from Oklahoma State University, Oklahoma, **Dr. Alejandro F. Tongco** invited as part of the Maritime Academy of Asia and the Pacific (MAAP) Research and Extension project had conducted series of training-workshops in GIS to familiarize N8 personnel with the nature and power of GIS as applied to naval operations

The training workshop at HPN was arranged by **Capt Sean Anthony U Villa** and reserved officer **LCdr Angelica M Baylon PN (*Res*)**. Two other similar workshops were held; all three GIS workshops, which were conducted during 06-09 (at N8 Philippine Navy Headquarters), and 20-23 and 26-29 (at MAAP in Mariveles Bataan) in the whole month of March 2012, were attended at various times by N8 personnel, namely: **Lt Rutchie L Ventura PN**, **Ens Catherine E Estrada PN**, **Sgt Nelson Adornado**, **Jennylyn Bitor** (civilian employee), **Sgt Jared Custodio**, **Ens Benedict Milo**, **Ens Andre Neil Osoya**, **Sgt Vicente K Alagar,** and others.

From left to right: ***Sgt Nelson Adornado***, ***Capt Sean Anthony U Villa, Dr Alejandro F Tongco*** *(Trainor),* ***Jennylyn Bitor****,* ***Dr Angelica M Baylon****(MAAP),and* ***Ens Benedict Milo.***
*Photo Courtesy of****Sgt Jared Custodio PN (2012).***

As part of workshop requirement, participants presented their output to the audience. Some sample outputs are: ***PN Officer Geographical Assignment Management System*** (by Lt Ventura and ENS Estrada) and ***Simulation of Chemical Explosion in Metro Manila*** (by ENS Milo and ENS Osoya).
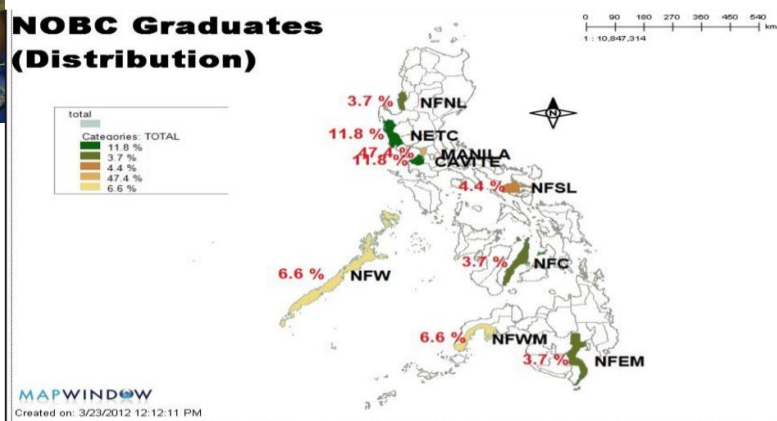
This sample power point was taken from GIS project presentation by Lt Ventura and Ens Estrada (2012)

Already, N8 has lined up several projects as part of its GIS capability program for PN personnel. The list includes PN-wide GIS training programs for personnel in fundamental and technological aspects as well as in naval applications of GIS. GIS-skilled naval personnel are much needed to handle new technologies that increasingly integrate geospatial technologies in naval operations and management. With GIS, decision-making by all rank levels is faster. GIS support becomes highly critical during emergencies that demand quick naval response and deployment.

Another area of GIS application in naval operations is the management of physical facilities and assets of PN bases and installations. This requires the design and construction of a computerized GIS visualization and database of bases infrastructure including physical facilities, and assets within, engineering utilities, natural resources, and topography. It allows users to quickly access and to perform complex queries of information about PN's varied resources. All levels of PN management can be provided with a single, centralized data source to aid them in decision making related to planning, expansion, management, monitoring, and assessment of PN's resources toward the sustainability of its vision, mission, and goals. Related to this project is the emerging implication of the developments in West Philippine Sea. It has spurred in-depth assessments of existing naval security not only of the area in question but nationwide as well. GIS analysis is useful in the search for locations of additional bases and installations as well as for planning of new buildings and infrastructure.

Another GIS-related work that is of high significance to PN is the development and production of electronic navigational charts (ENC) for PN-specific use. This entails ENCs that also meet the minimum requirements of the International Hydrographic Office (IHO) S-57 format and compatible with the IMOmandated

Electronic Chart Display Information Systems (ECDIS) that could be on-board PN vessels. ENCs describe information such as coastal topography, bathymetry, landmarks, geographic place names, and marine protected areas. Integration of emergent datasets such as currents, tides, meteorology, and other oceanographic variables shall be explored.

A highly significant initiative for PN is the development and implementation of an archipelago-wide PN geospatial information system and data portal. This is a comprehensive web-based system to manipulate, analyze, and display information. Presently, no national marine information system exists in the country. The project shall develop and produce GIS data layers and a system for easy data access by various users in the navy.

There are other salient applications of GIS in the Navy, such as spatial analysis of PN naval and civilian personnel. Human resource distribution trends are viewed and analyzed. Data is valuable for intelligent expansion planning, recruitment, retention, policy making, and sustainability of naval personnel and civilian employees.

It is thus highly important to employ GIS techniques in many aspects of PN planning, operations, and sustainability. GIS can save not only a lot of time, money, and effort but also of headaches.

Since GIS is a visualization tool, it is easy to understand for all users, planners and decision makers involved in any project.

Photo shows: from right to left: **Capt Anthony Sean Villa, PN**, **Dr Alejandro Tongco** (GIS Trainer from OSU, USA),
Balanga City **Mayor Hon Jose Enrique S. "Joet" Garcia** (handling the Plaque to Dr Tongco), **Dr Angelica Baylon**, President of the Philippine Association of Extension Program

Implementers, Inc (PAEPI) and (on behalf of MAAP President Vadm Eduardo Ma R Santos, AFP (Ret) former FOIC of PN, as its Director for Research and Extension Series, BPSU President **Dr Delfin Magpantay** on March 29, 2012 during the Fellowship Dinner sponsored by the Province of Bataan in Honor of **Dr Alejandro Tongco, Capt Anthony Sean Villa, PN** reads the contents of the plaque as follows "In *grateful recognition for his significant contribution to the advancement of technology in the country thru his advocacy on GIS. The training workshop utilized a free open source software which immensely contributed to the knowledge and utilization of GIS amongst Higher education institutions, government offices and agencies in the country"* signed by PAEPI President

Dr Angelica Baylon, Head N8 Education and Training of PN **Capt Sean Anthony Villa** , Bataan Governor **Abet Garcia**, Balanga City Mayor Garcia, BPSU President **Dr. Delfin Magpantay** and MAAP **President Vadm Eduardo Ma. R Santos, AFP (Ret)** *(Photos courtesy by MIS, Province of Bataan)*