Running a NREN: Philippine Experience

Bani Lara
Advanced Science and Technology Institute (ASTI)
Philippine Research, Education and Government Information Network (PREGINET)

Advanced Science and Technology Institute (ASTI)

- ICT and microelectronics R&D agency under the Philippines' Department of Science and Technology (Ministry level)

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ADVANCED SCIENCE AND TECHNOLOGY INSTITUTE

Advanced Science and Technology Institute (ASTI)

- Situated in proximity to the national weather bureau; national volcanology & seismology bureau; and the main campus of the University of the Philippines

PAGASA

PHIVOLCS

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Advanced Science and Technology Institute (ASTI)

- Manages and operates the National R&E Network called the Philippine Research, Education, and Government Information Network (PREGINET)

- Established in 2000
- Connected to:
  - AI3 (since 1999)
  - APAN (since 2004)
  - TEIN (since 2005), 2nd generation of the TEIN initiative

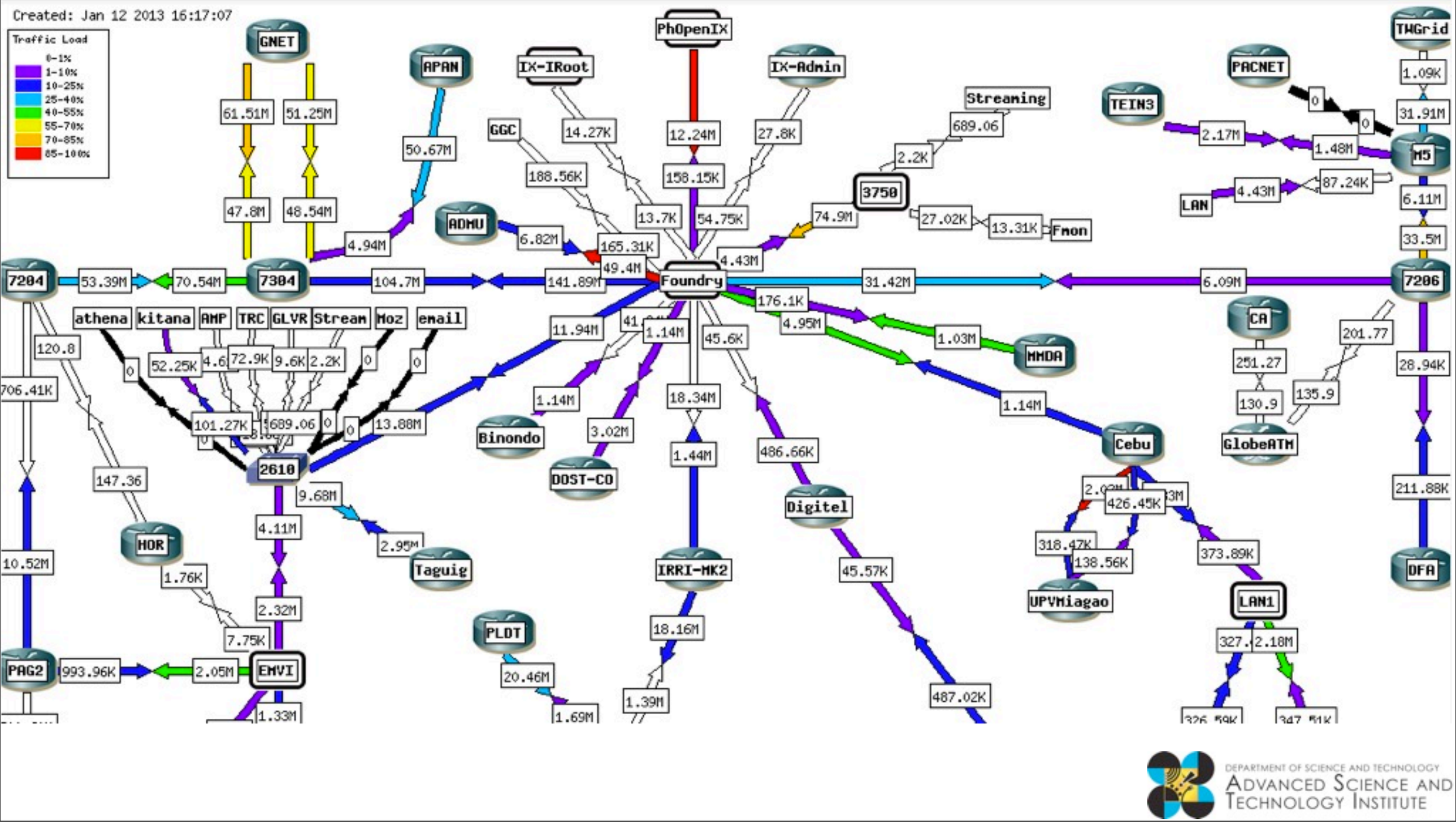
PREGINET Partners

Manila Observatory

Monday, January 14, 13

PREGINET Infra

Heavy User of FOSS



Network Links (R&D)

- 155Mbps to APAN-Japan (R&D)
- 22.5Mbps to TEIN3-Hongkong to be upgraded to 45Mbps by Feb 2013 (TEIN*CC)
- 155Mbps sat-link to the WINDS Project (JAXA, Japan)
- 13Mbps UDLR sat-link going to AI3, Keio University, Japan

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Network Links (non-R&D)

- 200Mbps to Globe-Manila (commercial)
- 200Mbps upcoming (commercial)
- 1Gbps to PhOpenIX (internet exchange)
- 50Mbps to Globe-Cebu (local loop)
- 10Gig ASTI-NCC (local loop)

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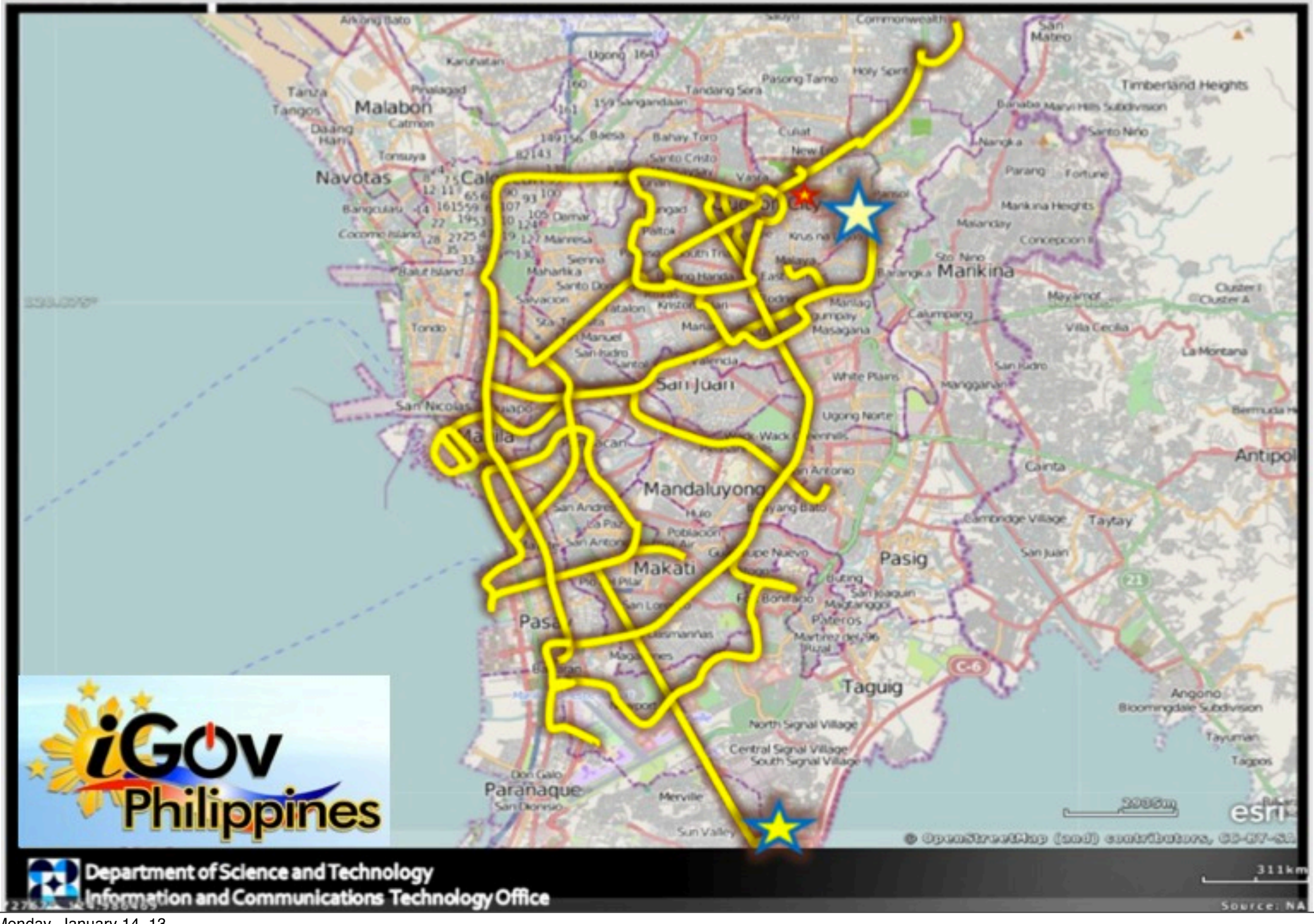
Luzon (Metro Manila)

http://i.gov.ph

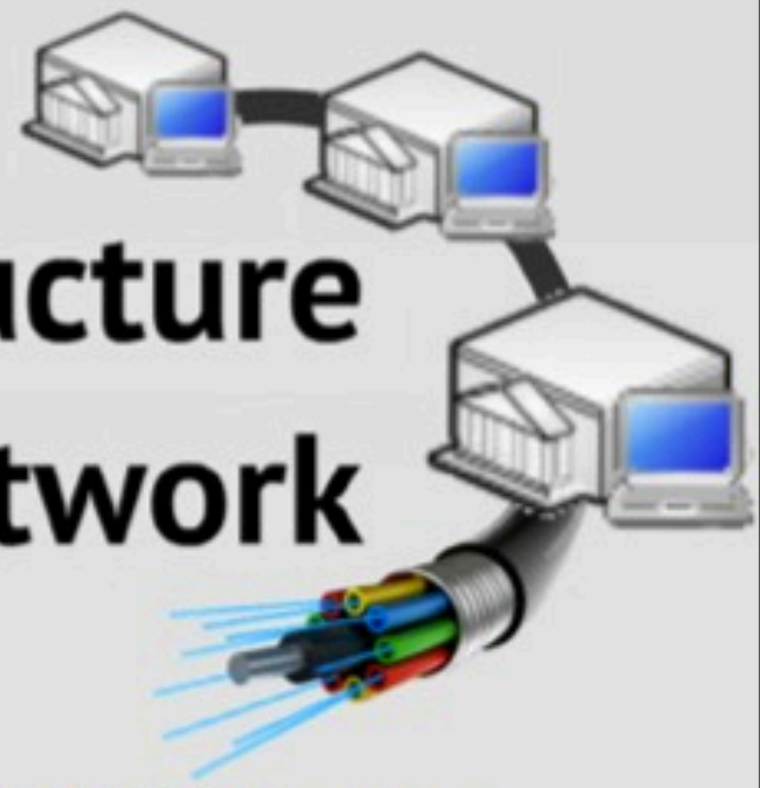
Fiber Optic Link - 154,092.239 meters



iGov Philippines

Department of Science and Technology
Information and Communications Technology Office

Infrastructure Core Network



Connect 98 priority government agencies via Fiber Optic link

Utilize LRT, LRT2 and MRT lines and MMDA ducts for the network

Cluster Implementation for NGAs

Fiber Optic Link - 154,092.239 meters

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Visayas

NTP I-2 PROJECT
(STAGE 1 & 2)

PLANNED TRANSMISSION UPGRADE

Republic of the Philippines
Department of Science and Technology
INFORMATION AND COMMUNICATIONS TECHNOLOGY OFFICE
TELECOMMUNICATIONS OFFICE
COMMUNICATIONS PROGRAM MANAGEMENT OFFICE

NATIONAL TELEPHONE PROGRAM I-2

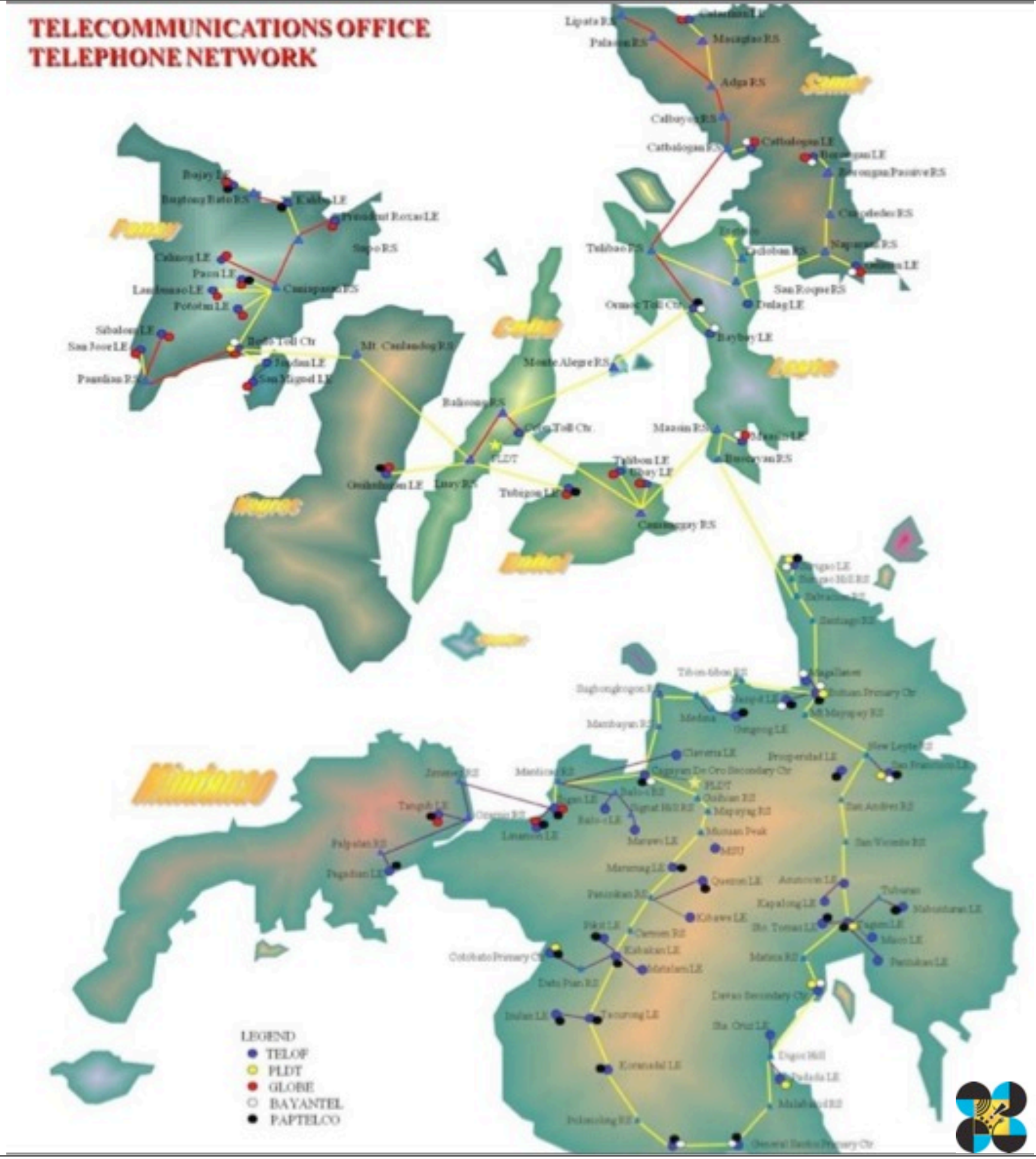
Planned Transmission Upgrade

Mindanao

NATIONAL TELEPHONE PROGRAM I-2

Rest of the Tranche Completion

TELECOMMUNICATIONS OFFICE
TELEPHONE NETWORK



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Users of the Network

Academe

Originating Point	Destination Point	LT	Tech	Facility	BW (Mbps)
UP Diliman	ASTI IC Node	Fiber	Fiber	Fiber	100
UPOU Diliman		Fiber	Fiber	Fiber	2
UP Manila		TELCO	Fiber	Fiber	50
UP Los Banos		via IRRI	Fiber	Fiber	50
		TELCO	IPVPN / DLL / MPLS	Copper / Radio / Fiber	50
UPOU Los Banos		via IRRI	Fiber	Fiber	5
UP Baguio					5
UP Pampanga					10
UP Cebu					5
UP Miag-ao					10
					10

Academe

UP Cebu	ASTI IC Node	TELCO	IPVPN / DLL / MPLS	Copper / Radio / Fiber	10
UP Miag-ao					10
UP Iloilo					10
UP Tacloban					10
UP Davao					2
UP Mintal					10
SHS, Palo, Leyte					2.0
SHS, Aurora, Quezon					2.0
SHS, Koronadal, Cotabato					2.0
UP Fort Bonifacio					2.0

Government Hospitals

- AMANG RODRIGUEZ MEDICAL CENTER
- Dr. JOSE FABELLA MEMORIAL HOSPITAL
- JOSE R. REYES MEMORIAL MEDICAL CENTER
- NATIONAL CENTER FOR MENTAL HEALTH
- NATIONAL CHILDREN'S HOSPITAL
- PHILIPPINE ORTHOPEDIC CENTER
- QUIRINO MEMORIAL MEDICAL CENTER
- RESEARCH INSTITUTE FOR TROPICAL MEDICINE
- PHILIPPINE CHILDRENS MEDICAL CENTER
- RIZAL MEDICAL CENTER
- SAN LAZARO HOSPITAL
- TONDO MEDICAL CENTER
- VETERANS MEMORIAL MEDICAL CENTER
- PHILIPPINE HEART CENTER
- LUNG CENTER OF THE PHILIPPINES
- NATIONAL KIDNEY AND TRANSPLANT INSTITUTE
- EAST AVENUE MEDICAL CENTER

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Putting Value over a NREN

Activities
Collaborations
Linkages
Benefits

with the effects of climate change...

...addressing food security is essential in order to meet the needs of the world's population

Crop Research

Over the network, IRRI is able to exchange multi-gigabytes of genetic data with research centers in Europe and other parts of the world, used to develop resilient rice varieties for the world's rice farmers

TEIN3
global collaboration

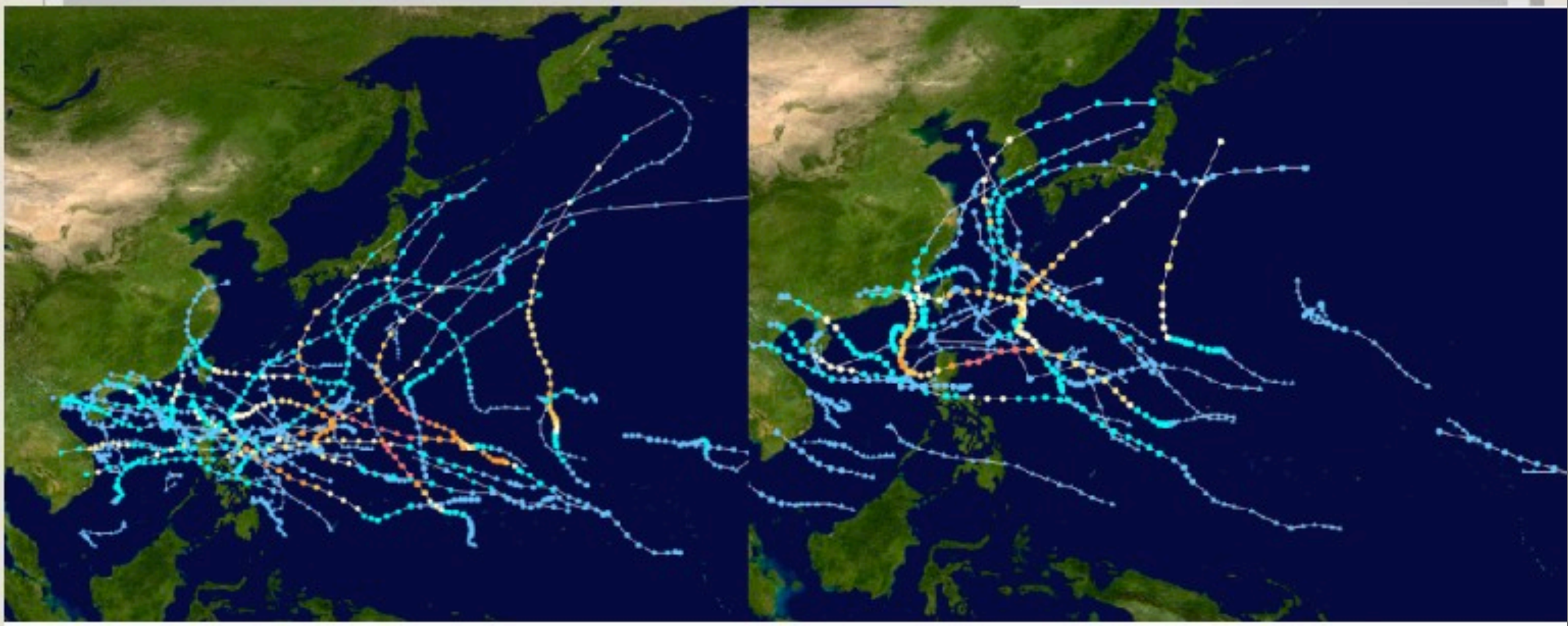
High-speed networking: decoding the diversity of rice

it has been
orld's most
% by 2050. As
nore rice on less
land and water, farmers need new rice varieties adapted to changing climatic conditions. The main objective of the International Rice Research Institute (IRRI) in the Philippines is to help farmers improve their yields and thus sustain their livelihoods – a mission that calls for joint efforts across the globe and for high-performance data communications networks, such as TEIN3, to facilitate data-intensive collaborative crop research.

Local livelihoods on the line

One of the consequences of climate change for many millions of rice farmers today is an increased risk of flooding. Although

each year, an average of 20 typhoons hit the Philippines...



...causing millions-worth of damage to infrastructure, crops, and lives

Disaster Warning

The Philippine's weather bureau is able to acquire weather data from its German counterpart, which aids in providing the Filipino public with timely forecasts

TEIN3
global collaboration

High-speed networking: saving lives by typhoon forecasting

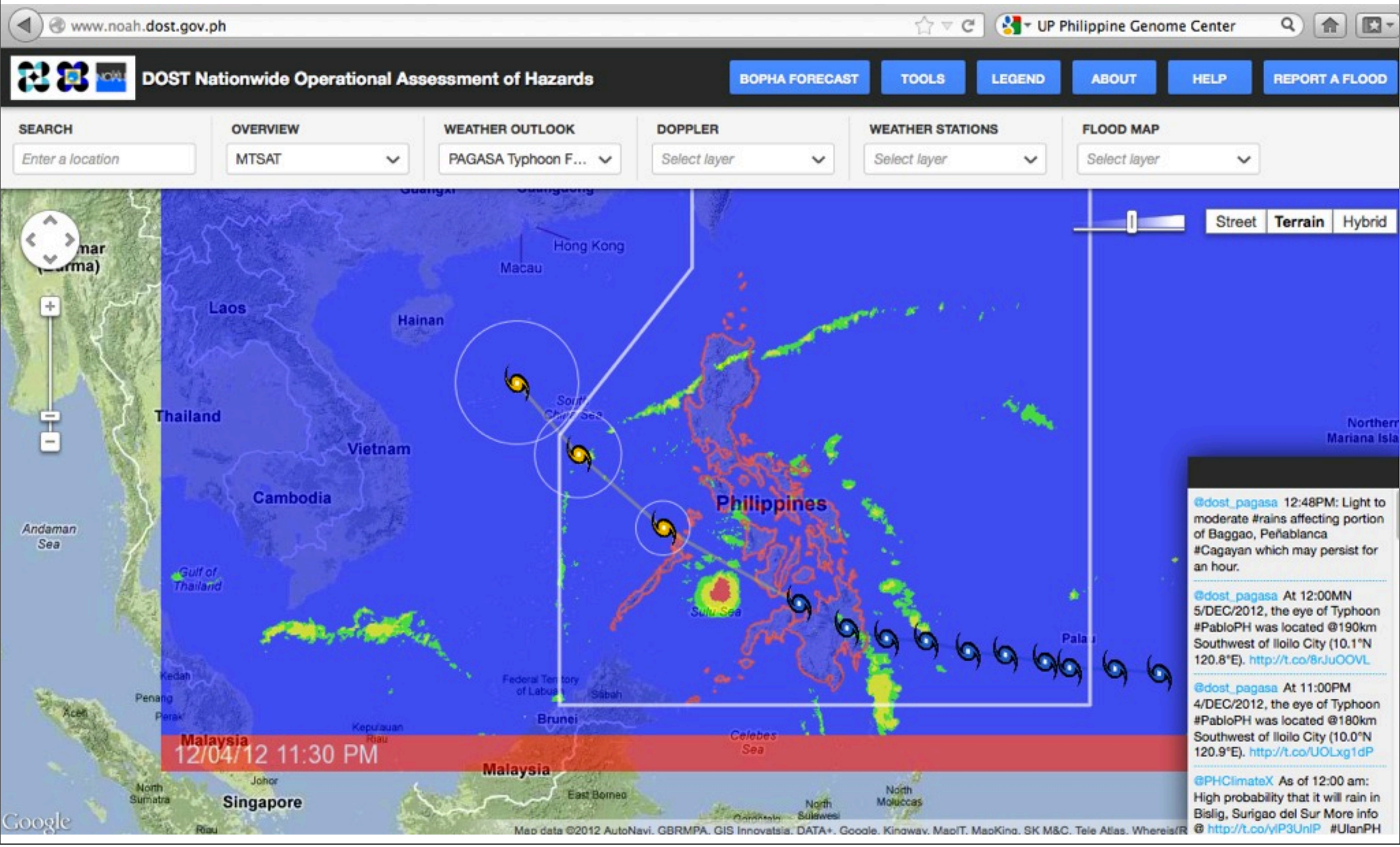
Typhoons are major natural killers. High winds and extreme rainfall damage property, while collapsing buildings, flood waters and disruption to food supply, sanitation and communications cause injury and death. Nothing can be done about the weather, but a great deal can be accomplished if local authorities have the precious advantage of time to prepare. Effective disaster warning systems rely on accurate storm forecasts and the speedy communication of weather alerts. In this race against time, high-speed data networks can make all the difference to typhoon-prone regions like the Philippine archipelago.

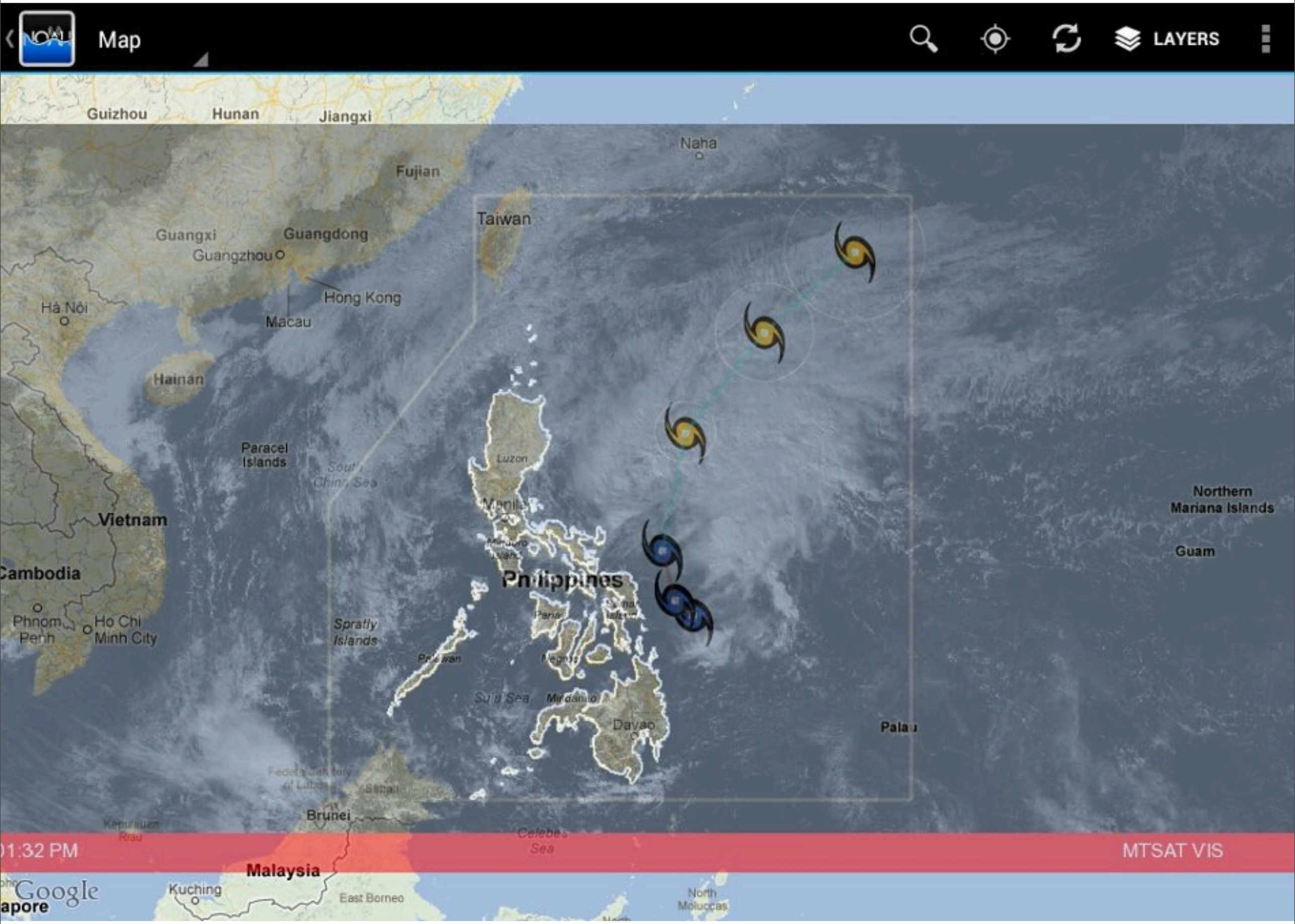
Courtesy of Marieta Cada

Two typhoons contrasted

Typhoon Uring made landfall in the Philippines in November

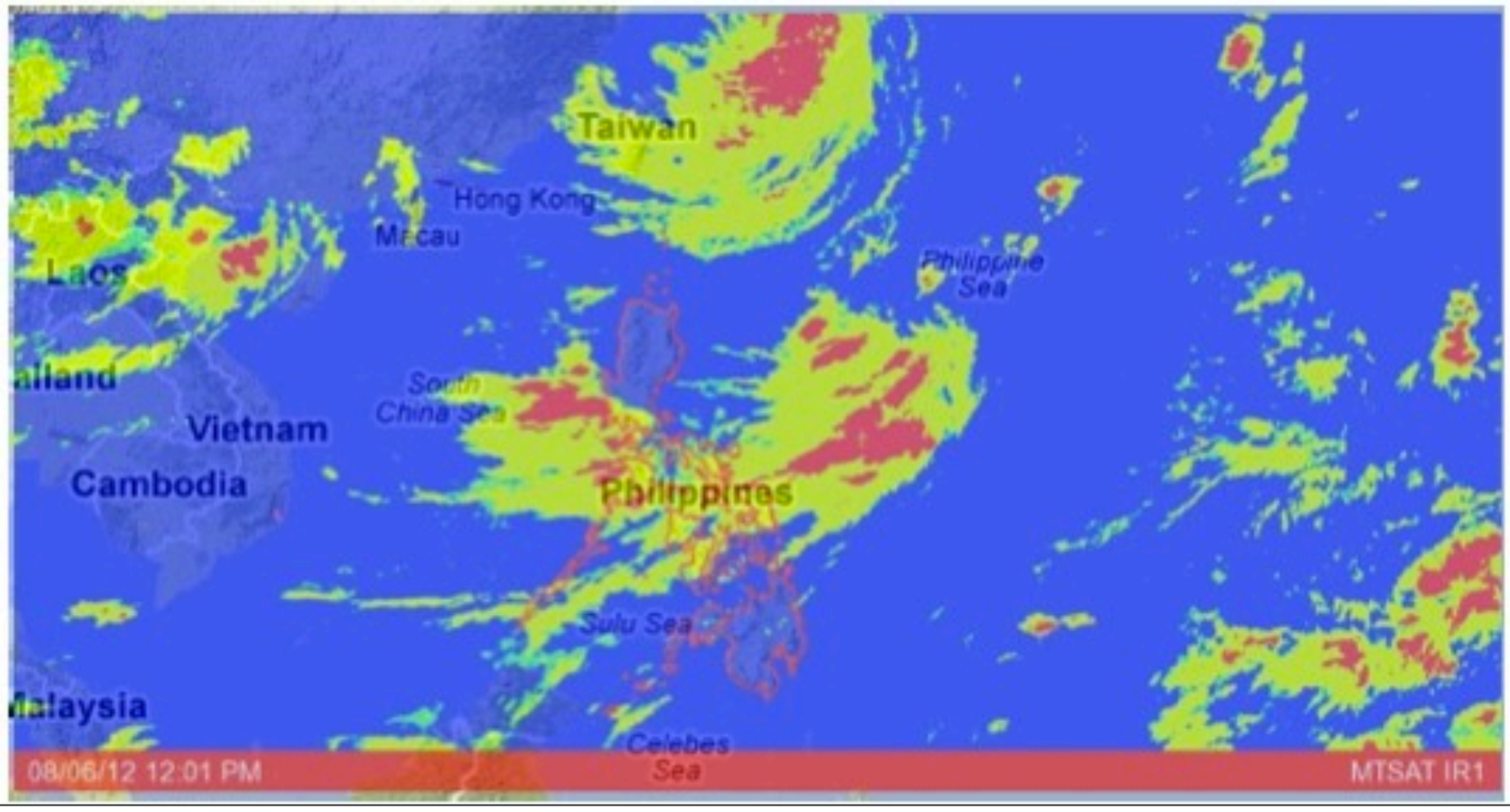
noah.dost.gov.ph





Monday, January 14, 13

Taiwan
Hong Kong
Macau
Laos
Philippine Sea
Thailand
South China Sea
Vietnam
Cambodia
Philippines
Sulu Sea
Malaysia
Celebes Sea


Taiwan
Hong Kong
Macau
Laos
Philippine Sea
South China Sea
Vietnam
Cambodia
Philippines
Sulu Sea
Celebes Sea
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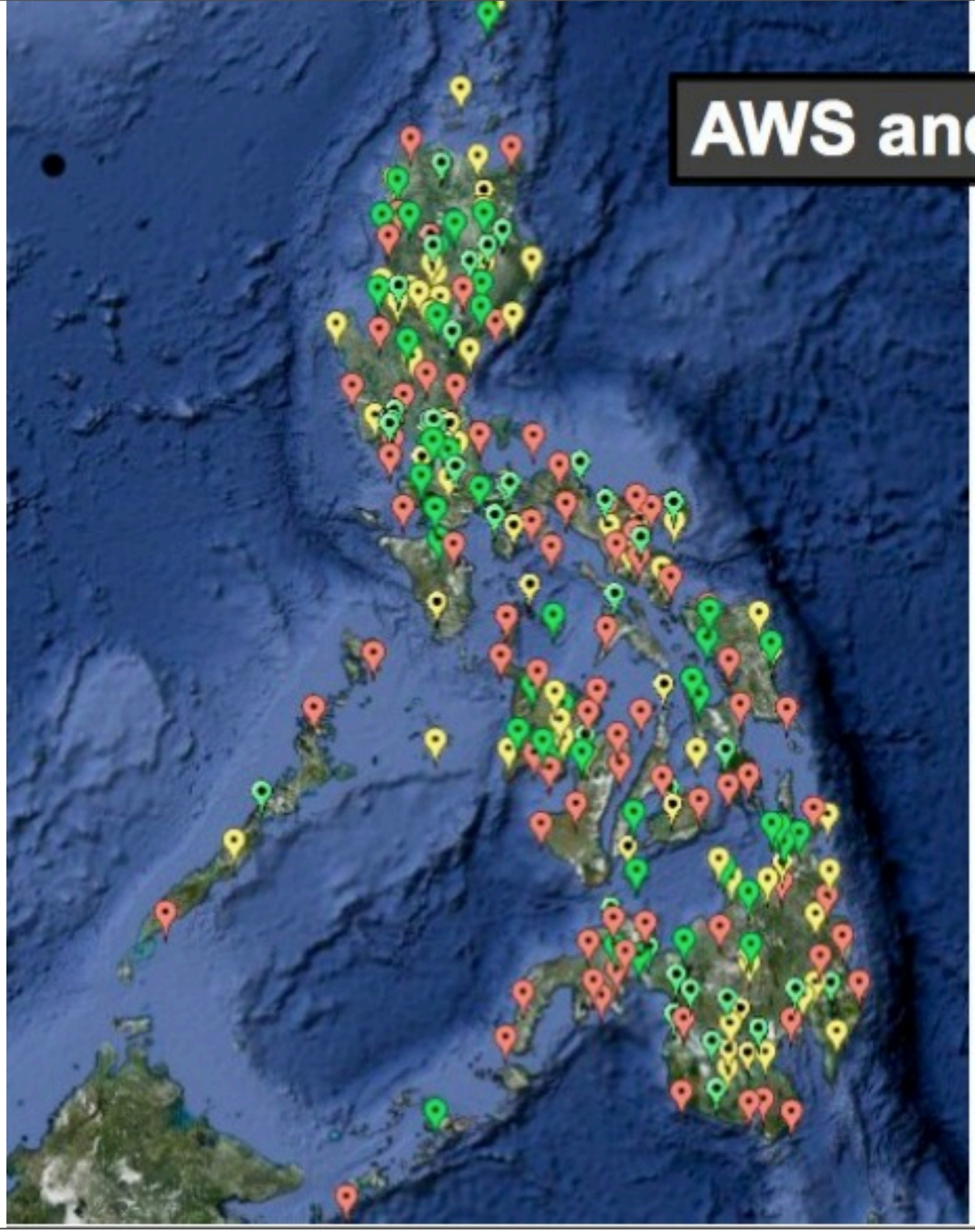
MTSAT IR1

AWS and ARG Network



Deployments:

85 AWS

87 ARG

27 WLMS

Legend:
Yellow dot balloon - PAGASA AWS (73 units)
Red dot balloon - ASTI AWS (85 units)
Green dot balloon – ASTI ARG (87 units)

Aparri
Laoag
Batac
Tuao
Baggao
Tuguegarao
City of San
Jose del Monte
Manila
Dasmariñas
Philippines
Laoang
Borongan
Tacloban
Cadiz
Iloilo
Ormoc
Bacolod
Cebu
Taytay
Roxas
Puerto
Princesa
Quezon
Narra
Bataraza
Sulu Sea
Cagayan
de Oro
Butuan
Iligan
Zamboanga
Cotabato
Davao
Mati
Digos
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Koronadal
Malita
Isabela
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Sandakan
General
Santos
Sabah
Municipality
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climateX *The Climate Experiment: Predicting rainfall for the Philippines*

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…o, Zambales (63.0%) | **San Carlos, Negros Occidental** (51.0%) | **San Jose, Antique** (63.0%) | **Sipalay, Ne**

August 8, 2012 Subic Doppler Animation

Climate X
PHClimateX

PHClimateX As of 6:00 pm: Chance of rainshowers is high in the vicinity of Baguio, Benguet. Keep posted. More info @ climatex.ph #UlanPH
9 minutes ago · reply · retweet · favorite

PHClimateX 5:02 pm: Sa kasalukuyan, may pag-ulan pong nasukat sa Iba, Zambales na may lakas na 34.37 mm/hr. climatex.ph #UlanPH
about 1 hour ago · reply · retweet · favorite

PHClimateX As of 5:00 pm: You might need to bring an umbrella, residents of Alabel, Sarangani. More info @ climatex.ph #UlanPH
about 1 hour ago · reply · retweet · favorite

PHClimateX 4:02 pm: Dumingag, Zamboanga del Sur has 17.018 (mm) amount of rainfall in the last hour.

Join the conversation

Latest Rain Forecast
As of 3:39 PM August 28, 2012

Current location: Alabel, Sarangani

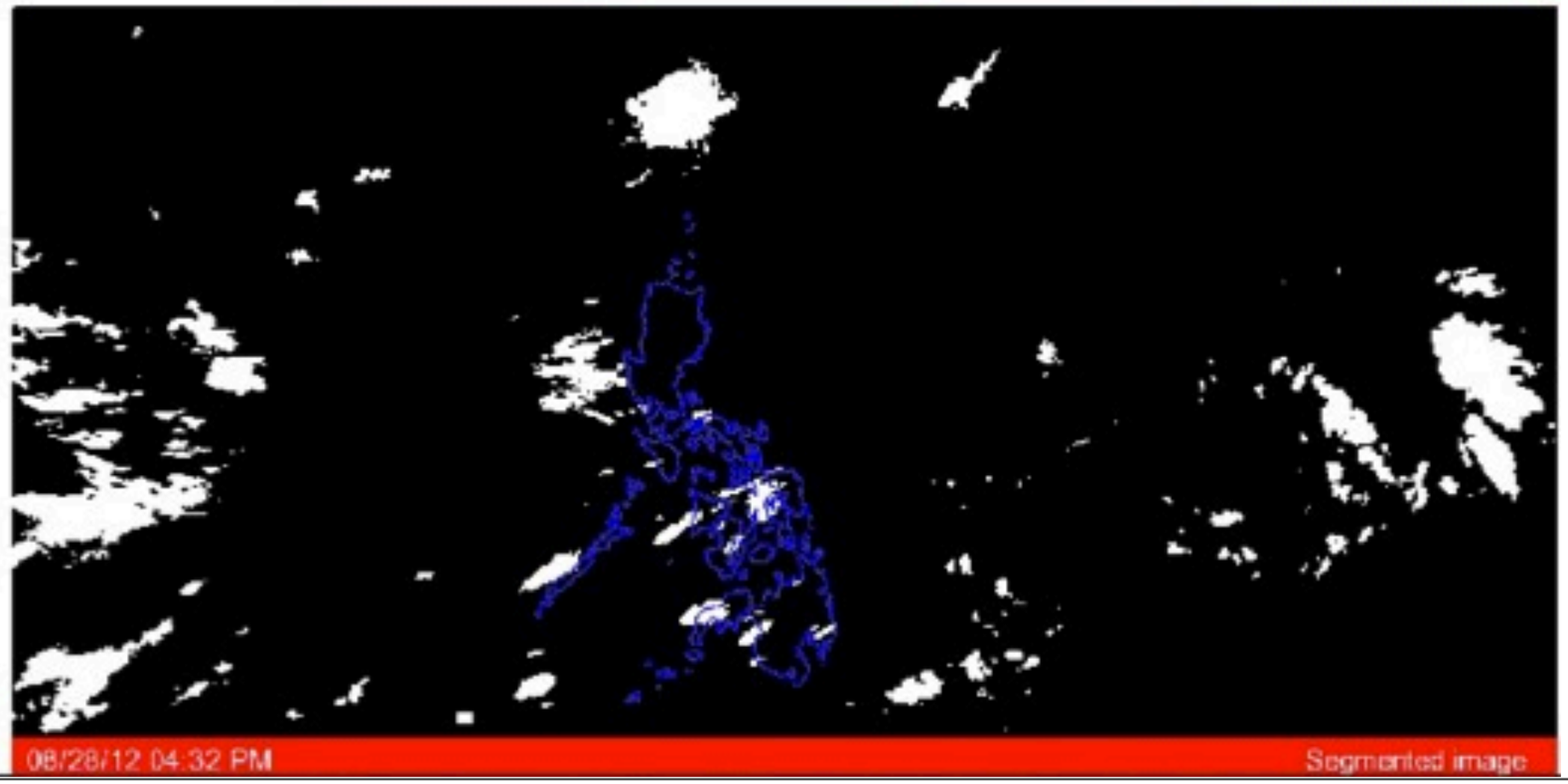
22.0% within 1 hour

22.0% within 2 hours

22.0% within 3 hours

27.0% within 4 hours

HIGH RAINFALL ALERT
San Carlos City, Negros Occidental has 19.89 mm at 05:08 pm



advanced networks provide an opportunity for the Philippine medical community to take advantage of medical advances in other countries without having to spend on travel

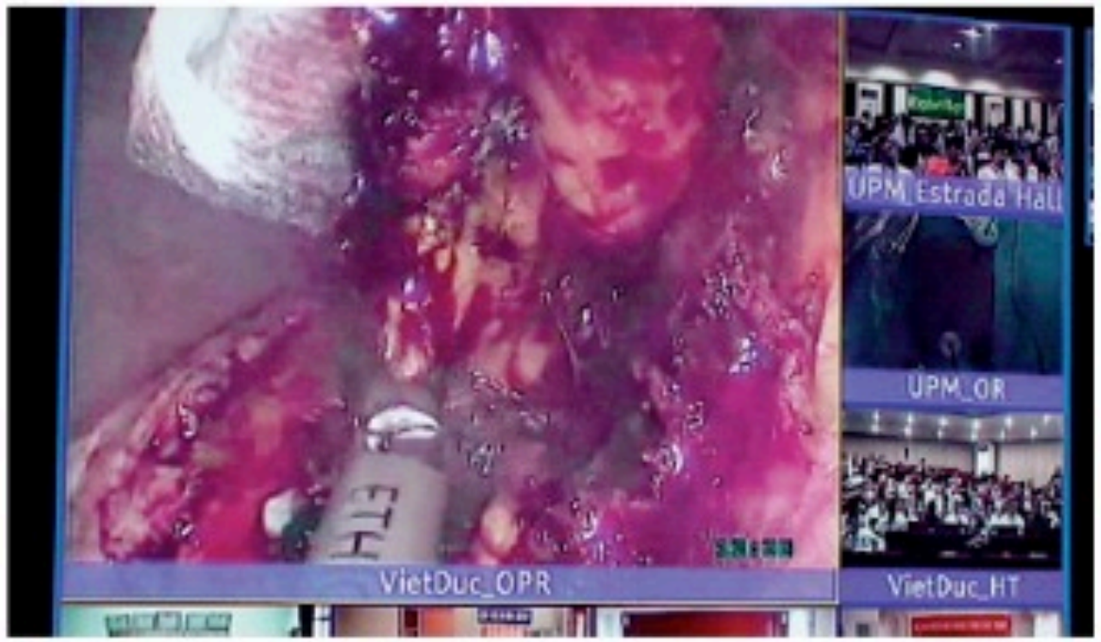
Telemedicine

Breakthrough telesurgery held in the country

By MARY JESSA T. CARITATIVO

The UP PGH - Department of Surgery is now able to conduct joint live surgery/operations with its counterparts in other countries, which enables remote medical consultation, and medical teaching and training

etDuc University in Hanoi



Laparoscopic view within the peritoneal cavity, VietDuc or middle frame

ferencing software, Poly- performed a laparoscopic

wants "easy access to education which also includes teaching, training, research,

likewise share the same sentiment when it comes to medical teleconferencing.

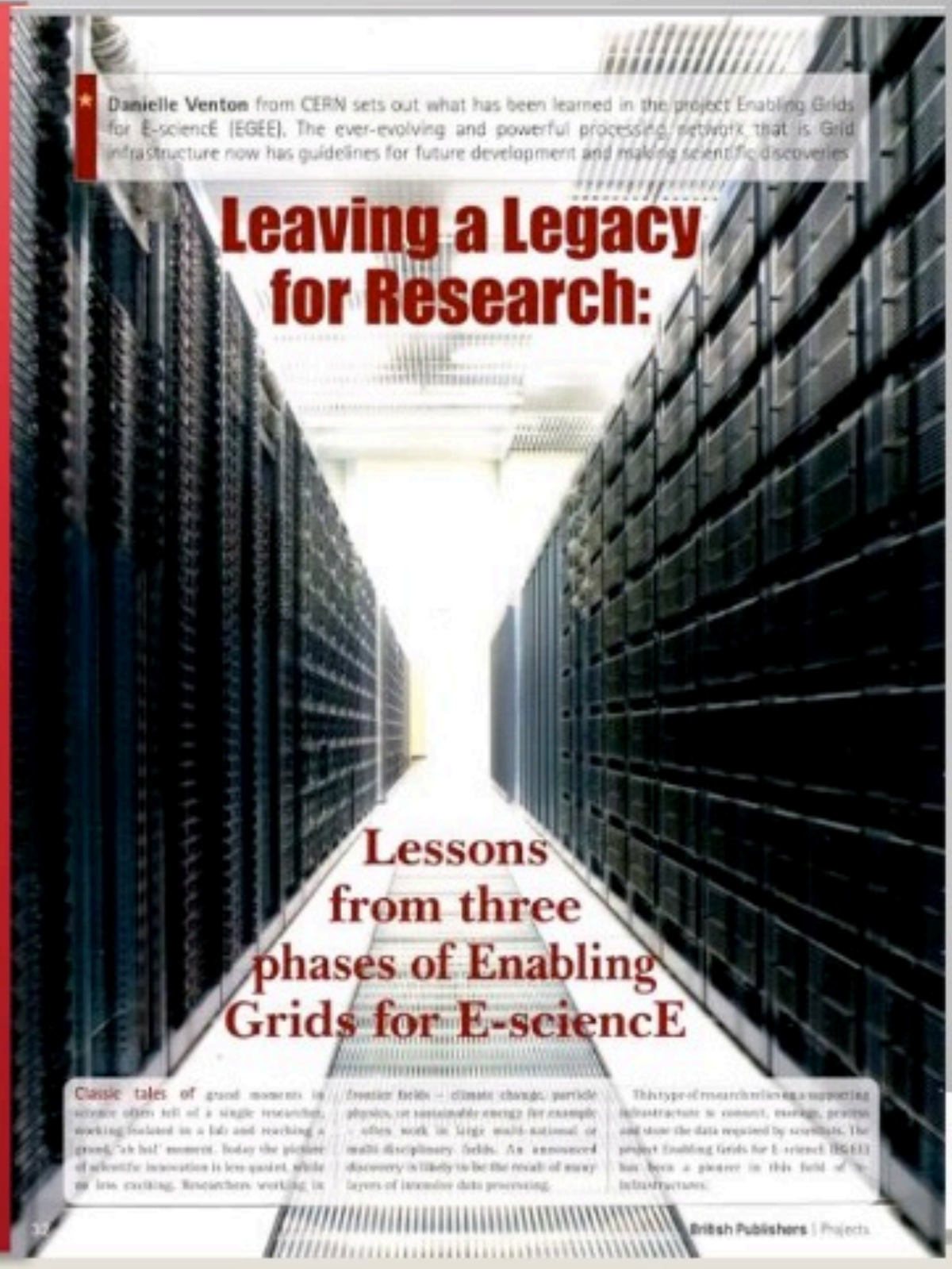
nowadays, scientists handle vast amount of data that a single computer cannot process...

Enabling Grids for E-sciencE

...it requires fast and powerful storage and computing resources

E-Infrastructure

The ASTI high performance computing facility shares its resources to the EGEE infrastructure, which is linked by the NREN



Danielle Venton from CERN sets out what has been learned in the project Enabling Grids for E-sciencE (EGEE). The ever-evolving and powerful processing network that is Grid infrastructure now has guidelines for future development and making scientific discoveries

Leaving a Legacy for Research:

Lessons from three phases of Enabling Grids for E-sciencE

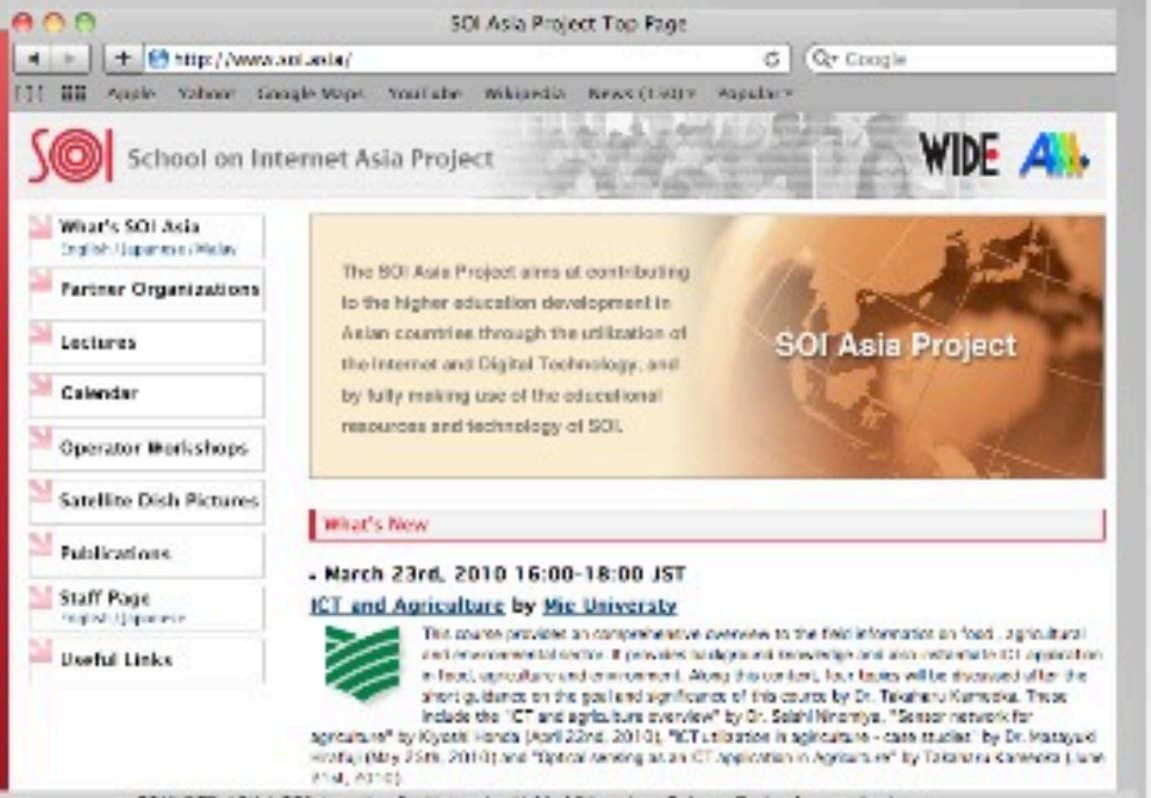
Classic tales of ... frontier fields – climate change, particle physics, or sustainable energy for example – often work in large multi-national or multi-disciplinary fields. An announced discovery is likely to be the result of many layers of intensive data processing.

... This type of research relies on a supporting infrastructure to connect, manage, process and store the data required by scientists. The project Enabling Grids for E-sciencE (EGEE) has been a pioneer in this field of ... infrastructures.

British Publishers | Projects

E-Education

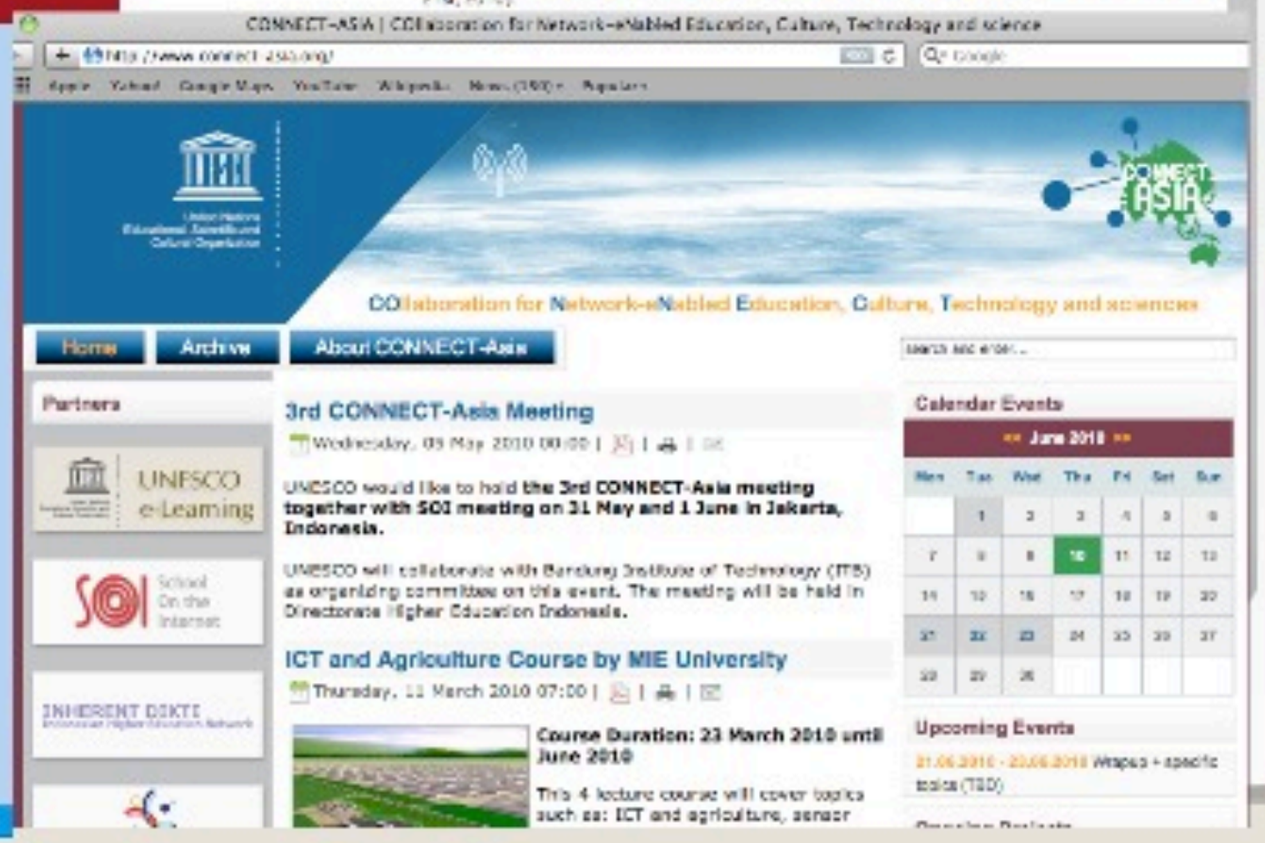
The NREN provides the link that enables ASTI and its partners to participate in scientific discussions and forums with other countries



Manila, Philippines

UNESCO Lecturer Site

Syiah Kuala University, Indonesia



Conclusion

How has it helped the country?

- Enables regional/global collaboration
- Supports mutually beneficial collaborations in science and ICT research
- Provides a platform where solutions to global issues/problems can be derived

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http://www.pregi.net/apan2013.pdf

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keyword :“preginet”