

CONNECTING OUR RESEARCH AND EDUCATION COMMUNITY TO THE WORLD

A TEIN3 workshop organised by the University of Computer Studies, Yangon (UCSY), Myanmar and DANTE under the aegis of the Ministry of Science and Technology, Myanmar and of the European Commission

EVENT AGENDA (CLICK ON SPEAKERS' NAMES TO ACCESS THEIR PRESENTATIONS)

09:00 OPENING SESSION

Master of Ceremony

★ Welcome addresses

- Ministry of Science and Technology
- Mads Korn, Attaché, Delegation of the European Union to Thailand/Myanmar

★ Keynote speech

- Chief Minister, Yangon Region
- **ByungKyu Kim**, Executive Officer, TEIN* Cooperation Center

★ Opening address from UCSY

TEA / COFFEE BREAK

11:00 SESSION 1: SHARING KNOWLEDGE AND EXPERIENCE

Chaired by Sigma Orionis

★ ASEAN-EU Year of Science

- **Alexander Degelsegger**, READI/SEA-EU-NET

★ Practicable steps to develop a NREN Network

- **Dale Smith**, NSRC

★ Presentations from other Southeast Asian NRENs

- **Chalernmpol Charnsripinyo**, NECTEC/THAIEN
- **Denis Villorente**, ASTI/PREGINET
- **Kamal Hisham Kamaruddin**, MDEC/MYREN
- **Nguyen Hong Van**, NASATI/VINAREN

BUFFET LUNCH

14:00 SESSION 2: PROMISING APPLICATIONS

Chaired by UCSY

★ Presentations from Myanmar education and research institutions

- **Dr. Kyi Kyi Thin**, Head of Department, Microbiology Department, University of Medicine, Ministry of Health
- **Dr. Theingi**, Pro-Rector, West Yangon Technological University, Ministry of Science and Technology
- **Dr. Phoe Kaung**, Pro-Rector, Yangon University, Ministry of Education
- **Dr. Khin Marlar Tun**, Professor, University of Computer Studies, Yangon, Ministry of Science and Technology

TEA / COFFEE BREAK

16:00 INTERACTIVE FORUM

- ★ Open interaction with the audience (Q&A, next steps)
- ★ Wrap-up by UCSY and TEIN* Cooperation Center

NETWORKING DRINKS

Co-Prosperity of Asia and Europe through Digital Silk Road



TEIN3 Southeast Asia Workshops

Yangon, Myanmar

23 May 2012

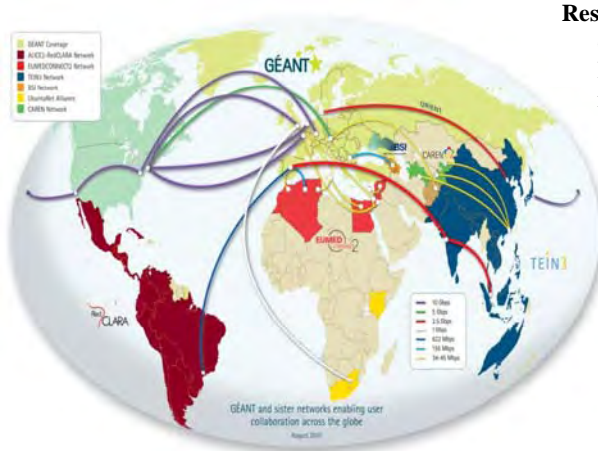
ByungKyu Kim, Ph.D.

Executive Officer

TEIN* Cooperation Center

Research Networks

- providing new opportunities for global collaborations in all fields -



Research networking started since early 1990's to offer high speed, high quality Internet connections for research and education:

- National level, run by NRENs (normally publicly funded)
- Increasing regional level networks e.g. TEIN connecting all European and Asian countries, and major academic and research centres
- During last 5- 10 years emergence of inter-regional links for global co-operations

TEIN (Trans-Eurasia Information Network) provides regional and global links for Asian researchers.

Beginning of TEIN

- TEIN Initiative @ ASEM3 (October 2000) -



“Partnership for Prosperity and Stability in the New Millennium”



- ◆ Contribute to enhancing exchanges and cooperation between Asia and Europe through increased and more effective information flows;
- ◆ Enhance and diversify research exchanges and cooperation between Asia and Europe;
- ◆ Expand and diversify speedier and more powerful telecommunication connections between Asia and Europe

Brief History & Evolution of TEIN



2000 TEIN Initiative endorsed @ ASEM3 (Seoul)

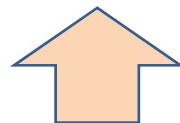
2001 TEIN KR-FR launched (2Mbps)
TEIN quoted as “the basis of a strong partnership b/w Asia & Europe” @ ASEM4 (Copenhagen)

2003 TEIN KR-FR upgraded to 45M

2006.03, TEIN3 Outline Proposal by DANTE – extended to South Asia partners

2006.09, TEIN2 Launch Event (press conference)
@ ASEM6 Summit (Helsinki)

2009.12, ASEM/TEIN3 Workshop (KL) – KR Statement for TEIN*CC proposal



2000

2004



2006

2010



2004.01 TEIN2 announced by EU, funding 10M Euro esp. for ASEM-Asia(SEA) partners

2004.12 TEIN1(KR-FR) upgraded to 155M

2006.01 TEIN2 launched, TEIN1 closed and replaced with TEIN2



2010.05, TEIN4 Outline Proposal by DANTE and Korea – toward self-sustainable in Asia

2010. 10, TEIN4 and TEIN*CC endorsed @ ASEM8 Summit (Brussels)

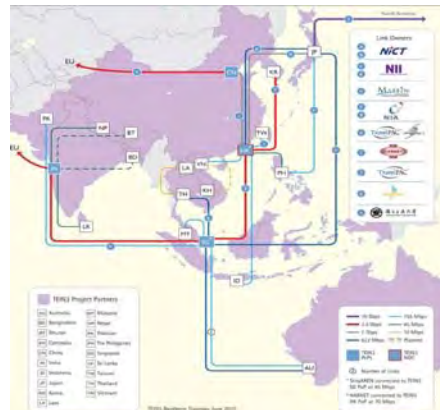
TEIN 3



- TEIN3 provides a **large-scale research and education data-communications network for the Asia-Pacific region** since 2006.
 - Extends and encourages research and education IP connectivity, **linking Asia-Pacific researchers, educators and students** to each other and to their counterparts in Europe.
 - Via fast, **direct links to Europe's multi-gigabit GÉANT network and North America**, providing the Asia-Pacific countries with a gateway for global collaboration..

TEIN3 Network

- 18 Asian partners (12 receiving EC funding support)
- 45M+ connected users
- 4 hubs: Mumbai, Singapore, Hong Kong, Beijing
- Fastest Internet links for research within Asia
- Fastest and highest capacity direct Internet links for research with Europe
- 11.4M Euro EC funding (65% co-funding)
- Non-commercial



Key Applications



TEIN3 success stories:

- Natural disaster warning and post-crisis support
- Crop research
- Tele-surgical training
- Medical tele-consultations
- Virtual lectures
- e-Social Science



An ASEM Success Story *is continued*



- ASEM3 Summit (Seoul, 2000) endorsed **TEIN** as one of the new 16 **ASEM Initiatives** upon the co-proposal by Korea, Singapore and European Commission

“Under the theme of “Partnership for Prosperity and Stability in the New Millennium”



- The success of **TEIN2** was celebrated at the ASEM6 Summit in Finland, which marks the tenth anniversary of ASEM (Asia-Europe Meeting) co-operation, **“10 Years of ASEM: Global Challenges – Joint Responses”**.

“Collaboration between Europe and Asia is increasingly critical to solving global issues, such as climate change and health threats such as avian influenza and HIV/AIDS.”

“TEIN2 is bridging the digital divide within Asia-Pacific, and it is already delivering opportunities and benefits to the citizens of both regions. We expect this success to continue as it expands.”



- ASEM8 Chair's Statement for **TEIN4** and **TEIN* Cooperation Center** (<http://www.asem8.be/asem-8-chairs-statement-and-brussels-declaration>), October 2010
- (page 18) 79. Leaders recognized the important role played by the Trans-Eurasian Information Network (TEIN) project in increasing direct internet connectivity among research and education in Asia and between Asia and Europe. **They welcomed the planned launch of its 4th phase and the establishment of a Cooperation Center hosted by the Republic of Korea with financial contributions from participating ASEM partners.**

TEIN4 & TEIN* Cooperation Center



- In the ASEM8 Summit in Brussels on October 2010, the **Leaders endorsed TEIN4 and the establishment of the TEIN* Cooperation Center** in its Chair's Statement.
- TEIN* Cooperation Center (TEIN*CC) was established on August 2011 in Seoul, South Korea. It is a non-profit Foundation Corporation governed by the Korean Civil Act.
- Supports from EC, KCC, Seoul Metropolitan City
 - Operational costs by KCC (Korea Communications Commission)
 - TEIN4 programme (8M Euro/48months) by the EC
 - Seoul Metropolitan City provides the TEIN*CC office and office facilities

- TEIN4 contract signed between EC and TEIN*CC on April 2012.**

- The 1st Governors' Meeting and TEIN*CC Opening Ceremony in Seoul (May 2012)



TEIN4 Objectives



❑ Overall objective

To contribute to the MDGs (Millennium Development Goals) by establishing dedicated high-capacity internet links between Research and Education (R&E) organisations in the Asia-Pacific region and Europe, enabling and promoting collaborative research on applications of broad societal benefit.

❑ Specific objectives

- ❖ To further develop dedicated high-speed internet links between national R&E organisations in Asia and connect them with Europe.
- ❖ To promote the broadening of MDG relevant user applications made available by the TEIN network, and increase the use of the TEIN network.
- ❖ To enhance human capacity of the TEIN4 beneficiary partners and promote international R&E collaboration between Asian and European partners.



TEIN4 Partners

❑ Beneficiary partners (13 countries)

Bangladesh : University Grants Commission (UGC)
Bhutan : Department of Information Technology and Telecom (DIT&T)
Cambodia : Institute of Technology of Cambodia (ITC)
India : National Knowledge Network (NKN), Education and Research Network (ERNet)
Indonesia : Institut Teknologi Bandung (ITB)/INHERENT
Laos : Lao Education and Research Network (LERNet)
Malaysia : Malaysian Research and Education Network (MYREN)
Nepal : Nepal Research and Education Network (NREN)
Pakistan : Pakistan Education and Research Network (PERN)
Philippines : Advanced Science and Technology Institute (ASTI)
Sri Lanka : Lanka Education and Research Network (LEARN)
Thailand : Thailand Research Education Network Association (ThaiREN)
Vietnam : National Agency for Science and Technology Information (NASATI)

❑ Non-Beneficiary partners (5 countries)

Australia : Australia, Academic and Research Network (AARNet)
China : China Education and Research Network (CERNET),
 Hong Kong Academic and Research Network (HARNet)
Japan : National Institute of Information and Communications (NICT),
 National Institute of Informatics (NII),
 Ministry of Agriculture, Forestry and Fisheries Research Network (MAFFIN)
Korea : National Information Society Agency (NIA)
Singapore : Singapore Advanced Research & Education Network (SingAREN)

Further country National Research and Education Networks (NRENs) may join during the course of TEIN4.

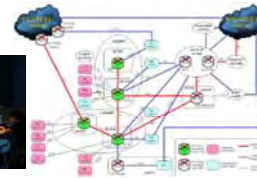


TEIN4 Work Packages



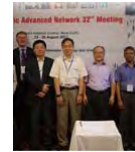
❑ WP1 - Network Procurement and Commercial Management

- ❖ Conducting TEIN4 network tender, TEIN4 NOC tender
- ❖ Sourcing TEIN4 network equipment
- ❖ Reviewing NOC performance & overseeing the TEIN4 NOC
- ❖ Conducting a feasibility study



❑ WP2 - Promoting and Supporting Applications

- ❖ Developing a portfolio of target applications areas for TEIN4 support
- ❖ Developing tools and technical support to facilitate application deployment on TEIN4
- ❖ Setting up a TEIN4 user support group to co-ordinate applications support and share best practice
- ❖ dissemination activities



❑ WP3 - Enhancing Human Capacity and International Collaboration

- ❖ Commissioning and delivering customized training courses on network engineering and operations
- ❖ Providing funding support, subject to budget availability, for beneficiaries' staff capacity development
- ❖ Assessing needs for non-technical training by beneficiary partners
- ❖ Enhancing the cooperation with other parties in facilitating R&E developments in Asia



Open Discussions for NREN in Myanmar



“Connecting our Research and Education Community to the World”

- ❑ How to develop the NREN in Myanmar, to benefit from a strong cooperation with NRENs in the region, and to ensure the future integration of the Myanmar NREN into TEIN3
- ❑ Which applications could take the greatest benefit of the potential of a NREN: e-learning, education, emerging diseases, agriculture and crop research, etc.
- ❑ The next steps needed to implement identified perspectives, namely through the next TEIN phase: TEIN4



Thank you.

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- ❖ TEIN*CC Staff : staff@teincc.org
- ❖ TEIN*CC Website : www.teincc.org

ASEAN-EU Year of Science, Technology and Innovation 2012



ASEAN from an EU perspective

- 600 million people / ~9% of the world's population live in Southeast Asia
- Population expected to grow to over 700 million by 2030
- very dynamic, diverse region; S&T excellence is developing fast
- Increasing political efforts for regional integration
- Real GDP growth for six ASEAN countries to be at an annual average of 6% between 2011 and 2015
- The EU's fifth most important trading partner (after the US, China, Russia and Switzerland, before Norway, Japan, India, South Korea and Brazil)

Unique richness of
Biodiversity

One of the regions
most vulnerable to
Climate Change

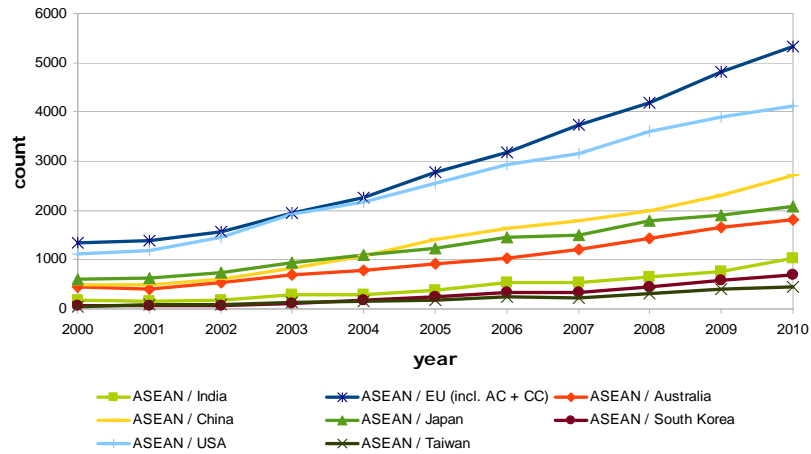
Major food producer
(Rice production)

Hotspot for
emergence of
infectious diseases
and drug resistance



ASEAN-EU co-publication output

Articles co-published by authors from ASEAN and EU,
and ASEAN and other major players(*)



Science, Technology & Innovation 2012

ASEAN participation in FP7

	MM	BN	LA	KH	SG	PH	MY	ID	TH
ENERGY					1				1
ENV			1	3	3	10	5	11	9
ICT	1	1	1	3	7	2	3	3	2
INCO			1		2	1	1	1	4
INFRASTR					3	5	4	2	3
KBBE			1	2		2	6	5	10
NMP					1		2		
SIS					2	1	2		
SPACE								1	
SSH					1				
SST									2
PEOPLE				1					2

ASEAN-EU
Science, Technology & Innovation 2012

Introduction to the ASEAN-EU Year of Science Technology and Innovation

- An idea born within the SEA-EU-NET project, based on the project's dialogue activities
- SEA-EU-NET:
 - Project funded by the European Commission (2008-2012) to foster S&T cooperation between Europe and South East Asia
 - one of ten running INCONETs (major world regions)
 - 22 partner organisations in EU and ASEAN (10 partners from Europe, 3 from associated countries and 9 from South East Asia)
 - Run by policy makers and science administrators
 - Objectives: stakeholders dialogue; increasing participation of researchers from ASEAN in FP7; scientific analyses and recommendations



SEA-EU-NET Lessons learnt

Stakeholder dialogue:

- Stakeholder conferences are an effective informal forum for dialogue between multi-sectoral and multi-disciplinary stakeholders
- Useful platform to link different bi-regional and bilateral initiatives (Creating synergies between EU and SEA member states initiatives)
- Challenging to organise a conference that is of interest for very different groups of stakeholders (Policy makers, administrators, scientists)
- Very good experiences in sharing the responsibility for the conferences among different partners
- Official political dialogue open for input from INCO projects (esp. for analysis/recommendations)



SEA-EU-NET Lessons learnt

FP7 participation, NCP establishment:

- FP7 National contact points in SEA are key to reach out to SEA research community
- Good experience to organise NCP meetings/trainings linked to publication of FP7 calls (mid-of the year)
- FP7 is not an “easy sell” (no ASEAN-specific priorities, “global competition”, collaborative research in big teams, high entrance barrier)
- No prior definition of thematic focus in the project (Strength and Weakness)
- Very difficult to translate priority setting (recommendations for topics) into action (“SICA calls”)
- FP7 alone is not sufficient (esp. to strengthen cooperation with weaker ASEAN countries) – FP cooperation has to be set in a ‘ (mobility schemes, long-term institutional cooperation)



SEA-EU-NET Lessons learnt

Analysis:

- Strong analysis is key to be able to convince policy makers about the necessity to strengthen bi-regional cooperation
- Need to provide both qualitative and quantitative analysis (and interlink them)
- Major objectives:
 - Increase knowledge among EU policy makers (and scientists) about dynamics of Innovation systems in SEA
 - Increase visibility of S&T cooperation between the two regions
- Offers great opportunities to collaborate with other stakeholders (OECD, UNESCO, APEC Foresight Centre, etc..)
- Timing is important: Publication/presentation of major studies during Stakeholder conferences



Introduction to the ASEAN-EU Year of Science Technology and Innovation

- An idea born within the SEA-EU-NET project, based on the project's dialogue activities
- A year long campaign to deepen S&T collaboration between Europe and Southeast Asia
- Officially endorsed by the ASEAN Committee of Science and Technology and the European Commission/DG RTD



The Objectives

- Coordinate joint S&T-related events
- Raise awareness among the public, and especially the young, about the importance of S&T cooperation
- Promote Southeast Asian and European competencies in S&T
- Establish a platform for the mobility of ideas and researchers and stimulate research partnerships
- Identify common global research challenges and ways to tackle them
- Develop and launch new funding instruments to support SEA-EU S&T cooperation

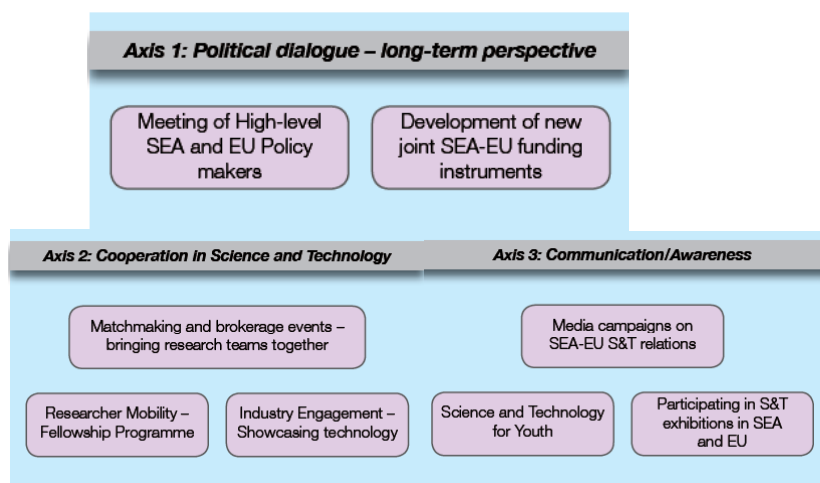


The Objectives (2)

- Strengthen a high level political dialogue between the two regions in support of S&T cooperation
 - Highlight the diversity of S&T relations between the two regions and give impetus to future joint activities
 - Promote closer ties between the peoples of Southeast Asia and Europe
- To date, **31 events planned** in 10 different countries from the two regions, with more than 30 different institutions from both regions involved
- Direct involvement from the European Commission and ASEAN COST



Three Main Groups



Four Pillars

Pillar 1: SEA-EU-NET-led and funded Activities/events

Pillar 2: EC and ASEAN-led initiatives

Pillar 3: Ongoing Multilateral activities/events labelled under the ASEAN-EU YoSTI

Pillar 4: Bilateral activities/events of ASEAN and EU member states



Regional EU-ASEAN Dialogue Instrument (READI)

READI is an ODA facility, financed by the EU, **to support cooperation and policy coordination** between ASEAN and the EU **in all non-trade related sectors**.

Science & Technology is one of the priority sectors defined by the EU and ASEAN to be addressed by READI. Other sectors include, for the moment, Disaster Management, Energy and ICT.

These are the expected overall results of READI:

- Development of concrete action plans for integration and contribution to the ASEAN Secretariat and AMS collegial bodies' work to further integration
- Improved institutional capacity of the ASEAN (ASEAN Secretariat, ASEAN Collegial bodies, ASEAN Chair countries, and AMS) to support integration
- Extended and strengthened ASEAN-EU network in areas of relevance to the ASEAN's priorities, leading to effective mutual learning process



**REGIONAL EU-ASEAN
DIALOGUE INSTRUMENT**



READI activities in the Year of STI 2012

- Visit of ASEAN Science Journalists to Singapore – Media Awareness Raising on the occasion of the visit of European Commissioner Máire Geoghegan-Quinn (early March 2012)
- Session and workshop on the role of S&T cooperation for ASEAN emerging economies' innovation systems during Triple Helix Conference in Bandung/Indonesia (8-10 August)
- Thematic and policy-oriented conference Session during International Techmart 2012 in Hanoi/Vietnam
- Study Visit of ASEAN COST Officials to Europe (tbc)



**REGIONAL EU-ASEAN
DIALOGUE INSTRUMENT**



ASEAN-EU
Science, Technology & Innovation 2012

Thank you

More information

- www.yearofscience2012.com
- SEA-EU-NET: www.sea-eu.net
- READI: www.asean.org/readi (soon to come)

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READI S&T Key Expert



**REGIONAL EU-ASEAN
DIALOGUE INSTRUMENT**



ASEAN-EU
Science, Technology & Innovation 2012

Practical Steps to Building an NREN

Dale Smith

Network Startup Resource Center

dsmith@nsrc.org

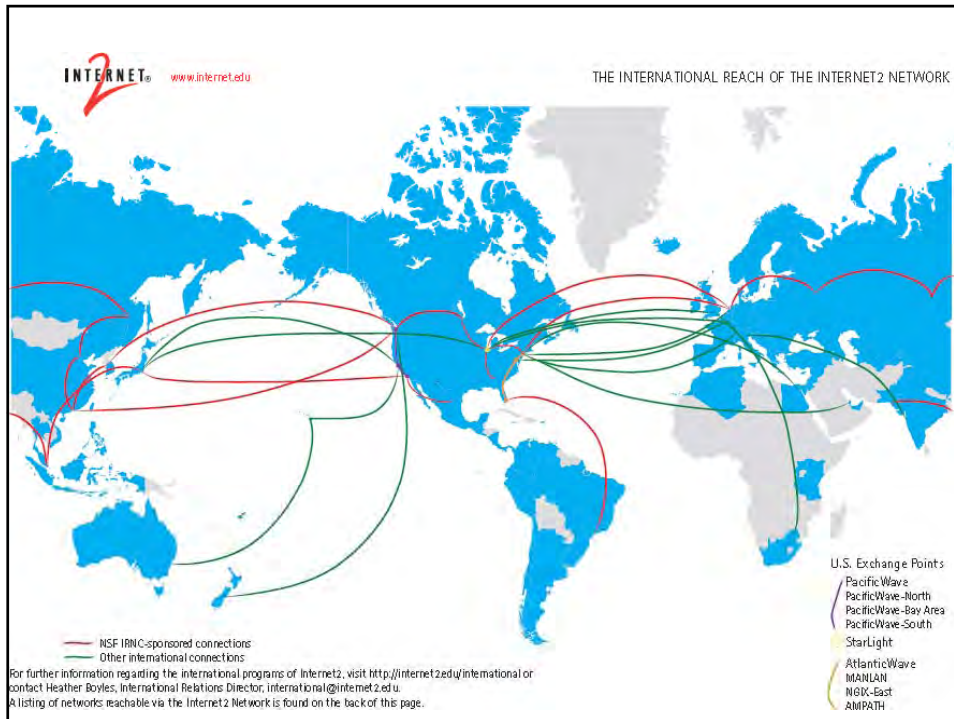
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Research and Education Networks

- Some Terminology
 - Research and Education = R&E
 - Research and Education Networks = REN
 - National REN = NREN
- Almost every developed country around the world has built a National Research and Education Network (NREN)
- Why?





Why an NREN?

- Develop networking capacity to support Research and Education
- Build a community that is a forum for collaboration
- Successful RENs find that there are unanticipated benefits
- Why not just buy Internet Access from an Internet Service Provider?

Why not Commercial Providers

- High bandwidth networks
 - Advanced R&E networks have 10Gbs backbones with some doing 40Gbs and 100Gbs
 - Research typically needs uncongested networks
- Open Networks with no filtering
- Commercial Providers can do this
 - A few NRENs are operated by Providers
 - The barrier is cost. Most successful NRENs are operated by Universities, not Providers



NREN Challenges

- NSRC works throughout the world with many emerging NRENs
- Many NRENs have three challenges:
 - Some don't make effective use of their R&E connectivity
 - Campus Networks are not adequate
 - Some don't provide general Internet access



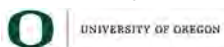
Don't Make Effective use of R&E

- This is a technical issue, but very common
- The problem is that when there are two paths (Internet and Research and Education) from the NREN to another site, how is the path chosen?
 - Default configuration won't always prefer the Research and Education network.



Inadequate Campus Networks

- Many are not structured properly and can't effectively utilize high bandwidth REN connections
- Many make heavy use of NAT and firewalls that limit performance
- Many are built with unmanaged network equipment that provide no ability for monitoring or tuning the network
- Many don't have sufficiently trained staff

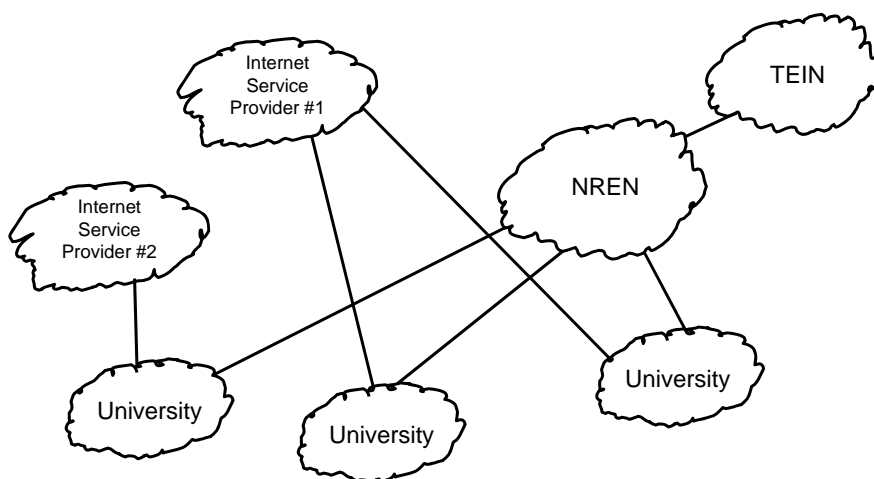


NREN Not Providing Internet

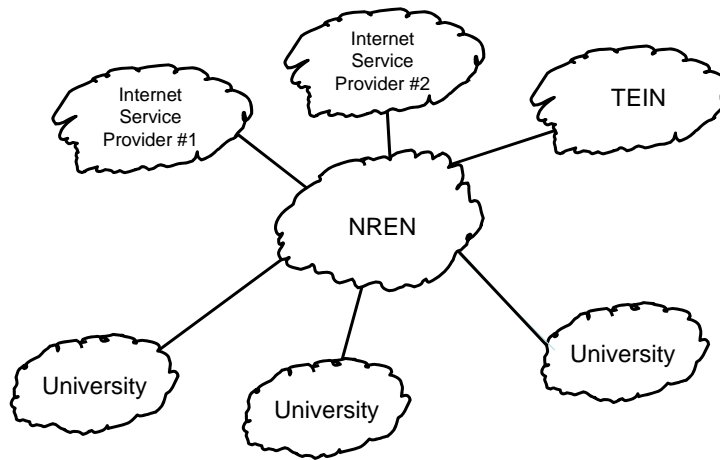
- Two basic NREN models:
 1. NREN is Peering network
 - No access to the Commercial Internet
 - Exchange traffic between members
 - Provide international connections to other RENs
 2. NREN provides all Internet connectivity
 - Provides access to the Commercial Internet
 - Also exchanges traffic between members
 - Provides international connections to other RENs
 - The REN is the Internet Service Provider



NREN as Peering Network



NREN as ISP



Implications for Universities

- If NREN is a Peering Network
 - Each University still has their own ISP
 - Each University connects to NREN
 - The two connections are hard to manage
- If NREN provides all Internet connectivity
 - Simplest for campus members
 - Treats NREN as Internet Service Provider
 - Only one connection to manage

NREN as a Peering Network

- Easiest to implement from a political perspective.
 - The Internet Service Providers like this approach because they keep many customers
 - Often the legal and regulatory environment allows this use without licensing and/or the license is easier to get
- However, there are problems with this approach



NREN as a Peering Network

- Universities now have two connections
 - How do they decide which one to use?
- Three approaches:
 1. Get provider independent IP address, autonomous system number, and run BGP
 2. Get routes from NREN and run special software and configuration on a NAT box
 3. Split campus network into NREN and Internet
- What do we find around the world?



NRENs Around the World

- Most NRENs act as the Internet Service Provider
- There are two classes of Peering Only
 - Advanced regions: they do the right thing and have Provider Independent IP addresses, ASN, and run BGP. This works fine.
 - Less advanced regions: they split their campus and the NREN becomes a video conferencing network.
- What kind of network will you build here?



Closing Thoughts

- How will you structure your Research and Education Network strategy?
- If you build an NREN
 - Consider providing consulting services to members to address inefficient campus networks
 - Consider providing Internet access as part of the NREN



Questions/Discussion?

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Development of Thailand Research Educational Network for Global Collaboration

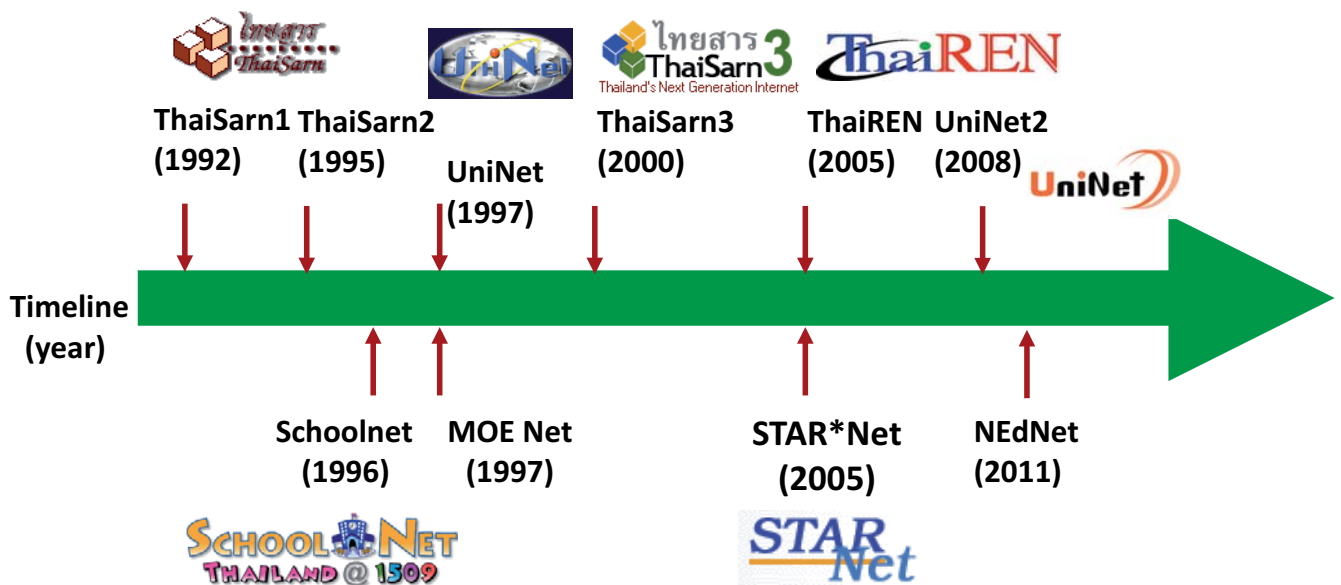
Sharing Knowledge and Experience in TEIN3 Workshops

By Chalermopol Charnsripinyo

NECTEC/ThaiREN



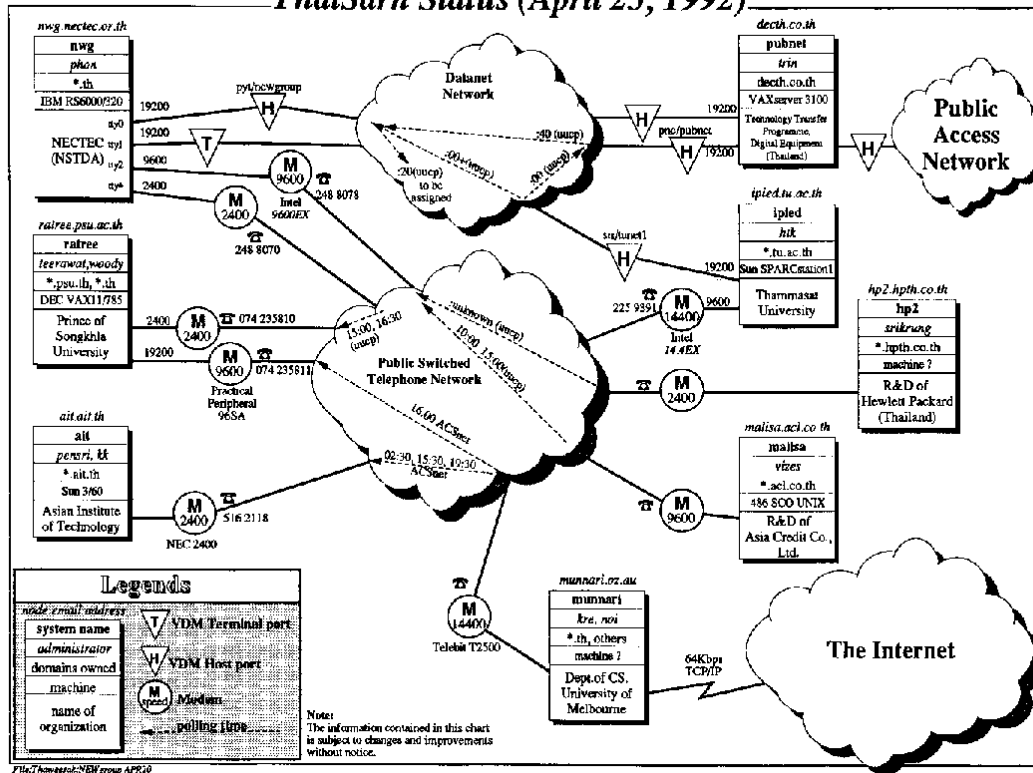
Development of Research & Education Networks in Thailand



➤ ThaiREN is established to coordinate among research and education networks in Thailand as well as collaborate with international R&E networks.

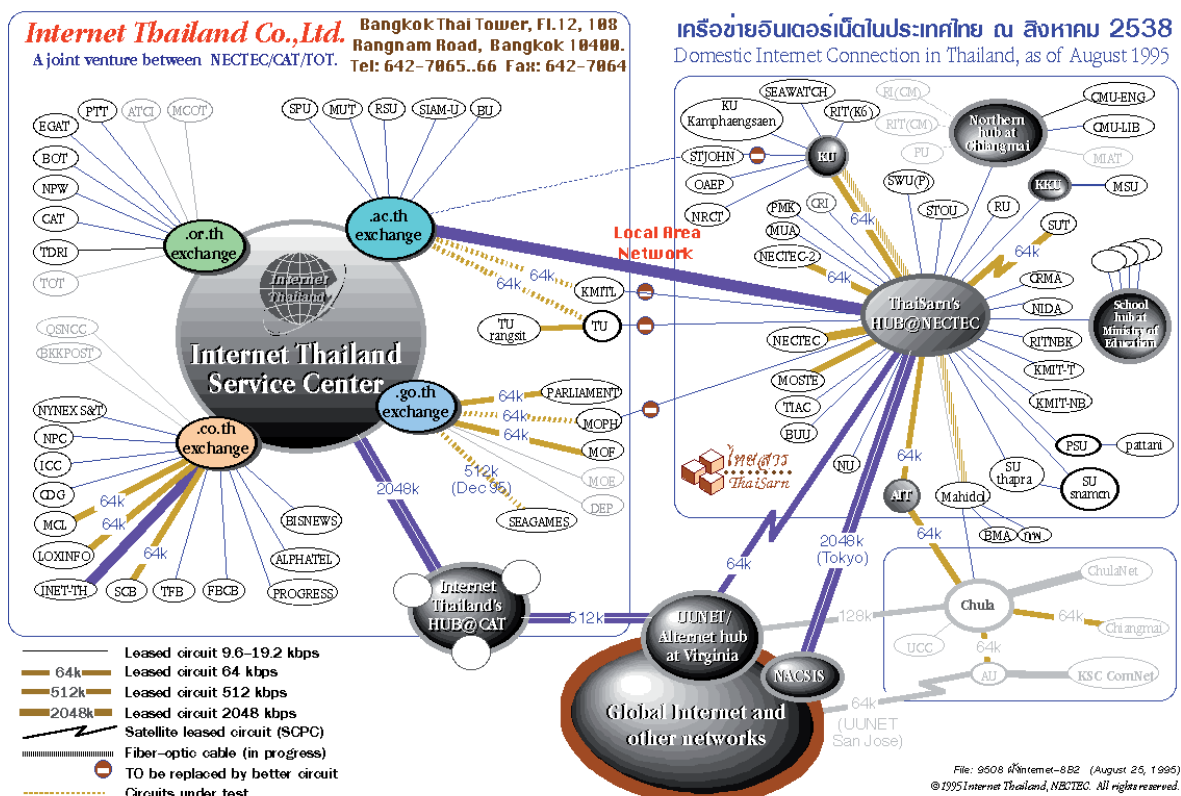
Beginning of Thai R&E Network

ThaiSarn Status (April 23, 1992)



[Information Source: <http://www.nsrc.org/ASIA/TH/thaisarn.gif>]

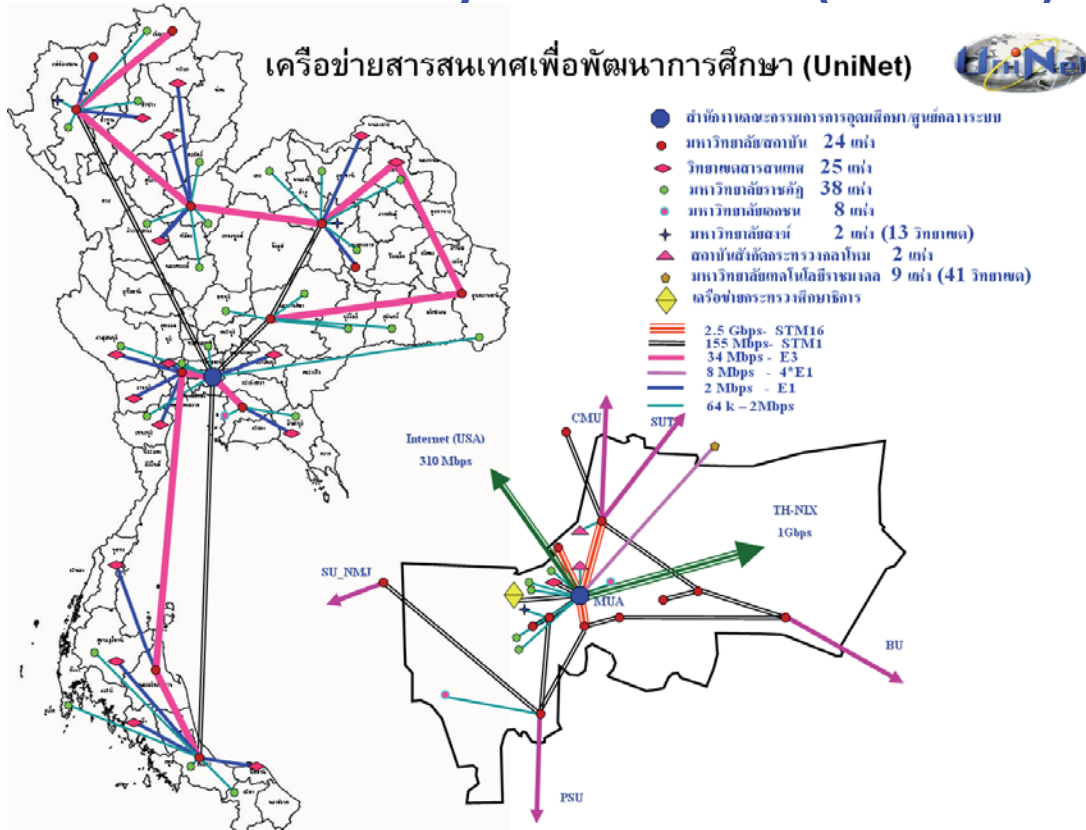
ThaiSarn Network (Y1995)



[Information Source: NECTEC]

Expanding network infrastructure in Thailand IT Year (1995)

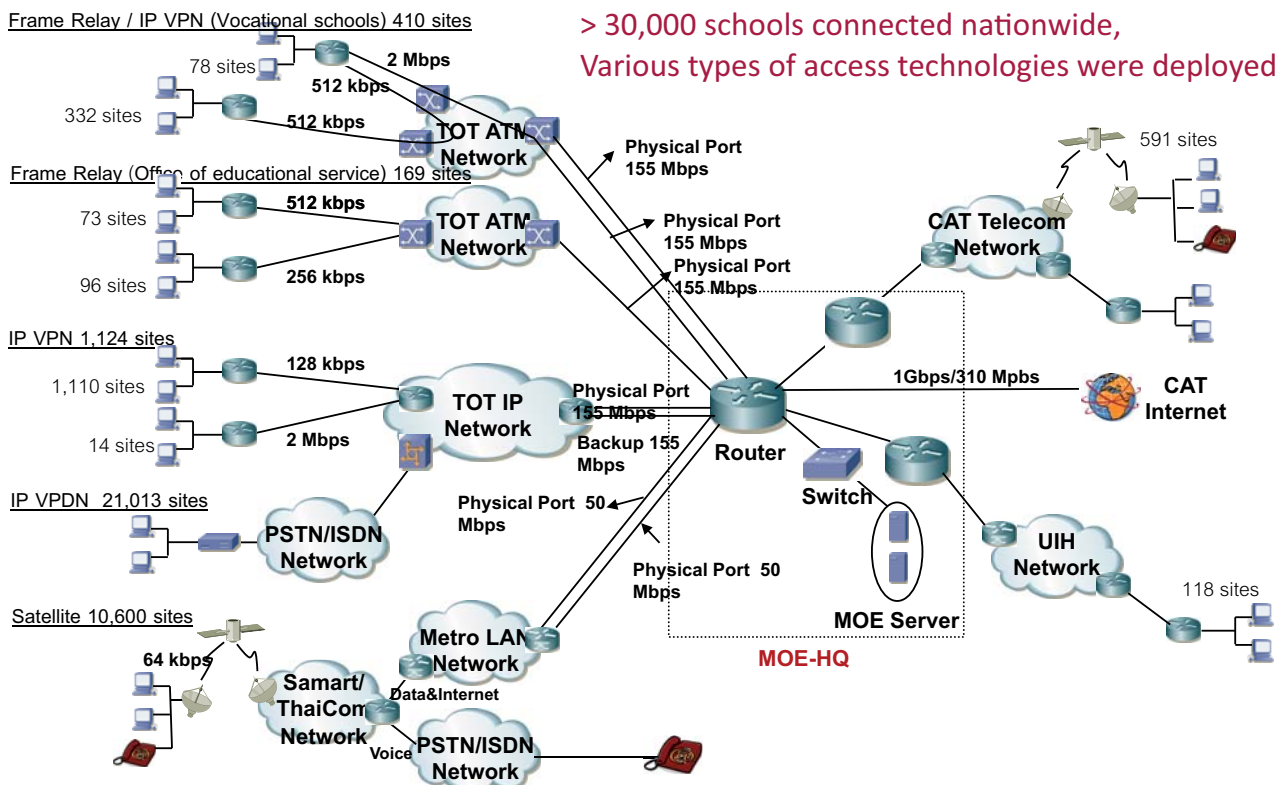
Inter University Network (Y2006)



[Information Source: UniNet]

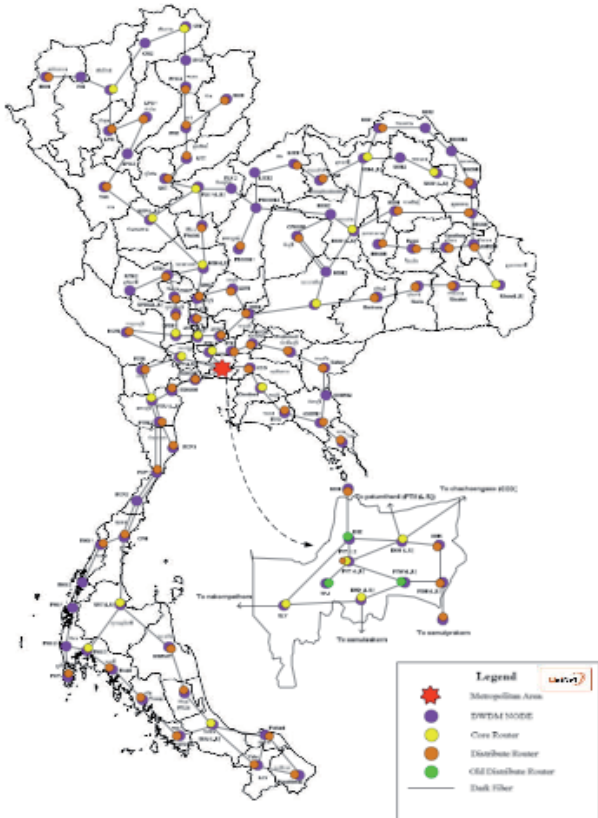
Setting up nationwide backbone network

MOE Net (Y2006)



[Information Source: TOT and MOE]

Needs for High-Speed National R&E Network



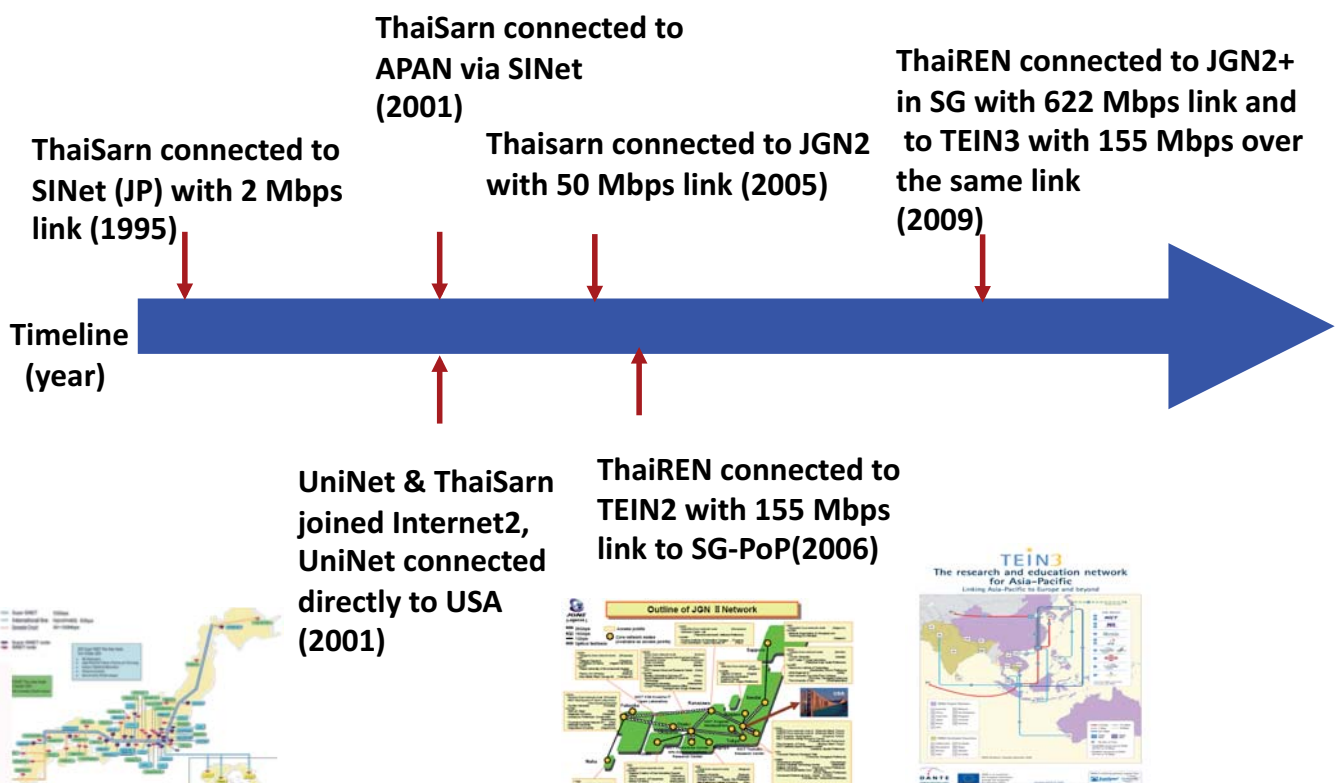
New backbone network

- Optical Network Backbone with DWDM @ N x 10Gbps
- Fiber to the University @ Gbps
- Fiber to the school @ 10 – 100 Mbps
- Public libraries @ 10 – 100 Mbps

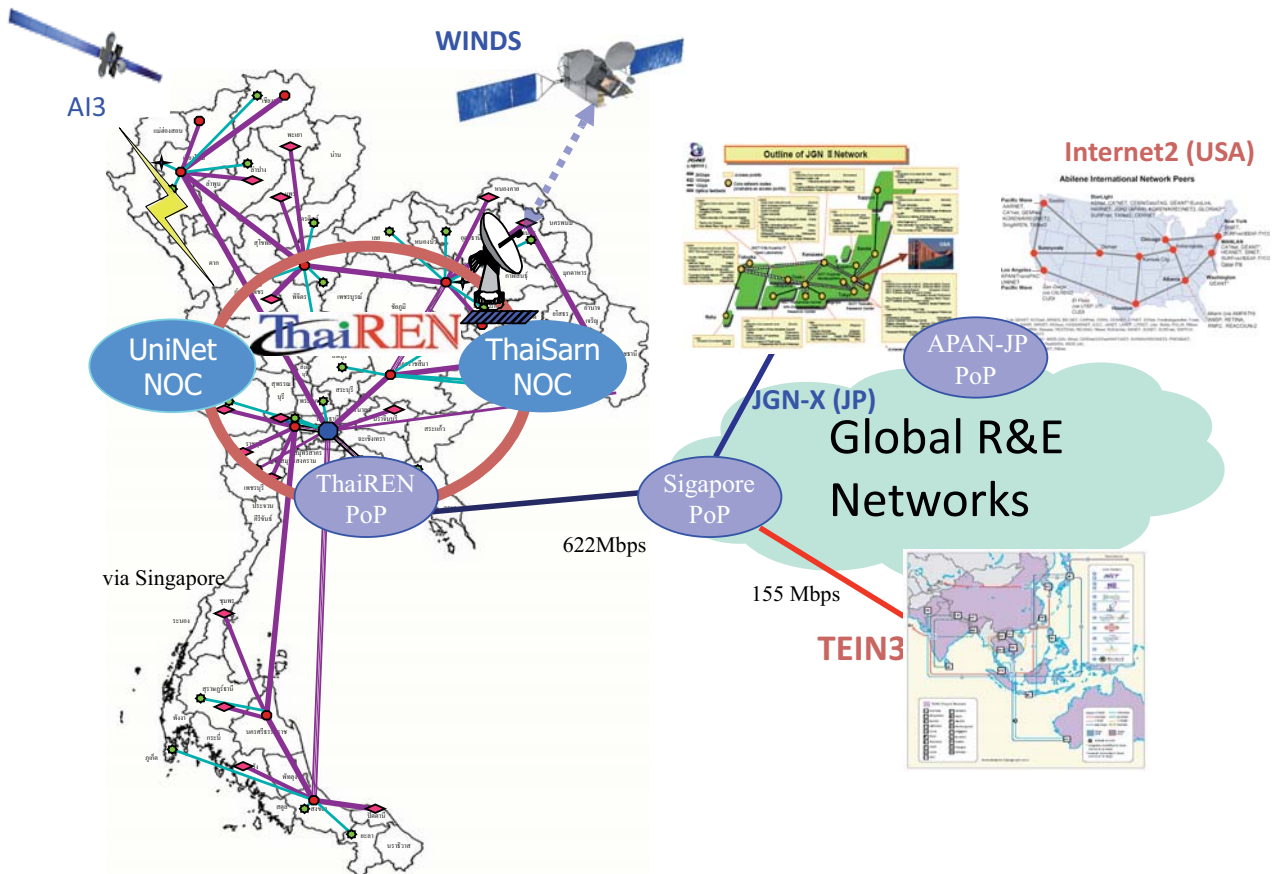
Type	Number of Institutes
University and College	> 350
Research Center/ Institute	> 15
School	> 30,000
Others	>10



Connecting to International R&E Networks

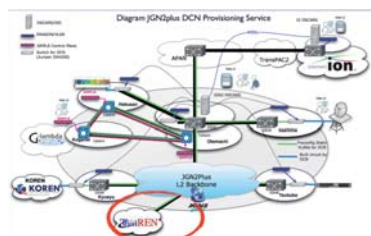
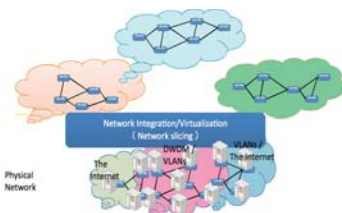
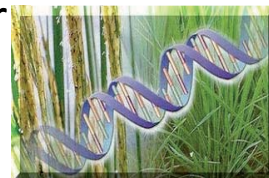


R&E Gateway to Global Collaboration



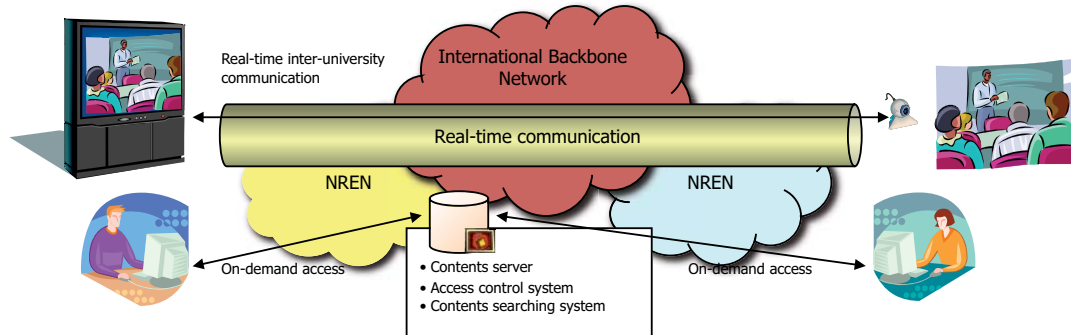
Examples of Network Services, Applications, and Project Collaborations

- IPv4/IPv6
- Teleconferencing
- E-learning
- Tele-education
- Tele-medicine
- Live video stream transmission
- Earth observation data transfer
- E-Science
- Future Internet technology



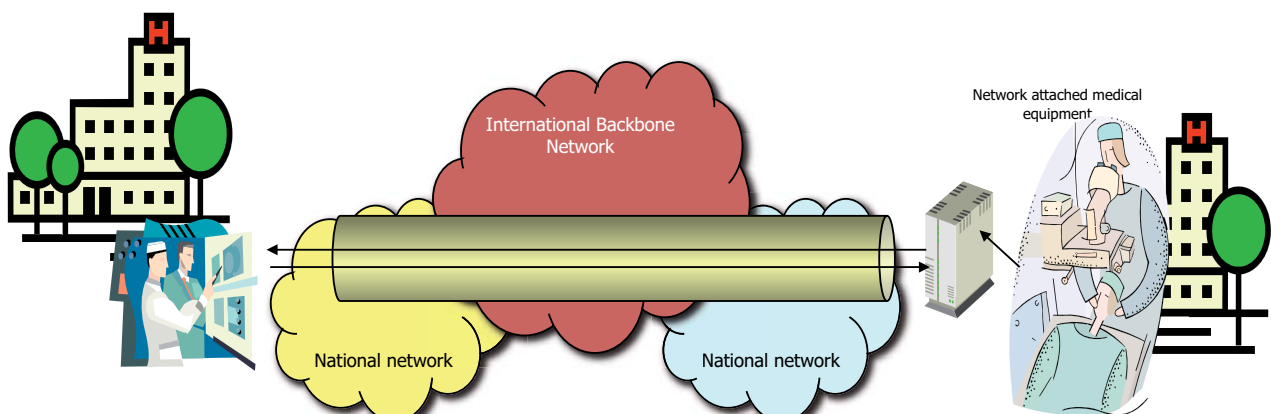
Tele-Education

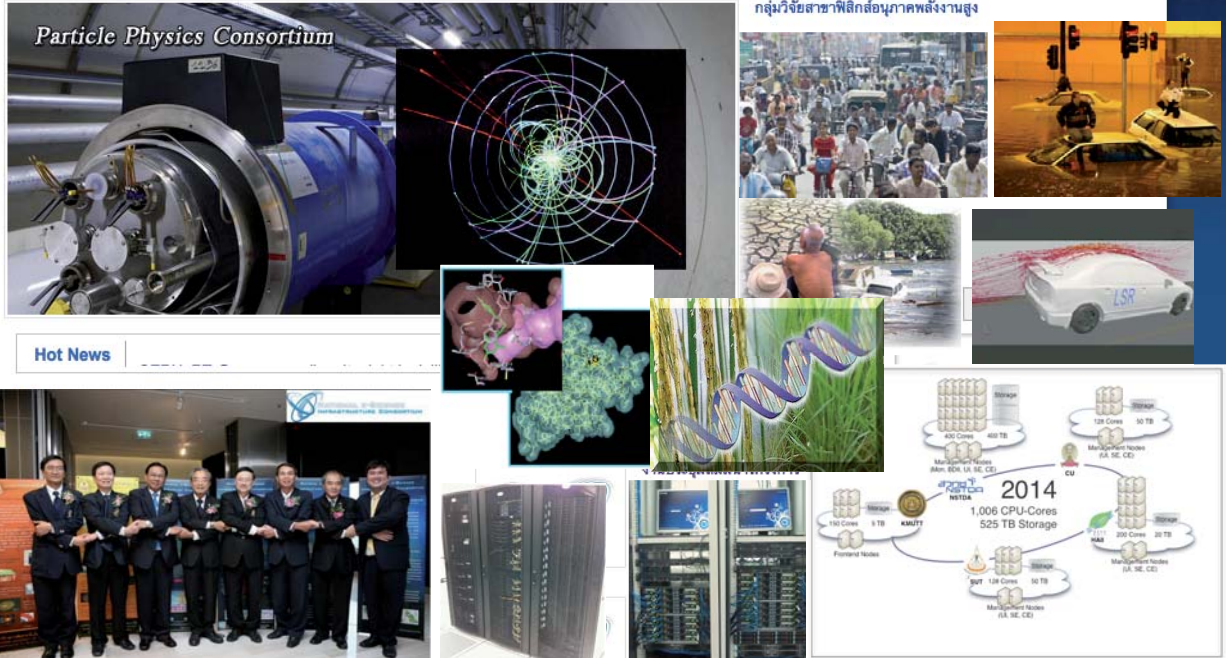
- Students can attend virtual classes that look as if they are attending in the same classroom.



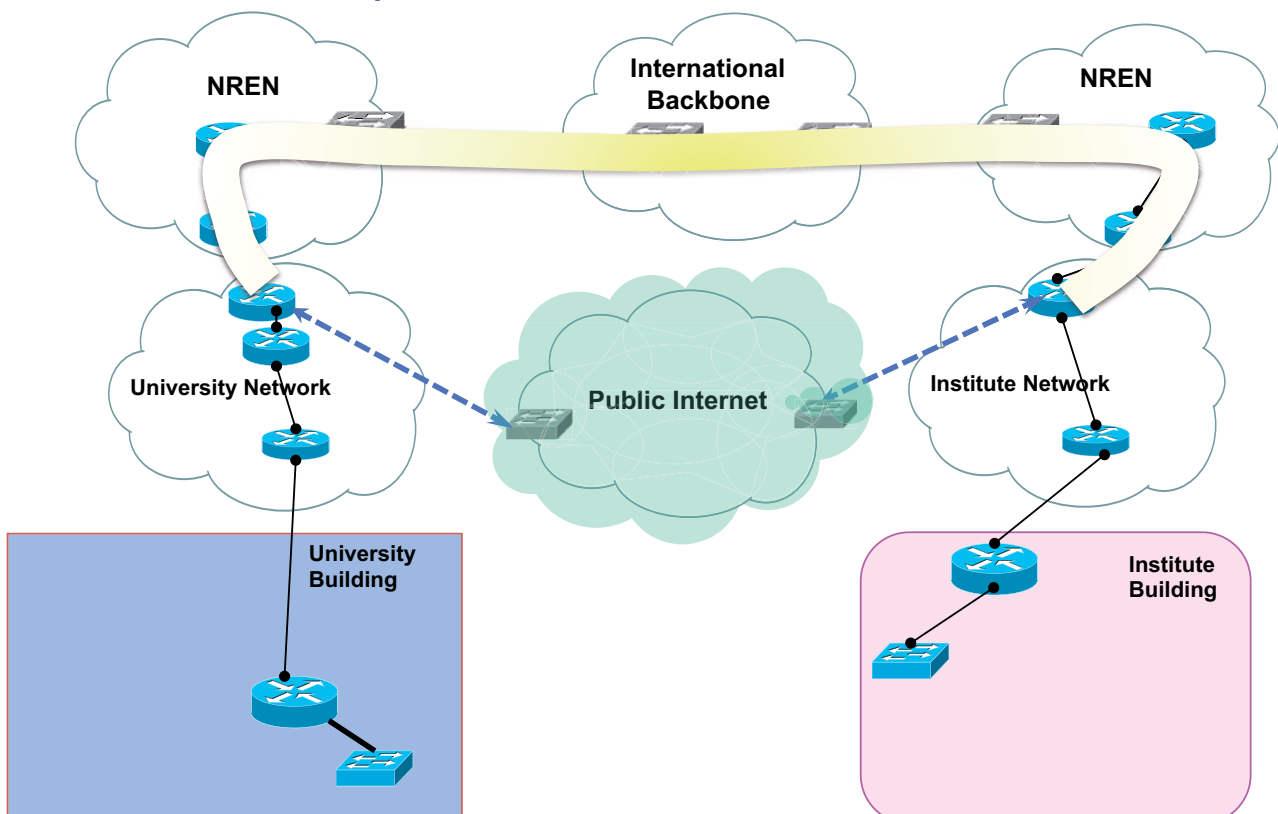
Tele-medicine

- Advanced medical treatment and diagnostic skills from specialist doctors are feasible with tele-mentoring system



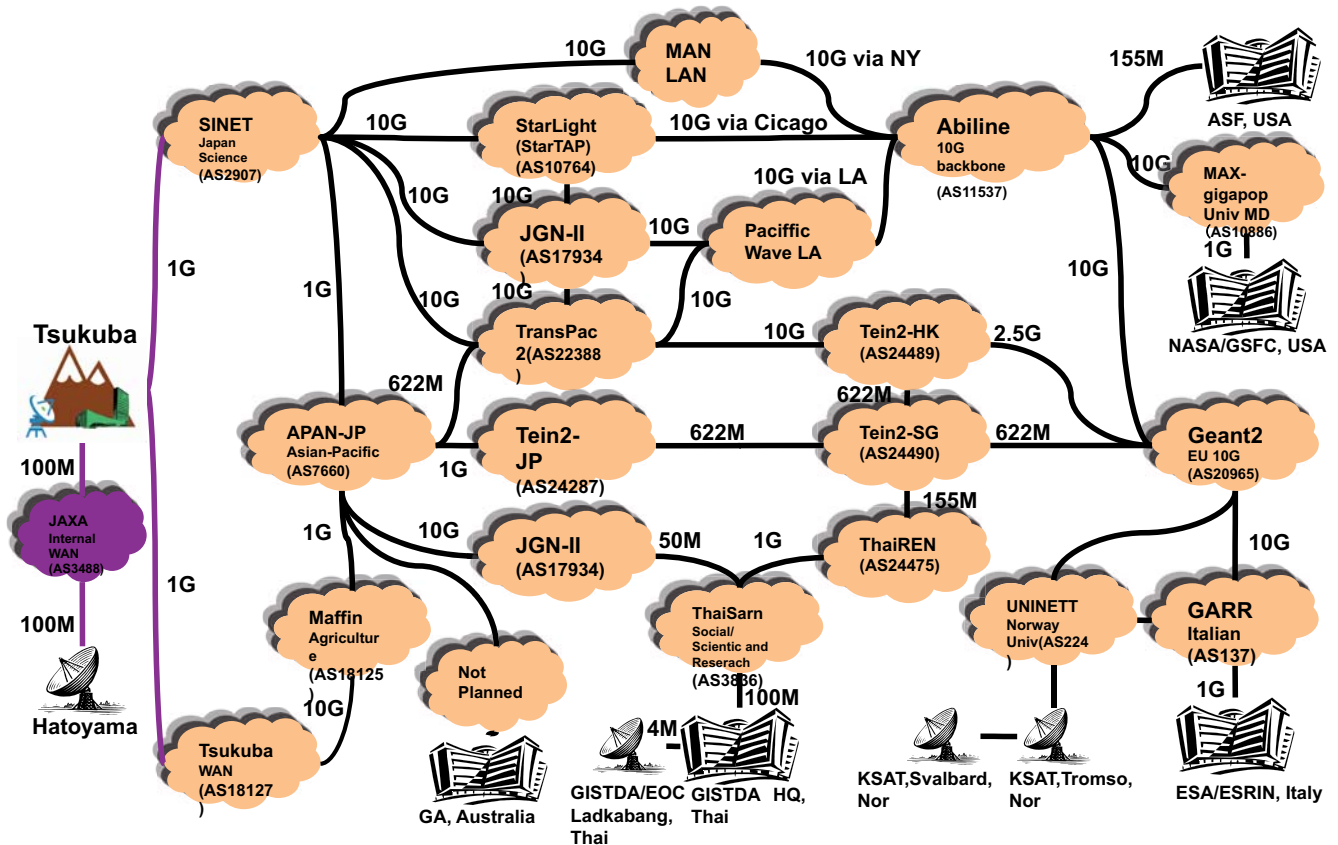


Case Study: Selecting Network Path for Project Experiment between NRENs



Co-operation between network engineers along the network path is important

Example of Network Paths (old diagram)



Knowledge and Experience from NREN Development

- The development of a NREN normally takes time and effort
- All types of supports from government are necessary
- Good coordination between organizations/institutes can overcome problems
- International collaboration (and support) can be a good opportunity for improvement
 - Network development for research and education activities
 - Technology and knowledge transfer through training programs and research collaborations
 - Human relationships and networking with partners through project collaborations

Summary

- National and International Research and Education Networks are important to provide network infrastructure for education and research activities
- New generation RENs will be able to support advanced research applications
- Global Collaboration is useful and and important
- Co-operations between networks/institutions are necessary to provide quality of service and assurance to network applications
- More research projects, applications and collaborations should be encouraged

Thank You



Running a NREN: Philippine Experience

DENIS F. VILLORENTE

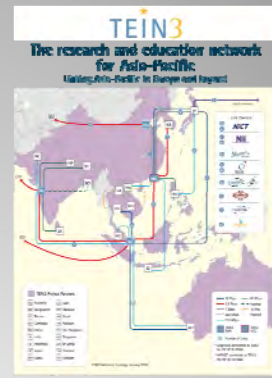
Advanced Science and Technology Institute

Advanced Science and Technology Institute (ASTI)

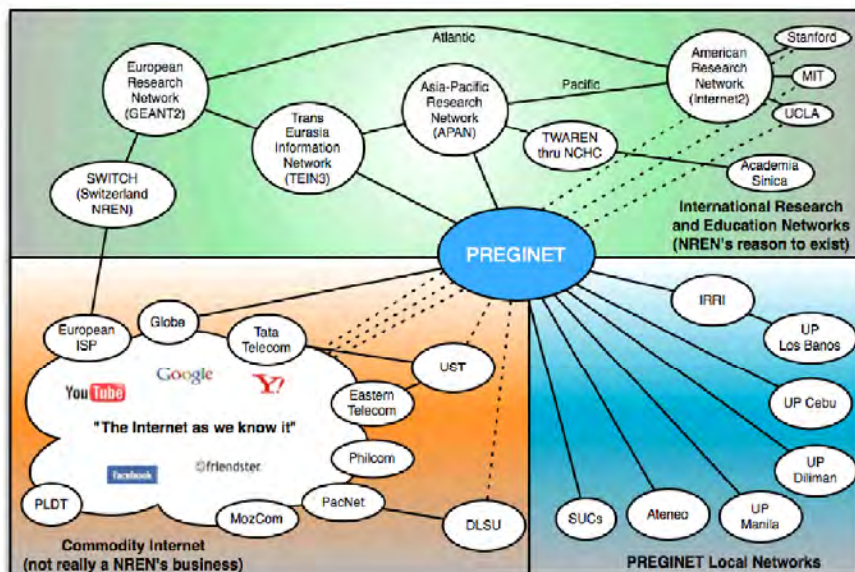
- ICT and microelectronics R&D agency under the Philippines' Department of Science and Technology (Ministry level)
- Situated in proximity to the national weather bureau; national volcanology & seismology bureau; and the main campus of the University of the Philippines
- Manages and operates the National R&E Network: The Philippine Research, Education, and Government Information Network (PREGINET)

PREGINET

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



Who's Connected?



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

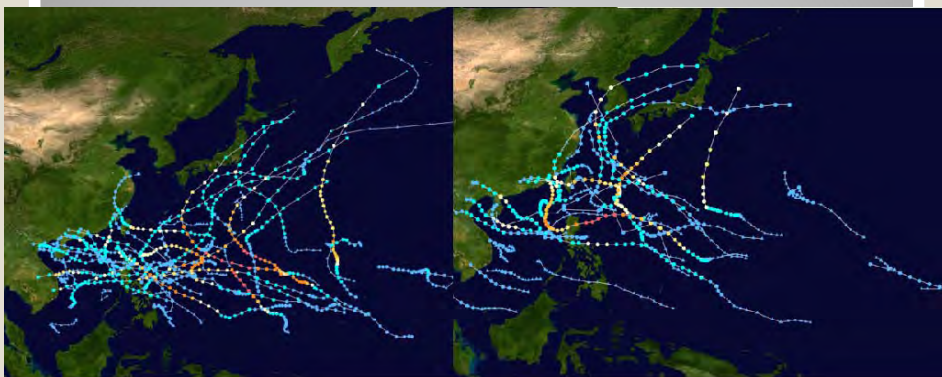
...it has been the world's most... by 2050. As... more rice on less... land and water, farmers need new rice varieties adapted to changing climatic conditions. The main objective of the International Rice Research Institute (IRRI) in the Philippines is to help farmers improve their yields and thus sustain 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



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.

Two typhoons contrasted

Typhoon Uring made landfall in the Philippines in November 1991. One of the deadliest tropical cyclones in Philippine history.



Courtesy of National Grid

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

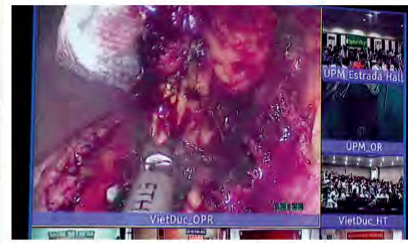
4 | E-mail: news.vital@gmail.com

NEWS

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



Laparoscopic view within the peritoneal cavity, VietDuc or middle frame

teleconferencing software, Polycom performed a laparoscopic surgery. The UP PGH also 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...

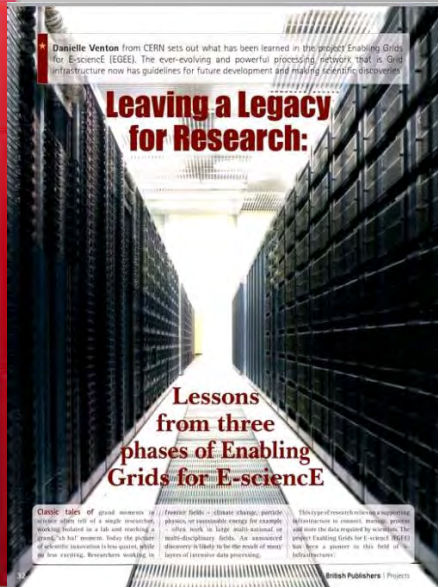


eGee
Enabling Grids
for E-science

...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



E-Education

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



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

Questions?

denis@asti.dost.gov.ph

links:

www.asti.dost.gov.ph

www.pregi.net

Malaysian Research & Education Network

TEIN3 Workshops

Kamal Hisham
MYREN Network Operation Manager
kamal@myren.net.my



Agenda

1. Introduction
2. Infrastructure
3. MYREN Services
4. Collaboration Highlights



Introduction

MYREN is...

- Malaysian Research and Education Network
 - a **dedicated** network linking research and education entities throughout Malaysia
 - to provide a networking avenue for universities & research institutes to collaborate locally & globally.
- officially launched in March 2005 under 8th Malaysia Plan.
- started with 11 members, now 88 members (universities , polytechnics, community colleges and research organisations)
- centered at the MSC Malaysia Innovation Centre in Cyberjaya (the country's first intelligent city)

3

Introduction

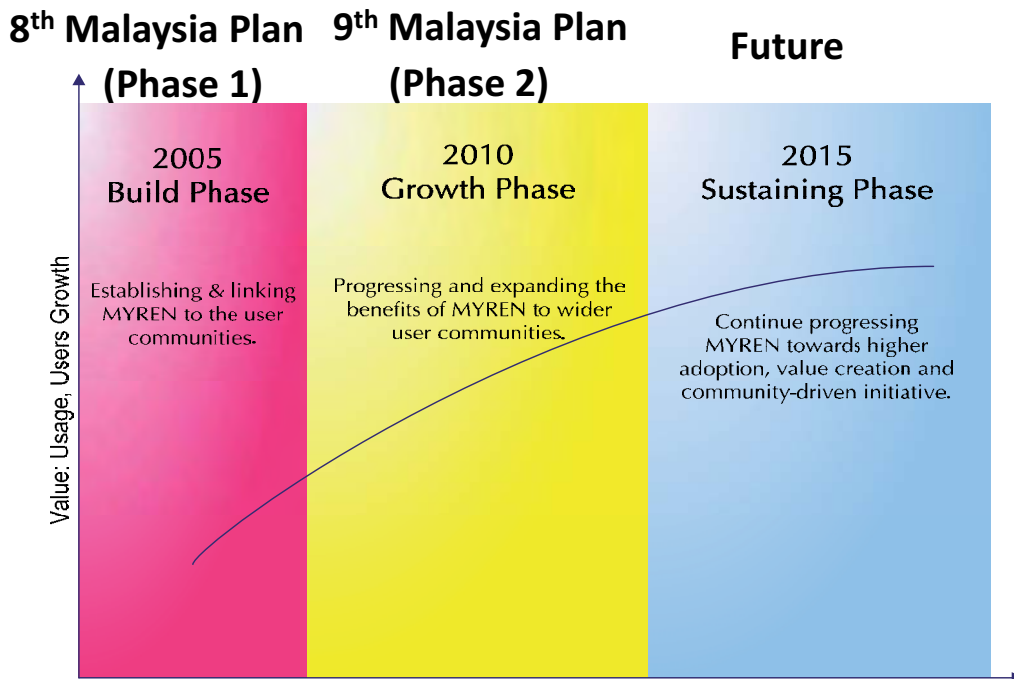
Key Players in MYREN...



- **Project Sponsor/Owner**
 - Ministry of Higher Education (MoHE)
 - From Jan 2011
 - Ministry of Information, Communication & Culture (MICC)
 - July 2009 till 2010
 - Ministry of Energy, Water & Communication (MEWC)
 - March 2005 until June 2009
- **Project Manager**
 - Multimedia Development Corporation (MDeC)

4

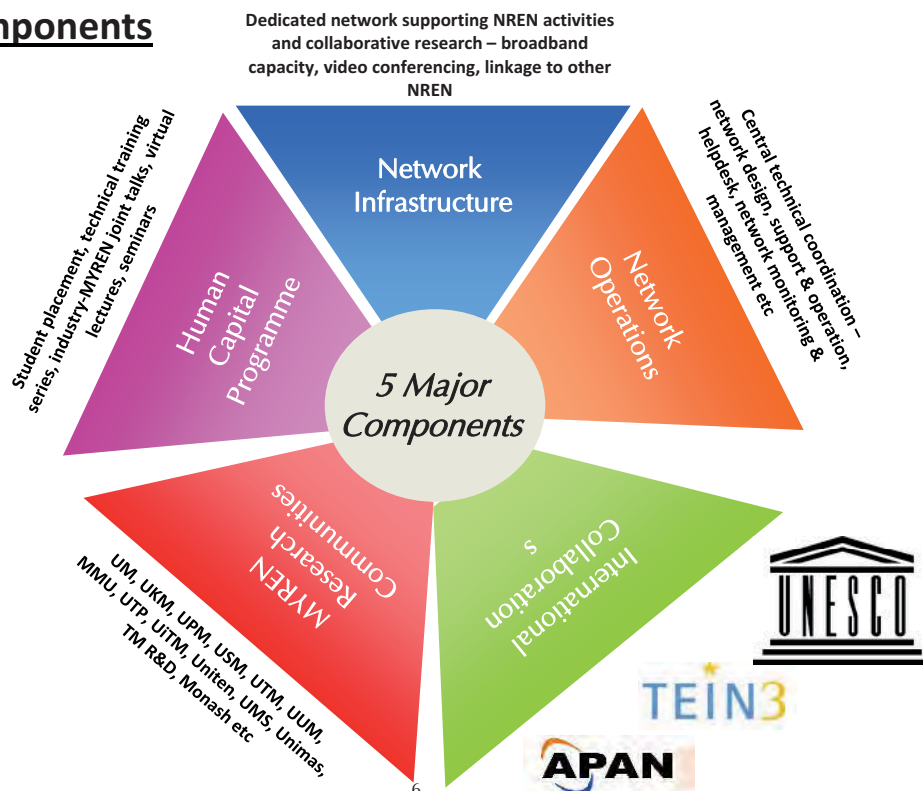
Strategic Directions



5

Introduction

Key Components



6

Infrastructure – Fact Sheet

Expansion Phases

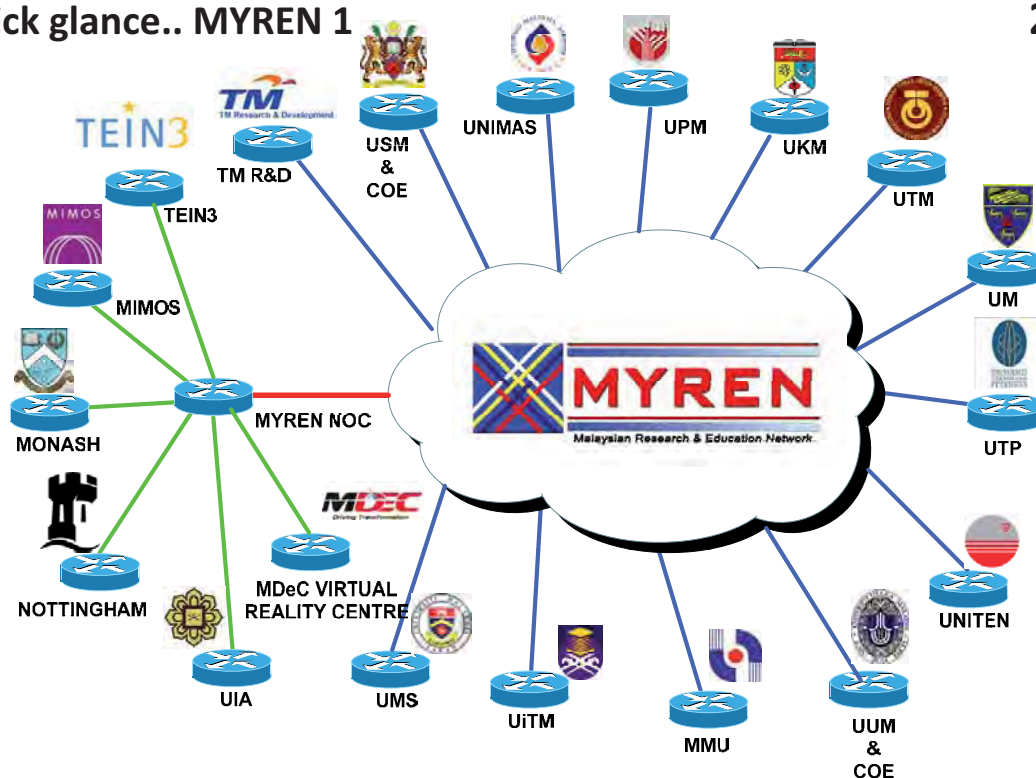
- Phase 1 : Building MYREN (March 2005 – June 2010)
- Phase 2 : Building MYREN Core, Connecting IHL (June 2010)
- Phase 2A : Extension to 20 Polytechnics & 20 Community Colleges (October 2010)
- Phase 2B : Further extension for PoP Sarawak, AKEPT, 2 Polytechnic, 16 Community Colleges (October 2011)
- Phase 2C : Further extension to 2 Hospitals, 5 Polytechnics and 2 Community Colleges (October 2012)



Infrastructure

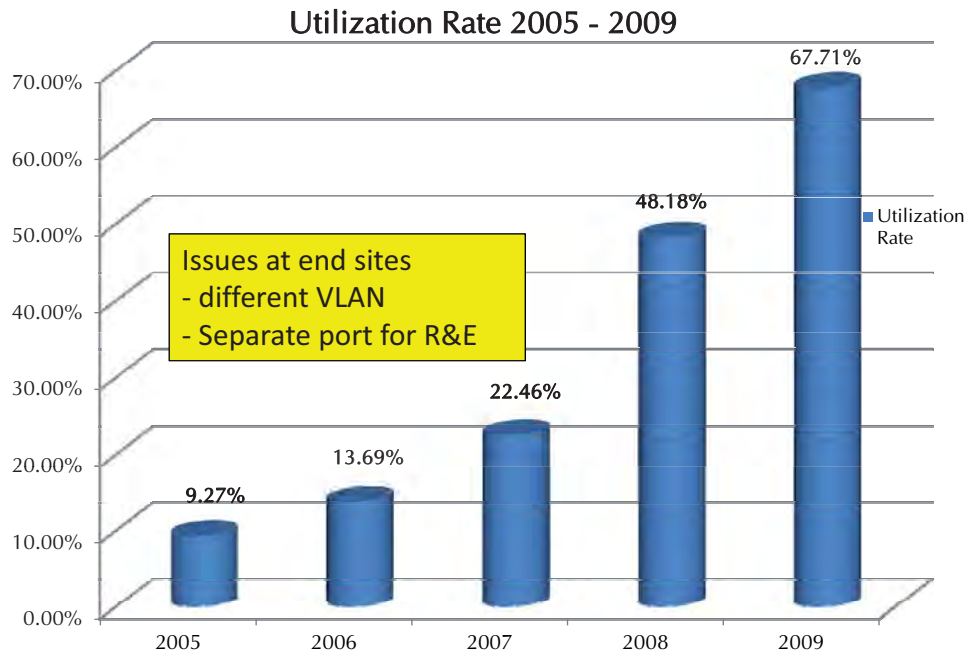
A quick glance.. MYREN 1

2005



Infrastructure

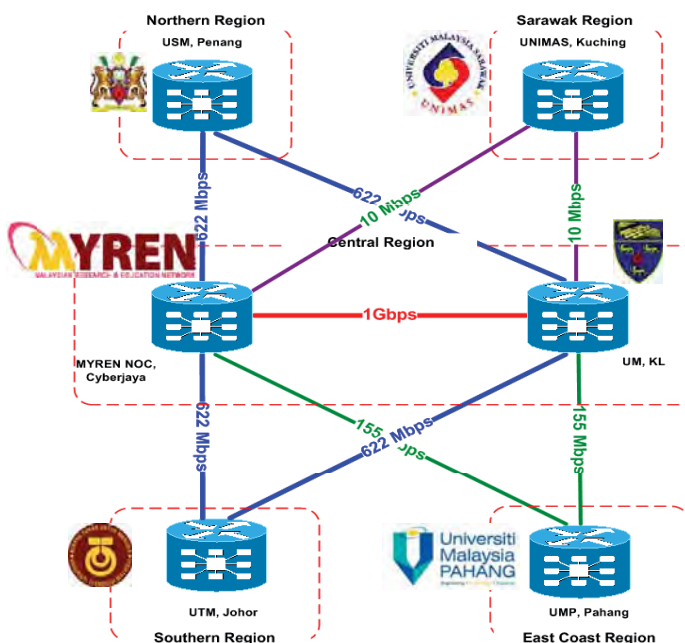
MYREN1 Network Utilization



Infrastructure

MYREN Phase 2 (MYREN2) – Core Network

2010

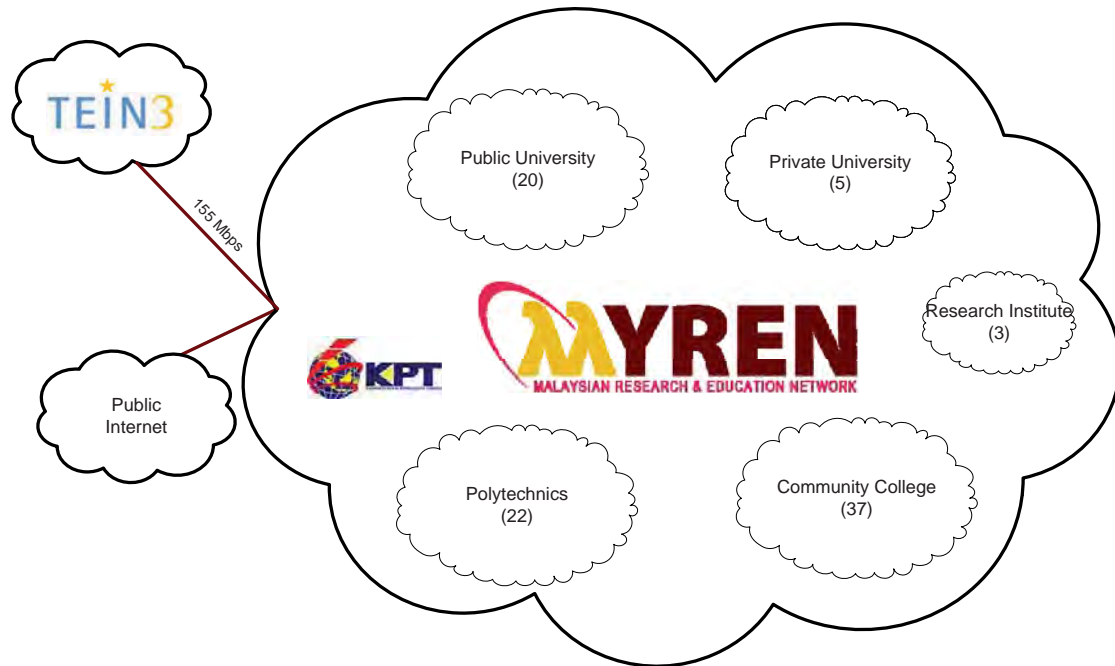


Facts :

- MPLS enabled network
- Dual stack at all core and access network
- PoP located at strategic member areas

Infrastructure

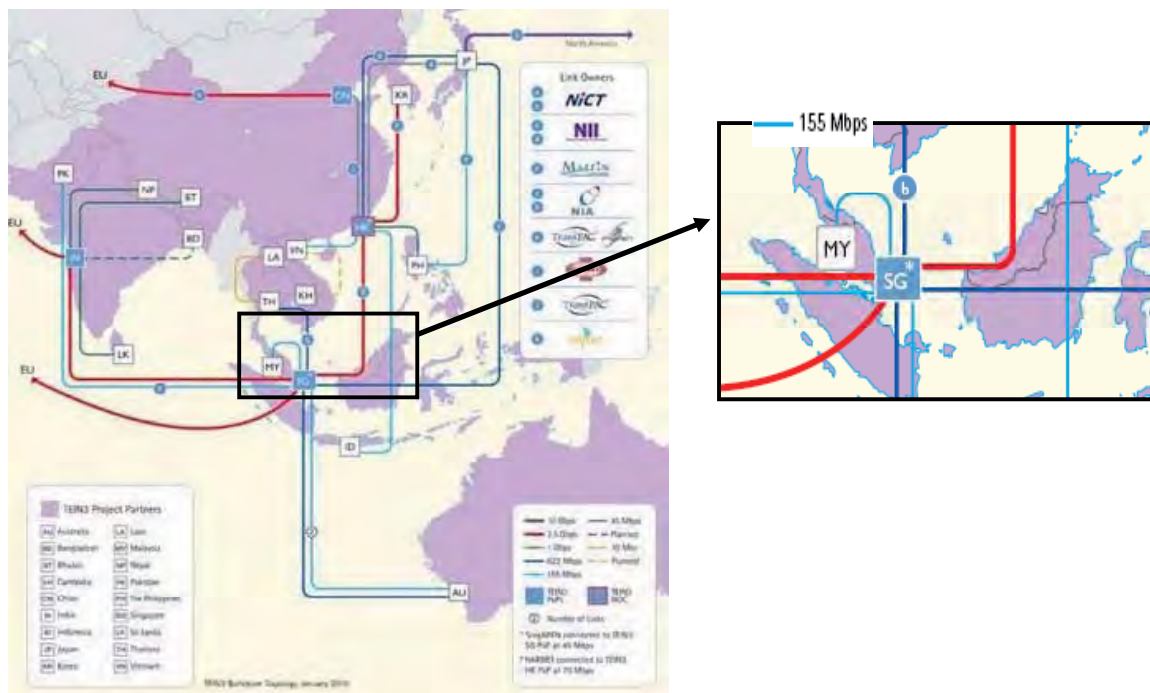
Members community



Infrastructure

International Cooperation and Linkages

TEIN3 (Trans Eurasia Information Network)



Services

Connectivity Services

- R&E network
 - Must have AS# (public or will be assigned with private)
 - min /24 IPv4 address
 - Mostly for universities and research institutes
- R&E network & commodity
 - A default route to MYREN
 - Mostly for polytechnics and community colleges
- L2VPN or L3VPN
 - Mostly for research purpose
 - Accommodate special/POC request



13



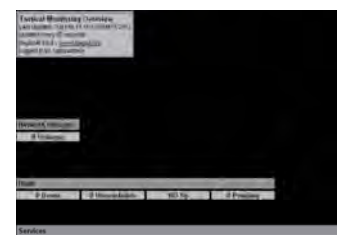
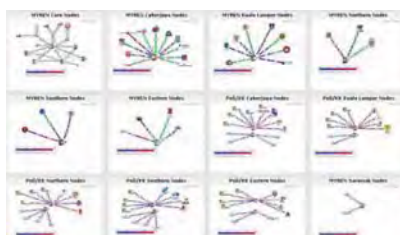
Services

Services (<http://www.myren.net.my/services/myren-services>)

- Weathermap, Cacti, Rancid, Looking Glass, Smokeping
- iPerf server : iperf.myren.net.my
- Video Conferencing MCU

Future Plan

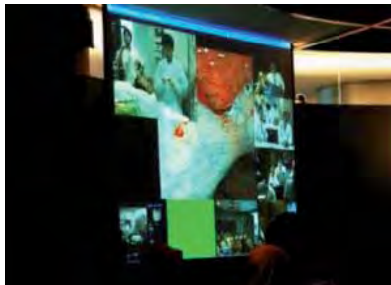
- PerfSONAR, SIP peering, NRENum
- MYREncloud



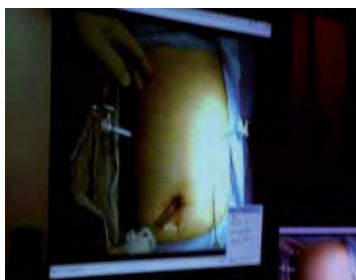
Collaboration Highlights

Some of Collaborative Projects conducted under MYREN

Telesurgery: UPM-HUKM-Kyushu Uni Hospital-Bundang Seoul Hospital, August 2007



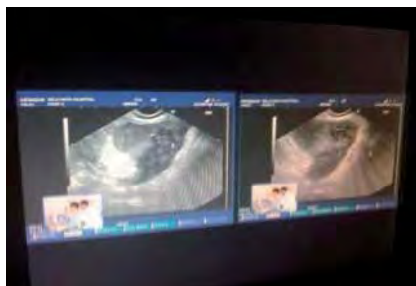
Telesurgery: APAN-Manila, February 2007



Collaboration Highlights

Some of Collaborative Projects conducted under MYREN

Telesurgery : Selayang Hospital-Boston Hospital, September 2008



Malaysia – UK : Research at the speed of High Performance Computing Seminar,
4th June 2007, Kuala Lumpur



Collaboration Highlights

28th APAN Meeting, 20th – 23rd July 2009 @ Berjaya Times Square



ASEM Workshop, 1-2 December 2009 @ KL Convention Centre



Thank you



Connecting our Research and Education community to the world VinaREN case

Dr. Nguyen Hong Van
VinaREN Director

Myanmar, May 23, 2012

VinaREN – the unique NREN in Vietnam

VinaREN is the National Research and Education Network of Vietnam. It is an advanced information infrastructure that fosters nationwide and worldwide collaborations of researchers and educators communities in Vietnam.

Since its official launching at the national scale, on 27 March 2008, VinaREN has now developed in both breadth and depth.

VinaREN connects 100+ R&E institutions in 11 provinces & Cities



Communities – VinaREN Members

- **The leading universities and academic institutions:** Vietnam National University in Hanoi (VNU HN), Vietnam National University in Ho Chi Minh City (VNU HCM), Hanoi University of Science and Technology, Can Tho University, Da Nang University, Hue University, Thai Nguyen University, RMIT in HCM and in Hanoi, Duy Tan University, Nha Trang University, An Giang University, Hanoi Medical University, Hanoi Pharmacy University, Hanoi Water resources University, Military Medical Academy, and so on;

Communities – VinaREN Members

- **The major R&D institutions:** Vietnam Academy of Science and Technology, Vietnam Academy of Social Sciences, Vietnam Agency of Atomic Energy, Institute of Advanced Technology Progress, Central Institute of Hygiene and Epidemic, ...
- **The leading research hospitals:** Hanoi Central pediatric hospital, Viet-Duc hospital, Cho Ray hospital, Central Military hospital N#108, Hue Central hospital, Da Nang Central hospital, Bach Mai hospital,...

Communities – VinaREN Members


- **The major institutions on climate change:** Central Hydro-meteorology Service, Tsunami Warning center, National Remote Sensing center, regional Hydrometeorology stations, ...
- **The leading library & information centers:** NASATI, National Library, Ho Chi Minh City center for STI, Da Nang center for STI, learning resources centers in Da Nang, Hue, Can Tho, Thai Nguyen,
- **Government institutions:** MOST, Hoalac High Tech Park, STAMEC, ...

Applications: *E-learning*

- E-learning has been used by more and more members to promote national and international cooperation programs. Hanoi National University, Hanoi University of Science and Technology, and Can Tho University have been proactively involved in E-learning.


VinaREN fosters E-learning





Applications: Grid computing

- VinaREN is survival condition for R&E institutions in Vietnam to conduct the researches on the grid computing.
- VinaREN supports VN-Grid's operation and participation in Pragma.
- VinaREN facilitates collaborations of existing high performance computing centers in the country.



Applications: Telemedicine

- VinaREN-supported Telemedicine has been largely applied by major hospitals in Vietnam(Cho ray hospital, Central Pediatric hospital, Central Military hospital, Viet-Duc hospital, etc. ...) proactively using Digital Video Transmission System (DVTS) to exchange experiences between medical communities

Applications: Telemedicine

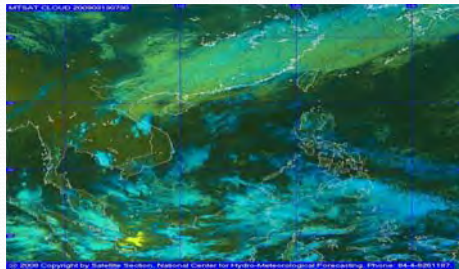


VinaREN supports Weather Forecasting & Climate Modeling

- Data exchanged over VinaREN is about 90% of the total data that National center for Hydro meteorological weather forecasting needs for conducting research and forecasts.
- 500 GB per day from NOAA, US-Navy, Korea, Japan
- 15 to 20 minutes per session instead of 5 to 6 hours before.
- Accuracy of short-term and medium-term weather forecasting has been improved.

VinaREN supports Weather Forecasting & Climate Modeling

- VinaREN-based international satellite sensing information network has been created to facilitate access and exchange environmental data sets, satellite images for the weather forecast and climate modeling.



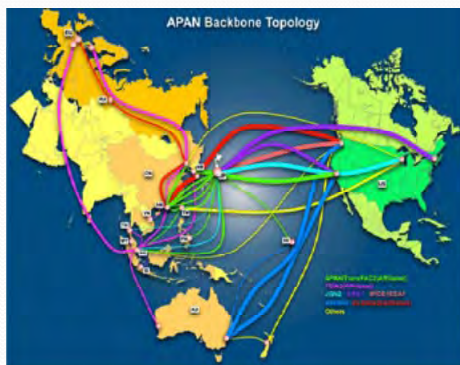
Applications: Digital content development and sharing

- Digital library development and digital content sharing are one of important applications that VinaREN facilitates and greatly fosters.
- Domestic research database and online international scholar resources can be exchanged and shared on the VinaREN that allow R&E communities access to and use proactively.

International Connections

- VinaREN has been internationally connected to TEIN3 (Hanoi - Hong Kong) with a bandwidth of 155 Mbps. Through this connection, VinaREN has connections to GEANT, Internet 2 and APAN.
- In 2011, VinaREN cooperated with Viettel company to establish 10 Mbps connection for CamREN to TEIN3 via VinaREN.
- 40 Mbps of commercial Internet for access to online data bases and journals

International Connections



Activities



- VinaREN supports its members in organization of online seminars, workshops, conferences and training activities with partners at home and abroad
- VinaREN supports the VN-Grid in deployment of grid computing network that facilitates national collaborations as well as participating in international project Pragma.
- VinaREN supports and trains members to implement video conferencing and DVTS.

Activities



- Cooperate with InTERLab (AIT, Thailand) and NSRC (Oregon University, U.S.) to organize international training courses on "Campus Network Design and operation" and "Multicast hand-on" for network technicians coming from 9 different countries in December 2011.



Future Plans

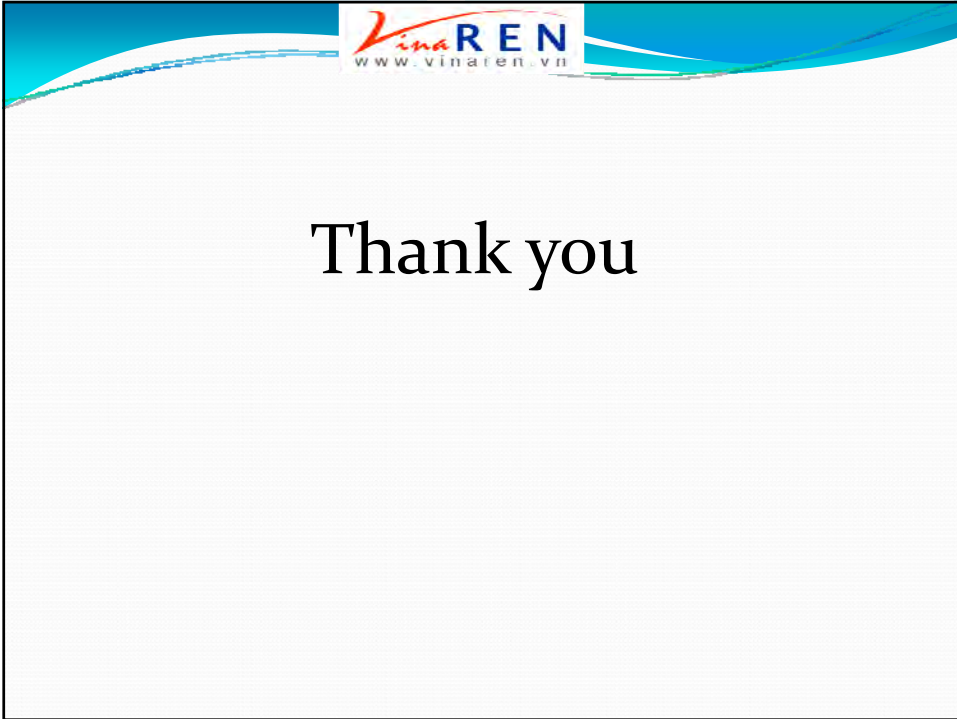


- Promote activities of working groups: telemedicine, climate change, grid computing, e-learning and network engineering, etc. ...
- Implement new technologies such IPv6, Multicast, etc...
- Promote information resources sharing among VinaREN members
- Connect VinaREN to GLORIAD by 1 Gbps via Singapore;
- Support LaoREN and CamREN to connect to TEIN_{3/4} via VinaREN;

Future Plans



- Expand the connectivity of VinaREN to 50% of R&E institutions by the year 2015 and to 100% of ones by the year 2020
- Cooperate with InTERLab (AIT, Thailand) and APNIC to organize international training courses on "Basic Routing" for network technicians of TEIN₃ members in June 2012 at VinaREN - Hanoi.
- As a member of TEIN₂/TEIN₃ and APAN, VinaREN participated and contributed actively in the framework of cooperative projects.



Reaching out to the World through TIEN 3



**Universities of Medicine
and
Myanmar National Research
and Education Network (NREN)**

Professor Kyi Kyi Thinn



**Head
Department of Microbiology
University of Medicine (1),
Yangon**

**MBBS, D.Bact.,
Ph.D (London), Ph.D (Hon)(Ygn)**

UNIVERSITIES

MEDICAL	4	YANGON (2) MANDALAY (1) MAGWAY (1)
DENTAL	2	YANGON, MANDALAY
NURSING	2	YANGON, MANDALAY
MEDICAL TECH	2	YANGON, MANDALAY
PHARMACY	2	YANGON, MANDALAY
PUBLIC HEALTH	1	YANGON
COMMUNITY HEALTH	1	MAGWAY

Universities and Training Schools under Department of Medical Science

Sr. No.	University/ Training Schools	Degree/ Diploma/ Certificate Conferred
1.	University of Medicine (1), Yangon	M.B., B.S., Dip. Med.Sc., M.Med.Sc., Ph.D, Dr. Med. Sc.
2.	University of Medicine, Mandalay	M.B., B.S., Dip. Med.Sc., M.Med.Sc., Ph.D, Dr. Med.Sc.
3.	University of Medicine (2), Yangon	M.B., B.S., Dip. Med.Sc., M.Med.Sc., Ph.D, Dr. Med.Sc.
4.	University of Medicine, Magway	M.B.,B.S.
5.	University of Public Health, Yangon	Dip. Med.Sc, Dip.Med.Ed, MPH, Ph.D.
6.	University of Dental Medicine, Yangon	B.D.S., Dip.D.Sc., M.D.Sc., Dr. D.Sc., D.DT.(Diploma in Dental Technology)
7.	University of Dental Medicine, Mandalay	B.D.S.
8.	University of Nursing, Yangon	B.N.Sc., M.N.Sc., Diploma Speciality Nursing (Dental, EENT, Mental Health, Paediatrics, Critical Care, Orthopaedics)
9.	University of Nursing, Mandalay	B.N.Sc., M.N.Sc.
10.	University of Medical Technology, Yangon	B.Med.Tech., M.Med.Tech.
11.	University of Medical Technology, Mandalay	B.Med.Tech.
12.	University of Community Health, Magway	B.Comm.H.
13.	University of Pharmacy, Yangon	B.Pharm., M.Pharm.
14.	University of Pharmacy, Mandalay	B.Pharm.

MEDICAL UNIVERSITIES UNDER DMS



UM (1) established 1927



UM (2) established 1963



UMM established 1954



UMMG established 2001



University of Medicine (1), Yangon

University of Medicine 2, Yangon

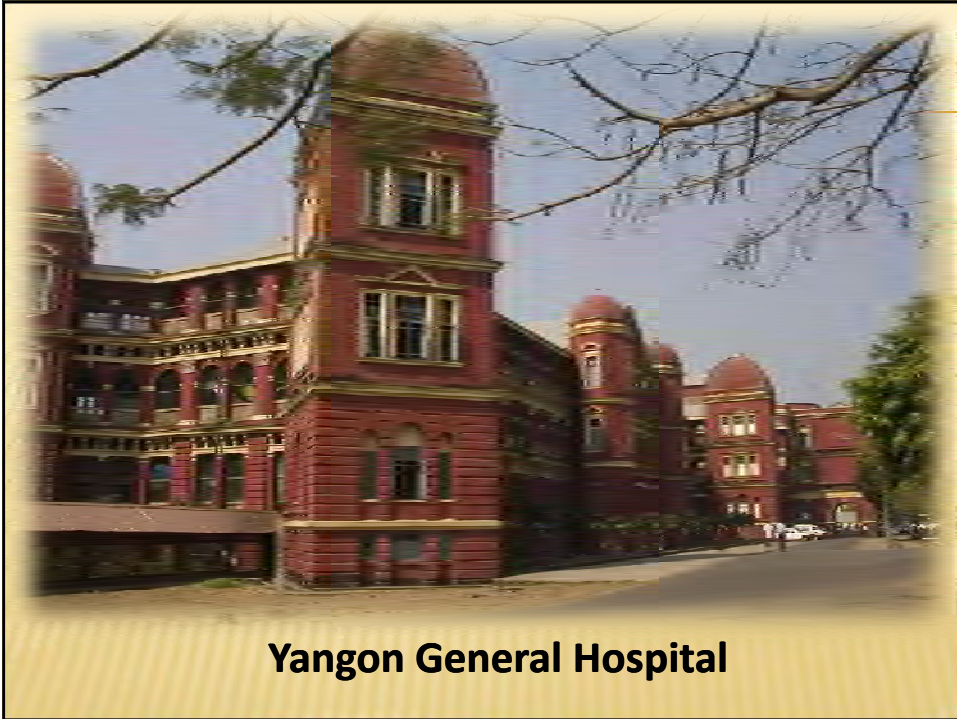


University of Medicine, Mandalay



University of Medicine, Magway





Yangon General Hospital



New Yangon General Hospital





Yangon Eye Hospital



Yangon ENT Hospital

HUMAN RESOURCE DEVELOPMENT

General strategies needed –

- ☺ Situational analysis and *need assessment*
- ☺ Developing *partnership & resource networking* (local & abroad)










🚩 Augmenting *research & development* activities
in all universities

🚩 Creating *improvement in career ladder
development system & incentives*

🚩 Ensuring quality assurance of
facilities & equipment



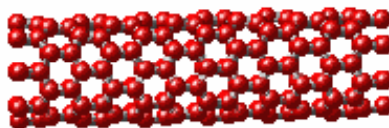
-  Adequate funding & *financial support* to all universities
-  Creation of more opportunities for *training (local/abroad)*
-  Recruitment of *students with academic excellence & strong motivation*
-  *Monitoring, evaluation, auditing & timely feedback*

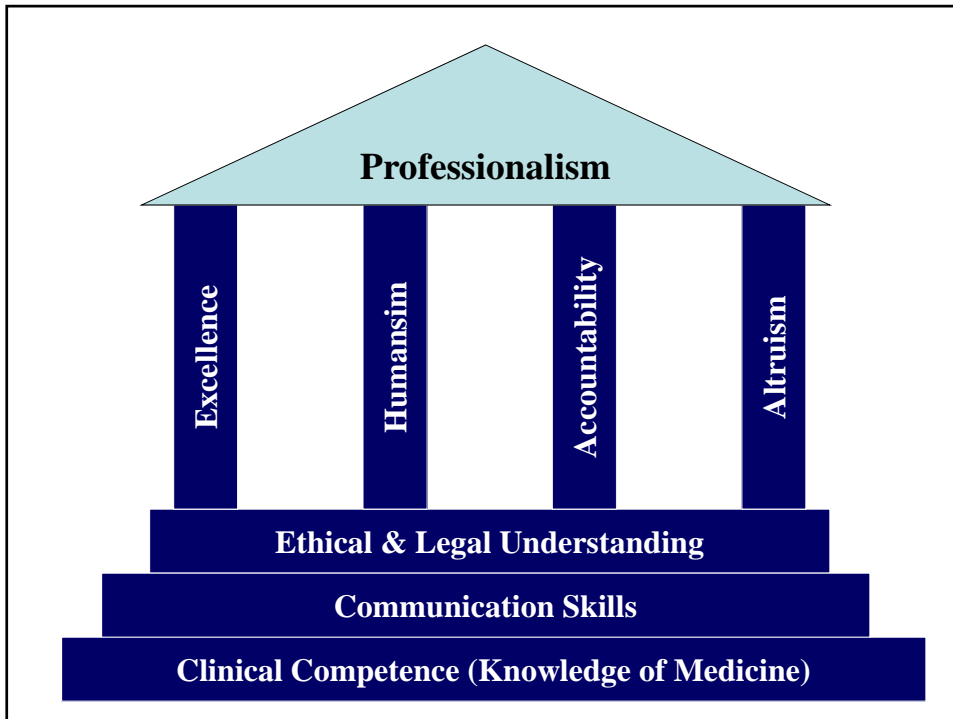
-  The *curriculum* at different levels must be continuously *upgraded*
-  Keeping up with the advances of global health care & new developments in the *biomedical* and *clinical sciences*
-  Incorporation of the concepts of *evidence-based medicine* & the principles of *ethics*

DOCTORS OF TODAY

- Today's world – *many values have changed, some drastically* – in the name of modernization
- Some for the better, some for the worse
- Changes – at *brehtaking speed*
- Especially in *science & technology*
- The medical arena is no exception

- As *new research* and *clinical experience* broaden our knowledge and horizons
- Changes in *treatment* and changes in *laboratory diagnostic techniques* – even up to the *nano* level





THE DOCTORS OF TOMORROW

- 🌀 In the era of **information technology** – the process of research & education has been revolutionized (**evidence-based medicine**)
- 🌀 There is a need for wider connectivity (networking) with other countries – for no man is an island

Strategy: To update, upgrade and sustain teaching and health care facilities to reach global standards



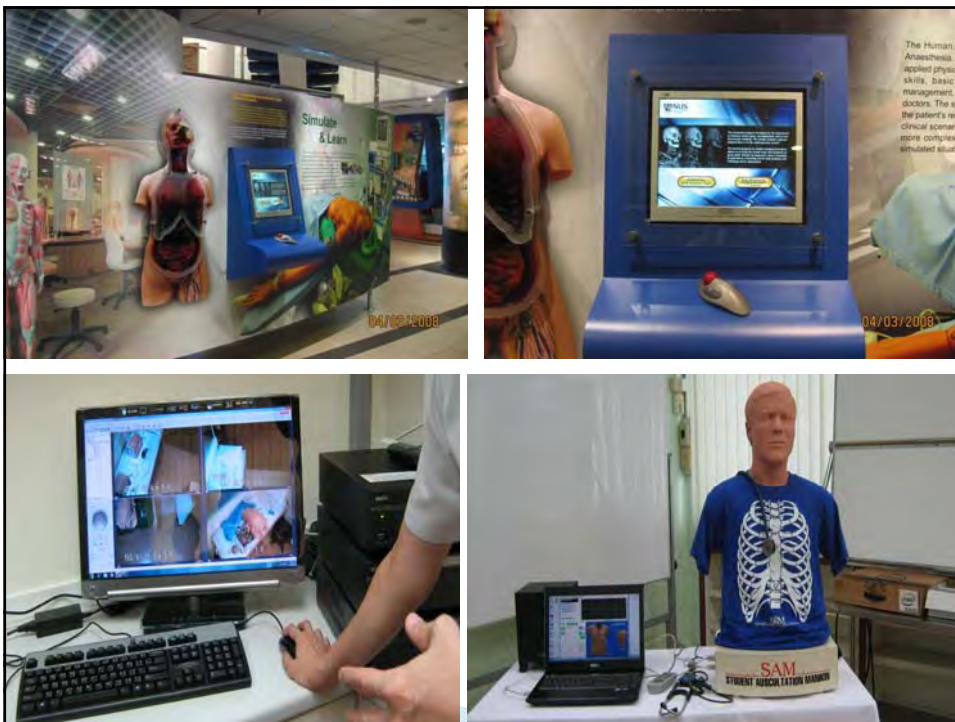
**To augment
Technological Development**

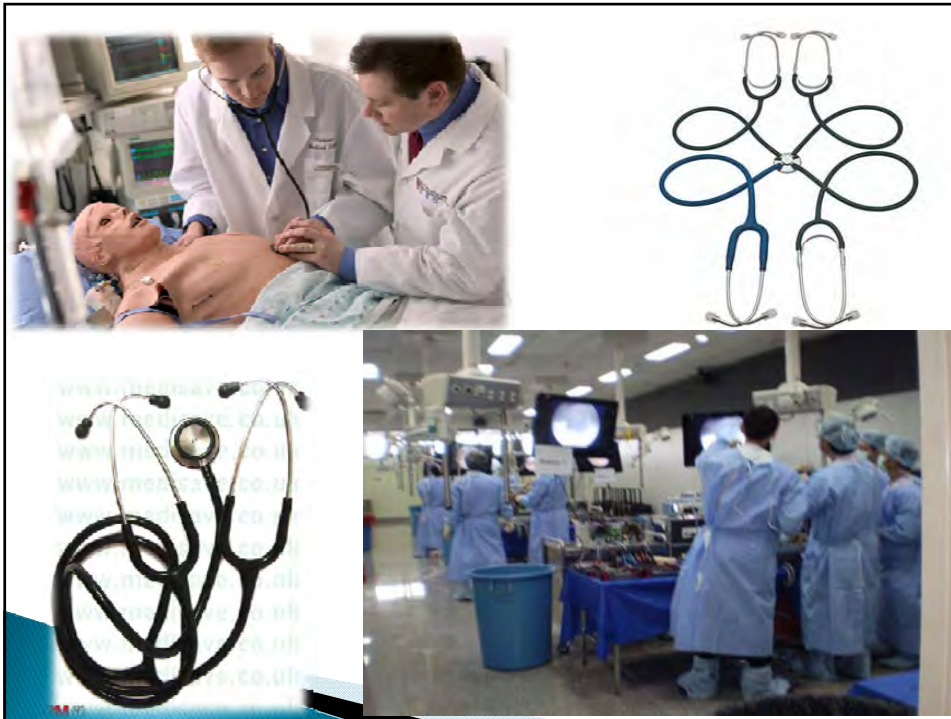


Strategy 1: Advance technological development and quality control for diagnostic and therapeutic facilities and procedure

Activities

- Establish and upgrade skill-training laboratories
- Develop standard therapeutic guidelines and standard operating procedures
- Advanced therapeutic facilities essential for reference hospitals





Strategy 2: Create opportunities to obtain exposure and experiences to advanced technologies in international academic arena

Activities



Training locally and abroad



International teams' visits



Staff exchange program



Accreditation



Granting an institution/university or program a quality mark that indicates that certain standards have been met in terms of internationally accepted criteria

WHO / WFME STRATEGIC PARTNERSHIP ACCREDITATION TASK FORCE

Accreditation of medical education institutions

Report of a technical meeting

Schæffergården, Copenhagen, Denmark, 4–6 October 2004

WHO-WFME Task Force on Accreditation



World Health Organization
Geneva



WORLD FEDERATION FOR
MEDICAL EDUCATION

- ▶ Global Standards for Quality Improvement in **Basic Medical Education**
- ▶ Global Standards for Quality Improvement in **Postgraduate Medical Education**
- ▶ Global Standards for Quality Improvement in **Research and Continuous Professional Development**



Cutting-Edge Strategies

- ▶ Quality assurance
- ▶ Realistic goals & timeline



Linkage thru **TIEN 3** to research & education communities across Asia- Pacific and to Europe and beyond will help the development of new health-related technologies aimed at diseases that disproportionately burden individuals in the developing world, such as **tuberculosis, AIDS, water-borne diseases, tropical- and other region-specific ailments and parasitic infections**



Spread of Vector-borne Diseases



Aedes aegypti

- *Warmer temperatures and disturbed rain patterns* could alter the distribution of important disease vectors
- Combined with altered rainfall patterns, hotter conditions may *increase the spread of disease*, such as malaria, dengue, and chikungunya, to new areas

Malaria



RODENT-BORNE DISEASES



Water-borne Diseases

Diseases caused by ingestion of water contaminated by human or animal excrement, which contain pathogenic microorganisms – especially **diarrhoea** & **dysentery**

Drug-Resistant Tuberculosis

MDR-TB is a *man-made problem...*

It is costly, deadly, debilitating and is a major threat to our current control strategies







HEPATITIS VIRUSES



rkm.com.au



Human Immunodeficiency Virus

BAD BUGS, NO DRUGS



As Antibiotic Discovery Stagnates ...
A Public Health Crisis Advances



Antimicrobial Drugs -

**A Fading
Miracle?**

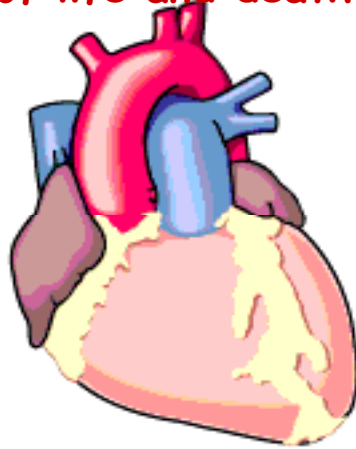




On the path towards internationalisation



It's a matter of life and death



**Strengthening Laboratory Capacity
& Networking**



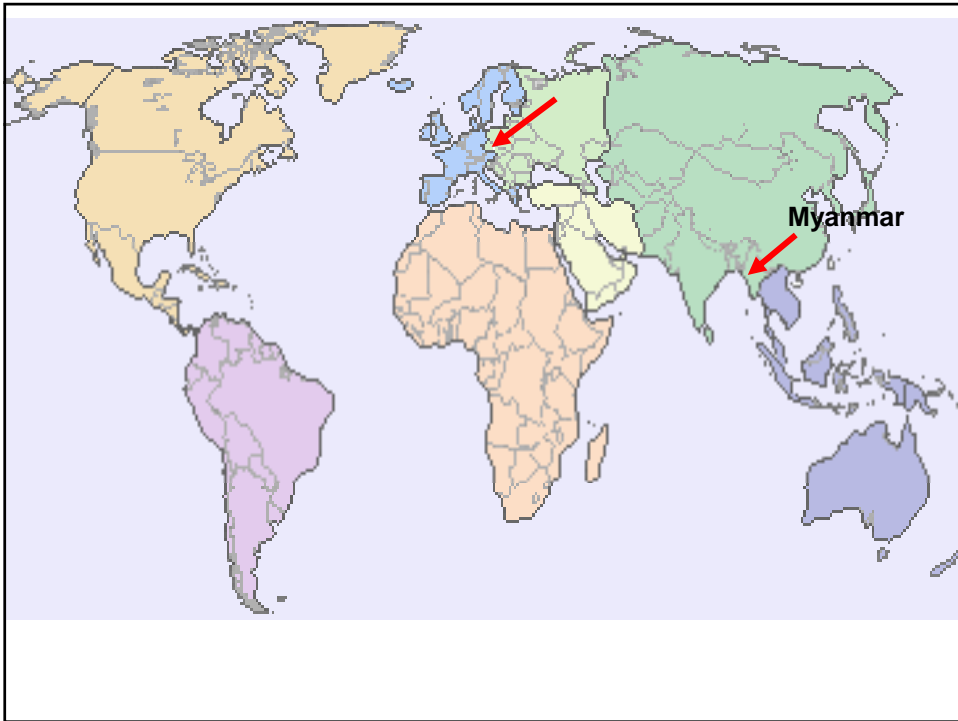


**It is hoped that TIEN 3 will
provide the opportunity:**


- To enhance the quality of higher education in the medical field
- To promote dialogue and understanding between people & cultures through mobility & academic cooperation
- To link organizations through university synergies by creation of networks



Ghent, Belgium










Ghent University

A rich history





Internationalization Policy

Ghent University

Internationalization

EU Programmes – Erasmus Mundus Action 2

- clusters of countries with exchanges at all levels
- (bachelor, master, PhD, postdoc, academic staff)

- **As coordinator**

- Western Balkans *Basileus*
- China *LiSUM*
- South-East-Asia *Lotus*

- **As partner**

- Argentina
- Brazil
- Brazil – Paraguay – Uruguay
- Chile – Venezuela – Ecuador – Cuba
- China
- India
- Colombia - Costa Rica – Panama
- USA - Canada



• Ghent University - Prof. Dr. Paul Van Cauwenberge












TIENS 3 can help

 to cultivate human resources by promoting international exchange to improve academic standards

 to cultivate a spirit of creativity and cooperation so that innovative Myanmar medical researchers and medical educators can be facilitated

 to provide new learning experiences with opportunities to benefit from the complementary strengths of different universities from different countries



DANTE (Delivery of Advanced Network Technology to Europe)

- can support research & education in Myanmar Medical Universities by providing essential data communications infrastructure and guarantee international connectivity



Ministry of Science and Technology

The Brief Introduction to Technological Universities, Myanmar

23th May, 2012

by Theingi



Background

Ministry of Science & Technology was established in 1996 with the aim to build up a peaceful, modern, developed country that the Ministry of Science and Technology has opened

- (32) Technological Universities
- (25) Computer Universities
- (1) Aerospace Engineering University
- (3) Technical Colleges,
- (11) Technical Institution and
- (36) Technical High Schools



Technological Universities



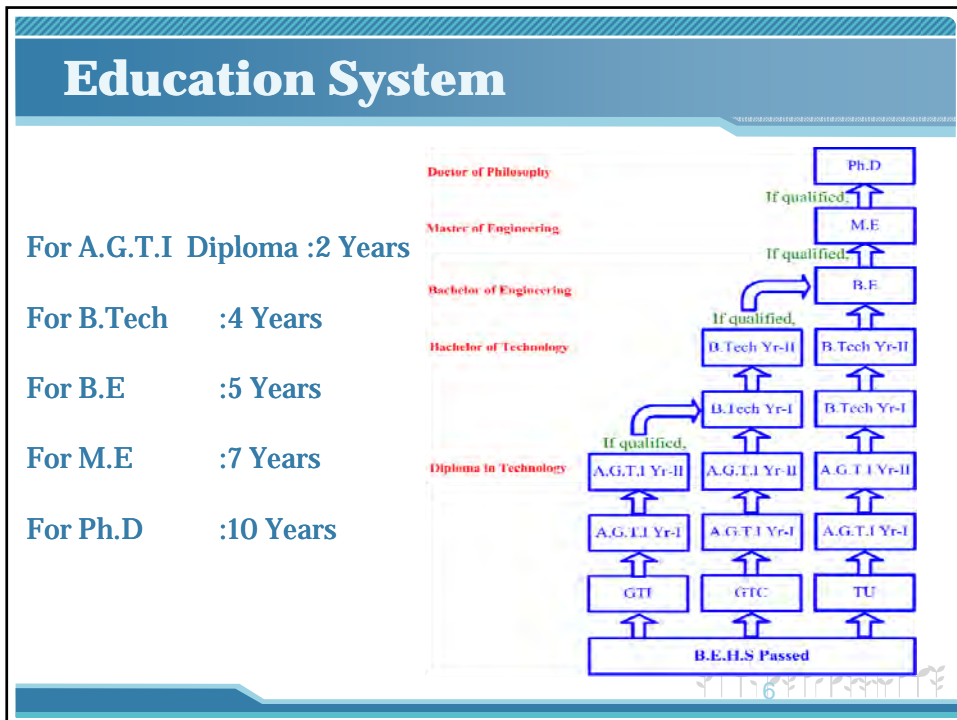
- To develop highly qualified and committed professionals who will play a leading role in the sustainable development of the region and its integration into the global economy

Teachers : Students
4100 : 96106



TUs





Programme

- Civil Engineering
- Electronic Engineering
- Electrical Power Engineering
- Mechanical Engineering
- Mechatronic Engineering
- Information Technology
- Chemical Engineering
- Metallurgical Engineering
- Textile Engineering
- Petroleum Engineering
- Mining Engineering
- Architecture
- Biotechnological Engineering
- Nuclear Engineering



Academic Calendar

- Undergraduate Students-
- Semester I- December-April
- Semester II-May-Sep



- Postgraduate Students-
- Semester I- Jan-June
- Semester II-July-Dec

Tuition Fees



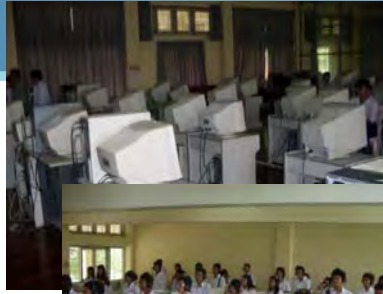
- For Diploma student: 1000ks/month (1.2 USD)
- For Undergraduate student: 2000ks/month (2.5 USD)
- For Postgraduate student: 3000ks/month (3.7 USD)



Teaching Aids

- **Computer Lab**

- Capacity : 30~80 Sets



- **Language Lab**

- Capacity : 20~ 60 Sets

- Training for English 4 Skills



- **Class Room**

- Capacity : 36~80 rooms

- Size : 40' x 60' , 40'x40' , 40'x 20'



West Yangon Technological University

9

Current Research Projects

- Bio-Technology Research
- Renewable Energy Research
- CNC Research
- Automobile Research



10

Current use of ICT in TUs



- Internet
 - all TUs are provided ipstar Internet Connection.
- GSM
 - almost 25% of Students in Yangon / Mandalay Region are GSM Users.
- CDMA
 - almost 10 of % Students in Yangon / Mandalay Region are CDMA Users .
- Computer Facility
 - every students can use computers in Tus' computing rooms.



It still needs to develop to use ICT in other cities .

National Research and Education Network

- **A National Research and Education Network (NREN)** is a specialized internet service provider to support the needs of research and education communities within the country.
- ICT are all tools used both in universities and research centers, which help to convey information, as well as be used as working tools for the construction of knowledge, especially in the courses of the educational stages.
- Use the ICT technologies to increase regional cooperation
- Contact local universities and foreign universities
- Connect researchers to each other
- Communicate students to each other within local or oversea



Advantages

- To facilitate wide and effective use of ICT in every sector as an essential factor for the economic development and modern nation
- To develop a national telecommunication network for high speed communication and increased access to the internet country wide.
- To promote competition in the information communication technology network and services.
- To enhance human resource in the field of ICT as a key factor for the successful implementation of ICT in Myanmar.



Benefits

- ☐ better internet access
- ☐ increase speed capacity
- ☐ e-learning
- ☐ share knowledge
- ☐ make international research collaboration
- ☐ develop industries capability
- ☐ do research and to promote international research projects
- ☐ promoting national economic development



Conclusion

In building of peaceful and developed nation with an inclusive ICT society, for all students in the technological universities to play an important role, to be qualified engineers and to breed Union spirit, we are performing to the best of ability.

Thank you.



Research Activities of the Higher Education Institutions in Myanmar

Pho Kaung
Universities' Research Centre
University of Yangon

23-5-2012

The Departments of Higher Education seek

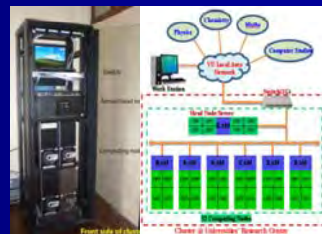
- to build research capabilities of higher education institutions
- to promote basic research to generate new knowledge,
- to boost applied research not only for the advancement of the discipline concerned, but also for the economic and social development of the nation.

Research capacities have been built.
Research facilities have been upgraded.
New equipments and references have been provided.
Funding for research has been enhanced.

Universities' Research Centre (URC) in University of Yangon



Cluster for High Performance Computing



Energy Dispersive X-RAY
Fluorescence Spectrometer



Fourier Transform Infrared
Spectrometer



Scanning Electron Microscope

Universities' Research Centre (URC) is a multidisciplinary research laboratory

- to provide research facilities and technical assistance for research works leading to MSc, MRes and PhD degrees.
- to assist and foster research activities in various higher education institutions
- to provide research assistance/services to private enterprises and government organizations seeking modern technology.
- to foster and promote effective multidisciplinary and interdisciplinary research with the emphasis on applied research essential for the economic development

Pathein University Biotechnology Research Centre

established in 2000 .

Researches being carried out in the centre focus on the production of bio-fertilizers for local/community needs, fish and prawn breeding cultivation and production of indigenous medicines from medicinal plants

Biotechnology Research Centre in Pathein University



Ultra Deep Freezer



Incubator



Bio Clean Bench



Microscope



Constant Temperature
Water Bath

Set-se Aquaculture Research Centre in Mawlamyaing University

The Aquaculture Research Centre located in Set-Se, a coastal town in Mon State, Southern Myanmar which was established by the Marine Biology Department of Mawlamyaing University is the largest research centre on aquatic life under the Department of Higher Education (Lower Myanmar). Its research activities concern fresh water and salt water prawn culture, other aquatic life culture and the cultivation of seaweeds. The centre also carries out fresh water and salt water prawn culture on a commercial basis in collaboration with the private sector. The centre aims to produce 24 million prawn post lava annually.

Set-se Aquaculture Research Centre in Mawlamyaing University



Microbiology Research Centre in Myitkyina University



Microbiology laboratory has been set up in Myitkyina University located in Kachin State, northern Myanmar under the supervision of the Botany Department. Research in the centre focuses on the fauna and flora of the region, for example, seed culture of perennial orchids in Kachin State.

The higher education sector promotes collaborations with regional organizations, international research centres and foreign universities.

UY and Korea Foundation for Advanced Studies (KFAS) began collaborating through the KFAS's International Scholar Exchange Fellowship (ISEF) in 2001, which is a live-and-research program in Korea for one year that has invited 25 Myanmar scholars over the past eleven years. After the collaboration began, the two institutions co-established Asia Research Centre in University of Yangon (ARC-UY) in August 2002. The objective of this Centre is to provide research grants and academic support to Myanmar scholars at the local level. There are currently 16 ARCs in leading universities of the region in 7 countries (i.e. China, Mongolia, Vietnam, Thailand, Cambodia, Laos, Myanmar).

The higher education sector promotes collaborations with regional organizations, international research centres and foreign universities.

In 1998, Myanmar became a member of the South East Asian Minister of Education Organization (SEAMEO) and in 2000, SEAMEO CHAT was established in Myanmar. It is carrying out research and hosts training programmes on the history and traditions of SEAMEO member nations. Myanmar became a member of ASEAN in 1997. In the same year, Yangon University and Yangon Institute of Economics became members of ASEAN University Network (AUN) and member institutions promote collaborations and exchange of expertise.

The institution encourages and facilitates publication of the results obtained by scientific researchers with a view to promoting the advancement of science and technology, education and culture. To fulfill the above objective, it has been publishing the plausible research outcomes in journals and proceeding in the following sections:

- Publishing in University's Research Journal published by each university and college,
- Publishing in Universities' Research Journal published by in the Ministry of Education,
- Publishing in Journal of Myanmar Academy of Arts and Science published by the Myanmar Academy of Arts and Science Association,
- Publishing in Asean Engineering Journal published by the Asean University Network (AUN), and
- Publishing in Journal of the Asia Research Center published established in collaboration with Korea Foundation for Advanced Studies (KFAS).

The seminars and conferences held in Yangon and Mandalay Universities in collaboration with international higher education institutions

- Winter School on Physics
- Conference on Environmental Impact on Human Kinds
- Conference on Continuous Assessment on Environmental Development
- Myanmar-German Conference on Scientific Computing
- International Workshop on Nuclear Physics & Particle Physics

Connecting Researches to REN

- Computationally intensive sciences - particle physics, electronic structure calculations and simulation on molecular dynamics
- Climate impact and mitigation studies

Accessing digital libraries in REN

Thank you for your attention



UCSY



University of Computer Studies, Yangon (UCSY)

Main Street (4), ShwePyiThar Road, HlawGar Township, Yangon, Myanmar

☎ 951-610655 Fax : 951-610633

2012 May 23 (Wednesday)



UCSY

Outline

- History of UCSY
- Aims of UCSY
- Computer Universities in Myanmar
- Myanmar ICT Statistics
- Network Status at Computer Universities
- Research Activities at UCSY
- Partnerships
- The Need for Myanmar NREN
- The Need for TEIN3
- The Need for Capacity Building
- UCSY Role in NREN and TEIN3
- Conclusion



History of UCSY

- Under **Ministry of Education**



- In 1971, It was founded as UCC, the Universities' Computer Center.
- In 1988, It was established as an ***"Institute of Computer Science and Technology (ICST)"***.

- Under **Ministry of Science & Technology**
- On July 1, 1998, the Institute was changed to ***"University of Computer Studies, Yangon (UCSY)"***.



Aim of UCSY

- ***Conducting teaching and research*** in various aspects of computer science and technology.
- Help to meet the growing need for and ***advanced computer education in Myanmar***.
- Offers both ***undergraduate and postgraduate degrees*** as well as ***diploma programs*** in computer studies.
- Now also conducting ***Doctoral programs on IT***.





UCSY

Computer Universities (25)

Lower Myanmar

1. **UCSY**
2. Maubin
3. Hinthada
4. Pathein
5. Sittwe
6. Kyaingtong
7. Pyay
8. Taungoo
9. Thahton
10. HpaAn
11. Dawei
12. Myeik



Upper Myanmar

1. **UCSM**
2. Mandalay
3. Myitkyina
4. Bamaw
5. Kalay
6. Monywa
7. Magway
8. Pakokeku
9. Meikhtila
10. Lashio
11. Taunggyi
12. Pinlon
13. Loikaw



UCSY

Human Resource Development (2011-2012) intake students



Computer Universities	Computer Science	Computer Technology	Total
Bachelor Student	21,103	5,485	26,588
Honors Student	8,447	1,826	10,273
Master Student	2,337	535	2,872
Ph. D Student	178	54	232
Total	32065	7900	39,965



Myanmar ICT Statistic



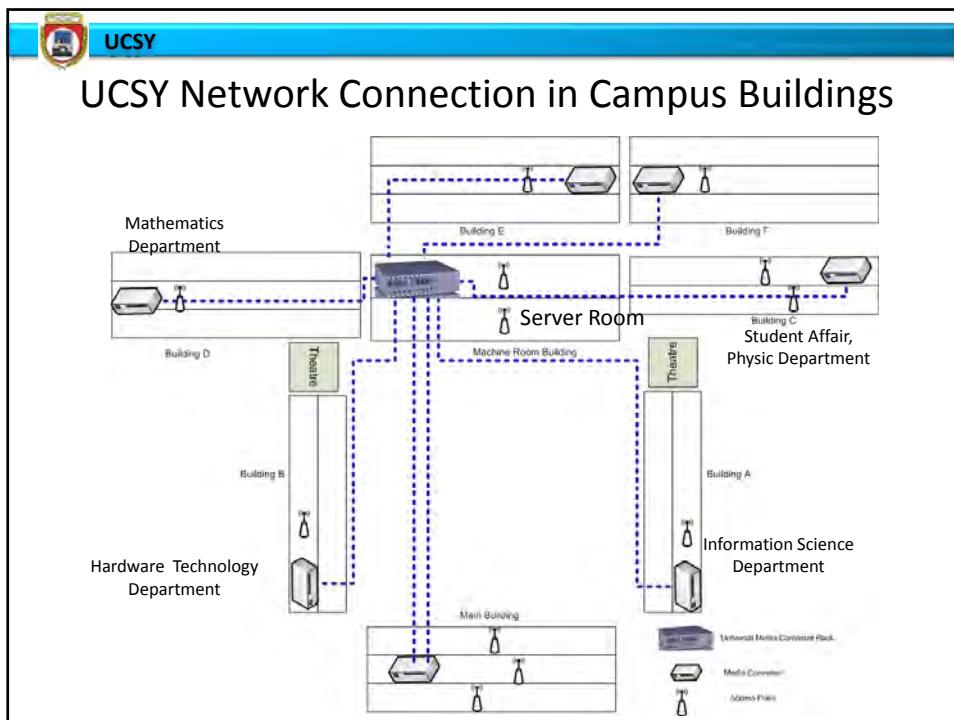
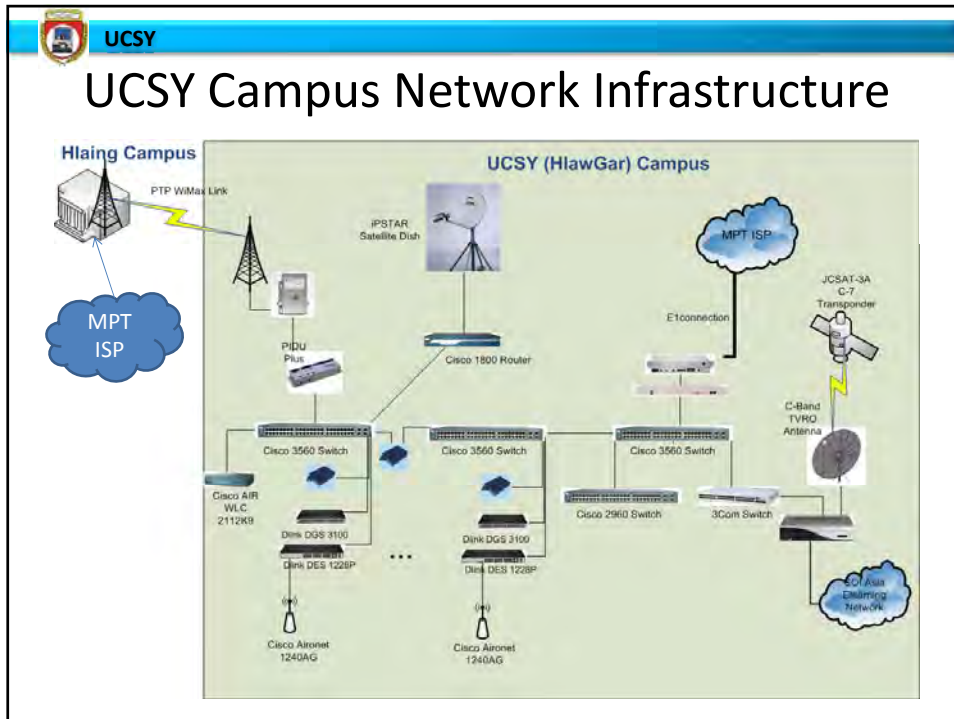
- **Internet Service Provider**
 1. Myanmar Posts and Telecoms (MPT)
 2. Yatanarpon ISP
- **National backbone** : Fiber link between major cities
- **Narrowband Access**
 - Dial-up, Access kit
- **Broadband Access**
 - ADSL, Wi-Max, Optical Fibre, Satellite (ipStar, Thaicom5, VENASAT)



Network Status at Universities

- **UCSY** has 3 dedicated line from MPT
 - Fiber Optic, E1 connection, Wi-Max connection, ipSTAR
- **UCSM**
 - ipSTAR Satellite Connection, Fiber Optic
- **All universities** have internet access through
 - *ipStar Satellite Communication*
- **No intranet connection** between all computer universities



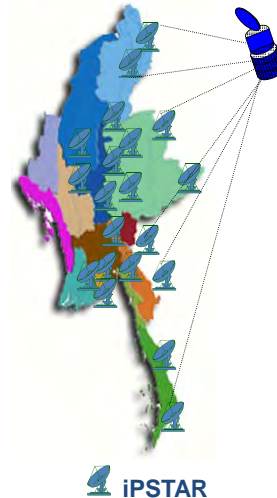
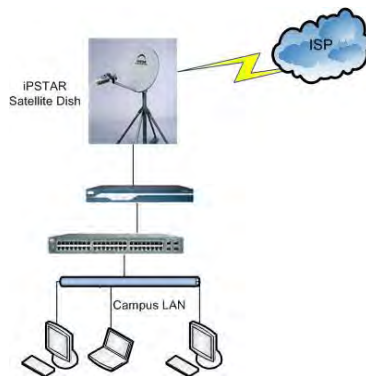




UCSY

Other Universities Network Connection

- **ipStar Satellite connections**
 - Internet Access



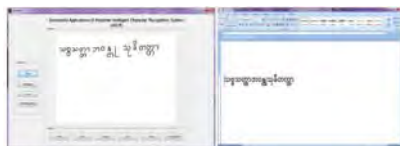
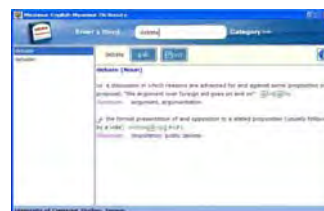
UCSY

Research Activities at UCSY

1. Natural Language Processing

- Myanmar-English Myanmar Bilingual Dictionary
- English-Myanmar Machine Translation System

<http://www.nlpresearch-ucsy.edu.mm>



2. Image Processing

- Myanmar Intelligent Character Recognition (MICR) and Myanmar Voice Mixer (MVM) System
- Automatic Identification System of Myanmar National Registration Card (NRC) Holder based on Biometric Information



UCSY

Research Activities at UCSY



3. Mobile Computing

- iTextmm (Myanmar Text Input for Mobile Phone)
- Context-Related Access Control Mechanism
- Context aware Location-based Service

<http://www.ucsy.edu.mm>

4. UCSY Online Library Management System



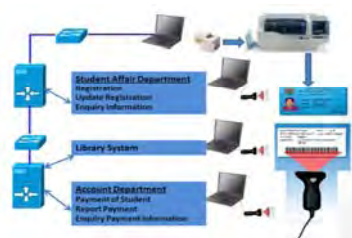
5. Open source Web portal



UCSY

Research Activities at UCSY

6. University Student Information System



UCSY e-Groupware System



7. UCSY e-Groupware System

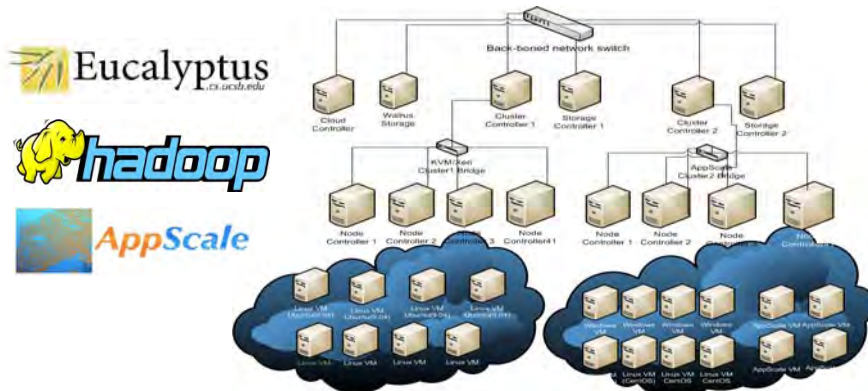
- Moodle Course ware management
- Project Management
- Knowledge base
- MyDMS
- InfoLog
- Mail
- Resources



Research Activities at UCSY

8. Virtualization and Cloud Computing

- UCSY Private Cloud System (Open Source)



Research Students

- Research Students at **UCSY** – 400 students (Ph.D + Master)
- Research Students at **UCSM** – 100 students (Ph.D + Master)
- Their **specialized research Fields**:
 - Natural Language Processing
 - Image Processing
 - Intelligent Character Recognition
 - Wireless Sensor
 - Mobile Computing
 - Virtualization
 - Data Mining
 - Cloud Computing
 - Digital Signaling
 - Parallel Computing
 - Network Security





Current Status of R&D

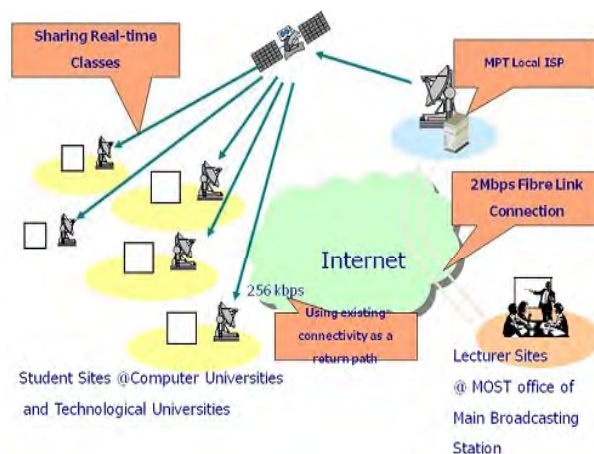
- These research activities done at UCSY are available *within the campus only*
- They *can not share among other Universities.*
 - UCSY Online Library Management System
 - UCSY Private Cloud System
 - University Student Information System
 - UCSY e-Groupware System



Distance Learning among Universities

- **Online Teaching and Learning System**

- Use 4Mbps Fibre Line from MPT
- All universities use 256Kbps ipStar Link from MPT
- Use **Streaming server** to transmit the lecture and streaming media player to receive the lecture





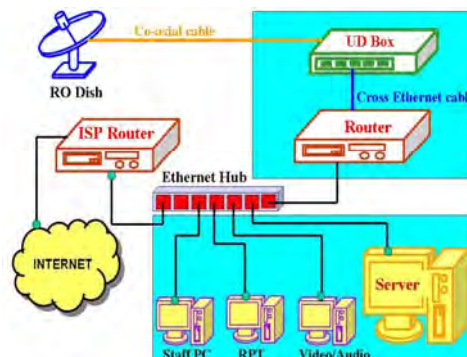
Limitation of Distance Learning

- **Software-based video sharing** – Streaming Server
- Maximum **15 Universities** can join at the time of broadcasting.
- **Discussion** is done through mail and chat.
- Because of **low bandwidth**, frequent disconnection occurs using **ipSTAR connection**.



Partnerships

- AI3/SOI membership in SOI-Asia R&D Network
 - E-Learning System
 - Uni-directional receive only side





The Need for Myanmar NREN

- Establish better E-Learning System for all Universities
- Facilitator of advanced research and education for researchers and students
- Develop national computational grids
- Provide access to “have-nots”
- Sharing knowledge and resources
- Establish knowledge-center to support ICT initiatives
- Promote and support research and development of
 - Distance Education, Disaster Management, Tele-medicine



The Need for TEIN3

- TEIN3 promotes NREN to **global connection/ international cooperation** with Universities and Research Institutes
 - E-Lecture Sharing (IT/ Marine Science/ Biotechnology/ engineering/ .. etc.)
 - E-Seminars
 - E-Courses
 - Tele-Medicine/ Tele-surgery
 - Disaster Management
 - Cloud Service Sharing





The Need for Capacity Building NREN and TEIN3

- Develop capacity for building and supporting research and education networks in Myanmar
- Help in building experience and capacity for developing a National Research and Education Network



What **UCSY** could do for NREN & TEIN3?

- **UCSY** has 3 dedicated line from MPT (Fiber Optic, E1 connection, Wi-Max)
 - *Backup system for connection*
 - *Enough human resource for Network administration* since there is a network administration training institute for all graduated students.
- **UCSY** could *provide HRD and technical support other University to setup the Campus Network for NREN*
- **UCSY** could also *serve as hub center for Myanmar NREN*
- Then **UCSY** could *serve as hub center for TEIN3 Network for further international connection.*
- **UCSY** would *share REN not only to Universities under MOST but also to other Universities in Myanmar.*



Conclusion



- Current *ICT Status of all Computer Universities*.
- Researchers and students could benefit from *specialized education network* of **Myanmar NREN**.
- **UCSY** could host for **Myanmar NREN** as well as global **TEIN3**
- We are very much looking forward to gain access to the benefits of those NREN to create a better infrastructure for ICT in our country.



THANK YOU