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# **MAAP and PAEPI Global GIS-based Academic, Research and Development Activities, Accomplishments and On-going Projects**

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# ABSTRACT



*This paper introduces **MAAP**, its curriculum and research and extension initiatives including but not limited to one of its latest best practices in introducing GIS to the community (internal and external - **PAEPI member institutions**) who share similar passion for innovation*

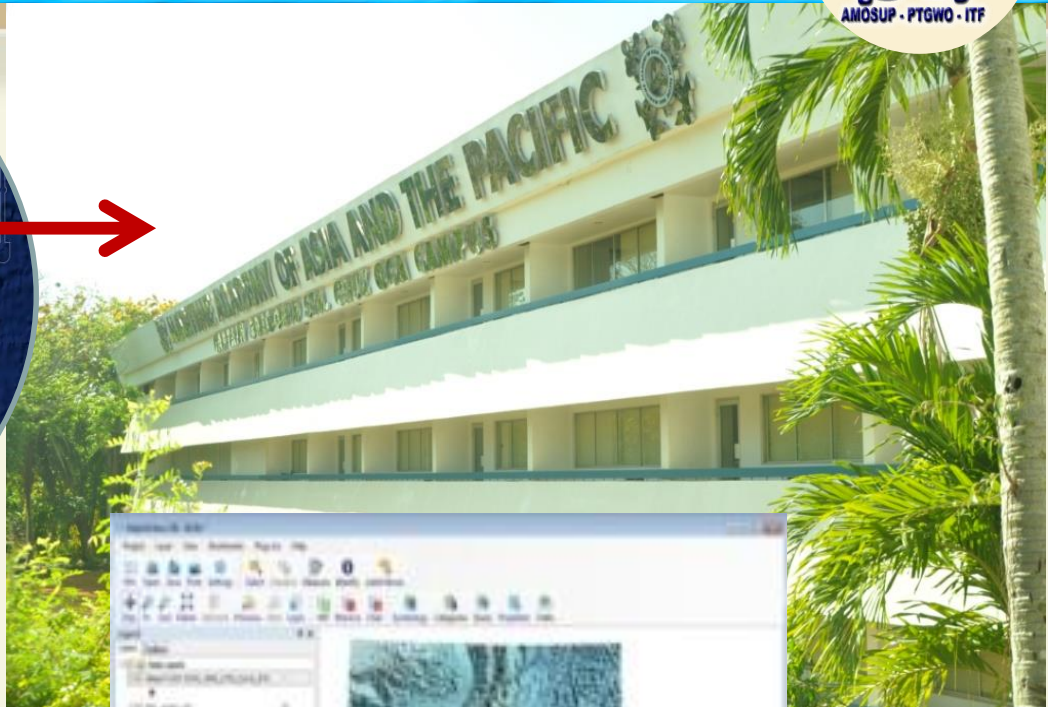
***GIS –based accomplishments led and shared by MAAP and PAEPI Global** as part of its Research and Extension Services*

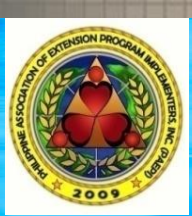
- GIS-based papers presented and published*
- GIS-based project proposals for campus management enhancement*
- the capability Training on GIS*
- CHED & DOST- endorsed National 3-day GIS Conference*

*78 proposed GIS-based research project outputs involving **20 HEIs** ( **PAEPI member institutions** in the Philippines), 17 are applicable to METIs, MAAP has 6 on-going GIS- based projects*



# ABOUT MAAP





# MAAP MET CURRICULUM( as an example)



- ◆ BSMT curriculum: 155 units of Prof and Gen Ed courses
- ◆ BSMarE curriculum: 158 units of Prof and Gen Ed courses plus 40 units - one-year shipboard training
- ◆ Starting 2011, MAAP is the only school in the country authorized by CHED to offer vertically articulated maritime graduate programs (MSMT and MSMarE)
- ◆ Core courses can be enhanced with the integration of GIS topics relevant for future deck officers, faculty, and researchers



# RESEARCH & EXTENSION SERVICE INITIATIVES



- ✓ As **MAAP Director** and **PAEPI President**, coordination (2011-2012) with GIS specialist Dr Alejandro Tongco from Oklahoma State University was done as regards GIS ([www.philgis.org](http://www.philgis.org))
  - wide application of GIS in any discipline which may be applicable in MET, research, extension and campus management beneficial for **MAAP** and its **PAEPI member institutions**
  - GIS use in analyzing the relationships of people, places, things, and events using several spatially referenced data layers representing the earth
- ✓ **GIS is applicable in any discipline be it maritime or not**
- ✓ the maritime industry for example like MET schools can leverage the power of GIS through analysis & finding innovative ways, means and solutions to the shipping industry's multifaceted & interlinked global challenges.
- ✓ The increasingly widespread application of GIS in the maritime and related industries necessitates the integration of GIS techniques in METIs.



# ***GIS in Education and Training***



## ***? improve teaching methodologies and curriculum content***

- spatial analytical competence and be at ease with equipment and activities in the workplace that uses GIS; graduates to be analytical thinkers and to could be researchers

## ***? GIS may be used as an aid to teaching and as a skill to be taught to students***

- integrate GIS techniques in field laboratory exercises
- Teach GIS software skills to enhance students' analytical thinking
- engage in GIS-based research and development activities.

## ***? GIS techniques may be integrated in the curriculum***

- enclosure of GIS topics can enrich the maritime curricular content of courses for example such as ICT; ships & ship routines; meteorology & oceanography; world geography; pollution and prevention; & merchant ships search and rescue
- undergraduate and graduate courses



# *Various MAAP and PAEPI Global GIS papers presented and published*



*Human Security and GIS: An Introduction*

20<sup>th</sup> General Conference by the International Federation of Social Science Organizations (IFFSO), Lyceum of the Philippines University, Batangas City, **November 18-20, 2011**

*Introducing GIS as Catalyst for Research, Extension Services and Development of Catanduanes Island*

2012 National Conference on Water and Biodiversity (BIOME3), Virac Catanduanes Island, **October 21-23, 2012.**

*GIS as an Innovative Tool for MET Research, Extension and Campus Management Enhancement: MAAP Initiatives*

10<sup>th</sup> TRANSNV. Gydnia Maritime University on **June 19-20, 2013.** paper is published in refereed book by GMU and Nautical Institute Book (**ISBN 978 -1-138-00104-6**)



# ***Institution-Wide GIS Implementation***



## **Institution-Wide GIS Implementation**



### **Academic Capability**

### **GIS-Based Campus**



- Faculty/Staff Development in GIS
- GIS Curriculum



- GIS-based campus facilities & asset management
- GIS-based student curriculum

**PAEPI Member Institutions with an Institutional GIS Center**





# ***GIS-Capability Trainings***



- ↓ **MAAP faculty and staff** (20-23 March 2012 and 26-29 March 2012) at MAAP campus
- ↓ **MAAP students** - every Saturdays (March 12 to 24, 2012).
- ↓ **Philippine Navy Education and Training Compound** (March 7-10, 2012)
- ↓ **Bataan Provincial Hall** (March 13-16, 2012),
- ↓ **MAAP and BPSU community** (March 12, 17, 21-24, 2012)
- ↓ **other PAEPI members institutions** (March 26-29, 2012)





# CHED & DOST –endorsed National GIS Conference



- “Enhancing Research, Extension Services and Institutional Capacity of HEIS through GIS”
- MAAP, Philippines on March 29-31, 2012





# ***GIS-based project proposals***



- 1. GIS-based Campus-wide Management of Physical Facilities & Assets***
- 2. GIS Applications in Ship Management: Database Query & Visualization of Ship's Facilities & Assets***
- 3. Development and Production of IMO Compliant Philippine Electronic Navigational Charts( ENCs) Using Geospatial Technologies***
- 4. Development of a National Maritime Geospatial System & Data Portal: A Research & Extension Initiative***
- 5. Students, Faculty and Staff Profiling Using GIS***
- 6. Enhancing Alumni Data Base Using GIS***
- 7. A Graduate Level Subject Offering "GIS with Maritime Applications " at the MAAP Center for Advanced Maritime Studies***



# ***GIS-based project proposals***



8. *Identifying Vulnerability of Different Communities(Barangays) to Different Types of Risks Using GIS*
9. *Tracer Study of Graduates*
10. *Research on the Employability of Graduates in the Various Programs Offered*
11. *Community Baseline Data on Outreach Areas*
12. *Monitoring of Outreach Projects Using GIS*
13. *Enhancing Outreach Community Planning Using GIS*
14. *Resource Mapping of Outreach Areas Using GIS*
15. *Integrating GIS in Outreach Program Implementation*
16. *Geo-Hazard Mapping & Risk Reduction Management by GIS*
17. *Impact Evaluation of Outreach Projects Using GIS*



# ***On-going GIS – Based Special Academic Research Projects***



## **1. GIS Visualization and Spatial Analysis of Students, Faculty, Staff, and Alumni (Profiling of Institutional Students, Faculty, Staff and Alumni Using GIS)**

👉 GIS data visualization, trends, and patterns profiling cadets, faculty, staff, and alumni of the institution

👉 Past and present human resource distribution trends - for intelligent expansion planning, recruitment, retention, policy making, and sustainability of students and human resources





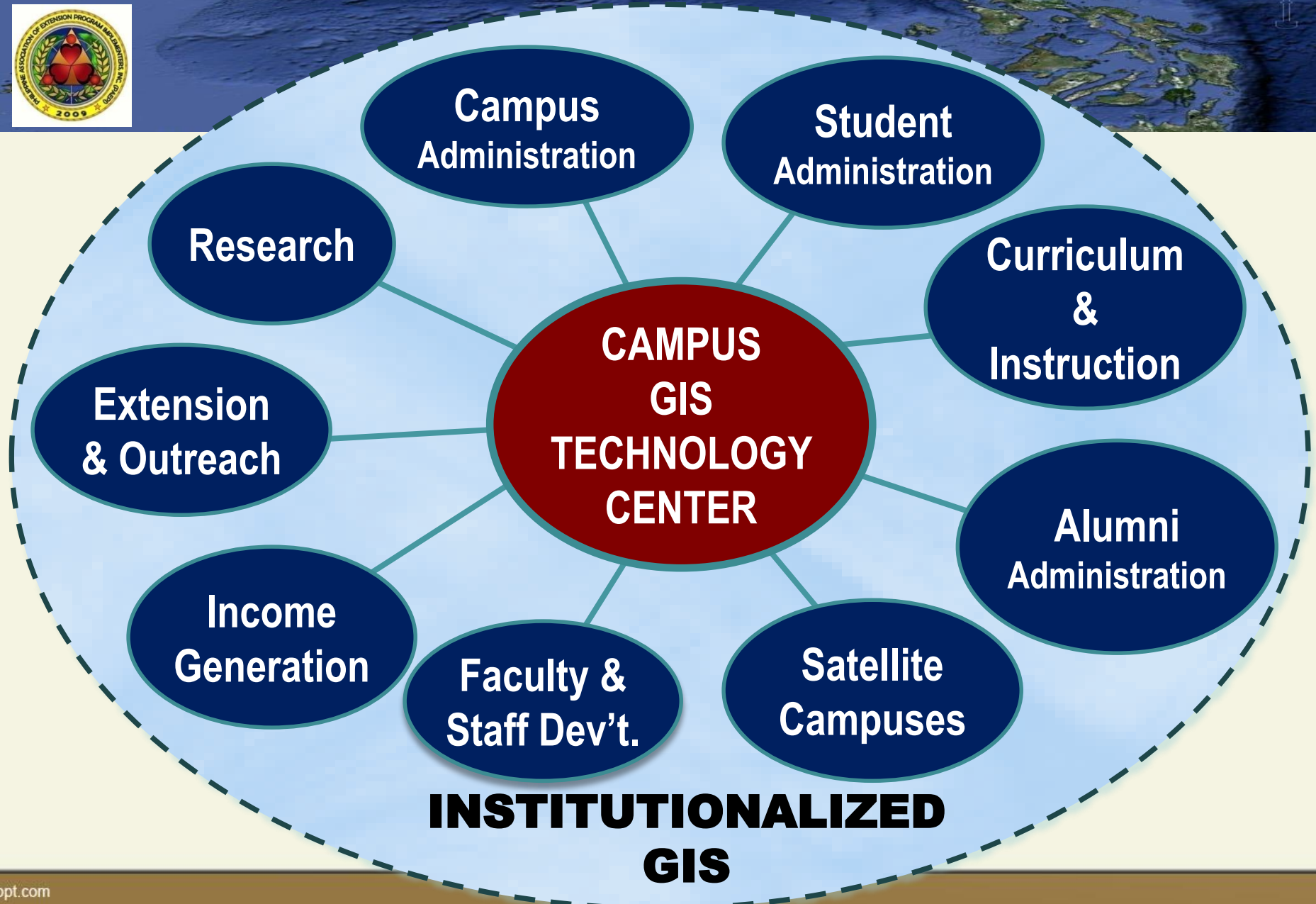
# ***On-going GIS – Based Special Academic Research Projects***



## **2. GIS-Based Campus-wide Management of Physical Facilities and Assets**

- 👉 A computerized GIS visualization and database of campus infrastructure, physical facilities, and assets within, including engineering utilities, campus natural resources, and landscape. It will allow users to access and perform complex queries of information about Institutions' varied resources.
- 👉 centralized data source to aid them in decision-making related to planning, expansion, management, monitoring, and assessment of Institutions' resources toward sustainability of its vision, mission, and goals

# IMPROVING CAMPUS MANAGEMENT USING GIS





# On-going GIS-Based Special Academic Research Projects



## 3. Institutional Dev't & Prod'n of Electronic Navigational Charts (ENCs) Using Geospatial Technologies

🚢 ENCs for the Philippines that meet the min. reqts of IHO S-57 and compatible with the IMO-mandated ECDIS

🚢 Integration of emergent datasets such as currents, tides, meteorology, and other oceanographic variables

🚢 development and production of ENCs can be hastened

🚢 develop and produce own digital and navigation maps for teaching and training needs of cadets and seafarers







# ***On-going GIS-Based Special Academic Research Projects***



## **4. Development of an Archipelago-wide Maritime Geospatial Information System and Data Portal: An Institutional Research & Extension Initiative**



A comprehensive web-based maritime geospatial information system and data portal for the maritime and shipping industry as well as for other ships plying or entering Philippine waters.



Presently, no national maritime information system exists in the country. This will be first of its kind, and to be spearheaded by any PAEPI member institution who shall develop and produce GIS data layers and a system for easy data access by users in the industry.





# ***On-going GIS-Based Special Academic Research Projects***



## **5. A Graduate-Level Subject Offering: *GIS with Maritime Applications* at the Center for Advanced Maritime Studies**



- 👉 Syllabus and detailed lesson plan for a graduate-level and continuing-education subject offering in “GIS with Maritime Applications”
- 👉 focus on the fundamental principles of GIS and its increasingly wide applications in maritime transportation, ports management, and marine and coastal environment.
- 👉 Knowledge of GIS is becoming highly desired, e.g. in marine transportation traffic and fleet management as well as in ports planning, operations, and administration



# ***On-going GIS-Based Special Academic Research Projects***



## **6. GIS Application in Ship Management: Database Query and Visualization of the Ship's Facilities and Assets**

-  computerized GIS-based database and query system of the physical and spatial aspects of a ship - ship's floor spaces, facilities, assets, and manning assignments, including passenger and/or cargo hull capacities
-  access to this data quickly allows effective and efficient management and monitoring of the ship's facilities and assets





# CONCLUDING REMARKS



- ⊕ GIS as a software technology are mostly found in seaborne trade and none in an educational setting for campus, research and MET enhancement
- ⊕ GIS can be used in whatever discipline as long as 4 components exist: People, place, things and events
- ⊕ GIS can be introduced in existing maritime-related courses, developed into a distinct course for undergraduate and graduate program, and used as a tool in field research work
- ⊕ A GIS-based campus management system can grow hand in hand with that of GIS in teaching, research and extension services, constantly nourishing and building each other's knowledge base toward an institution-wide integration of GIS technologies.



# Ideas to invigorate “International External Linkages” among **MASCOT/IMACS/ISGG** members



✓ Sharing of Data among **member**

**Institutions** which can be done via email. The researcher can come up with their respective styles, ways or means in analyzing the data using **statistics**, **GIS** and other **applied scientific** and **computing tools** which **MASCOT** stands for



**Information or data are useless unless they are processed, analyzed, interpreted and shared ... Research partnership between PAEPI Global & MASCOT is envisioned!**



# THE AUTHORS



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**END OF PRESENTATION**



**THANK YOU  
& MABUHAY!!!**