TEIN3

COOPERATION WITH EUROPE ON RESEARCH AND EDUCATION NETWORKS

A TEIN3 workshop organised by CAMREN and DANTE under the aegis of the Ministry of Education, Youth and Sports, Cambodia and of the European Commission

Phnom Penh, Cambodia
May 25, 2012
Sunway Hotel

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

09:00   OPENING SESSION
Master of Ceremony
★   Welcome speech from **HE OM Romny**, CAMREN
★   Welcome speech from Jean-Francois Cautain, Ambassador, Delegation of the European Union to Cambodia
★   Keynote speech from **ByungKyu Kim**, Executive Officer, TEIN* Cooperation Center
★   Opening speech by **HE IM Sethy**, Minister of Education, Youth and Sports, Cambodia
TEA / COFFEE BREAK

11:00   SESSION 1: SHARING KNOWLEDGE AND EXPERIENCE
Chaired by Sigma Orionis
★   ASEAN-EU Year of Science
-   **Simon Grimley**, SEA-EU-NET
★   Practicable steps to develop a NREN Network
-   **Dale Smith**, NSRC
★   Presentations from other Southeast Asian NRENs
-   **Chalermpol Charnsripinyo**, NECTEC/THAIREN
-   **Denis Villorente**, ASTI/PREGINET
-   **Kamal Hisham Kamaruddin**, MDEC/MYREN
-   **Nguyen Hong Van**, NASATI/VINAREN
BUFFET LUNCH

14:00   SESSION 2: PROMISING APPLICATIONS
Chaired by CAMREN
★   Presentations from Cambodian education and research institutions
-   **Mr. Phal Des**, Vice Rector, RUPP
-   **H.E. Sang Sinawong**, Director General, NIDA
-   **H.E. Mov Chariya**, Director General, Post and Telecommunication
-   **Dr. Seng Sopheap**, Head of Information and Telecommunication Department, ITC
TEA / COFFEE BREAK

16:00   INTERACTIVE FORUM
★   Open interaction with the audience (Q&A, next steps)
★   Wrap-up by CAMREN and TEIN* Cooperation Center

NETWORKING DRINKS

EU-funded project   DANTE   sigma orionis SUPPORTING GLOBAL ICT DEVELOPMENTS   ASEAN-EU Science, Technology & Innovation 2012

Welcome Speech by H.E. Dr OM ROMNY, Representative from CAMREN for the
"Cooperative with Europe on Research and Education Networks"
Sunway Hotel, 25th May 2012

I would like to begin by extending a very warm welcome

- Excellency **Im Sethy**, Minister of Education Youth and Sport,
- Excellency **Jean François Cautin**, Ambassador, Delegation of the European Union to Cambodia,
- Dr. **Byung Kyu KIM**, TEIN* Cooperation Center,
- Excellencies, Ladies and Gentlemen

A warm welcome also to distinguished guests from Southeast Asia and Europe Network (SEA-EU-NET), TEIN* Cooperation Center, National Center for Scientific and Technological Information of Vietnam (NACESTI/VINAREN), Network Startup Resources Center of United State (NSRC), National Electronics and Computer Technology Center of Thailand (NECTEC/THAIREN), Advanced Science and Technology Institute/Philippine Research, Education, and Government Information Network of Philippines (ASTI/PREGINET) and Malaysian Research & Education Network of Malaysia (MDEC/MYREN) for joining this event - your participations and contributions will bring a range of important and valuable perspectives to the workshop and our communities.

Excellencies, Ladies and gentlemen may already known, TEIN3 is a Third Generation of the Trans-Eurasia Information Network which providing a connectivity and linking 18 countries in Asia-Pacific to each other via fast direct link to more than 30 countries in Europe. In response to this fast growth, on September 15th, 2008 ministry of education youth and sport had a positive response for allowing us to joint this network and then a series of activities had been established such creation of CAMREN, choosing ITC as a Network Operation Center (NOC) and collaborating with local and international partners such the Ministry of Science and Technology of Vietnam, i.e., VinaREN and Metfone for providing Cambodia link to TEIN3 through gateway to Hong Kong via HUB center in

Hanoi and the assistance NSRC for their help in upgrading our server. As planned, when NOC at ITC is working stable the next expansion will be linked to RUPP and RULE.

Excellencies, Ladies and Gentlemen

I am proud to note that since its inception, project TEIN3 has made a significant contribution to capacity building of HR among eighteen member countries across region can access TEIN3 internet backbone with a high-capacity connection for research and education communities across Asia-Pacific which offering a gateway for global collaboration, enabling over 45 million users at more than 8,000 research and academic centres to participate in joint projects with their peers in Europe and other parts of the world. Meanwhile, Cambodia Research Education Network (CamREN) benefit from this project and planning to mount among 16 academics research centres and about 34,000 of end-users including faculty members, prospective teaching staff who are the fruitful products of the project have created a pool of competent science and technology experts who will be a major driving force for rapid progress and growth of Cambodia manufacturing sector in the years to come.

On behalf of CamREN, I would like to invite all participating universities among the members to do their best to make the most use of knowledge and lessons learned from this unique network in strengthening their institutions and upgrading the teaching and research quality on science and technology education. I also wish to see the expansion of linkages into the industry to make a perfect connection between university and the world of work.

To be able to strategically respond to the emerging challenges resulted from the advancement of information and communication technology, science and technology innovation, there is an urgent need for ASEAN to prepare human resource for greater mobility of professionals within and across the region and for the ever increasingly global competitiveness. I, therefore, would like to emphasize that deliverables gained from the TEIN3 which have made a major contribution to such preparation process

should be maximized to yield a multiplier effect for enhanced capabilities of ASEAN present and future scientists and the regional prosperity.

Excellencies, Ladies and gentlemen,

In other to keeps the project developing after it has started and to achieve such goal, the current workshop aims to share an experience and opportunity to discuss on:

- how to promote NREN (National Research Education Network) in Cambodia,
- does the connection TEIN3 can be smoothly applied in ITC e-learning center, especially the ASEAN-ROK Cyber University,
- how to strengthen cooperation with NRENs in region,
- how to assure the full integration into TEIN3,
- which application can be beneficial for NRENs such e-learning, emerging diseases, agriculture, disasters mitigations, climate change, and
- how can we move forward to the next TEIN4 ?

Excellencies, Ladies and gentlemen,

On this auspicious occasion, I would like to extend my sincere gratitude and appreciation to the Ministry of Education Youth and Sport, European Commission, TEIN3, VinaREN, Metfone and NSRC for the supports and other involved organizations for the benevolent help throughout the workshop from the beginning until the moment. I wish all participant, key speakers from differences RENs have a pleasant stay in Phnom Penh. Besides, I truly believe that the outcomes of this workshop will be relevant to the development education of the further cooperation activities in higher education strategic.

Thank you very much for your kind attention.

Co-Prosperity of Asia and Europe through Digital Silk Road

TEIN3 Southeast Asia Workshops

Phnom Penh, Cambodia

25 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

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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
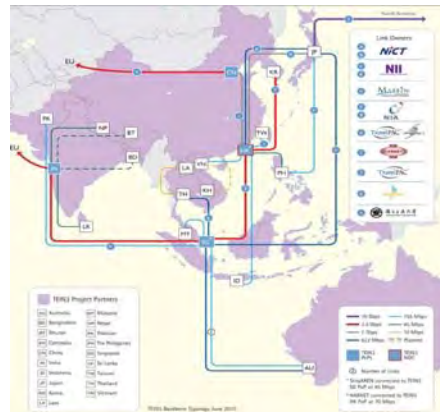
Key Applications

❑ **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* Corporation 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.

MILLENNIUM DEVELOPMENT GOALS

- End Poverty and Hunger
- Universal Education
- Gender Equality
- Child Health
- Maternal Health
- Combat HIV/AIDS
- Environmental Sustainability
- Global Partnership

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)

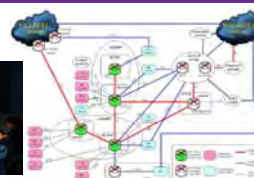*Further country National Research and Education Networks (NRENs) may join during the course of TEIN4.*

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
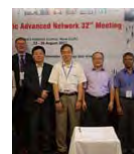
❑ **WP3 - Enhancing Human Capacity and International Collaboration**

❖ 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

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Open Discussions for NREN in Cambodia

"Cooperation with Europe on Research and Education Networks"

❑ How to further develop the NREN in Cambodia, to strengthen cooperation between NRENs in the region, and to ensure their full integration into TEIN3

❑ Which applications could take the greatest benefit of the potential of NRENs: e-learning and 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 Website : www.teincc.org

Opening Speech by H.E. IM SETHY,
Minister of Education Youth and Sport for the "Cooperative with Europe on
Research and Education Networks"
Sunway Hotel, 25th May 2012

*-Excellency **Jean François Cautin**, Ambassador, Delegation of the European Union*
  to Cambodia
*-Dr. **Byung Kyu KIM**, TEIN* Cooperation Center,*
*-Dr. **OM Romny**, Director of Institute of Technology of Cambodia,*
-Excellencies, Ladies and Gentlemen

First allow me to express my pleasure being here with Your Excellencies, Lork Chumteav, national and international guests, and all participants at this very important event. I warmly welcome you all, particularly, the distance-learning activists and cyber for joining the International Workshop on **"Cooperative with Europe on Research and Education Networks"** organized by CAMREN (*Cambodia Research and Education Network*) and DANTE (*Delivery of Advanced Network Technology to Europe*).

At this auspicious occasion, on behalf of Ministry of Education, Youth and Sport (MoEYS) of Cambodia and myself, I would like to express my profound thanks to *His Excellency **Jean François Cautin***, Ambassador, Delegation of the European Union to Cambodia for his formidable commitment on the digital agenda, and to ***Dr. Byung Kyu KIM***, the TEIN Cooperation Center of project TEIN* for the kind contribution and support to the Trans-Eurasia Information Network project. It is my great pleasure also to introduce my esteemed colleagues from CAMREN, SEA-EU-NET, NACESTI/ VINAREN, Metfone, NSRC, NECTEC/THAIREN, ASTI/PREGINET, MDEC/MYREN, and colleagues from the line ministries, authorities, academies and NGOs for taking times to attend the workshop.

As you may know, one of the main objectives from the Royal Government of Cambodia's Rectangular Strategy is the sustainable development of the country to ensure progress, prosperity, a good livelihood and dignity for all Cambodians equally. Strengthening the quality of education is a key to the human development needed to create growth and meet our ultimate objectives. In line with the human development objectives of the Rectangular Strategy, the current Education Strategic Plan 2009 – 2013 embraces Education for All through three main aims: Equitable Access to Education; Improving the Quality and Efficiency of Education Services, and Institutional and Capacity Development for Education Staff for De-centralization.

Within this context, the regional and global activities in education development are an important mechanism for sharing experiences and learning lessons about good practices and also to learn from each other on policy dialogue how to co-operate and develop the education sector. The participation and support from the various stakeholders underline the government commitment to provide access to *education for all people and all for education*. A related opportunity is to use ICT to enrich existing education and training programs. We are determined not only to strengthen the ICT infra-structure in Cambodia, but also to ensure Cambodia's young people develop the skills to use ICT for the maximum benefits.

Excellencies, Ladies and Gentlemen,

In Cambodia we recognize there are many challenges associated with the development of e-learning and ICT infrastructures, but the potential benefits are many. The Ministry sees the closer engagement with global partners requires immediate strengthening of information and communication technology at all levels.

This workshop aims to strengthen cooperation among TEIN3 members with Europe on Research and Education Networks that will take a joint action to link the Internet network connection, to share knowledge and experience from each others. With direct connectivity to Europe's GÉANT network, TEIN3 offers Asia-Pacific a gateway for global collaboration, enabling over 45 million users at more than 8,000 research and academic centers to participate in joint projects with their peers in Europe and other parts of the world.

As we already known, the Third Generation of the Trans-Eurasia Information Network (TEIN3) provides a dedicated high-capacity internet network for research and education communities across Asia-Pacific. This project already connects researchers and academics in Cambodia, China, India, Indonesia, Japan, Korea, Laos, Malaysia, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam, Australia and Bangladesh. Meanwhile, Bhutan is in the process of getting connected, bringing the total number of partners involved in TEIN3 to 18.

For Cambodia, CAMREN plays very important role to serve as a national research and education network, and be connected with the research and education communities across Asia-Pacific and Europe. This has really aligned and applied by with the National ICT (*Information and Communication Technology*) Policy, such as: Legal and regulatory frameworks, Human capacity development, Content development, ICT Infrastructure, and Enterprise development which are under the guideline. For the "Human Capacity Development", the Ministry has developed the policy and master plan of ICT for

increasing ICT education opportunities in secondary schools and teachers colleges. In adapting to this guideline, we have to:

- Support the use of ICT for formal and non-formal education, skills development and adult learning regardless of age, gender, ethnicity, disability or location,
- Mandate our ministry to provide basic ICT training to all teachers,
- Promote and support more community information center in the country,
- Promote radio and television as teaching and learning tools for all citizens, and
- Introduce standard ICT curriculum in educational system throughout the country.

As an example, in the last two weeks; we had inaugurated an e-learning center and multimedia studio at the Institute of Technology of Cambodia. This so called the project *"for Strengthening CLMV capacity of ASEAN Cyber University for Cambodia"*. This project have an objective to build the capacity of Cambodia's ICT human resources for the establishment of ASEAN Cyber University through establishing the e-Learning infrastructure at this institute and to contribute to narrowing the digital technological gap and enhance the ICT cooperation among ASEAN and Republic of Korea.

Meanwhile, by joint working with local partners, NGOs, we had implementing the other programs to support and promote the use of e-learning in Cambodian educational system as we believe that e-learning is one among key factors to improve the quality of education and widening access to educational opportunities. It will be of great benefits for higher educational institutions and other training centers that are considering use e-learning or in a planning process to start e-learning or will use e-learning at one point in the future as means to deliver their educational programs. Higher educational institutions and other training centers cannot implement e-learning strategically and sustainable without having core human resources who knowledge on e-learning operation and management. That is why building competence in e-learning know-how for them is the first and most important step and this under our consideration.

Excellencies, Ladies and gentlemen,

In deed, it is a matter of choice and corporate responsibility on the part of the Cooperative with Europe on Research and Education Networks which we had engage. It is also clear from the facts and reports that there is an ever-increasing member of countries within network and connection had shown a promising future for our interaction and contacts. This is simply because our exchange endeavor is driven by the interests of our partners and our attempts to find a larger number of partner universities throughout the connection of TEIN* to match each other's interests and to build strong linkage with ASEAN and Europe.

Also, our objective would leads participating universities to embrace university responsibility which provide better opportunity for access to higher education to general public by providing low cost, Life-long education to students and general public on-line through the internet network, Building confidence among partners, and Bearing in mind our mutual benefit in inspiring global competence to human resources in an increasing complex world.

In conclusion, the Ministry of Education, Youth and Sport of Cambodia recognizes the commitment made by its development partners to support continuous improvement and development in the education sector. The guaranteeing good connection on the Internet Network with the project TEIN* is a genuine challenge. Therefore, we would like to call for governments, NGOs, civil society, academia and ICT corporations to play their role together. By the time this workshop will start. I look forward to having gathered vital information about how we should step our efforts for internet network connection under this project. As Internet linkage is crucial for a flourishing education and research innovation as well as for economic growth.

Once again, let me reiterate our highest appreciation and acknowledgement to CAMREN who had spending times for establishing the team work in handling the project with TEIN 3 and close collaboration with VinaREN; to Metfone for providing optical fiber connection of IPLC 10 megabit per second to Hong Kong via Hanoi with the support of the Ministry of Science and Technology of Vietnam. My appreciation also goes to our partner from European Commission for allowing us to link to TIEN project including sever and other facilities to ITC, and to our friend from NSRC (Network Startup Resources Center based in Origon University, USA) for providing routers, switches, and technical supports to the Network Operation Center.

I would also like to take this opportunity to express my appreciation to the TEIN* Cooperation Center, Higher Education and Research institutions and the organizers for continued commitment to this workshop. I wish to thanks our distinguished committees from difference countries, key speakers and participants for their significant contribution to this workshop.

I hereby declare the opening of the Workshop on **"Cooperative with Europe on Research and Education Networks"**, and wish you all every success.

Thank You.

ASEAN-EU Year of Science, Technology and Innovation 2012

Outline

- What is NSTDA

- ASEAN-EU Scientific Cooperation

- What is FP7

- SEA-EU-NET Project

- Lessons learned

- ASEAN-EU Year of Science, Technology and Innovation

NSTDA – who we are

- Leading applied R&D agency in Thailand

- Staff ~2,600, 68% in R&D with ~400PhDs

- Annual operating budget 115 M-USD from the Government (including construction)
  - 20% from contracts, services and licenses

- Work in 4 broad technology areas - nano, biotech, ICT and materials – 4 National Centers

- 94 research labs

- Also provide external research funding

Completion 2013

Growth of ASEAN – EU Scientific Cooperation

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
- Regional integration – AEC 2015
- The EU's fifth most important trading partner
- S&T excellence is developing fast!

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
Science, Technology & Innovation 2012

Growth Thailand Scientific Publications
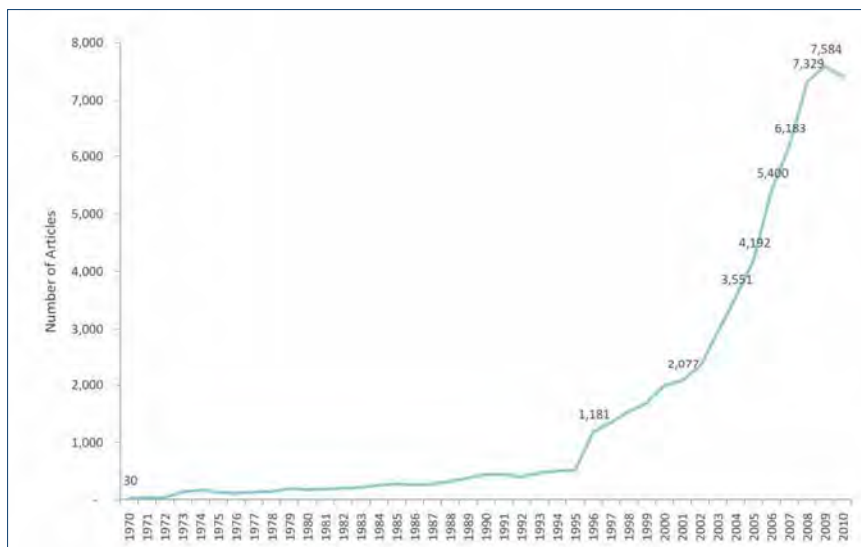
Source: Scopus data compiled by the Office of the Higher Education Commission, Thailand (OHEC)

3

ASEAN-EU co-publication output

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

Legend:
- ASEAN / India
- ASEAN / EU (incl. AC + CC)
- ASEAN / Australia
- ASEAN / China
- ASEAN / Japan
- ASEAN / South Korea
- ASEAN / USA
- ASEAN / Taiwan
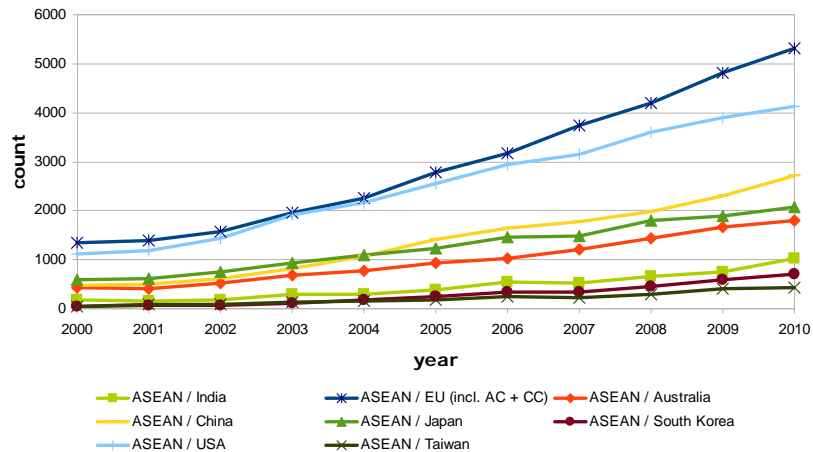
Thailand - EU Cooperation

- over 30 years bilateral relations

- 4x increase in scientific publications in 10 years

- Tripled contribution to the number of scientific publications worldwide

- 1998 Thailand and the EU had 200 co-published research papers

- In less than 10 years this had climbed to 700 co-publications

4

What is FP7

7th European Framework Programme FP7)

- Biggest pan-European programme for research and innovation

- 2007-2013, budget €54 billion

- Support for individual researchers, fellowships, consortia, academia, companies,...

- Bulk of program is " top down" (project themes are given)

- Open to the world
    - *EU Member States*
    - *Associated Countries (Norway, Switzerland, Turkey, Israel,...)*
    - *3rd Countries (entitled for funding, no funding)*

- Almost all of FP7 open to participation by ASEAN researchers!

ASEAN Participation in FP7
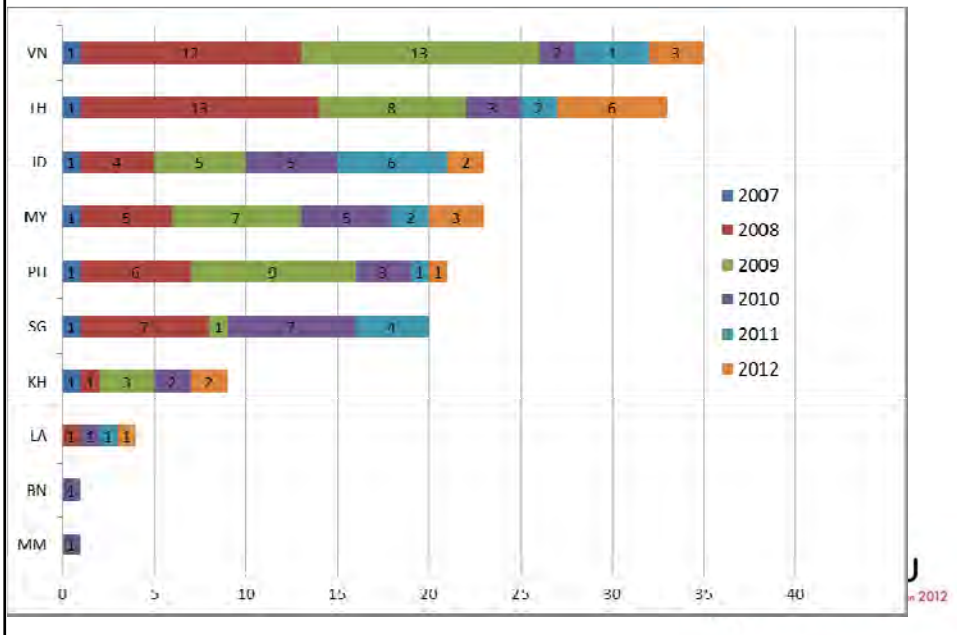
Thailand FP7 Participation at a glance

- 196 submitted participations in 156 proposals

- 33 successful projects with 40 participants

- Success rate: 20% (EU mean value: 22%)

- € 4 million funding to Thai researchers since the start of FP7 in 2007

SEA-EU-NET Project

SEA-EU-NET Project

- Project funded by FP7 to foster S&T cooperation between Europe and South East Asia
- Objectives:
    - stakeholders dialogue
    - increasing participation of researchers from ASEAN in FP7
    - scientific analyses and recommendations
- 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 Southeast Asia)
- Run by policy makers and science administrators

SEA-EU-NET Lessons learnt

1. 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)

ASEAN-EU
Science, Technology & Innovation 2012

SEA-EU-NET Lessons learnt

2. FP7 participation, NCP establishment:

- FP7 National contact points in SEA are key to reach out to SEA research community – project has built a regional network
- Positive experience in organising 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)
- 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 wider context (mobility schemes, long-term institutional cooperation)
- Bilateral cooperation strengthened

ASEAN-EU
Science, Technology & Innovation 2012

SEA-EU-NET Lessons learnt

3. Analysis:

- 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
- 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)
- 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

ASEAN-EU
Science, Technology & Innovation 2012

ASEAN-EU Year of Science Technology and Innovation 2012

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

- A year long campaign to deepen S&T collaboration between Europe and Southeast Asia

- Officially endorsed by the ASEAN Committee of Science and Technology (COST) and the European Commission/DG RTD

ASEAN-EU
Science, Technology & Innovation 2012

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

ASEAN-EU
Science, Technology & Innovation 2012

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 then 30 different institutions from both regions involved

Three Main Axes

Axis 1: Political dialogue – long-term perspective

Meeting of High-level SEA and EU Policy makers

Development of new joint SEA-EU funding instruments

Axis 2: Cooperation in Science and Technology

Matchmaking and brokerage events – bringing research teams together

Researcher Mobility – Fellowship Programme

Industry Engagement – Showcasing technology

Axis 3: Communication/Awareness

Media campaigns on SEA-EU S&T relations

Science and Technology for Youth

Participating in S&T exhibitions in SEA and EU

Activities - Four Pillars

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

Pillar 2: EC and ASEAN-led initiatives

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

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

Thank you

More information
- ASEAN-EU Year of Science www.yearofscience2012.com
- SEA-EU-NET project www.sea-eu.net

Simon Grimley
International Cooperation Division
NSTDA
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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?

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THE INTERNATIONAL REACH OF THE INTERNET2 NETWORK
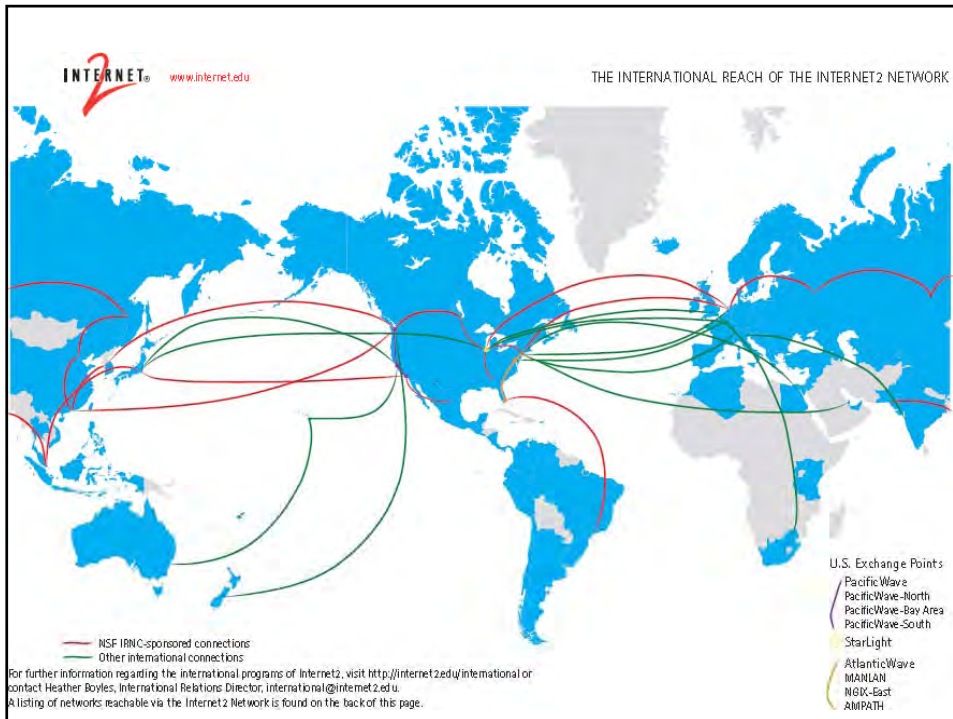
Why an NREN?

- 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?

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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

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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

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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
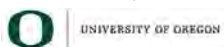
NREN Not Providing Internet

- 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
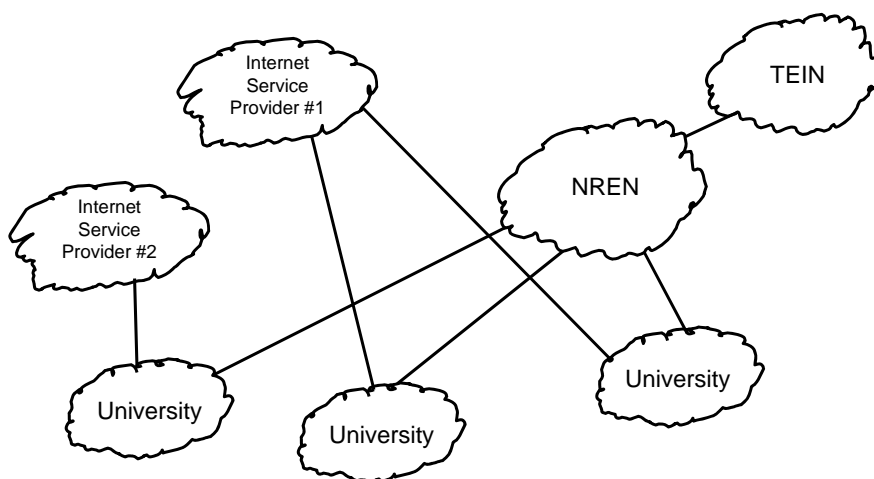
NREN as ISP
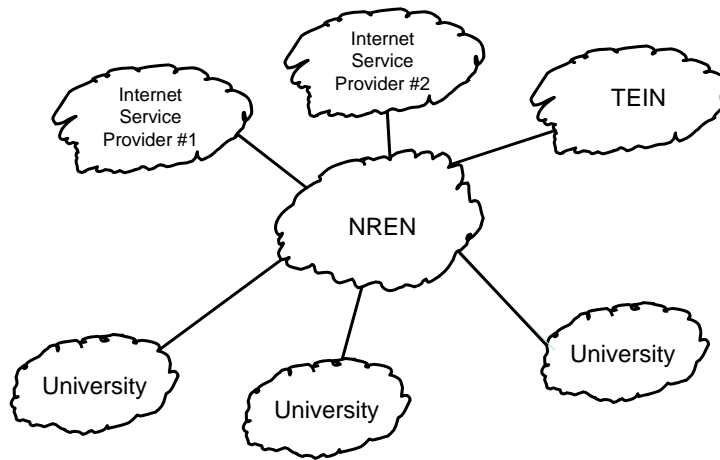
Implications for Universities

- 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

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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?

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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?

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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

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Questions/Discussion?

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Development of
Thailand Research Educational Network
for Global Collaboration

Sharing Knowledge and Experience in TEIN3 Workshops
By Chalermpol Charnsripinyo
NECTEC/ThaiREN

Development of Research & Education Networks in Thailand

ThaiSarn1 (1992) ThaiSarn2 (1995) UniNet (1997) ThaiSarn3 (2000) ThaiREN (2005) UniNet2 (2008)

Timeline (year)

Schoolnet (1996) MOE Net (1997) STAR*Net (2005) NEdNet (2011)
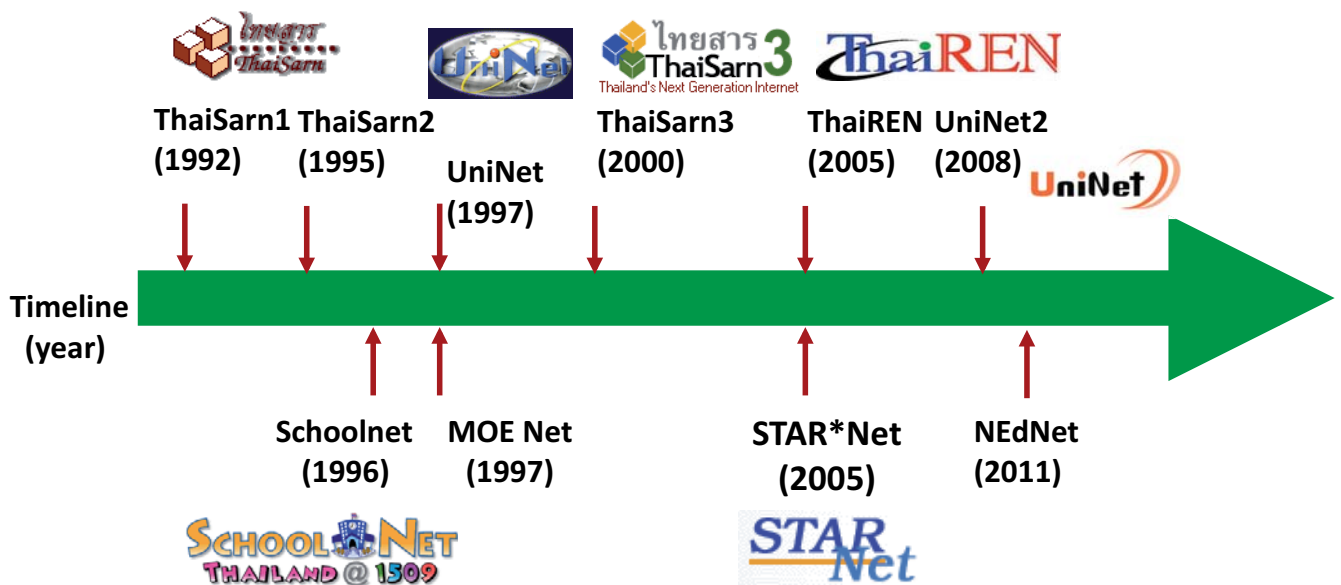
➢ ThaiREN is established to coordinate among research and education networks in Thailand as well as collaborate with international R&E networks.

Beginning of Thai R&E Network

ThaiSarn Status (April 23, 1992)

[Information Source: http://www.nsrc.org/ASIA/TH/thaisarn.gif]
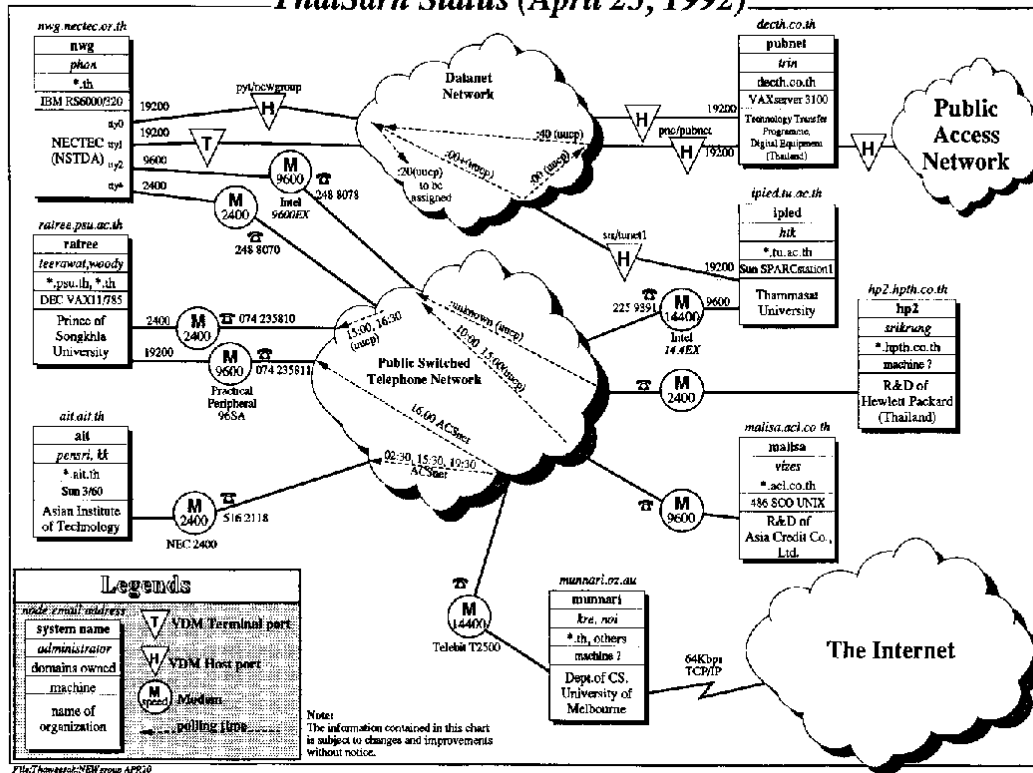
ThaiSarn Network (Y1995)
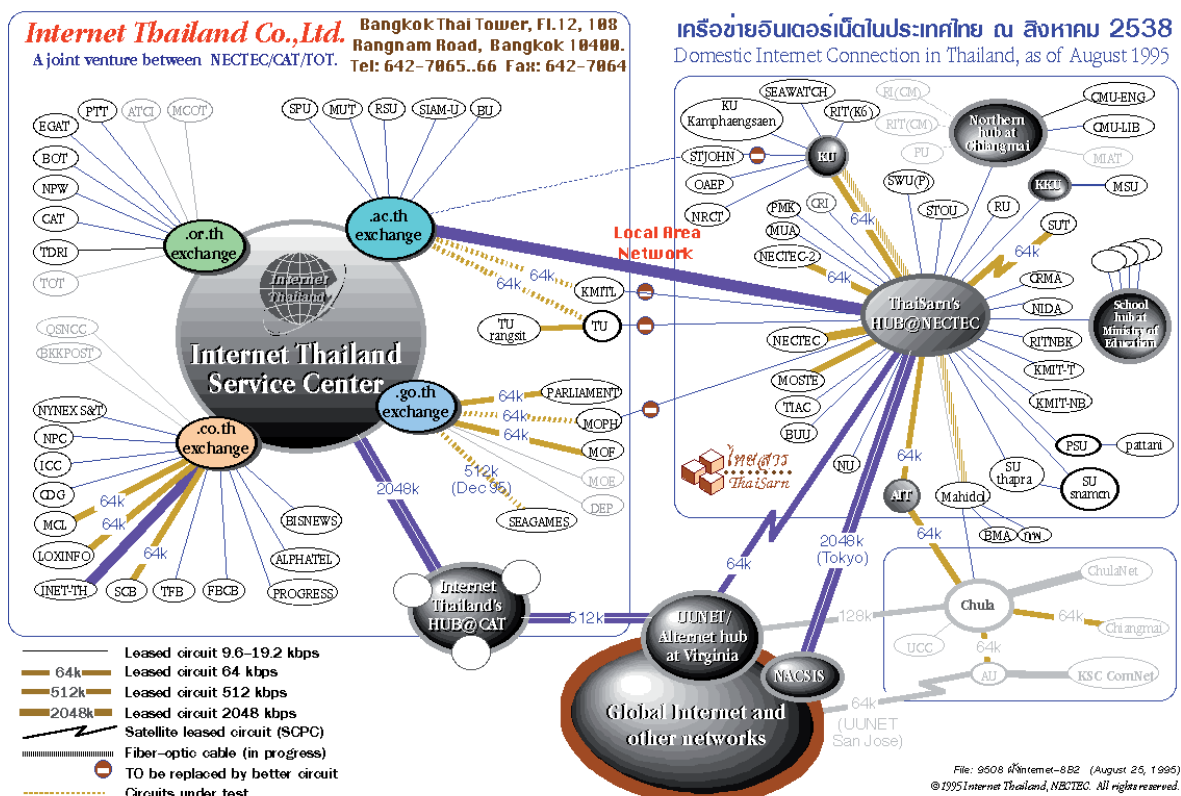
[Information Source: NECTEC]

Expanding network infrastructure in Thailand IT Year (1995)

Inter University Network (Y2006)

เครือข่ายสารสนเทศเพื่อพัฒนาการศึกษา (UniNet)
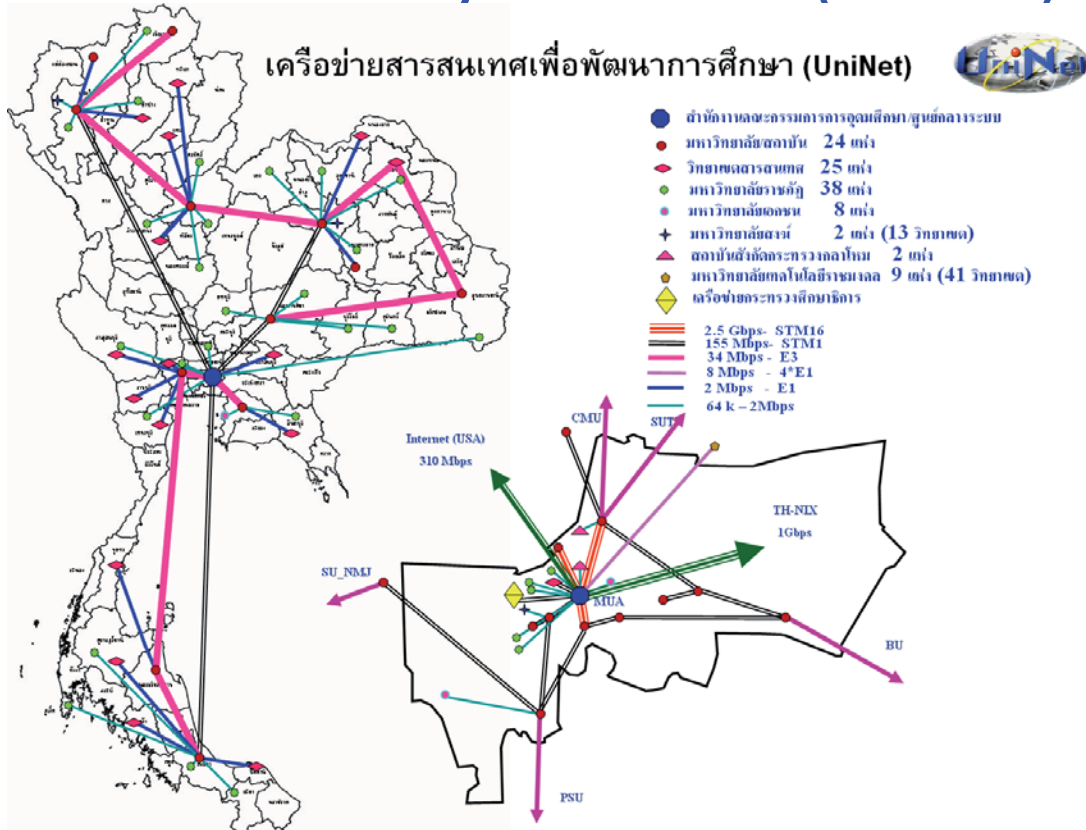
[Information Source: UniNet]

Setting up nationwide backbone network

MOE Net (Y2006)

> 30,000 schools connected nationwide,
Various types of access technologies were deployed
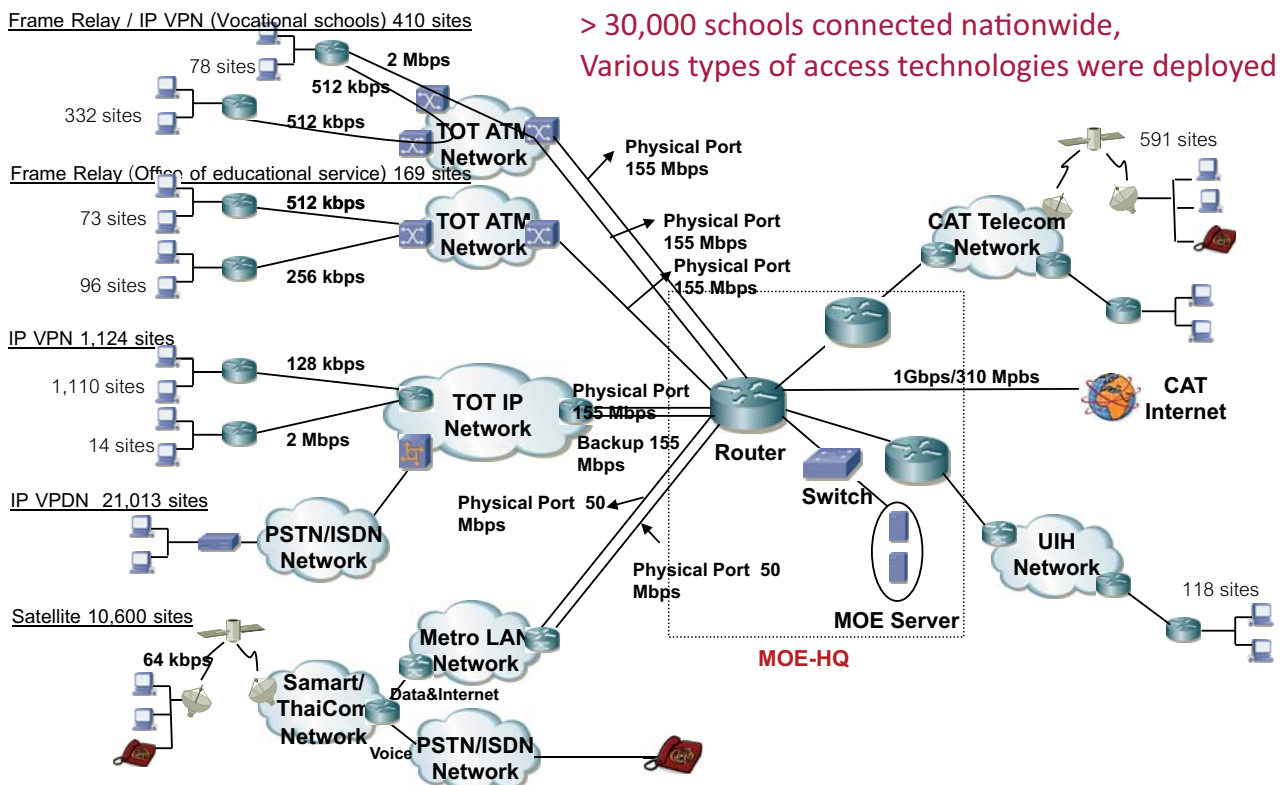
[Information Source: TOT and MOE]

Needs for High-Speed National R&E Network
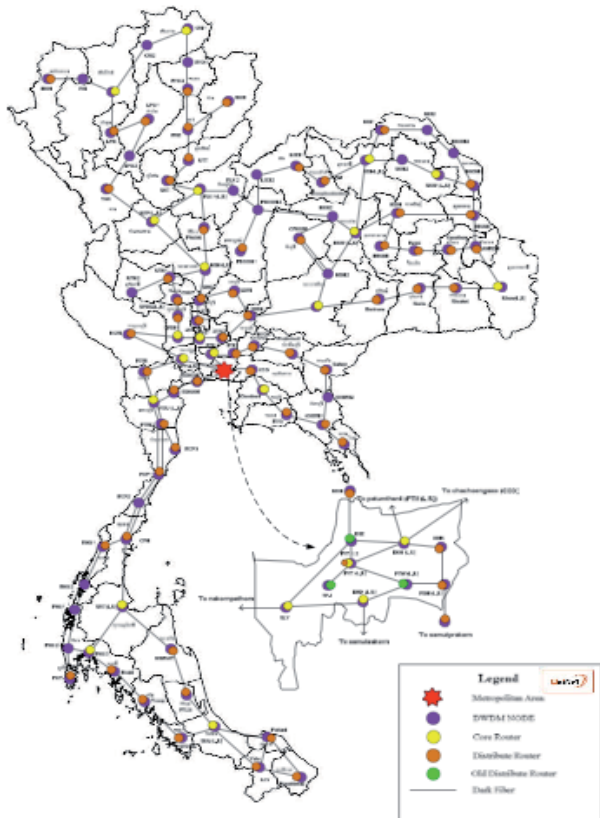
New backbone network

- 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

ThaiSarn connected to APAN via SINet (2001)

ThaiREN connected to JGN2+ in SG with 622 Mbps link and to TEIN3 with 155 Mbps over the same link (2009)

ThaiSarn connected to SINet (JP) with 2 Mbps link (1995)

Thaisarn connected to JGN2 with 50 Mbps link (2005)

Timeline (year)

UniNet & ThaiSarn joined Internet2, UniNet connected directly to USA (2001)

ThaiREN connected to TEIN2 with 155 Mbps link to SG-PoP(2006)

R&E Gateway to Global Collaboration
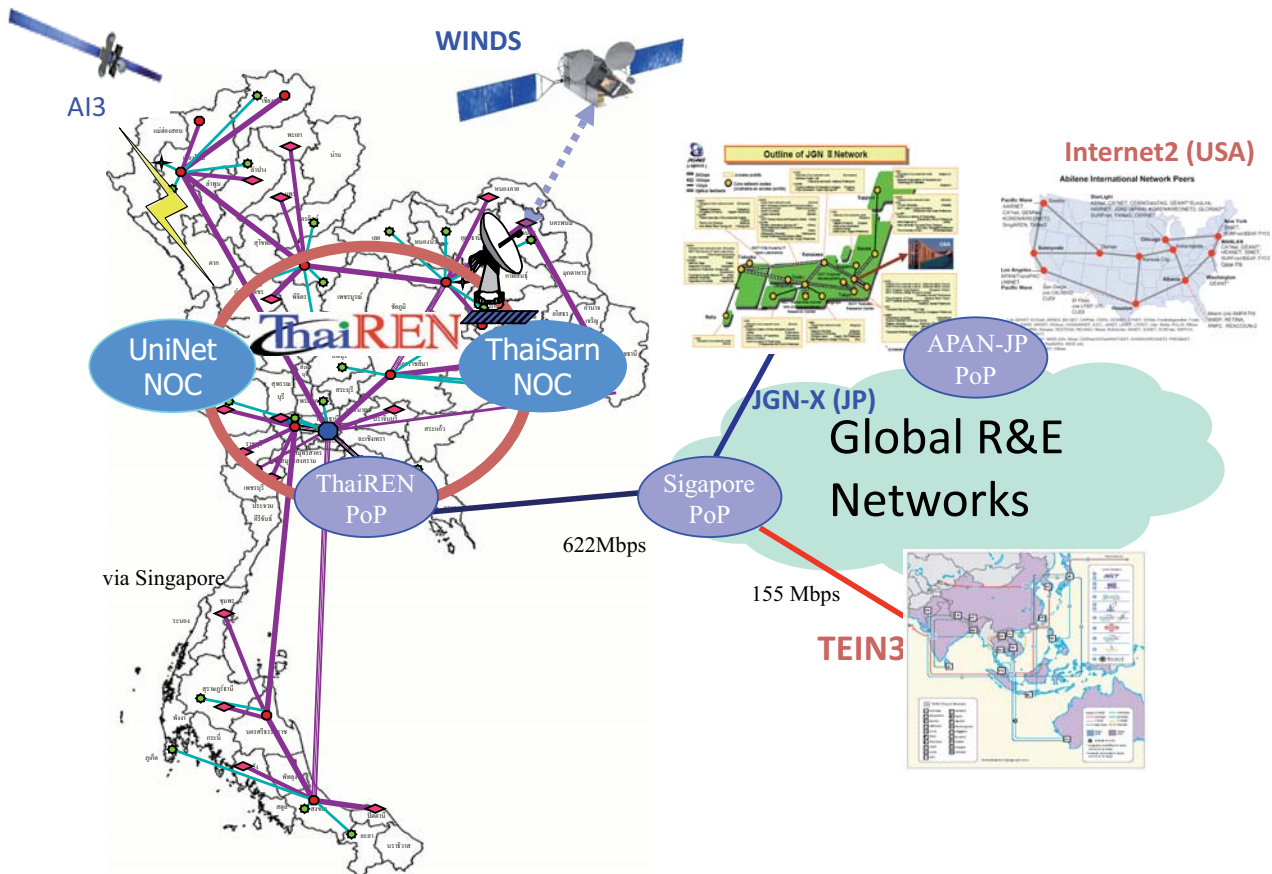
Examples of Network Services, Applications, and Project Collaborations

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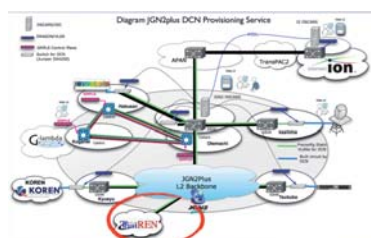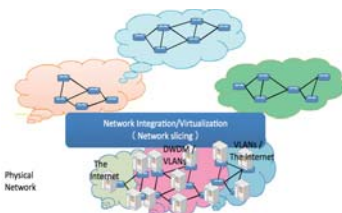
Tele-Education

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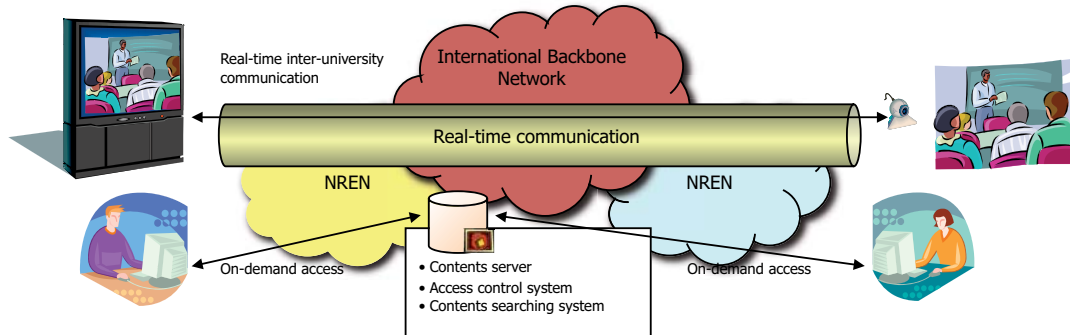
Tele-medicine

- Advanced medical treatment and diagnostic skills from specialist doctors are feasible with tele-mentoring system
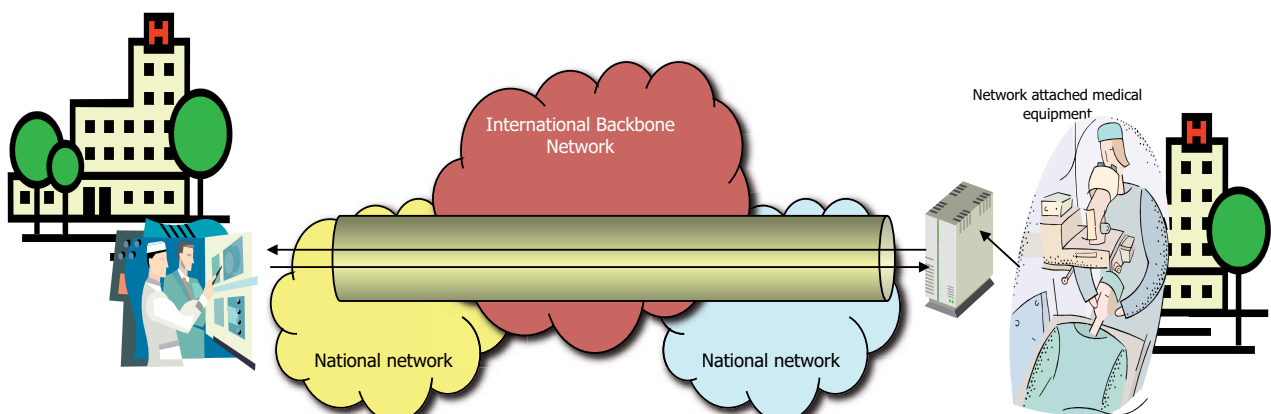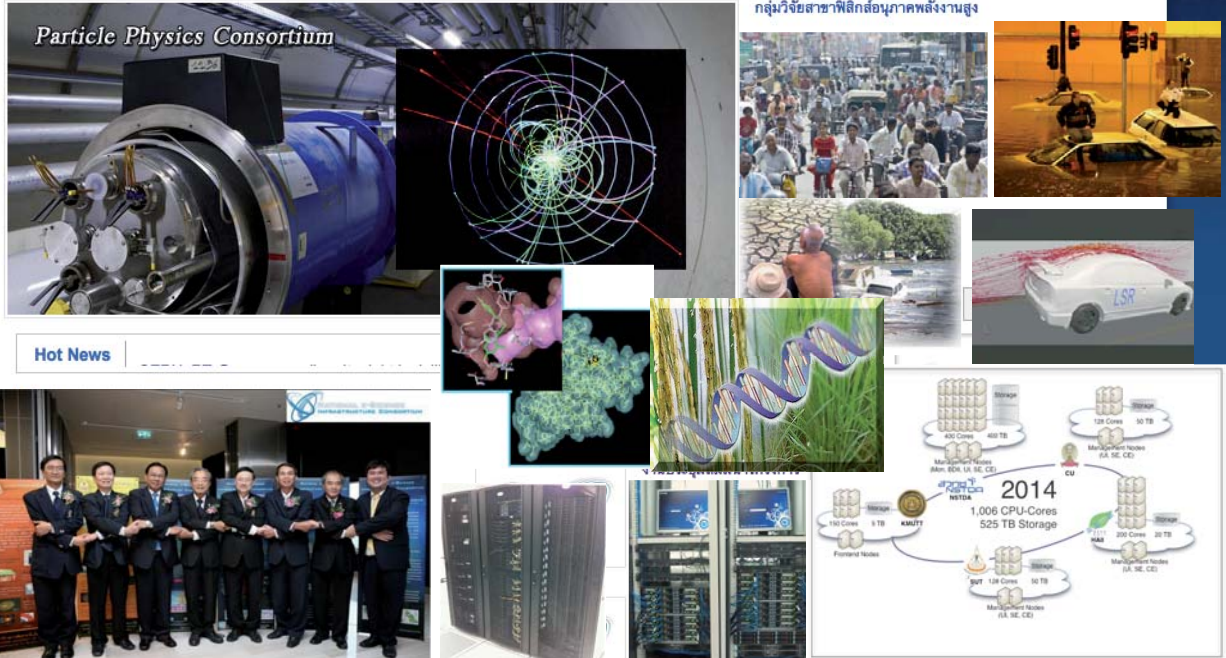
Case Study: Selecting Network Path for Project Experiment between NRENs
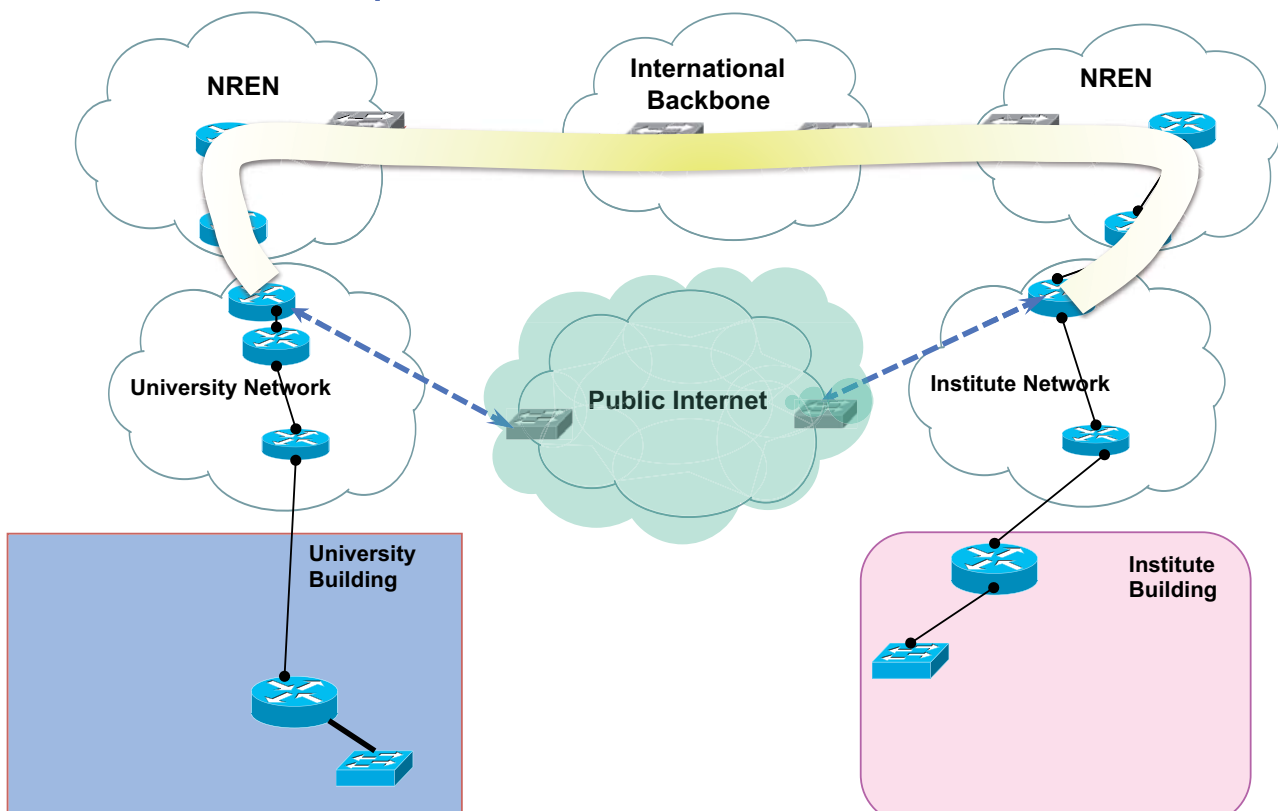
Co-operation between network engineers along the network path is important

Example of Network Paths (old diagram)
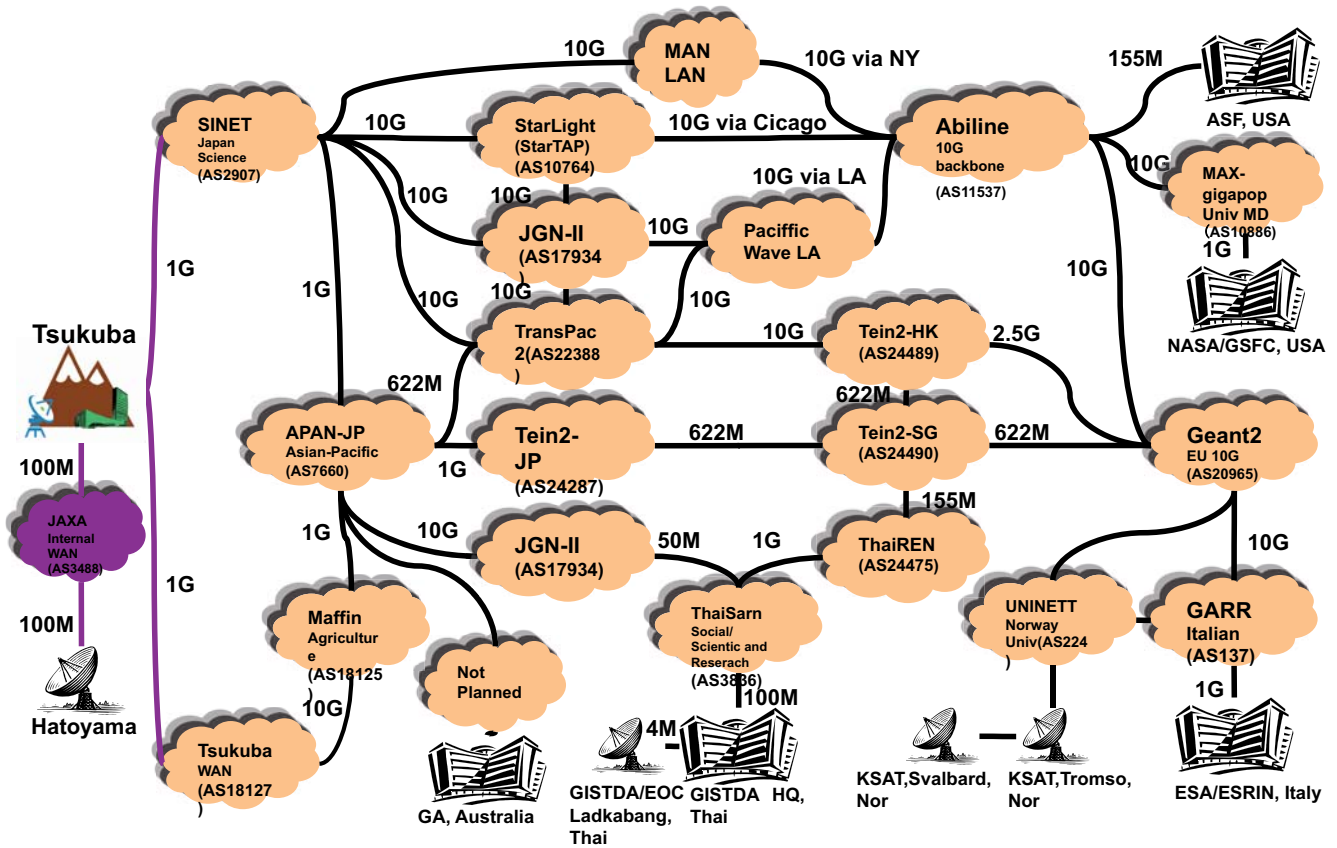
Knowledge and Experience from NREN Development

- 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
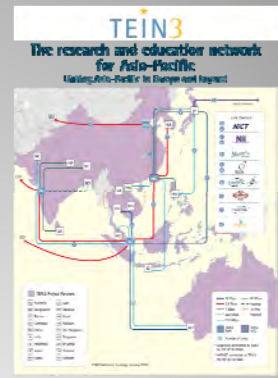
Who's Connected?
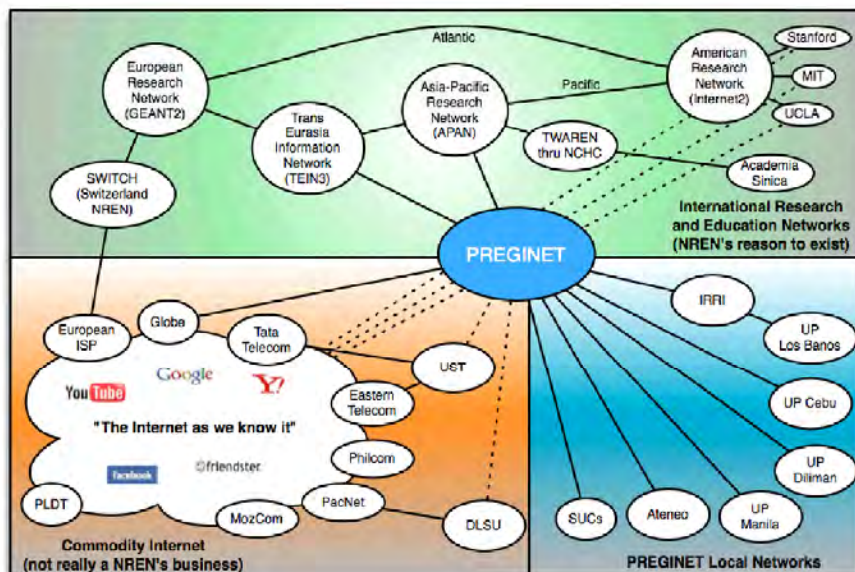
Putting Value over a NREN

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

High-speed networking: decoding the diversity of rice

it has been world's most h 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…
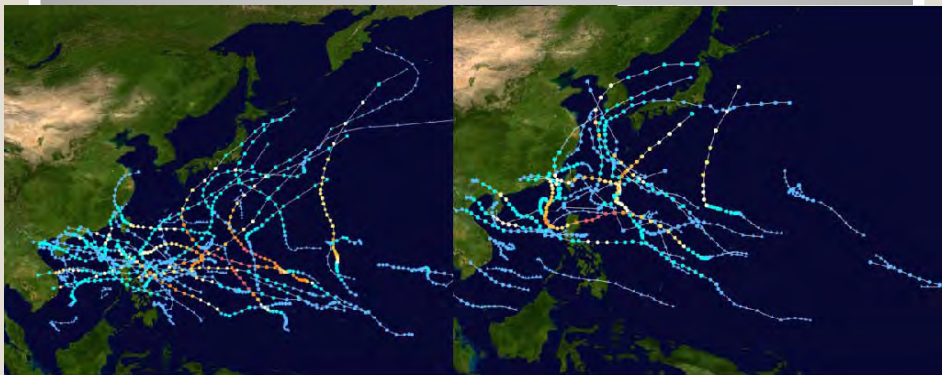
…causing millions-worth of damage to infrastructure, crops, and lives

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.

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

Courtesy of Mariela Cadis

---

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

VietDuc University in Hanoi

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
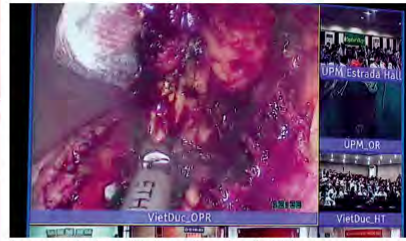
Laparoscopic view within the peritoneal cavity, VietDuc or middle frame

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...

eGee
Enabling Grids for E-sciencE

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

6

E-Infrastructure

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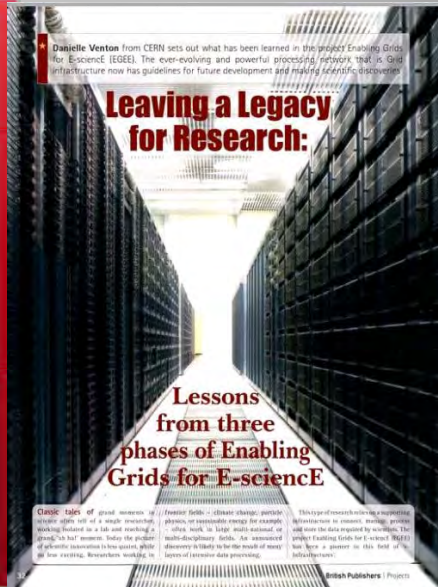
E-Education

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 Workshop
Phnom Penh, Cambodia
25 May 2012

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

Agenda

1. **Introduction**

2. **Infrastructure**

3. **MYREN Services**

4. **Cooperation 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

8th Malaysia Plan (Phase 1)	9th Malaysia Plan (Phase 2)	Future

Value: Usage, Users Growth

2005 Build Phase	2010 Growth Phase	2015 Sustaining Phase
Establishing & linking MYREN to the user communities.	Progressing and expanding the benefits of MYREN to wider user communities.	Continue progressing MYREN towards higher adoption, value creation and community-driven initiative.

5

Introduction

Key Components

Dedicated network supporting NREN activities and collaborative research – broadband capacity, video conferencing, linkage to other NREN

Student placement, technical training series, industry-MYREN joint talks, virtual lectures, seminars

Central technical coordination – network design, support & operation, helpdesk, network monitoring & management etc

Network Infrastructure

Network Operations

Human Capital Programme

5 Major Components

MYREN Research Communities

International Collaborations

UM, UKM, UPM, USM, UTM, UUM, MMU, UTP, UiTM, Uniten, UMS, Unimas, TM R&D, Monash etc

UNESCO

TEIN3

APAN

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**
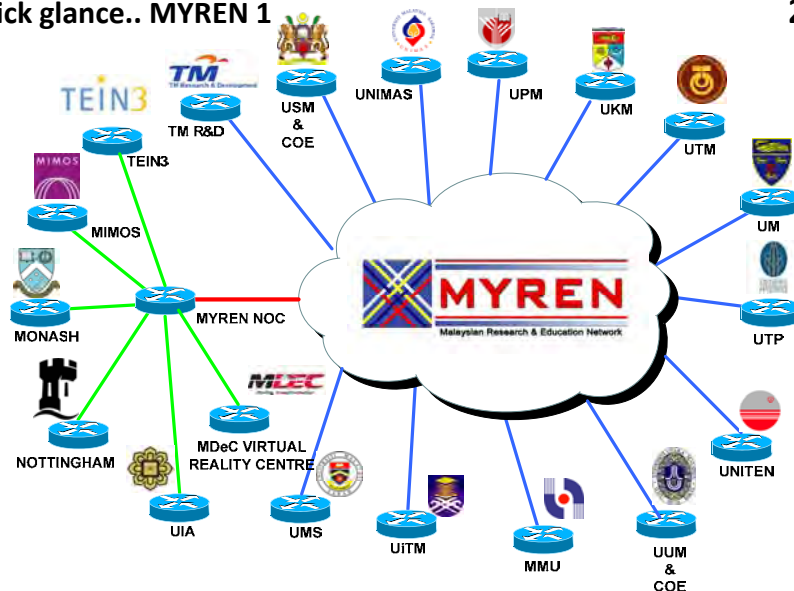
Infrastructure

MYREN1 Network Utilization

Utilization Rate 2005 – 2009

Issues at end sites
- different VLAN
- Separate port for R&E
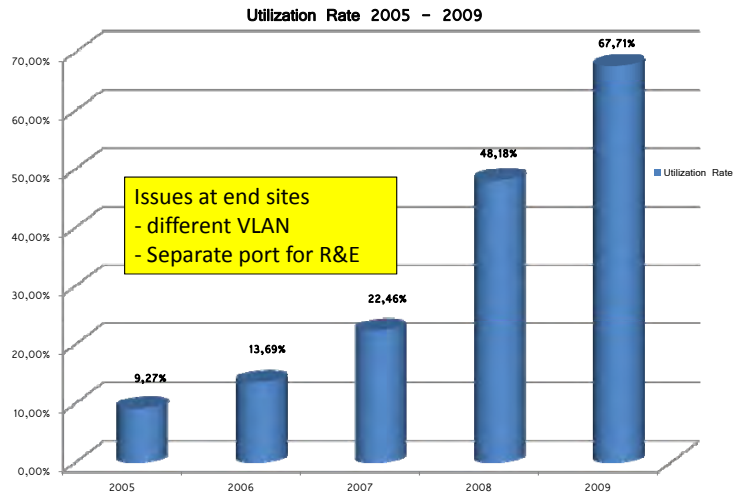
Infrastructure

MYREN Phase 2 (MYREN2) – Core Network   **2010**
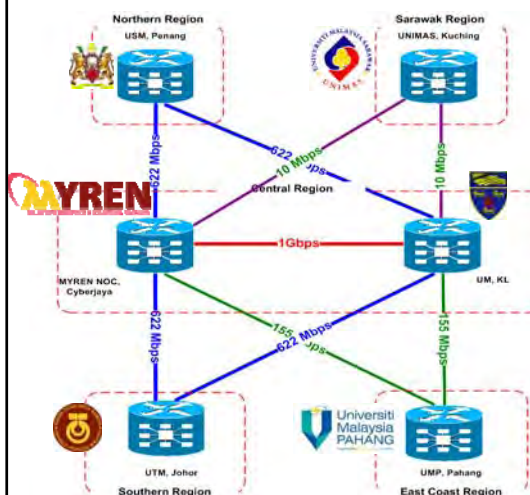
Facts :
- MPLS enabled network
- Dual stack at all core and access network
- PoP located at strategic member areas

5

Infrastructure

Members community
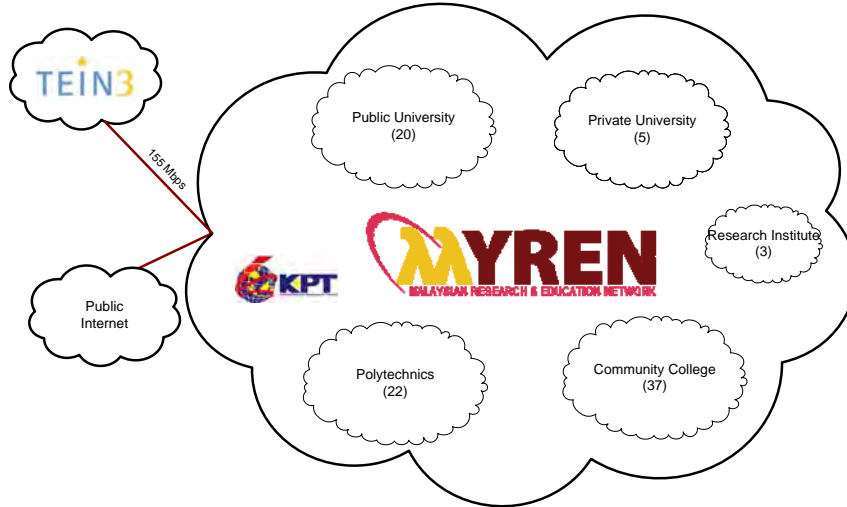
Infrastructure

International Cooperation and Linkages
TEIN3 (Trans Eurasia Information Network)
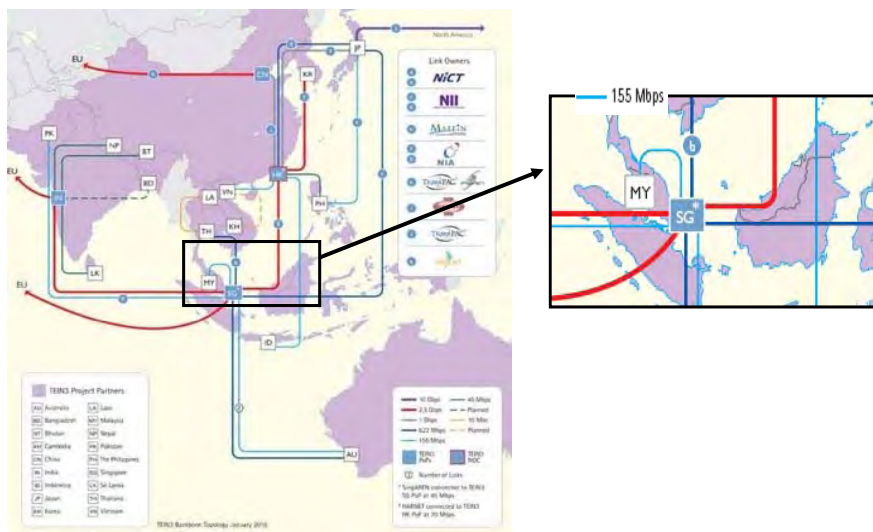
Services

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
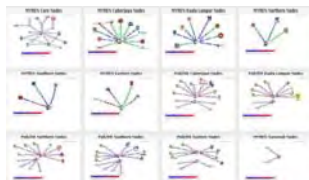
14

Cooperation Highlights

Some of Collaborative Projects conducted under MYREN

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

Telesurgery: APAN-Manila, February 2007
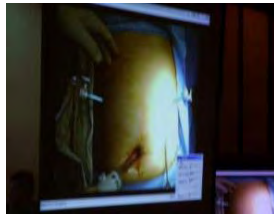
Cooperation Highlights

Some of Collaborative Projects   conducted under MYREN

Telesurgery : Selayang Hospital-Boston Hospital, September 2008
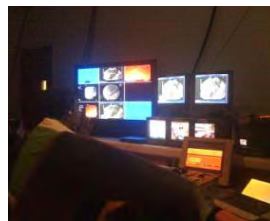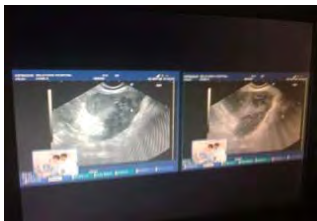
Malaysia – UK : Research at the speed of High Performance Computing Seminar, 4th June 2007, Kuala Lumpur

Cooperation Highlights

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

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

Thank you

Cooperation with Europe on Research and Education Networks

Nguyen Hong Van, Ph.D.
Director of VinaREN, Vietnam

Cambodia, 25 May 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.
- VinaREN was officially launched at the national scale on 27 March 2008.
- At the 23rd APAN Conference, 2007, Vietnam was officially joined APAN
- VinaREN has now developed in both breadth and depth.
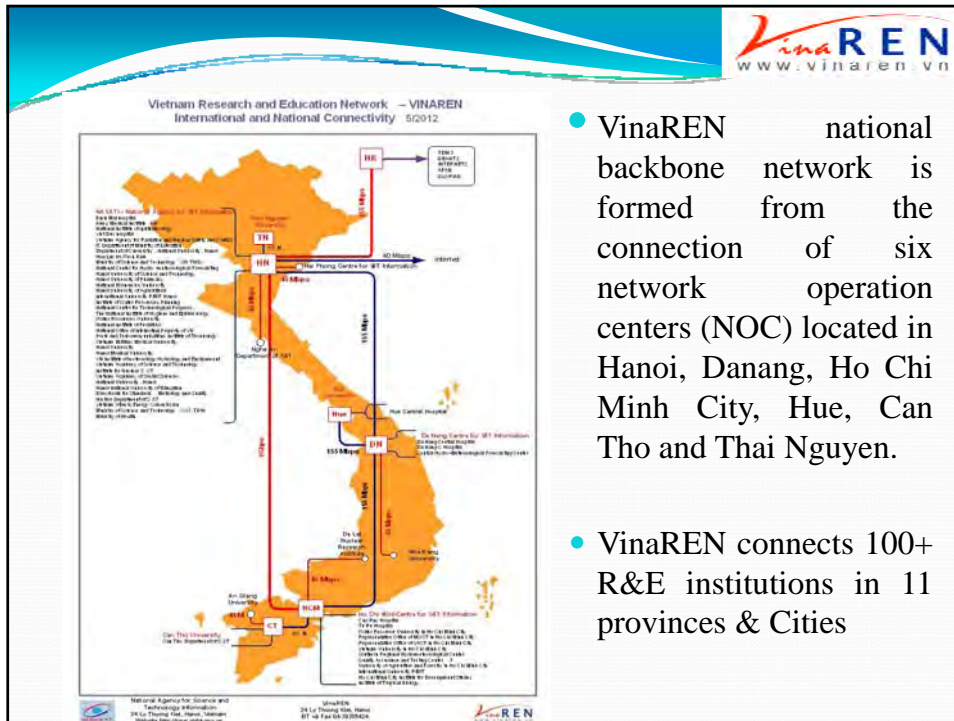
- VinaREN national backbone network is formed from the connection of six network operation centers (NOC) located in Hanoi, Danang, Ho Chi Minh City, Hue, Can Tho and Thai Nguyen.

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

Technical infrastructure before 2011
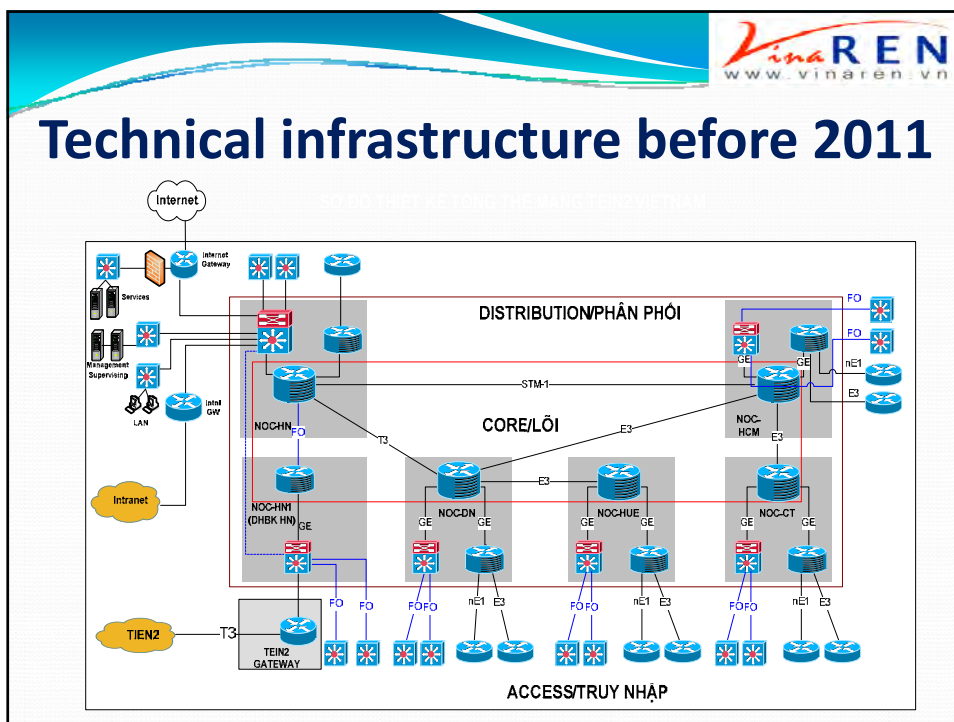
Technical infrastructure

National backbone upgraded

In 2011, VinaREN upgraded all the channels on the backbone. Currently, the bandwidth at all channels have been increased from 2 to 8 times higher than before.

- Hanoi - Ho Chi Minh: 01 Gbps;
- Hanoi - Da Nang: 155 Mbps;
- Da Nang - Hue: 155 Mbps;
- Da Nang - Ho Chi Minh City: 155 Mbps;
- Ho Chi Minh City - Can Tho: 155 Mbps;
- Hanoi - Thai Nguyen: 155 Mbps.

Communities – VinaREN Members

- **The leading universities and academic institutions:** 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, and so on

- **The major R&D institutions:** Vietnam Academy of Science and Technology, Vietnam Academy of Social Sciences, Vietnam Agency of Atomic Energy.

- **The leading research hospitals:** pediatric hospital, Viet-Duc hospital, Cho Ray hospital, and so on.

- **The major institutions on climate change:** Central center for Hydro-meteorology weather forecasting, Tsunami Warning center, National Remote Sensing center, regional Hydro-meteorology stations, …

- **The leading library & information centers:** NASATI, National Library, Learning Resources Centers in Da Nang, Hue, Can Tho, Thai Nguyen

- **Government institutions:** MOST, Hoalac High Tech Park

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

Lecture from UPMC, Paris, France

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 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 supports Weather Forecasting & Climate Modeling

**Numerical Weather Prediction Review
(A big jump)**

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.
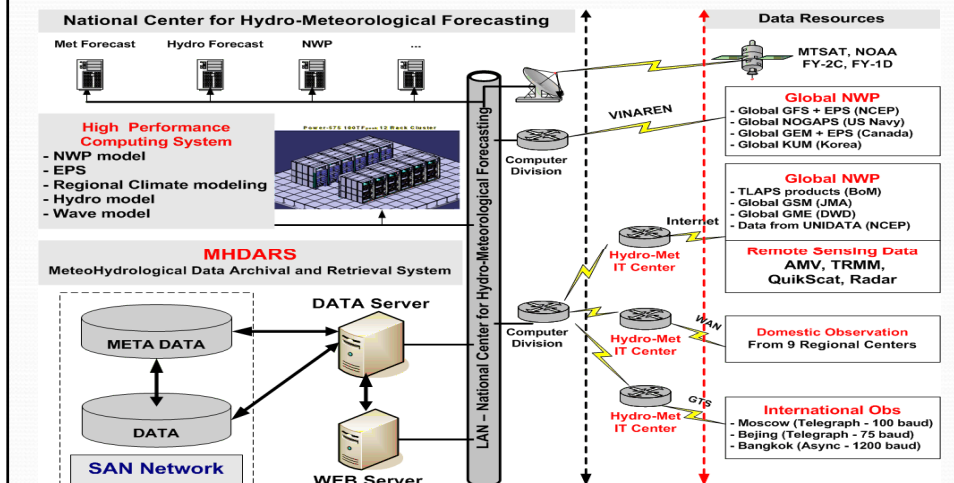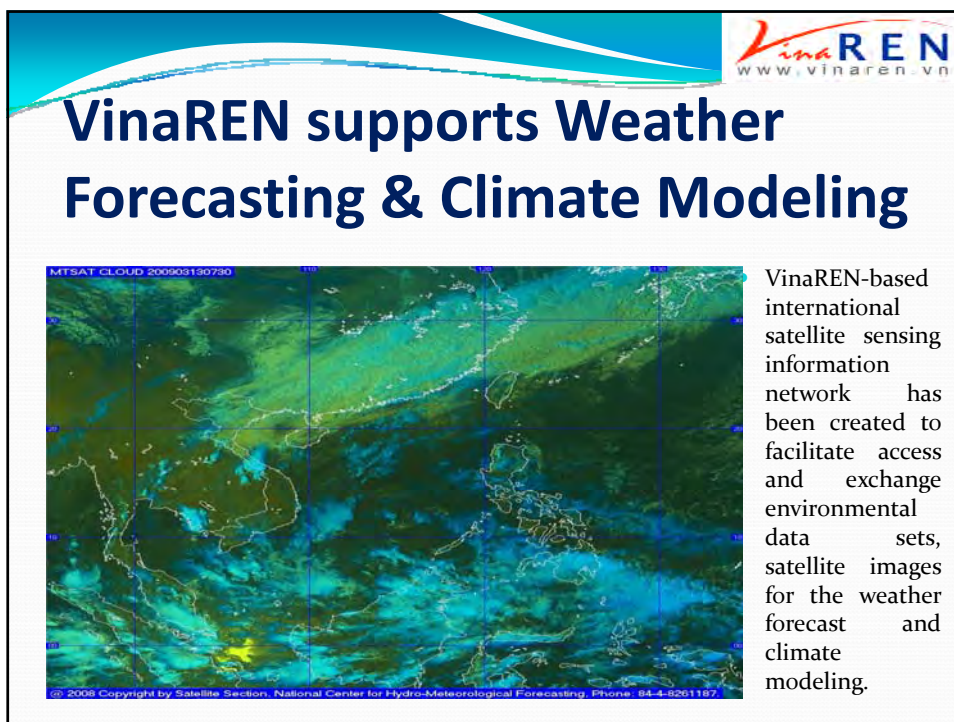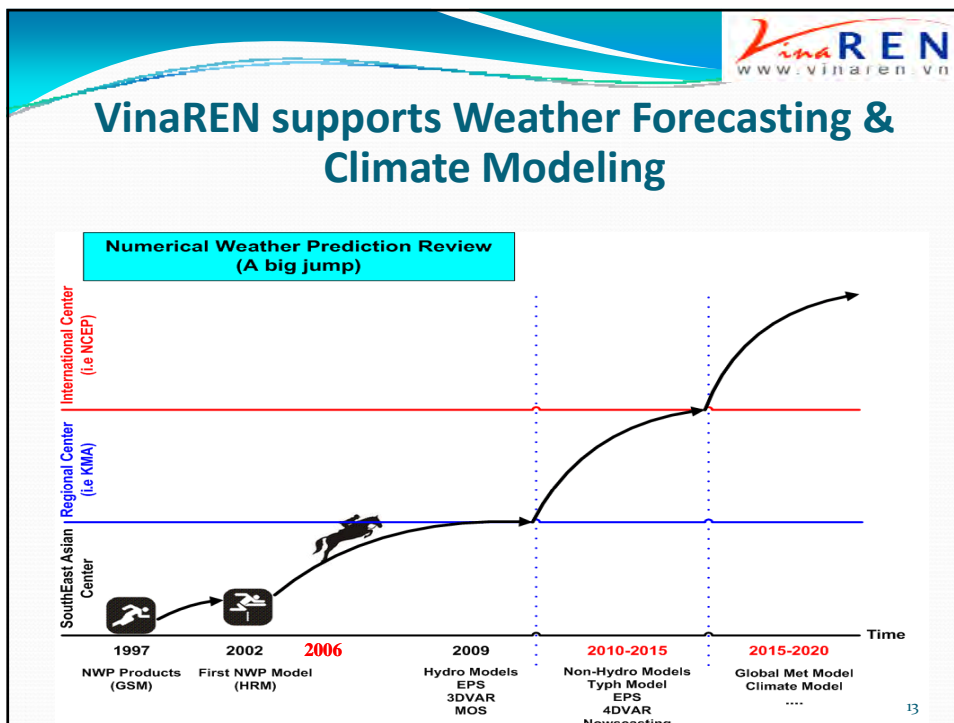
Grid Computing

- Grid Computing systems can be reached in to global
- Efficient utilization of resources of different organizations
- Users do not need to know where the resources is

need to build the Distributed Supercomputing
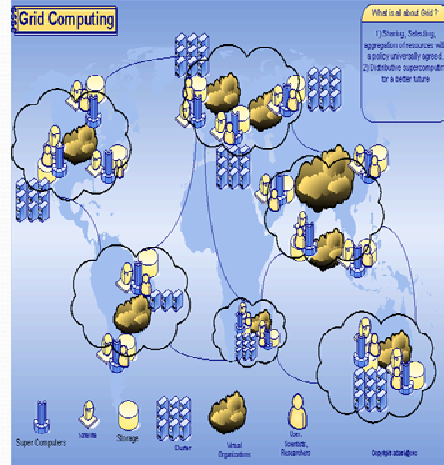
Grid Computing centers in Vietnam

- 2008: 6 centers
  - Hanoi University of Technology
  - HCM University of Technology
  - Vietnamese National University in Hanoi
  - Vietnamese Institute of Information Technology (IOIT)
    - Ha noi
    - Ho Chi Minh
  - Vietnamese Military Technical Academy (VMTA)
- 2009: one more
  - Hanoi University of Education

TEIN-3 and VinaREN network
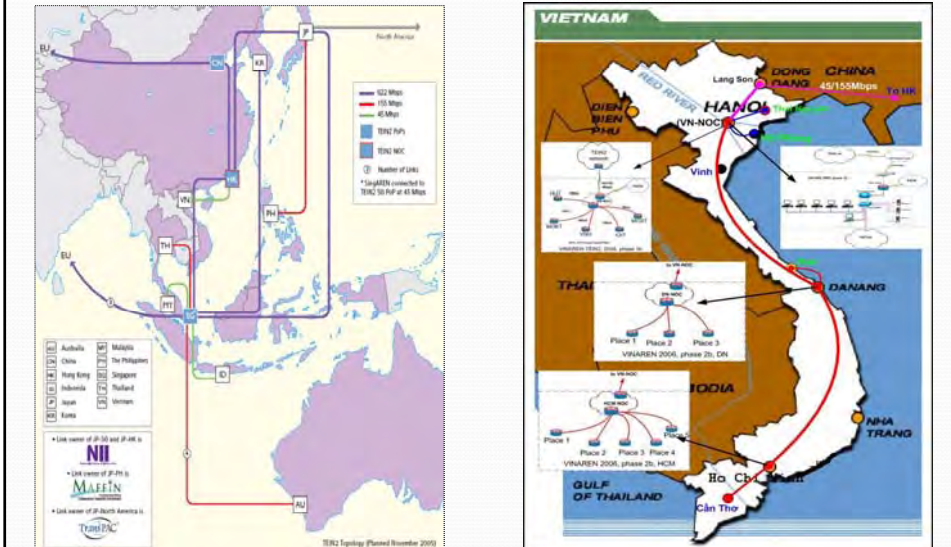
Grid computing

- 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.

PRAGMAGrid members

EUAsiaGrid Members

❖ Using gLite in the grid infrastructure

GEO Grid

The GEO (Global Earth Observation) Grid is aiming at providing an *E-Science Infrastructure* for worldwide Earth Sciences communities to accelerate GEO sciences based on the concept that relevant data and computation are *virtually integrated* with a certain access control and ease-of-use interface those are enabled by a set of Grid and Web service technologies.

A Workflow example

A Workflow example (cont.)

Predict problems

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 45 Mbps initially and of 155 Mbps actually. Through this connection, VinaREN has connections to GEANT, Internet 2 and APAN.
- In 2011, VinaREN cooperated with Viettel company to establish 100 Mbps connection for CamREN, including 10 Mbps to TEIN3 via VinaREN.
- 40 Mbps of commercial Internet for access to online data bases and journals

International Connections
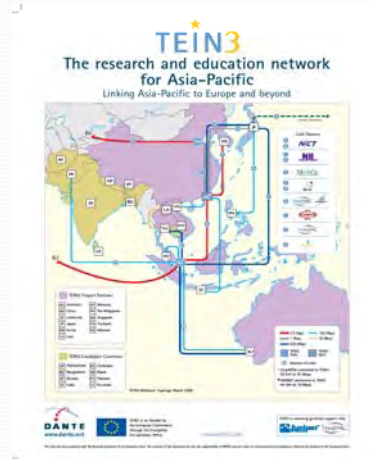
Activities

- 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
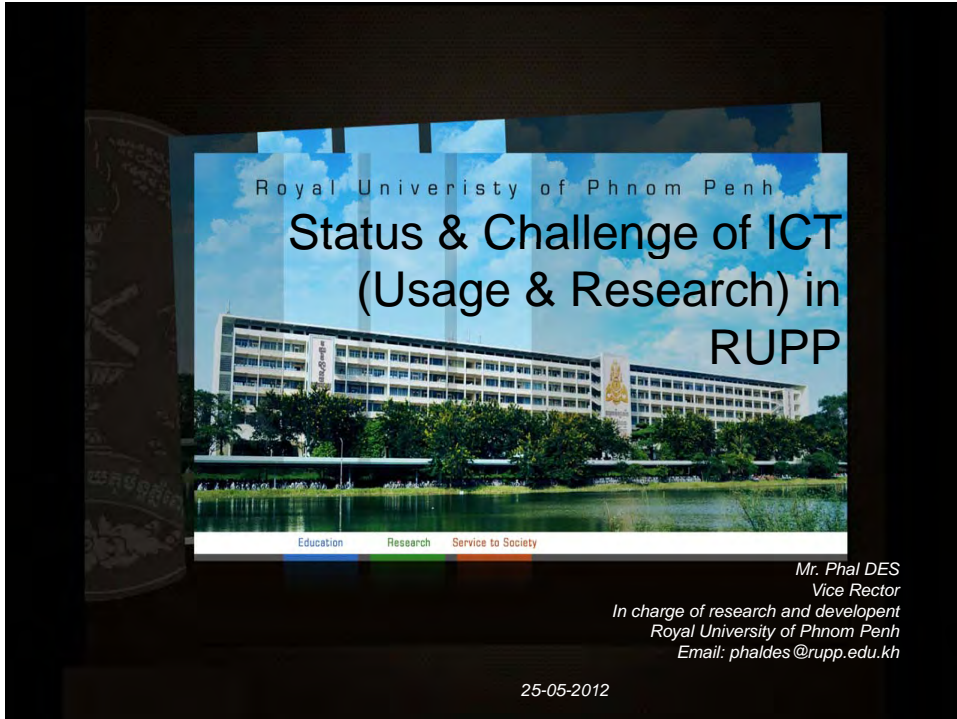
- Promote activities of working groups: telemedicine, climate change, grid computing, e-learning and network engineering, etc. ...
- Implement new technologies such IPv6, Multicast, etc...
- Promote information resources sharing among VinaREN members
- Connect VinaREN to GLORIAD by 1 Gbps via Singapore;
- Support LaoREN and CamREN to connect to TEIN3/4 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 "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.

Thank you

Royal Univeristy of Phnom Penh

Status & Challenge of ICT (Usage & Research) in RUPP

Education   Research   Service to Society

Mr. Phal DES
Vice Rector
In charge of research and develoment
Royal University of Phnom Penh
Email: phaldes @rupp.edu.kh

25-05-2012

Outline

- Introduction
  - Partners
- ICT Status In RUPP
  - Projects & Events
- Research Status
  - Committee
  - Research Archives
  - ACIS 2012
- Awards and Achievements In ICT
- Future Plans

2

Introduction

- Royal University of Phnom Penh (RUPP)
  - Was founded in 1960
  - Has three main campuses:
    - Campus I : Sciences faculty
    - Campus II: Social Sciences and Humanities faculty
    - IFL Campus : IFL & CJCC
    - These three campus hosts 22 Departments, and 12 graduated programs

3

Introduction (cont')

- Has 530 full-time staff
  - Academic staff: 416 (22 PhDs, 261 masters and 133 Bachelors)
  - Administrative and maintenance staff: 120
- Holds 83 active MOUs with universities and research centers around the world
- Is the first university in Cambodia with full membership of the ASEAN University Network (AUN)

4

Introduction (cont')

- Hosts more than 14,000 students
- Starts IT Department in 1995
- Has recruited IT students around 1200 students every year, and graduated around 600

Introduction (cont')

With the vision "To be leading education, research, and service to society in Cambodia"

Introduction (cont')

RUPP has a five-fold mission:

1. The training and production of qualified graduates with relevant abilities and skills;
2. The promotion of research for academic advancement and national development;
3. The extension of knowledge and technological transfer and development towards national self-reliance;
4. Academic service to the public and private sectors, and community development;
5. The promotion of cultural preservation, exchange and development.

Introduction (cont')

- ICT Strategy Plan 2009 – 2013 of RUPP:

  Goal IV: "To upgrade and integrate Information and Communication Technology throughout RUPP so that all stakeholders can access and exchange information"

  - Design & Set up Network and Internet infrastructure of RUPP
  - Provide IT Service within RUPP
  - Provide e-education resources to students

Partners

Won Erasmus Mundus programme, Action 2 for three times

- Action 2: 2009 -2012
  - 1 P+4D+7M+16B+6S=34
    METU (Ankara-Turkey), B1 (Bordeaux-France), ITC (Enschede-Netherland), RKUH (Heidelberg-Germany), UNS (Nice-France), USC (Santiago de Compostela-Spain), LBUS(Sibiu-Romania), UNIPD (Padova-Italy), UW (Warsaw-Poland).
- Action 2: 2010 -2014
- 3D+11M+10B+3S=27
  RKUH (Heidelberg-Germany), UNS (Nice-France), LBUS(Sibiu-Romania),USG (Genova-Italy), UW (Warsaw-Poland).
- Action 2: 2011-2015 (on going)

Partners

- In 2012, RUPP has become a membership of "IBM Academic Initiative"

ICT Status In RUPP

- Internet Access:
  - Internet Speed: 22 Mbps
    (All campus: Campus I,
    Campus II, and IFL)
- Internet Usage:
  - E-education – Moodle
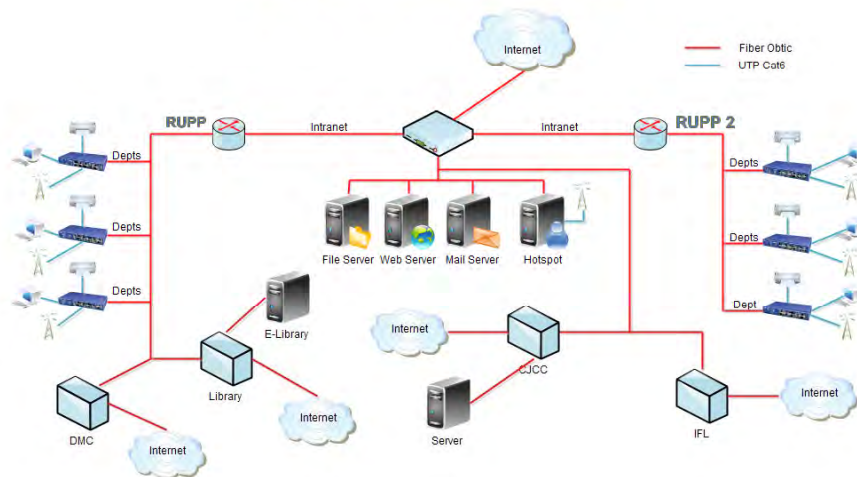 - E-education – Research / Resources
- Intranet Usage:
  - E-Library

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ICT Status In RUPP

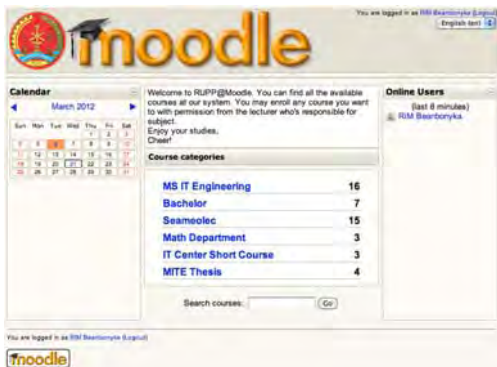RUPP Internet/Network Infrastructure

12

ICT Status In RUPP

ICT Status In RUPP

- E-education – Moodle
  - Moodle is a Course Management System
  - RUPP has used Moodle since July 2009

ICT Status In RUPP

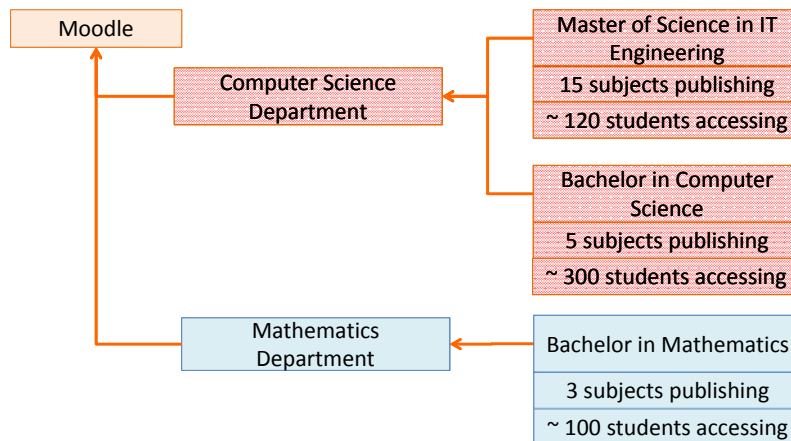▪ Moodle Usage

Moodle

Computer Science Department

Master of Science in IT Engineering
15 subjects publishing
~ 120 students accessing

Bachelor in Computer Science
5 subjects publishing
~ 300 students accessing

Mathematics Department

Bachelor in Mathematics
3 subjects publishing
~ 100 students accessing

15

ICT Status In RUPP

▪ Type of resources
- Text
- MS Word document
- Pdf file
- Flash Video
- Youtube Video

▪ Type of activities
- Assignment
- Forum
- Quiz

9 Seminar VI 20 July 2011
- Agenda Day 9
- Senimar VI
- Bad web site
- Color Psychology and Marketing
- The Psychology of Color

10 Video at Youtube 21 July 2011
- Before We Code
- How to Build a Corporate Website
- Mobile User Experience Design
- iPhone User Interface Design, Paper Prototype study
- Google I/O 2010 - Android UI design patterns
- Designing for Windows Phone 7

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ICT Status In RUPP

- Intranet Usage:
  - E-library
    - Hun Sen Library is located in Royal University of Phnom Penh
    - There are more than 100,000 volumes
    - Almost 800 students use the library each day
    - The library uses **Aleph500** as a Library Management System and uses **Dspace** for its Open Digital Repository
    - Student can search for the books' catalogue in the library from **WebOPAC**
    - Student can download and read some material in the digital form online using the Hun Sen Library's intranet

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Royal University of Phnom Penh

Projects & Events

- 2nd Regional Science & Technology Camp 2009
  - 25 Feb – 05 Mar 2009
  - Capturing children's "CAN-DO" attitudes in Science, Technology and Engineering
  - High school student age from 12-15 years in Asian

18

Royal University of Phnom Penh
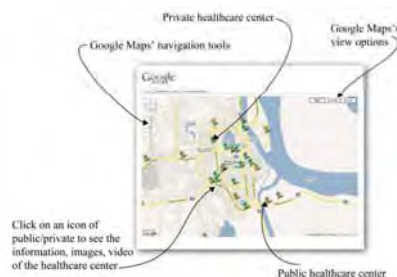
Projects & Events

- Google Event at Royal University of Phnom Penh (Google Camp):
  - 22-25 June 2009
  - Covered Google Technology:
    - Awareness
    - Collaboration
    - Stay informed
  - 18 expert staff from google headquarter

Projects & Events

- Mapping Healthcare service in Google Map
  - Improving healthcare services in Phnom Penh
  - Indicating available and unavailable resource in each healthcare center

Projects & Events

- Air Ship Tryout at Royal University of Phnom Penh
  - Collaboration with Aerospace University of Korea
  - 10 Feb 2011

Projects & Events

- High Attitude Platform Station (HAPs)
- The future telecom infrastructure
- Research: HAPs deployment in Cambodia
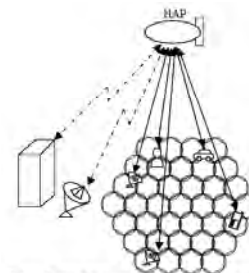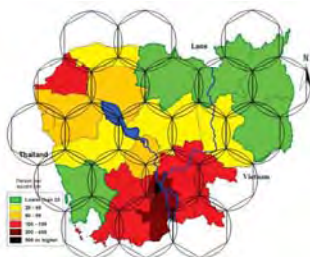- Result (after simulation):
  - 20 HAPs to be deployed.

$$d = 2R \cdot \left\{ \cos^{-1}\left(\frac{R}{R+h} \cos\alpha \right) - \alpha \right\}$$

Fig 2   Future telecommunication services offered by HAPS

Projects & Events

- J
  I
  T

Research Status

- RUPP Strategy Plan 2009 – 2013 of RUPP:

  Goal III: "All departments to develop their own research and community service programs"

24

Research committee

- RUPP has research committee into three teams
  - Advisory board
    - Group senior influential research management and decision of RUPP research lead by Rector.
  - Management Committee
    - Group of potential people who play an important role in managing, planning, and making decision for research affair lead by Vice-Rector (in charge of Research)
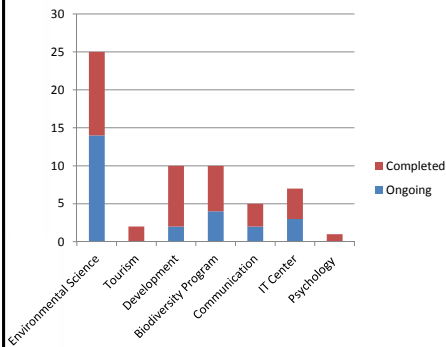
25

Research committee

  - Technical Committee
    - Group of RUPP's research professionals who play major role in research technical affair chair by Vice Rector in charge of R&D
    - Member included PhD who has experiences in research or Senior researchers who already obtains master degree.
    - 31 members
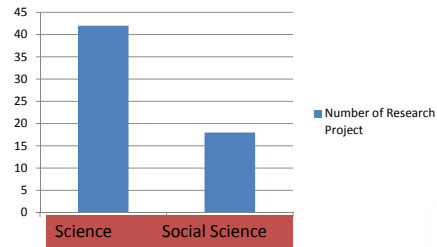   - PhD in Science or Engineering: 11
      - PhD in Social Science: 8

26

Research Status

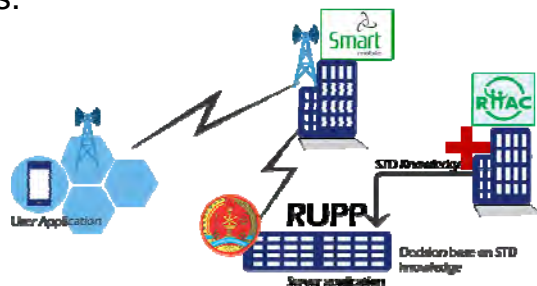**Research Project 2011-2012
(60 projects in total)**

Legend: Completed, Ongoing

Number of Research Project

Legend: Number of Research Project

Categories: Science, Social Science
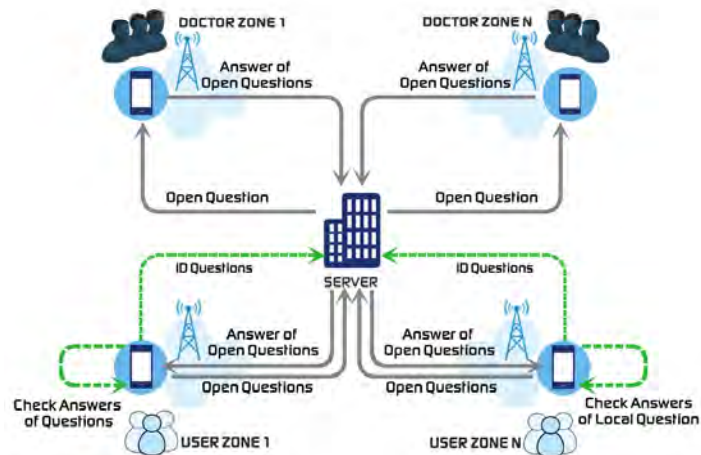
27

Research Archives

- Use ICT to improve healthcare in rural areas of Cambodia
- Develop mobile phone application for young people to consult their problems (STDs) with professional medical staffs.
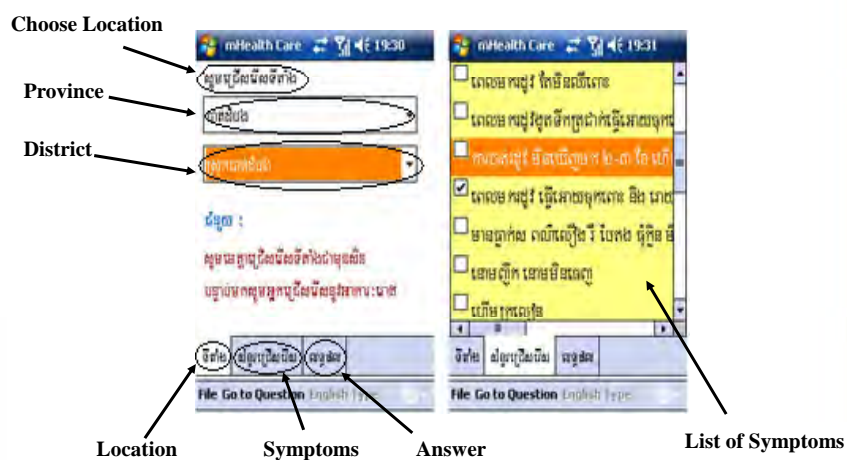

28

Research Archives

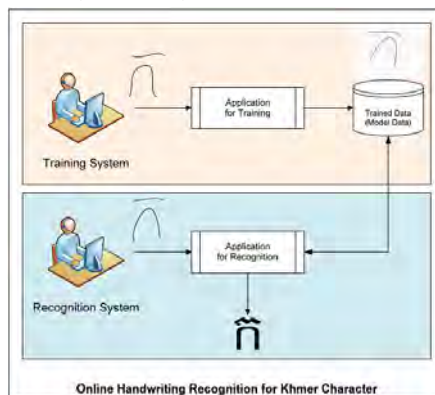**m-health ARCHITECTURE**

Research Archives

Choose Location

Province

District

Location   Symptoms   Answer   List of Symptoms

Research Archives

- A Master Thesis Research

  "Online Handwriting Recognition for Khmer Characters"

Online Handwriting Recognition for Khmer Character

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Awards and Achievements In ICT

- RUPP has been congratulated for outstanding contribution to the release of "Windows 7 and Office 2010 in Khmer"

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Awards and Achievements In ICT

- RUPP has won "The Best IT Education Institution 2011"
- RUPP has also won "The Best IT Education Institution 2012"

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Future Plans

- Will establish two faculties in the near 2013:
  - Engineering faculty
    - Telecommunication and Electronic Engineering Department
    - Bio-engineering Department
    - IT Engineering Department
  - Development Studies faculty
    - Community Development Department
    - Economic Development Department
    - Natural Resource Management and Development Department
  - KOICA Center
- Hopefully, we would become a CamREN member

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ACIS 2012

- The First Asian Conference on Information Systems – ACIS 2012
    - On 6-8 December 2012
    - In Siem Reap
    - http://www.rupp.edu.kh/acis2012/

Thank You
&
See You
@ ACIS 2012 - Siem Reap

NiDA

TEIN3 Workshop
Cooperation with Europe on Research and Education Networks

ICT Policy in Cambodia

H.E Dr. SANG SINAWONG
Deputy Secretary-General of NiDA

25 – May – 2012
Sunway Hotel, Phnom Penh

NiDA

Content

- NiDA
- Draft National ICT Policy

1

NiDA

NiDA: (National Information and Communications Technology Development Authority)

Tasks:
1. To formulate ICT promotion and development for short, medium, and long term,
2. To implement ICT policy for maximum economic growth, and
3. To monitor and audit all ICT related projects in the kingdom of Cambodia

Draft National ICT Policy

National ICT Vision:

• With a unique mélange of historical magnetism and geography, Cambodia is well placed to become a globally competitive, knowledge and information based society, capable of providing ICT-based solutions to enhance sustainable socio-economic development.

NiDA

Draft National ICT Policy

Mission:

- To integrate ICT activities in the government (public) and private sectors and ensure national optimal economic and social stimuli through achieving community framework agreements, which includes promoting an awareness against global warming.

- To provide a conducive framework (legal and regulatory) for public and private infrastructure investments in e-Commerce capacity building, by promoting the growth of national ICT and developing regionally competitive ICT experts.

NiDA

Draft National ICT Policy

Goals:

- Creating and providing a national framework and policy that will enable ICT to contribute towards the achievement of national development goals;

- Providing universal services and accessibility to information and communication facilities in the country that will inevitability lead towards global competitiveness in output and productivity.

- Transforming Cambodia into a knowledge-based society through the implementation of proper ICT.

NiDA

Draft National ICT Policy

ICT Frameworks

1. Develop a national ICT legal, and regulatory framework to ensure a national economic and social stimuli.
2. Develop measures to achieve the e-ASEAN Framework Agreement, as well as to ensure efforts to keep pace with the ASEAN level of ICT technology through the promotion of a national ICT innovation.

ICT Services

3. Improve government services through the application of ICT
4. Support the use of ICT in the private sector and the growth of e-commerce
5. Encourage the growth of a national ICT industry and its links among the ASEAN region

---

NiDA

Draft National ICT Policy

ICT Infrastructure

6. Develop a reliable national ICT infrastructure

ICT Development

7. *Enhance the level of ICT literacy among the population*
8. *Develop regionally competitive ICT experts and ICT savvy human resources*
9. *Support WID (Women in Development) in the ICT Sector*

Commitment to Global Issues

10. Encourage an awareness of ICT as a tool for fighting global warming

Ministry of Posts and Telecommunications (MPTC)

TELECOMMUNICATION INFRSTRUCTURE & SERVICES in CAMBODIA

25 May, 2012
Sunway Hotel, Phnom Penh

Contents

1. **Telecom Sector Reform**
2. **Telecom Status**
3. **Telecom Market**
4. **Telecom Network**
5. **Telecom Infrastructure**
6. **Policy and Regulation**
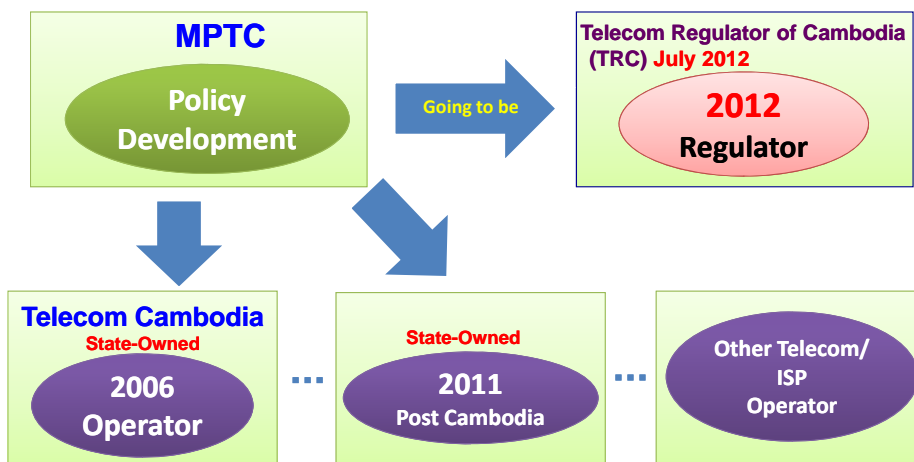7. **The Future of Communication and Challenges**
8. **Conclusion**

Telecom Sector Reform

MPTC

Policy Development

Going to be →

Telecom Regulator of Cambodia (TRC) July 2012

2012 Regulator

Telecom Cambodia
State-Owned

2006 Operator

...

State-Owned

2011 Post Cambodia

...

Other Telecom/ ISP Operator

Numbers of all telecom operators as March 2012

NO.	Services	Operators
1	Mobile (2, 2.5, 3G)	08
2	Fixed WLL	08
3	International Gateway	03
4	ISP	27
5	VoIP	15
6	VSAT	01
7	DNS (.KH)	1,461
8	Internet Café	304

Telecom Market

- **Fixed Line Operators**
  - Telecom Cambodia
  - Camintel (KTC)
  - Mfone (WLL)
  - Viettel (Cambodia)
  - Sotelco (WLL)
  - Hello (WLL)
  - CamGSM (WLL)

- **International Carriers**
  - 001 : Telecom Cambodia (T.C.)
  - 007 : Royal Telecom International (R.T.I.)
  - 009 : Viettel (Cambodia)

Telecom Market

- **Mobile Phone System for all Operators**

  1. CamGSM   : GSM900/1800MHz and 3G
  2. MFone   : EGSM900/GSM1800MHz/CDMA450MHz and 3G
  3. CADCOMMS   : 3G,
  4. HELLO   : GSM900/1800MHz and 3G
  5. Viettel (Cambodia) : GSM 900/1800MHz/3G and LTE
  6. GT-TELL   : CDMA 800MHz
  7. Latelz   : GSM 1800MHz , and 3G
  8. Sotelco   : EGSM 900 and GSM1800MHz
  9. Camintel (KTC)   : WCDMA 800MHz (Not in operation)
  10. Xin Wei   : SCDMA/McWill (Just starting operation)

3

4
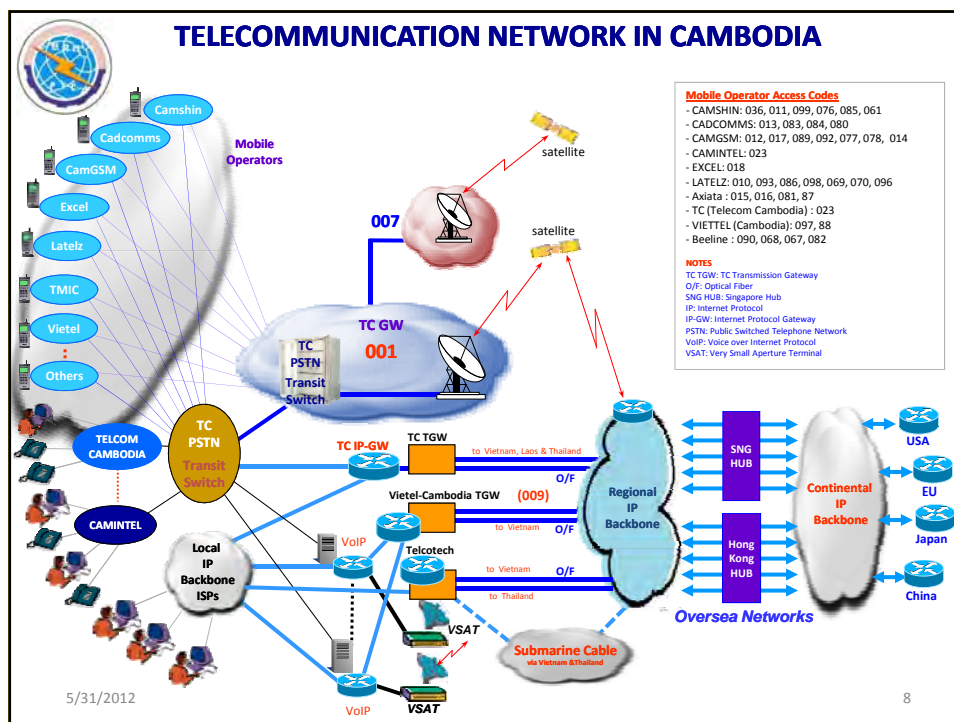
Nation Optical Fiber Backbone Network

Optical Fiber Backbone Operators (03)

– Telecom Cambodia (TC) : **1,200 Km**
– Viettel Cambodia : **16,000 Km**
– CFOCN (Cambodia Fiber Optic Cable Network): **5,180 Km**
❖ **Total national wide backbone: 22,380 Km**
❖ **Completed Connection of GMS Countries.**
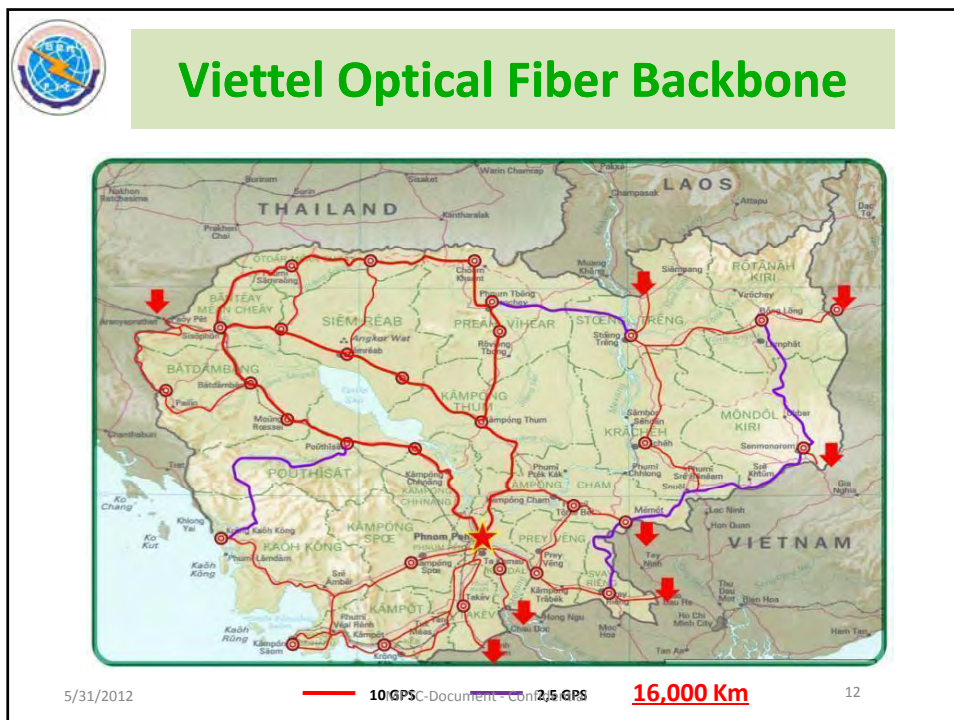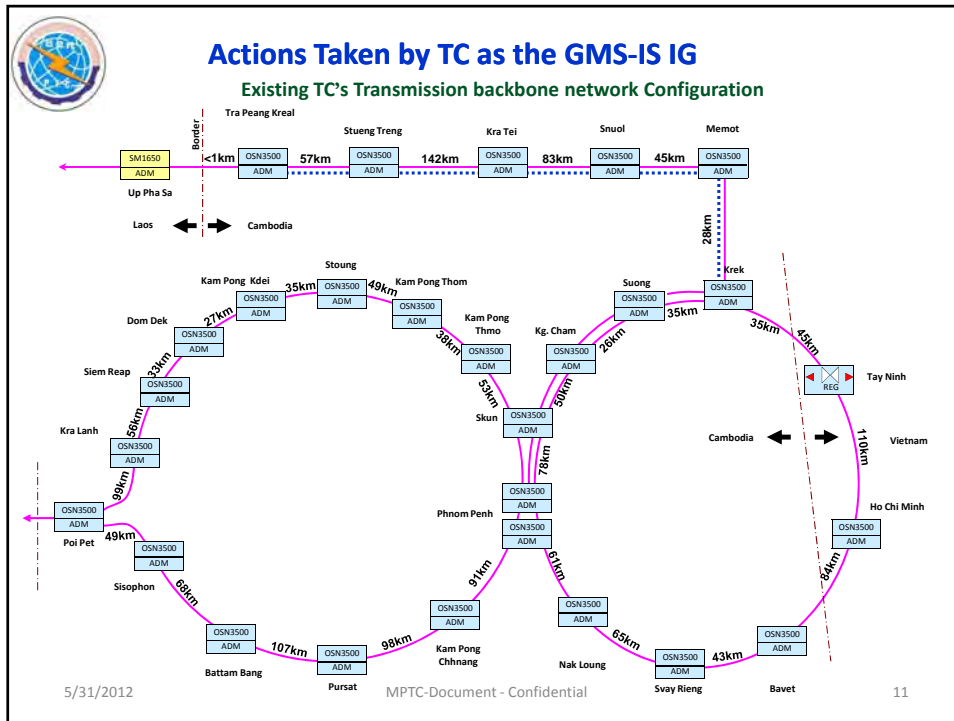❖ **International Internet Bandwidth = 8 Gbps (All ISPs)**

Telecom Cambodia Optical Fiber Backbone

Actions Taken by TC as the GMS-IS IG

Existing TC's Transmission backbone network Configuration

Viettel Optical Fiber Backbone

16,000 Km

CFOCN Optical Fiber Backbone

CFOCN Optical Fiber Backbone in PNH

FOC Constructed Municipal FOC Duct System in Phnom Penh

7
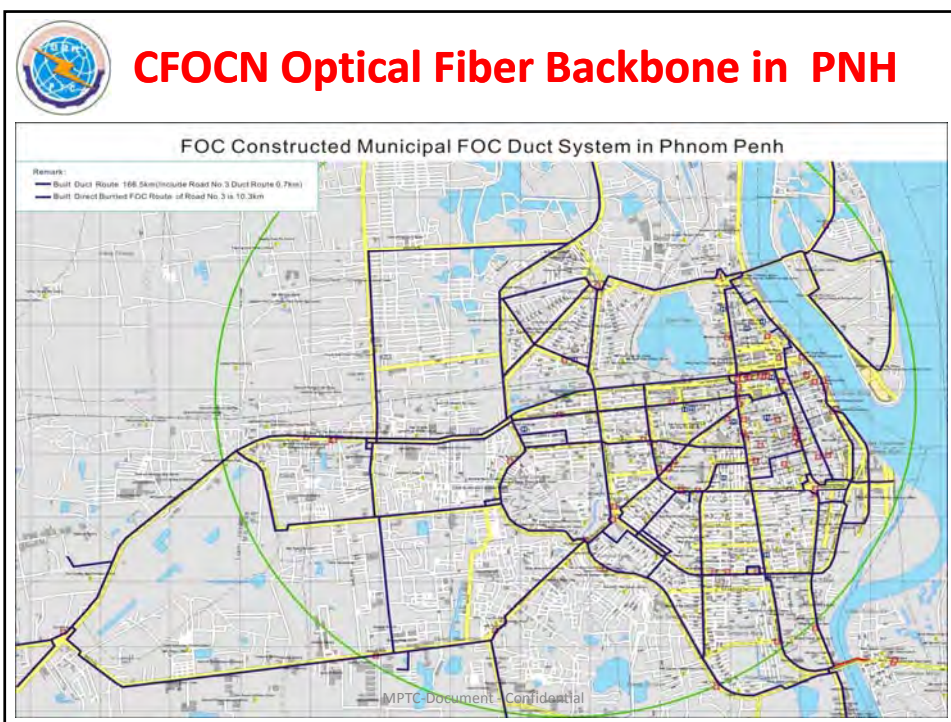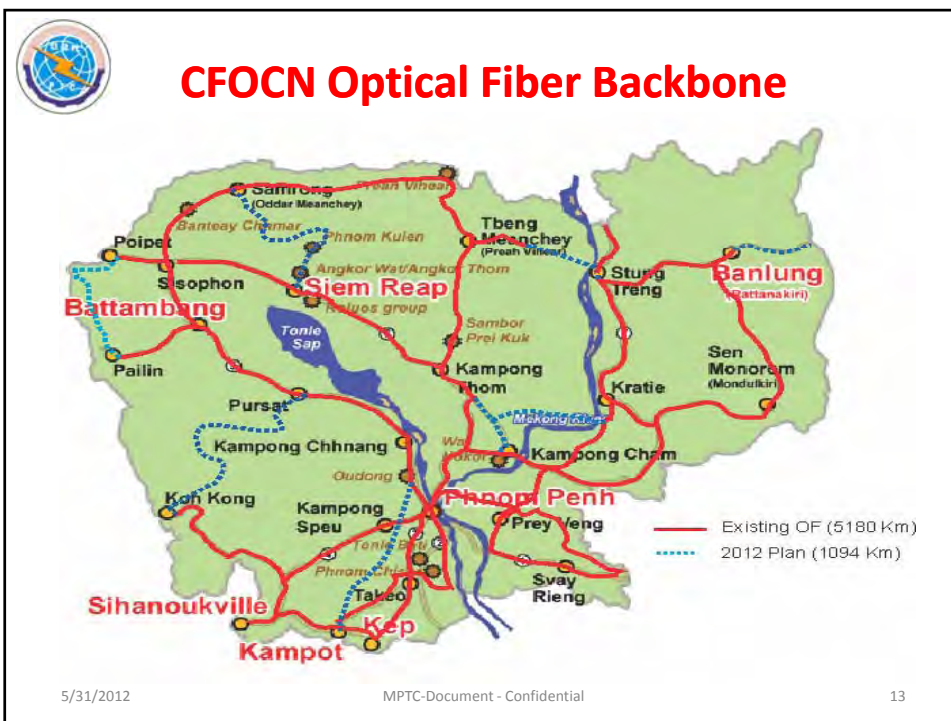
Regulation and Policy on Telecom and IT technologies

- **Law and Legislation**
  - Telecom Law and Related law on Telecom / IT
  - Competition and Quality of Service
  - Cyber Law
  - Radioncommunication Law
  - KHNIC will be implemented in near future to manage .KH domain and IP addresses
  - Property on Content

Regulation and Policy on Telecom and IT technologies (Con't)

- **Strengthen the Regulation and Policy**

  - Policy and technical standardization following ITU recommendation and other world organizations.

  - Encourage the fair competition in according to local and world market.

Regulation and Policy on Telecom and IT technologies (Con't)

- **Following the 2015 ASEAN ICT Master Plan responding to the large number of users**

The AIM2015 outlines six strategic thrusts to support four key outcomes. The six strategic thrusts are:

Innovation

Human Capital Development

Infrastructure Development

People Empowerment and Engagement

Economic Transformation

Bridging the Digital Divide

The AIM2015 outlines six strategic thrusts to support four key outcomes. The four key outcomes are:

ICT as an engine of growth for ASEAN countries

Recognition for ASEAN as a global ICT hub

Enhanced quality of life for peoples of ASEAN
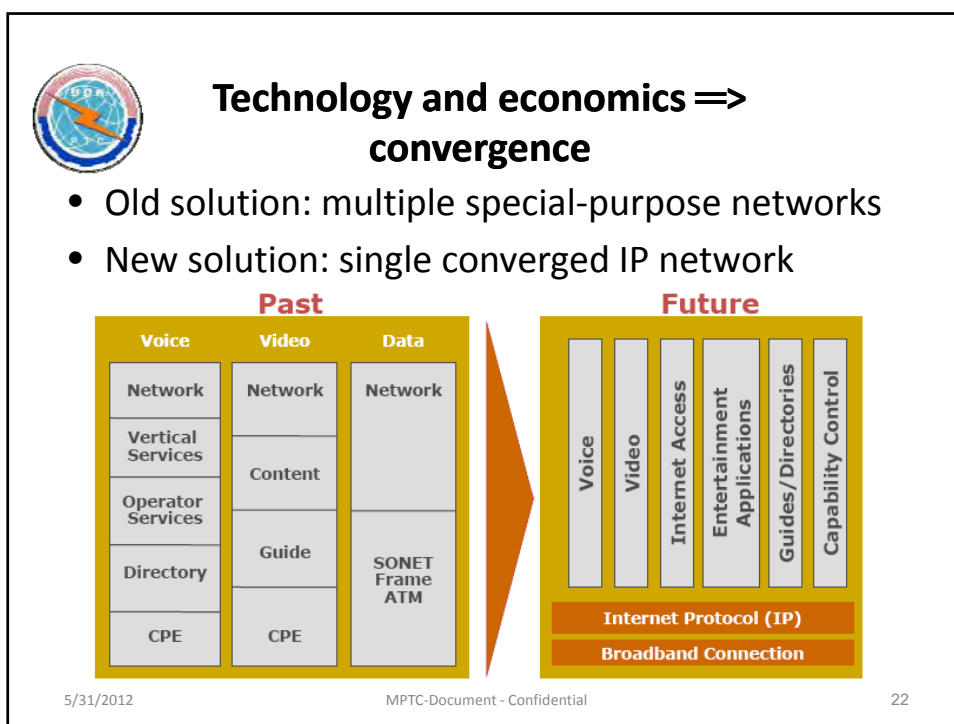
Contribution towards ASEAN integration
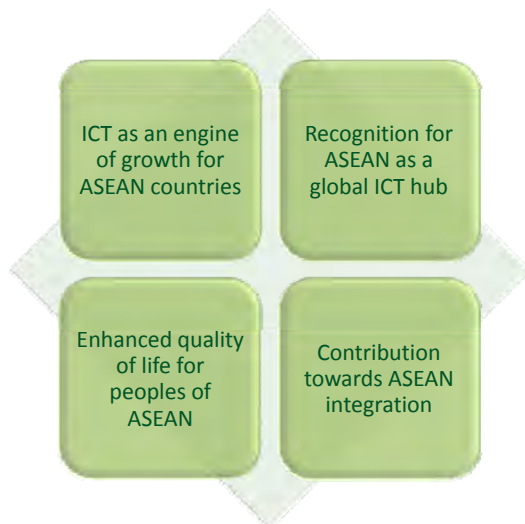
Key Action Items for Immediate Term 2010-2015

1. Sharing of Best PPP Models
2. Promote Secure Transactions within country
3. Reward ICT Innovators
4. Ensure Every Child has Broadband Access
5. Cambodia CIO Forum
6. Establish Cambodia Broadband Network
7. **Establish Internet Exchange (IX) and IIX Network**
8. Develop a Framework for Network Security
9. Develop ICT Skills Certification & Skill Upgrading
10. Develop USO sub-degree and USO Policy
11. Improving the quality of service (QoS) and products

Integrated Services over IP

Technology and economics => convergence

- Old solution: multiple special-purpose networks
- New solution: single converged IP network
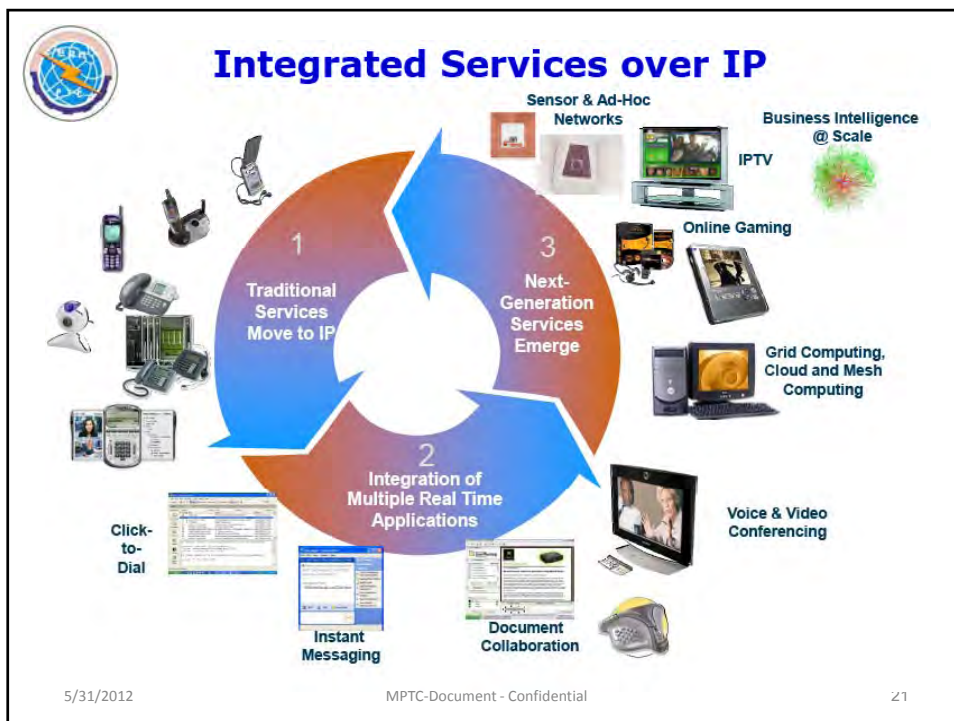
Challenging in Internet Governance

- Online Privacy/Consumer Protection/Child Safety
- Content, Access, Liability, Data Retention/Access
- Industry/Gov't Cooperation
- Intellectual Property Protection
- Changes in Global Legal/Regulatory Processes/Jurisdiction/Liability
- Economic Sustainability and Growth
- Digital Divide Issues
- Critical Infrastructure/ Cyber Security and Cyber Safety
- Net Neutrality/ Traffic Management
- Spam/Malware/Botnets and other new threats
- ICANN's Role
- Internet Governance Forum
- Internet Taxation
- New International oversight of the Internet? Content? Access?

Conclusion

- **Why …?**
- **Regulation reform**
  - More affordable, effective, fair competition, sharing information
- To lower cost of network (Most important)
- Gov't has own network called **e-Gov't** under **NiDA**
- All telco services will be developed into **IP Platform**
  - (**Applications, Infrastructures, Clouding Computing**)
- Solution for Education network (**MoEYS**)
- Network Security
- Readiness with collaboration (**VTC, CFOCN, TC**)
- All universities have to use one network by sharing capacity.
  - Internet Exchange (**IX**)

Thank You for your Attention..!

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CamREN and TEIN3 for Research & Education at ITC

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Agenda

- ITC at a glance
- CamREN
- TEIN3 connection
- ASEAN Cyber University (E-learning)
- Perspectives

ITC at a glance

8 Engineering programs
- Civil engineering
- Food engineering
- Electrical engineering
- Computer science
- Mechanical engineering
- Rural engineering
- Architecture
- Geo-Resources &
  Geo-Technical engineering

ITC at a glance

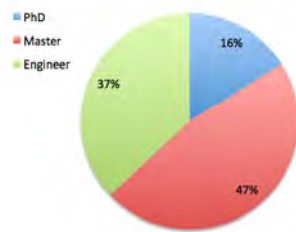**3400** Engineering students
- 500 graduated students / year

ITC at a glance

201 faculty members:
- 32 PhD
- 95 Master
- 74 Engineer

ITC at a glance

16 researchers

23 research projects undergoing:
- Arsenic removal from ground water
- Tank Model of Sub basin of the Tone Sap lake
- Bio-fuel extraction from non-food biomasses
- Khmer OCR, text-to-speech speech recognition
- Solar dryer for food processing
- Air monitoring in Phnom Penh and in Seam reap ...

ITC at a glance

24+ Scientific publications in 2011-2012

ITC at a glance

41+ International Partners/Networks:
- AUF
- CUD Belgium,
- JICA-AUN/SEED-Net,
- KOICA,
- SCAC-France Embassy,
- UNDP …
- MOU signing with
   41 Partners Universities

Research Activity Development at ITC

- Research is a strategic activity at ITC
  - Quality of our engineering programs
  - New Master programs
  - R&D partner for private sector
  - International collaboration/recognition

Local problem,

Local solutions

Research 9

Research Activity Development at ITC

- Research Master Plan 2013 - 2018
  - Research structure and policy
  - Doctoral school for research capacity building
  - R&D services for society
  - Research collaboration

Local problem,
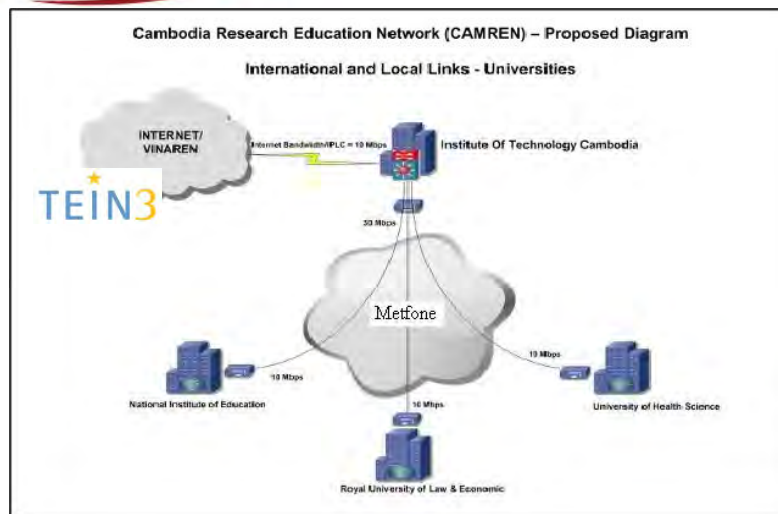
Local solutions

Research 10

CamREN

- Cambodia Research and Education Network:
  - Strengthen national and international research collaboration.
- Members:
  - Institute of Technology of Cambodia (ITC)
  - University of Health Sciences (UHS)
  - Royal University of Law and Economics (RULE)
  - National Institute of Education (NIE)

CamREN

Cambodia Research Education Network (CAMREN) – Proposed Diagram

International and Local Links - Universities

TEIN3

Trans-Eurasia Information Network

TEIN3 provides a dedicated high-capacity Internet network for research and education communities across Asia-Pacific (18 partners).

TEIN3

Trans-Eurasia Information Network

Applications:
- E-learning
- Tele-medicine
- Disaster warning and crisis support
- Crop research
- Socio-Economic Sciences
- Digital library
- International collaboration/Video conference

TEIN3

Trans-Eurasia Information Network

Applications:
- **E-learning** ✔
- Tele-medicine
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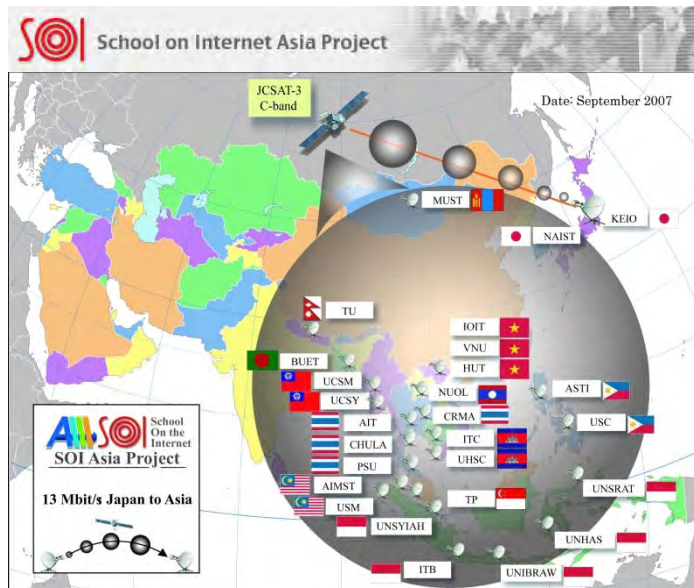- International collaboration/Video conference

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E-learning at ITC

- E-learning objective
  - Enhancing teaching/learning experiences through the usage of ICT
  - Promote exchanges with other universities
  - Promote access to higher education in Cambodia
- Projects
  - SOI School on Internet Asia
  - ASEAN-ROK Cyber University
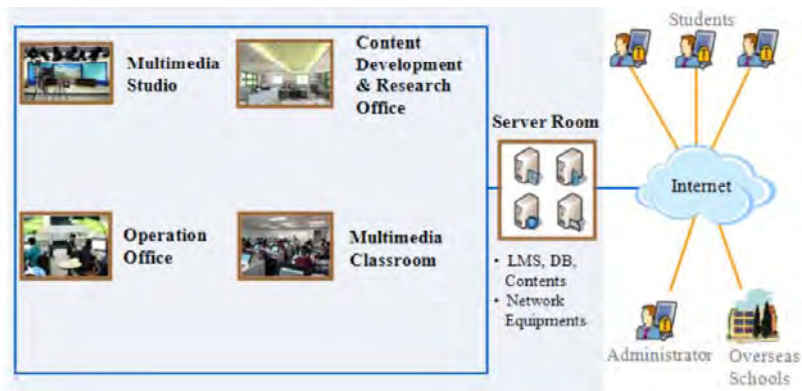
E-learning at ITC

E-learning at ITC

- ASEAN-ROK Cyber University
  - Strengthen and broaden educational exchange for the development of higher education within ASEAN countries and Korea
  - Encourage the collaborative research

E-Learning Center at ITC

Credit exchange program with CLMV countries via TIEN3 network

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TEIN3

Trans-Eurasia Information Network

Applications:
- **E-learning** ✔
- Tele-medicine
- Disaster warning and crisis support
- Crop research
- Socio-Economic Sciences
- Digital library
- Visio conference

TEIN3

Trans-Eurasia Information Network

Applications:
- **E-learning** ✔
- Tele-medicine
- Disaster warning and crisis support
- Crop research
- Socio-Economic Sciences
- **Digital library** ✔
- **Visio conference** ✔

Perspectives

- Develop CamREN
  - CamREN development Master Plan
  - Technical network infrastructure (NOC) and HR
  - Promote multidisciplinary research collaboration
- Ensure connection with TEIN3 via VinREN
- Strengthen cooperation With National Research & Education Networks in the region
- Perspectives for TEIN4

Thank you!

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Multimedia studio for e-Learning content development

TEIN3

Trans-Eurasia Information Network