



## **PAEPI Seminar-Workshop Proposal:**

### **Enhancing the Institutional Capacity of Maritime Education and Training Institutions (MET) Using Geographic Information Systems (GIS)**

#### **Why this seminar-workshop for MET ( like MAAP)**

A challenge to MET is to keep up with fast-developing changes and advances in the maritime and shipping industry, both domestic and global. MET has to continually evolve into a more relevant institution to better address the dynamic challenges in the industry. MET needs to strengthen itself to meet the present and future demands and expectations of its students and the workplace they are going to serve, and at the same time be always on top of other maritime institutions pursuing similar goals.

In this day and age, the use and development of information technology, specifically marine information technologies, is increasing exponentially. The maritime industry is fast adapting to these changes. Needless to say, MET as a major manpower provider and player in the maritime and shipping industry, has to keep up with these advances to produce graduates who are knowledgeable and updated with the use of latest marine information technologies. Having such qualifications, MET graduates are more suited and highly attractive to the maritime and shipping labor market globally.

Geographic information system (GIS) is a fast developing technology that has seen increasingly wide applications in many disciplines. MET can enhance its goals and thrusts and increase its relevance through the application of GIS in institutional research and, most especially, in its niche - marine transportation. GIS is now widely applied in an array of transportation systems and operations. Most significantly, GIS is a major integral component in marine information systems. Port operations and management, likewise, is another area now taking advantage of the power of GIS.

MET in the Philippines like MAAP can capitalize on its present status as a top maritime institution by moving quickly to integrate GIS in its academic goals, specifically in its curricular and research activities. This is a big step, but huge steps start with a small, single step. This initiative proposes an introductory seminar and workshop on GIS to familiarize audiences with the nature and power of GIS. This seminar-workshop is especially designed for MET administrators, faculty, and researchers. GIS capacity buildup can move at a faster pace once initial GIS knowledge is developed at MET like MAAP and all those other CHED accredited MET institutions .

#### **Main objective**

**To introduce GIS as a tool for enhancing the institutional capacity of MET institution.**

## **Two major activities**

### **Activity 1 – GIS Seminar (one hour)**

An Introduction to GIS in Institutional Research and Marine Transportation

### **Activity 2 – Intensive, Hands-on GIS Workshop (four days)**

Learning to Apply GIS in Institutional and Marine Transportation Research

**Event date** Four days in March 2012 (**March 12, 17 and 24 for the students and March 20-23 for MET and MAAP**)

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## Activity 1 – GIS Seminar (1 hour)

### **An Introduction to GIS in Institutional Research and Marine Transportation**

#### Outline (Tentative)

1. Contents
2. Target Audience
3. What is a GIS?
4. GIS – a Versatile Tool
5. Physical Components of a GIS
6. Features of a GIS
7. What can GIS do?
8. Process Questions in GIS Analysis
9. GIS Demonstration
10. What is Institutional Research?
11. What do Institutional Researchers do?
12. What is Educational Research?
13. Traditional Presentation of Results
14. GIS Applications in Institutional Research
  - a. GIS in campus administration
  - b. GIS in student recruitment and admissions
  - c. GIS in curriculum and teaching
  - d. GIS in survey research and extension
  - e. GIS in alumni management
15. Spatial Statistics Tools in GIS
16. Some GIS-based Topics in Institutional Research
17. Marine Transportation Requires Maps
18. GIS Applications in Marine Transportation and Port Administration
  - a. Port design, infrastructure and expansion planning
  - b. Environmental and spill response management
  - c. Port operations and facilities management
  - d. Security operations
  - e. Incident tracking
  - f. Intermodal management
  - g. Meteorological monitoring
  - h. Water depth assessment and visualization
  - i. Nautical charting
  - j. Shipping channels location
  - k. Restricted area awareness
  - l. GIS- and web-based marine information systems
19. Some GIS-based Researches in Marine Transportation
  - a. Nationwide vessel inventory and distribution
  - b. Vessel positions and navigation lanes
  - c. Navigation charting

- d. 3D bathymetry
  - e. Incident mapping and analysis
  - f. Mapping analysis of marine aids
  - g. Climate and weather maps
  - h. Sea worthiness and operating environment of vessels
  - i. Air quality of marine power plants
  - j. Delimiting maritime zones and boundaries
  - k. GIS software programs focused on marine transportation
20. Other Disciplines and Industries Using GIS
21. GIS in HEIs Worldwide
22. Enhancing MET institution
- a. GIS-based Institutional Research
  - b. GIS-based Research in Marine Transportation
  - c. Curricular Offering in Master of Science (and PhD) in Marine Transportation
  - d. Dedicated and Highly Qualified Faculty and Researchers

## Activity 2 – GIS Intensive Workshop (4 days)

### **Learning to Apply GIS in Institutional and Marine Transportation Research**

(Tentative Plan)

**Resource Person / Trainer:** Alejandro F. Tongco, PhD  
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**Target Participants:** Administrators, Office Heads, Faculty Members, and Researchers  
**Participant Qualifications:** Average computer-literate; enthusiastic to learn GIS  
**Number of Participants:** 20

**Software to Use:**

MapWindow GIS, Quantum GIS, OpenOffice, Google Earth, ArcGIS Explorer Desktop, 7-Zip, and other software as may be necessary. (All are free of charge.)

**WORKSHOP OBJECTIVE:**

The main purpose of the workshop is to teach participants with the basics of GIS and to use a GIS software. These skills shall include the following:

1. Fundamentals of GIS
2. Basic hands-on skills how to use a common GIS and visualization software to process and display data
3. How to plan, implement, and report a GIS project.

**WHAT TO BRING:**

1. Laptop (newer version with at least 2-gig memory; installed with Windows XP, Vista, or 7)
2. Maps and datasets from participating MET institution ( MAAP/AMOSUP example), government agencies (e.g. CHED, TESDA, NAMRIA, MARINA, NOAA, POEA, etc.), and other sources (including digital maps, GIS datasets if any, paper maps, and tabulated data)
3. Thumb/flash drive

**TO BE ACCOMPLISHED BY EACH PARTICIPANT:**

1. All workshop exercises
2. Individual simple GIS project
3. Powerpoint presentation of GIS project
4. Packaged project digital output (includes project report, presentation, datasets used and produced, and related files - all in single folder) to be submitted to Dr. Baylon.

**VENUE REQUIREMENT:** Fast Internet connection

## **DAY 1**

### **AM**

- Registration (including participant's name, phone, email address, office address)
- Opening Introductions
- Introduction to Geographic Information Systems (Powerpoint)
- File Management
- Software Download and Installation
- Fundamentals and Demonstration of MapWindow GIS

### **PM**

- Exercise 1: Creating a Simple Map
- Exercise 2: Creating Complex Maps with Several Layers; Labeling and Using the Coloring Scheme

## **DAY 2**

### **AM**

- Using Google Earth and ArcGIS Explorer
- GIS-based Researches for MAAP (Powerpoint)
- Exercise 3: Digitizing Features (Creating Points, Lines, and Polygons) in MapWindow, Google Earth, and ArcGIS Explorer, including conversion between KML or KMZ and GIS files

### **PM**

- Making a Simple GIS Project (includes title, summary of your project, background and significance, beneficiaries and implications, objective, data, procedure, results and analysis, conclusion, future work) (Powerpoint Presentation)
- Exercise 4: Editing Attribute Tables, including using OpenOffice Calc (or Excel) to Populate Tables

## **DAY 3**

### **AM**

- Exercise 5: Geoprocessing
- Exercise 6: Projections, Geographic Referencing, and GPS
- Project Assignment
- [Work on Project]

### **PM**

- [Work on Project]

## **DAY 4**

### **AM**

- [Work on Project]
- Powerpoint Presentation (15 minutes each)

### **PM**

- Powerpoint Presentation -- Continued

- Submission of Packaged Output (in single digital folder)
- Feedback from Workshop Participants
- Awarding of Certificates and Closing Remarks