

Grid Activities in the Philippines

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Outline

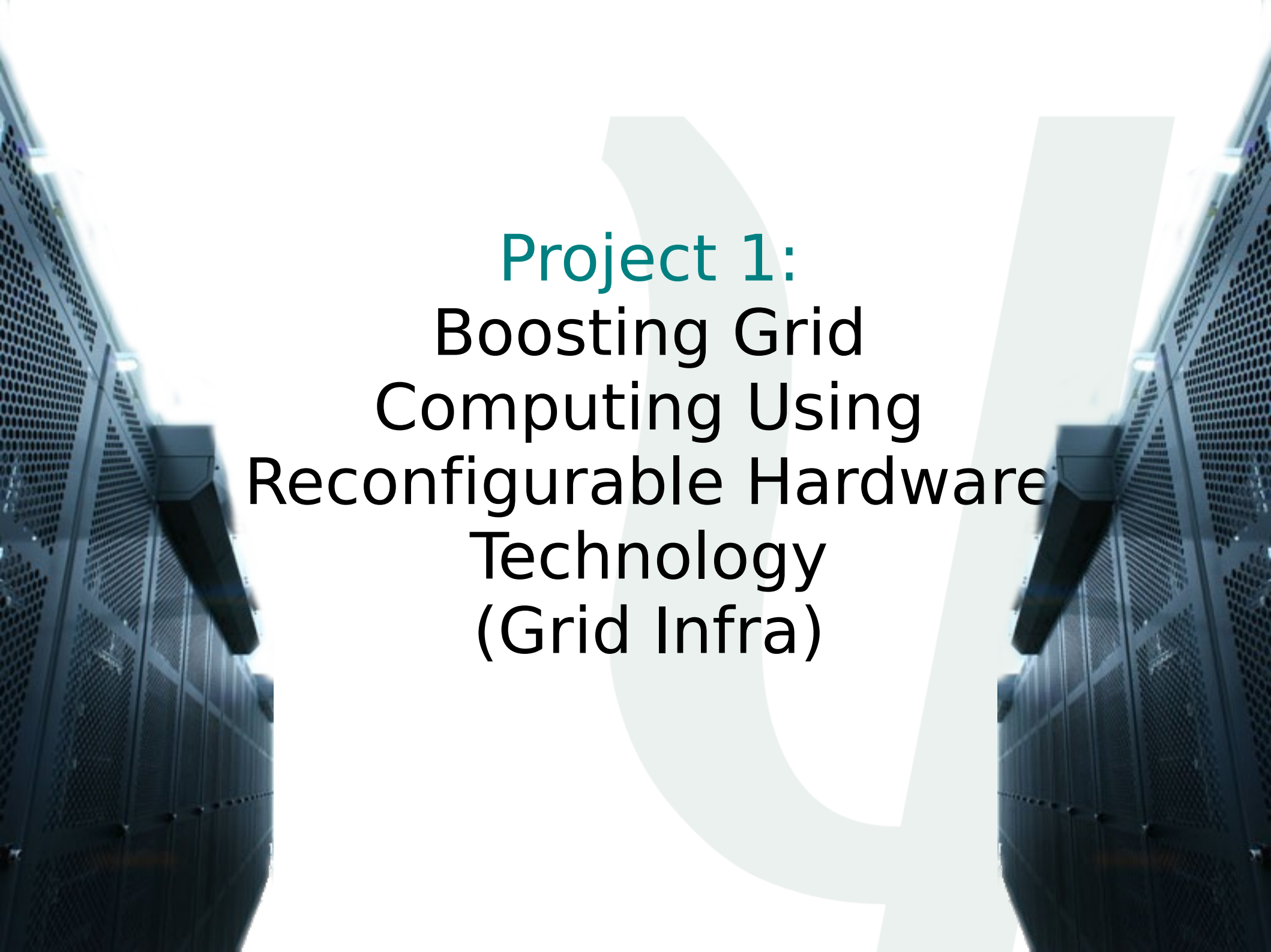
- The Philippine e-Science Grid Program
 - Grid Infrastructure
 - Federated GIS
 - Bioinformatics Solutions
- Deployment Status and Plans
- Focus and Approach
- Infrastructure
- User Community
- Issues

Philippine e-Science Grid Program

- Aims to establish a **grid infrastructure** in the Philippines that will:
 - Enable **collaborative research** activities among **local and regional educational and research institutions**, and
 - Provide **distributed services** to **general users** such as national institutions that will use the grid to deliver **advanced services**

Philippine e-Science Grid Program

- **Project 1:** Boosting Grid Computing Using Reconfigurable Hardware Technology
- **Project 2:** Developing a Federated Geospatial Information System for Hazard Mapping and Assessment
- **Project 3:** Boosting Social and Technological Capabilities for Bioinformatics Research



Project 1:
**Boosting Grid
Computing Using
Reconfigurable Hardware
Technology
(Grid Infra)**

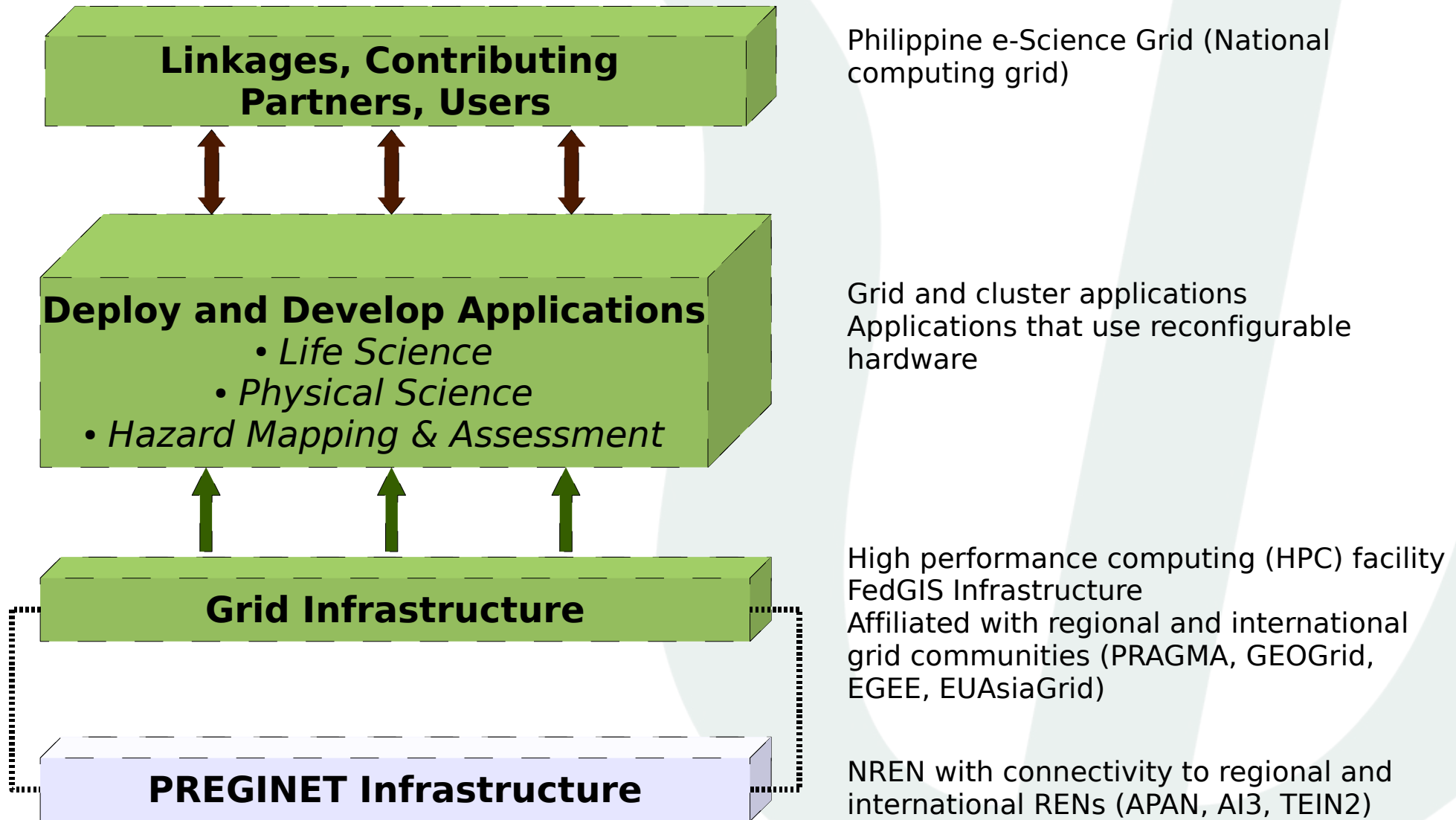
Objectives

- To initiate the establishment of the Philippine e-Science Grid infrastructure that runs both grid and cluster applications as well as applications that use reconfigurable hardware
- To advocate grid technology usage
- To establish linkage with other grid communities

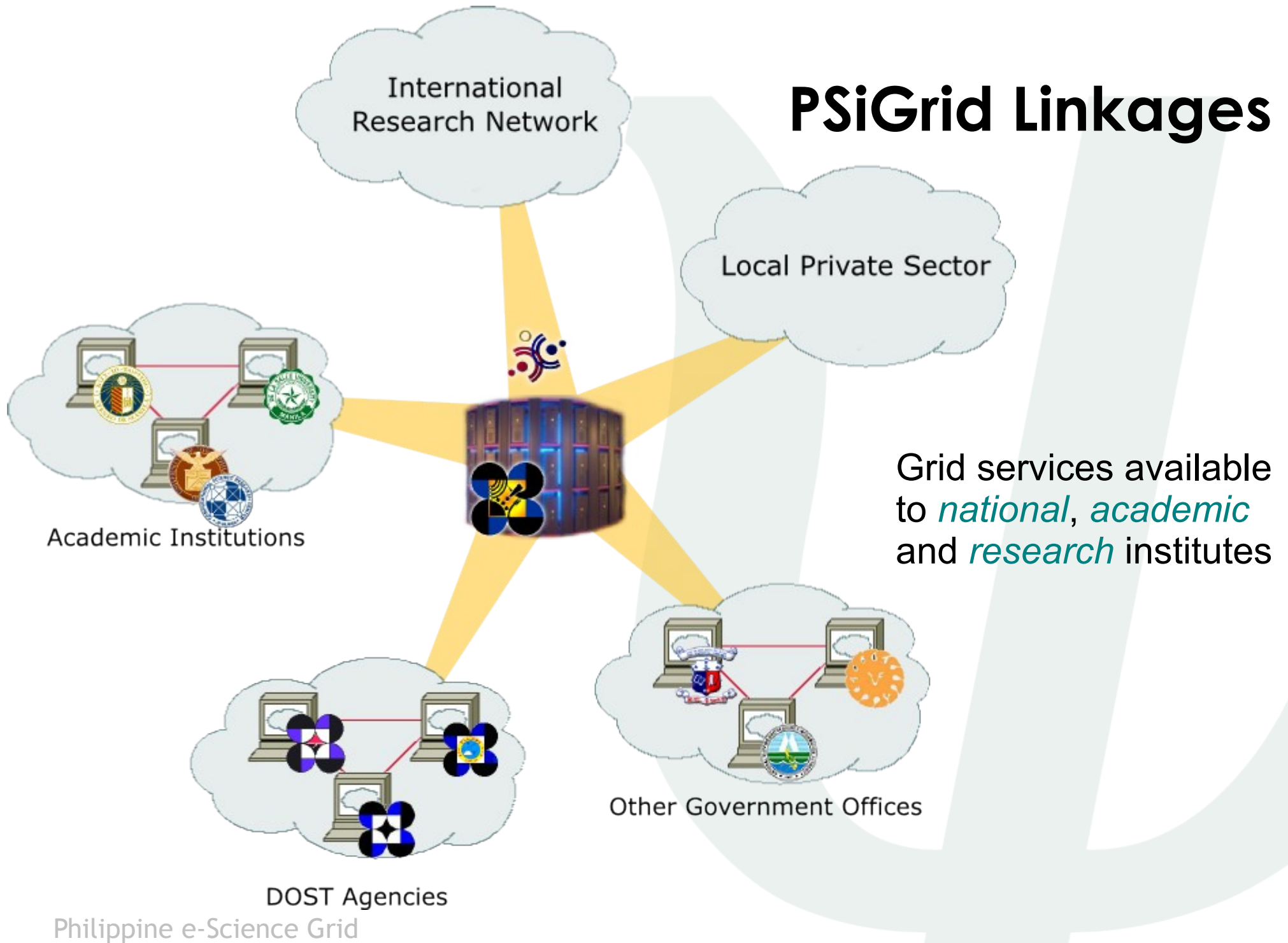
Strategies

- Build a high performance computing facility with reconfigurable hardware accelerators
- Establish the necessary infrastructure and community linkages to operate a national computing grid
- Develop applications that utilize reconfigurable hardware as auxiliary computing devices
- Offer basic computational and data grid services to national educational and research institutions
- Advocate and promote grid technology usage among national educational and research institutions
- Participate in regional and international grid communities

Grid Framework



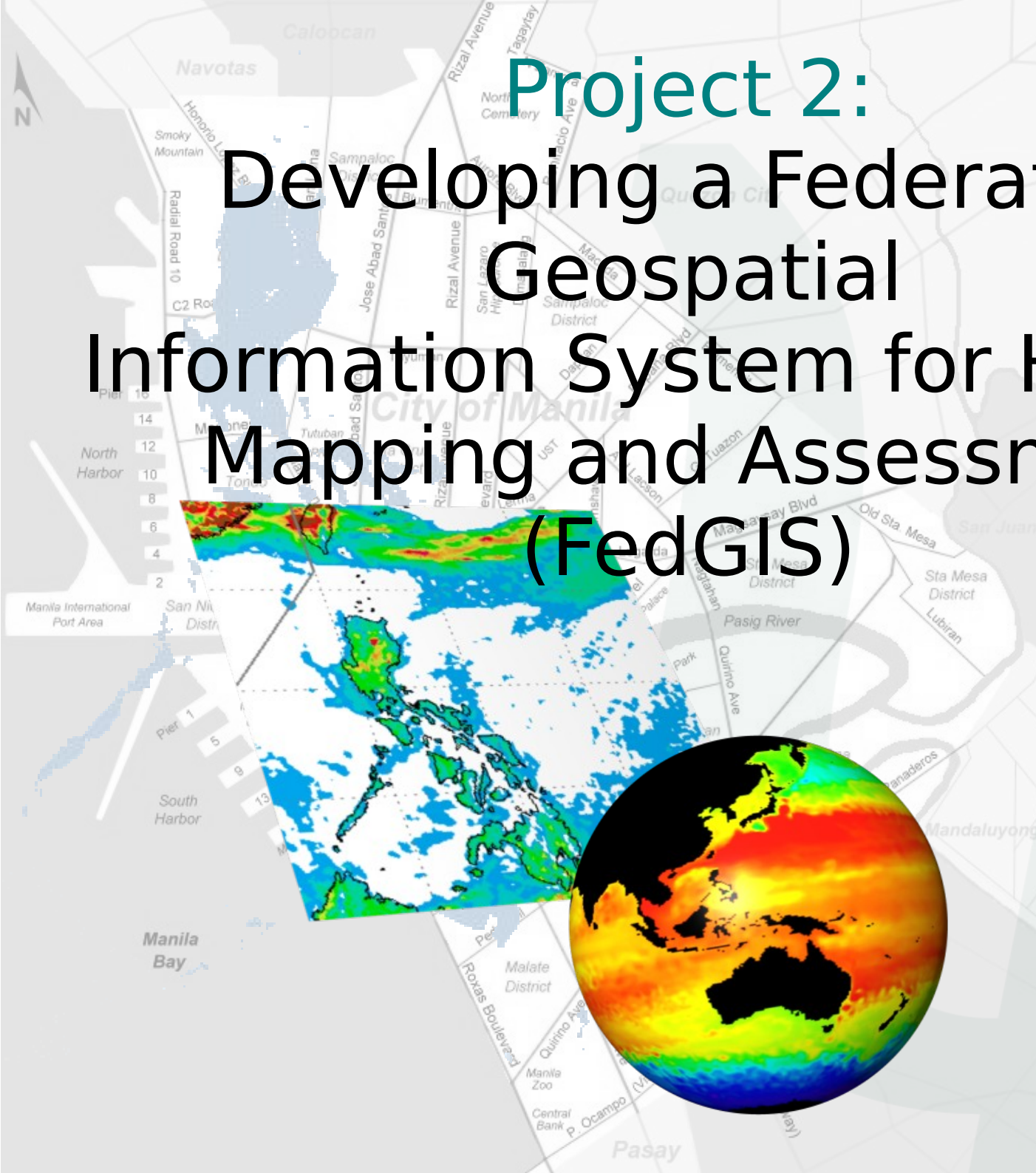
PSiGrid Linkages



International Grid Collaborations



Project 2: Developing a Federated Geospatial Information System for Hazard Mapping and Assessment (FedGIS)



Objectives

- To establish a web-based Federated Geospatial Informatics System for use in hazard mapping and assessment
 - a precursor platform for the National Spatial Data Infrastructure (NSDI)
- To enhance the capabilities of concerned agencies to improve disaster management response

Strategies

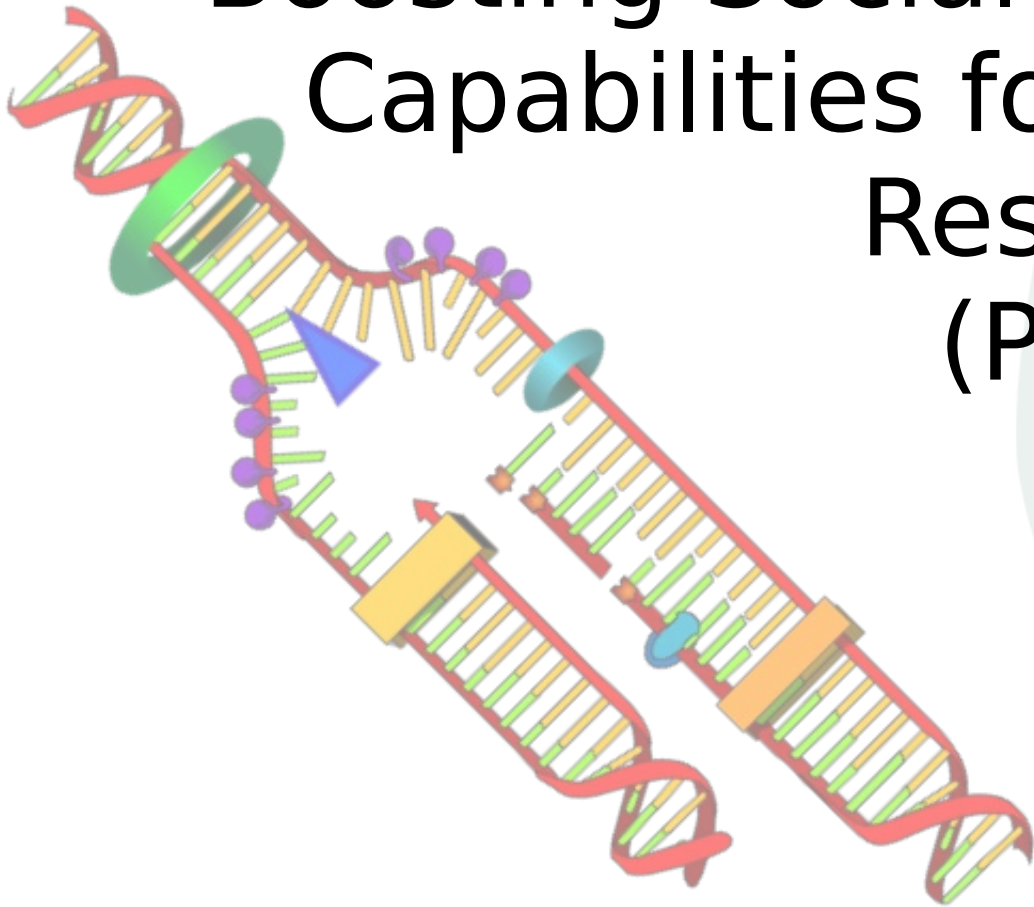
- Develop standards for the build-up, exchange, sharing, and integration of data, and for the interoperability of the FedGIS components
- Design and develop a web-based Federated Geospatial Information System
- Buildup a seamless spatial database
- Provide in-house training for staff to equip them with needed skills to develop and operate a FedGIS

Cooperating Agencies

- Lead Agency: Advanced Science and Technology Institute (**ASTI**)
- Co-lead Agency: National Mapping & Resource Information Authority (**NAMRIA**)
- Collaborating Agencies: Office of Civil Defense (**OCD**), Philippine Institute of Volcanology and Seismology (**PHIVOLCS**), Philippine Atmospheric, Geophysical and Astronomical Services Administration (**PAGASA**), Mines and Geo-sciences Bureau (**MGB**)

Project 3:

Boosting Social and Technological Capabilities for Bioinformatics Research (PBS)



Objectives

- To enhance local availability of bioinformatics services
- To contribute in improving research output of local bioinformatics experts

Strategies

- Provide **rapid access** to **major biological sequences and structure database**
- Provide **web hosting service** for **bioinformatics programs** to local researchers
- Enhance the **expertise** of local researchers in **bioinformatics** through **trainings**

Project Deliverables

- Web-based **search engine**
- Grid-accessible **bioinformatics solutions**
- **3D visualization facility**
- **Mirror** of major biological sequence and structure databases
- **Capability building** for local researchers in bioinformatics

Deployment Status and Plans

- Year 1
 - Quarter 1
 - Purchase new nodes
 - Quarter 2
 - Build new HPC facility
 - Connect with UP Diliman
 - Participate in EUAsiaGrid and PRAGMA
 - Quarter 3
 - Develop course materials
 - Install applications
 - Quarter 4
 - Connect with PAGASA

Deployment Status and Plans

- **Year 2**
 - Conduct trainings
 - Connect with AdMU
 - Publish paper
- **Year 3**
 - Conduct trainings
 - Secure and operationalize grid facility
 - Publish paper

Focus and Approach

- Network
 - PREGINET for the grid
 - Optical fiber connection to UP Diliman and PHIVOLCS
 - Optical wireless connection to PAGASA and AdMU
 - Gigabit ethernet for the cluster
- Middleware
 - Rocks Clusters 4.3 on CentOS 4.5
 - Xen 3.1 + Kernel-Xen 2.6.18
 - gLite 3.1 on Scientific Linux 4.6

Focus and Approach

- Current Applications
 - Bioinformatics
 - Meteorology
- Proposed Applications
 - Physics
 - Geoinformatics
 - Web Portal

Focus and Approach

- FPGA
 - BLAST
 - HMMER
 - Smith-Waterman
 - ClustalW
 - Genome Assembler

User Communities

- **Bioinformatics**
 - IRRI
 - UP Los Baños BIOTECH
 - UP Diliman CSRC
- **Meteorology**
 - PAGASA
 - AdMU
 - Manila Observatory

User Communities

- **Physics**
 - MSU-IIT
 - UP Diliman CSRC
- **Biomedical Imaging**
 - AdMU

User Communities

- Geoinformatics
 - NAMRIA
 - MGB
 - OCD
 - PAGASA
 - PHIVOLCS
 - AdMU

Issues

- Funding
- Human Resources
- Accountability
- Security
- Certificate Authority

Thank you!

