Mr. Sithavong Khamphanh,
Deputy Director of ITC,
National University of Laos
# Table of Contents

- General Information about Laos
- ICT Development in Laos
- ICT Utilization in Laos
- US Investment & Cooperation in Laos
- National University of Laos as an Initiative of LERNET
COUNTRY PROFILE

- Country name: Lao PDR
- Capital city: Vientiane
- Population: 6,961,210 millions
- Total area: 236,800 km²
- Province: 17
- District: 139
- GDP: 8,298 billion USD
- GDP growth: 8.0%
- GDP per capital: 2,706 USD
- Religion: Buddhism
- Language: Lao

www.givechildrenachoice.org
ICT DEVELOPMENT IN LAOS

- Guidelines, Strategies and Legislation on ICT in Lao PDR.
- ICT Infrastructure.
- Status of ICT Usage in Laos.
10th Party’s Congress Resolution on ICT Development

“To develop infrastructure on postal, telephone, telecommunications, high speed internet and make them to become an important industry which driving to the development..”
GUIDELINES, STRATEGIES & LEGISLATION ON ICT IN LAOS.

ASEAN ICT Master Plan 2015
1. Economic transformation.
2. People engagement & empowerment.
3. Innovation.
4. Infrastructure development.
5. Human capital development.
6. Bridging the digital devices.
Vision 2030 & Strategic Development Plan to 2025

2. Postal Work Development.
3. ICT Infrastructure Development.
5. IT Industry Development.
7. ICT Innovation Development.
ICT INFRASTRUCTURE IN LAOS.

Internet

LANIC

Telephone

MPTLaos, 2018
TOP DOMAIN .LA

- Mostly used in overseas. (Los Angeles, Latin America, Singapore, China and Malaysia)
- Governments mostly use .gov.la (mofa.gov.la; mpt.gov.la, ....)
- Others use third level domains .edu.la; .org.la; .com.la, ....)
- Web hosting :14,486
- Domain registration in total: 47,174
- Upgrade IPV4 to IPV6: 54,784 being used

(MPT- 30-11-2017)
Cloud & Data Center

Cloud Computing Services

Currently only 4 clients:
- Ministry of Finance
- Ministry of Justice
- Bolikhamxay Province
- UXO

Co-Location Services

Include spaces, racks, servers, etc.

Currently only 10 clients:
- All clients from government

Lao Digital Transformation Forum, 11-12-2018
CLOUD & DATA CENTER

Hosting Services
Include databases, websites, emails, etc.

Currently 194 Websites:
• From government and private

Environment
• Stable electricity.
• Standard cooling system.
• Excellent Security system.
• Secured Fire Protection System.

(MPT- 30-11-2017)
ICT INFRASTRUCTURE & TELECOM COMPANIES IN LAOS

- Lao Government 51%
- Shinington (Thai) 49%

- Lao Government 51%
- Vietel (Vietnam) 49%

- Lao Government 45%
- 3 Chinese Companies 35, 15, and 15%

- Lao Government 49%
- Jiafu (China) 49%

- Lao Government 100%

(MPT- 2017)
NATIONAL TRANSMISSION BACKBONE

- 8,346 KM Buried Optical Fiber Cores
- 73 Backbone nodes
- 69 Metro nodes
- 113 Access nodes
- 2 connection lines to China
- 2 connection lines to Myanmar
- 5 connection lines to Thailand
- 2 connection lines to Vietnam
- 1 connection line to Cambodia

(MPT-2017)
MOBILE COVERAGE

Legend
- 2G
- 3G
- 4G

(MPT- 2017)
ICT USAGE IN LAOS

Fixed-telephone subscriptions per 100 inhabitants (19/100)

Mobile-cellular telephone subscriptions per 100 inhabitants (95/100)

Broadband Internet subscriptions per 100 inhabitants (40/100)

(MPT- 2017)
ICT USAGE IN LAOS (URBAN)

- Fixed Phone: 1.5%
- 3G: 85%
- Wired: 1.7%

(MPT- 2017)
ICT USAGE IN LAOS (RURAL)

- Fixed telephone: 0.9%
- Mobile-cellar telephone subscription: 90%
- Mobile Internet: 95%
- Mobile Internet: 71%

(MPT- 2017)
ICT USAGE IN LAOS (GOVERNMENT)

Central Level
- 100%

District Level
- 100%
- 72%

Prov. Central
- 100%
- 25% (MPT Survey, Nov. 2017)
### ICT Development Index

<table>
<thead>
<tr>
<th>Rank</th>
<th>Economy</th>
<th>IDI 2017 Rank</th>
<th>IDI 2017 Value</th>
<th>IDI 2016 Rank</th>
<th>IDI 2016 Value</th>
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<td>2.91</td>
<td>144</td>
<td>2.43</td>
<td>↑</td>
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Out of 176 (World)

(ITU, ICT Development Index 2017)
### ICT Development Index

#### IDI 2017 Regional Rank: Asia & Pacific

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<thead>
<tr>
<th>Rank</th>
<th>IDI 2017 Rank</th>
<th>Economy</th>
<th>IDI 2017 Value</th>
<th>IDI 2016 Rank</th>
<th>IDI 2016 Value</th>
<th>Rank Change</th>
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<td>10</td>
<td>Japan</td>
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<td>4</td>
<td>13</td>
<td>New Zealand</td>
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Out of 159 (Asia-Pacific)

(ITU, ICT Development Index 2017)
# US Cooperation & Investment

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1955</td>
<td>US established full diplomatic relations with Lao P.D.R. right after it full independence from France 1954.</td>
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<tr>
<td>1975</td>
<td>US - Lao relations deteriorated due to Laos was subjected to heavy US bombing as a part of the wider war in Indochina in 1964.</td>
</tr>
<tr>
<td>1992</td>
<td>Full US - Lao diplomatic relations were restored and that was initial focus of the post-war bilateral relationship where the UXO project was implemented. Since then the relationship has broadened to include cooperation on a range of issues including counter-narcotics, health, child nutrition, environmental sustainability, trade liberalization and English language training.</td>
</tr>
</tbody>
</table>
A Former Secretary of State Hillary Clinton visited Laos in July. That was the marking of the first visit by a Secretary of State since 1955.
During the US-ASEAN Summit and the East Asia Summit, a Former US President Barack Obama visit Laos and that was the first US president whoever visit Laos where he had meeting with our president Bounnhang Vorachit and other key officials to advance US-Lao cooperation on economics and people-people ties among many areas.

MOFA, Vientiane, Laos
During the US-ASEAN Summit and the East Asia Summit, a Former US President Barack Obama visit Laos and that was the first US president whoever visit Laos where he had meeting with our president Bounnhang Vorachit and other key officials to advance US-Lao cooperation on economics and people-people ties among many areas.

MOFA, Vientiane, Laos
## US COOPERATION & INVESTMENT

(SUMMARY)

Ministry of Planning & Investment, November 2018

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<th>Area</th>
<th>Qty</th>
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<th>Foreign Partner</th>
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<td>500,000</td>
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<td>51,477,083</td>
<td>51,477,083</td>
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</table>
Official launch of the consumer protection website developed with the support from the US government (USAIDS)

U.S. Mission Laos Press Released, Vientiane, Feb. 27, 2019
United States and Lao governments officially launched an intellectual property web portal at the Ministry of Science and Technology in Vientiane. The project was funded by the U.S. government through USAID.
Representatives from the U.S. charitable organization Spirit of America and the U.S. Embassy officially handed over more than $10,000 in equipment and support to the Laos Buffalo Dairy in Luang Prabang.
For Scholars & Professionals:
- Young Southeast Asian Leaders Initiative (YSEALI)
- Fulbright Teaching Excellence and Achievement Program (TEA)
- Fulbright U.S.-ASEAN Visiting Scholar Awards
- Humphrey Fellowship Program
- Fulbright Student Fellowship

For University Students:
- Global Undergraduate Program (Global UGRAD Program)

For High School Students:
- South East Asia Youth Leadership Program (SEAYLP)

For Artists:
- YES Academy
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

General Information:

- Established 1996 by combining 10 institutions together.
- Campuses: 5
- Faculties: 13
- Institutions: 2
- Library: 1
- Hospital/clinic: 1
- School for gifted & Ethnic Students: 1
- Centers: 3
- Total Students: ~22,000
- Total Staff: ~2,000
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Academic Programs:
- Continuing Education: 31
- High Diploma: 4
- Bachelor: 105
- Master: 60 (Engineering 11; Social Sciences 6; Forestry 6; Agriculture 4; Economic & Management 6; Education 3; Postgraduates 3; Natural Sciences 6; Letters 5; Architecture 3; Law & administration 4; Water Resource 1; and Environmental Sciences 2)
- PhD: 3 (Integrated Forest Resources Development, Philosophy in Economics, Management Science)
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Vision:
To be a center of excellence in higher education, research and cultural preservation and contribute to capacity building, to the strengthening of human resources through fostering intellectual vitality, promoting knowledge and skills, positive attitudes, loyalty, dignity, good physical and mental health.
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Mission:

- To create and provide training and thus contribute to the development of the country’s human resources. Students are to acquire knowledge and to receive training so as to become academicians, administrators or researchers equipped with high knowledge, skills, expertise, and an overall ability to innovate as well as a solid moral background;
- To conduct and promote, alongside regular curriculum, research so as to buttress the country’s economic and social development;
- To disseminate research findings and provide academic and technical services to society in an efficient way; and
- To preserve and expand the arts, culture and traditions of our multiethnic nation, while acknowledging and respecting world culture.

University master plan 2016
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Information Technology Center (ITC):
- Established in 2002 under the supervision of the university president’s cabinet,
- One director and two deputy directors with 3 divisions,
- 15 staff (3 network engineers; 5 software development engineers; 4 administrative staff)

Duty:
- Assist university in planning and developing the ICT of the university.
- Develop human resources in IT, ICT through various technical trainings.
- Manage University Network, Internet connection of the university.
- Provide services and consultancy on IT and ICT related fields.
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Initial LERNET

- Started in 2003 right after the 3rd ASEAN-EU Summit in Hanoi, Vietnam 2003 where top leaders of ASEAN and EU supplemented ongoing ventures such as the Asia-Europe Foundation (ASEF), which encourages links between governments and civil society in Asia as well as policy and academic cooperation and debates on themes of common concern, or the Trans-Eurasia Information Network (TEIN), which connects about 60 million researchers in Asia and Europe via ‘the first large-scale research and education internet-based network’. Our former president Choumaly Sayasone was also there in witnesses.
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Initial LERNET

- 2004 under the funding of Swedish International Development Agency (Sida/SAREC) we formed a taskforce team to do the feasibility study and plan for submitting the proposal to the government for establishing the academic network.
  - Helped university to write a master plan and action plan on ICT 2005-2010.
  - Identified the strengths, weaknesses.
  - Wrote proposal to university for official implantation approval.
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

**Initial LERNET**

- 2004, several teams were formed according to the SWOT and took them to KTH to start planning, designing, testing.

- Network campus design,
- Network security and authentication,
- VLSpace,
- VoIP, etc.)
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Initial LERNET

- VoIP server - SIP proxy server
- Voice gateway
  - Intertex
  - Asterisk
- Billing
  - Business Support System
- User agents

- 2005 took the project back to Laos and started the implementation.
How LERNET was formed?

- Several attempts were made to push forward in establishment of LERNET:
  - Country level.
  - Ministry level.
  - University level.
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

County level.

- Proposed the government to have independent organizational body to run LERNET. (did not workout)
- Organized several meetings with ministry concerned like MPT, MOES, MOST, etc. discussed and proposed two options (ministry or university?). The majority of opinions wanted MOES to host LERNET.
Ministry level.

- Proposed to the MOES to have one section or division to manage LERNET.
- Organized several internal meetings with department concerned like DHE, DVE, ITC... The majority concerned about the readiness in terms of the human resources (technical personnel or experts as well as the facilities and infrastructure. At last the decision came down to university.
University of Laos as an initiative of LERNET.

University level.

- The university had no choice and took the initiative and proposed the MOES and the government to recruit more people in terms of technical staff in order to manage LERNET, but difficult since the government cut down the number of staff quota.
- The decision came down to the IT Center who will take role of managing the LERNET with our existing resources we have.
University level.

- The initial decision to join the TEIN community was the assistant of KTH (The Royal Institute of Technology, Stockholm, Sweden, and TEIN member countries, especially our neighbor, Thailand.
- Joining TEIN community is synchronized with the 5-year Plans of Lao P.D.R. National Social-economic Development Strategy 2010-2015 and 2016-2020 which aims to archive the MDGs and SDGs and it efforts to graduate from the group of Least Developed Countries (LDCs).
Laos actually joined TEIN 2 & 3 without physical connection. We only benefit from TEIN was the human capacity because there were many concerns in terms of readiness: infrastructure, manpower, human resources, budget, etc..

The physical connection of LERNET to TEIN was established in late of TEIN3 to TEIN4 (2012) with the help of the TEIN community, Korea, and Thailand (ThaiREN).

For technical work we constantly and closely work with partners from ThaiREN and direct supports from NSRC.
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Initial LERNET

The EU co-funded As@Connect project provides a dedicated regional high capacity and high quality internet network, Trans Eurasia Information Network (TEIN), for Research and Education (R&E) communities across Asia-Pacific and Europe, and leverages e-infrastructures developed for public service projects.
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Status of LERNET

- Not many direct activities implemented on LERNET except remote videoconferencing/remote meetings.
- Instead of direct pushing the government and universities to invest and support LERNET, IT Center tried to organize and encourage other activities instead:
  - To help out other universities to connect to us and work together in organizing and implementing activities: trainings, workshops, seminars and so on.
  - To cooperate and work with other international NRENs by joining various projects which aim to implement them on LERNET at the end.
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Status of LERNET
- Co-host the PerfSONAR workshop in Laos with Indiana University
  March 6-8, 2019.

perfSONAR Training Workshop

March 6-8, 2019

Vientiane, National University of Laos
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

- Participated in LandSAGE project with Hawaii University (Phase I) and will continue with AIST of Japan in Phase II.
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Status of LERNET

- Participated in Educational Roaming (Eduroam) project with AARNET, Australia.
  - Finished equipment purchase (2 National Roaming Servers and 3 Institutional Roaming Servers for 3 public universities and roaming access points
  - Next steps are install, configure and train. At the same time develop websites for each university.
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Status of LERNET
- Will participate in a Real-Time Haze Monitoring and Forest Fire Detection Information Centric Networks Project with the Internet Education and Research Laboratory (intERLab), Thailand. (Will start soon)
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Status of LERNET

- Participate in ASEAN Cyber University Project on e-Learning content development under the funding and support by Korean government.
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Status of LERNET

- Will participate in an Uplifting Resources to Deploy IPv6, DNS/DNSSEC, identity access management and monitoring of the network performance and its security with Lanka Education and Research Network (LEARN), Sri Lanka, APNIC, Australia
UNIVERSITY OF LAOS AS AN INITIATIVE OF LERNET.

Other activities to promote LERNET

- Organized and will extend meetings with concerned ministries, universities and institutions.
- Expanded, improved and continue to extend and improve NREN network by connecting them to NUOL.
- Provided and supported and will continue to do in terms of technical training for network engineers in each institutions and universities.
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Supports & cooperation:

- LERNET will not be possible and exist as we are now today without substantial supports of TEIN communities, international and global partnerships coordinated by DANTE – a non-profit organization that operates regional networking projects in Europe and Asia-Pacific project partners.
- Thanks to TEIN beneficiary members especially from Mekong sub-region like Cambodia, Myanmar, Thailand and Vietnam.
- Special thanks to NSRC, APNIC, APRICOS, APAN, AARNET, Internet2 and many more for their substantial supports to Laos.
Q&A

THANKS YOU!

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