ICT Infrastructure in Lao PDR
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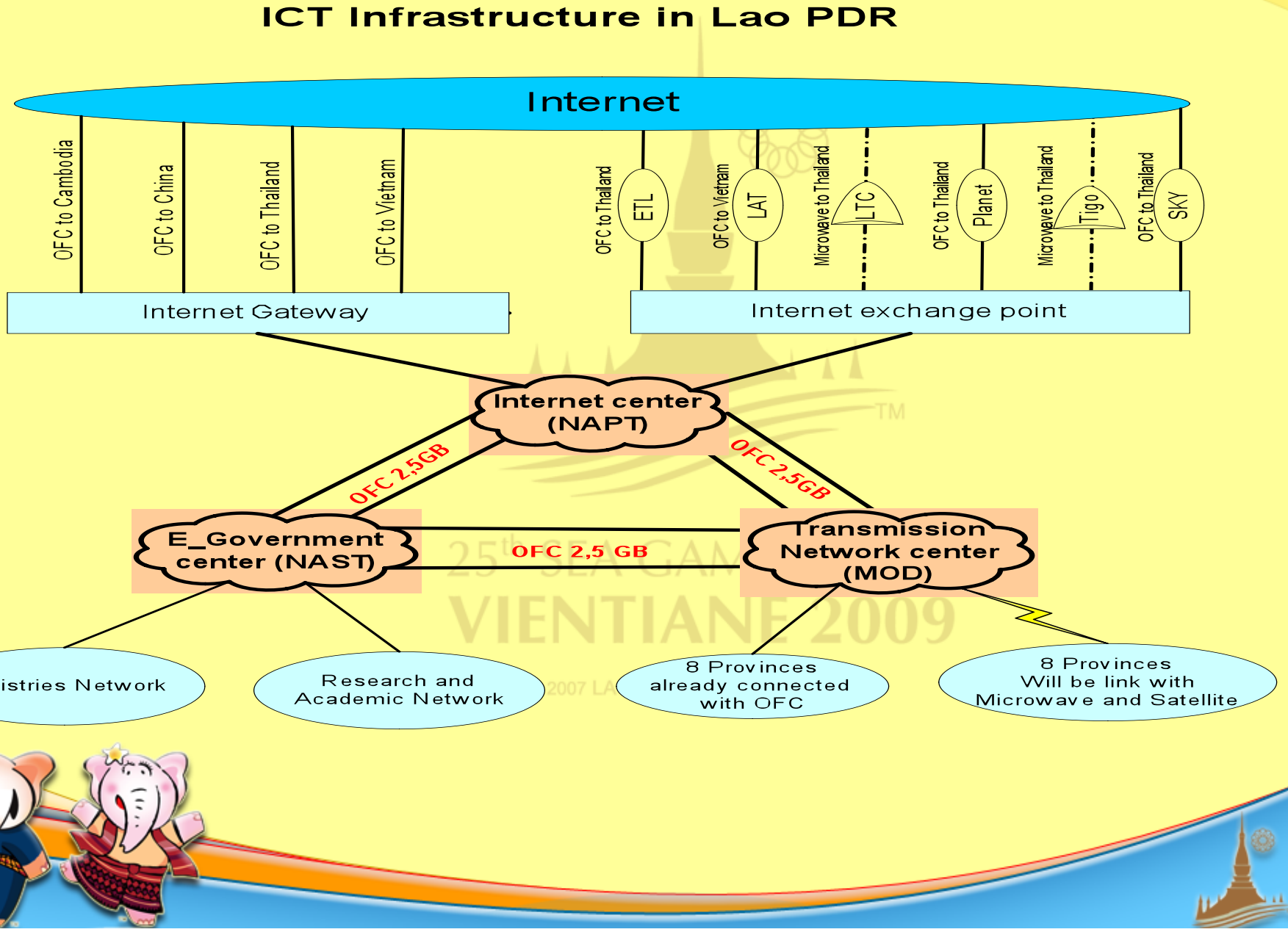
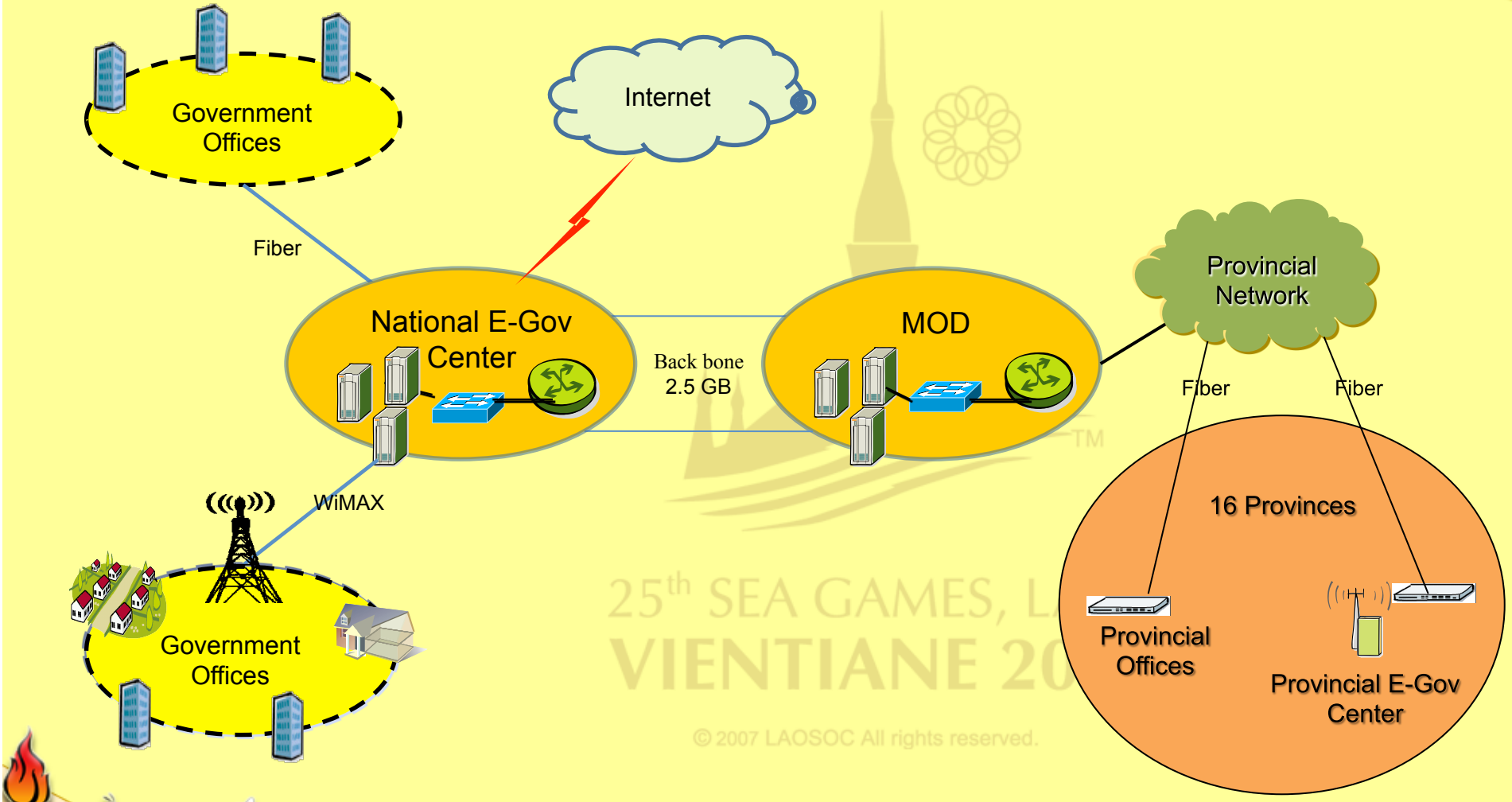
PRESENTATION OUTLINE

- National ICT Infrastructure
- E-Government Infrastructure
- National Transmission infrastructure
- National Internet Center
- National Research and Academy Network
- Telecom and ISP operators
- TEIN 3 in Laos
- Conclusion

National ICT Infrastructure



E-Government Infrastructure

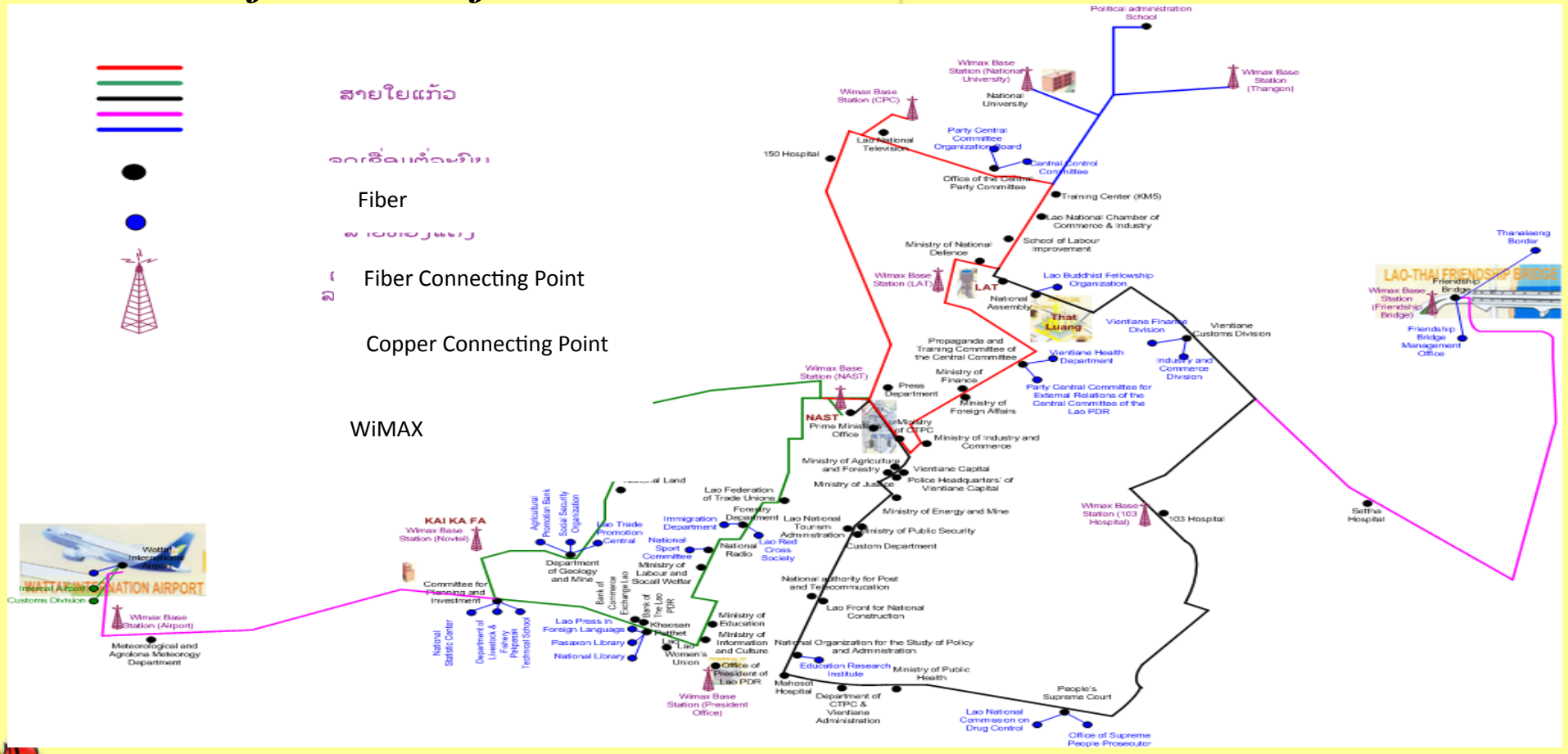


E-Government Infrastructure

- Multi-service Transport Backbone. The high speed link 2.5 Gbps interconnected with 50 ministry offices in Vientiane via OFC with the capacity 155 Mbps per site and 100 Departments via ADSL with the capacity 2 Mbps per site within a 20 km - 25 Km radius or 200 KM OFC.
- Metropolitan Area Network (MAN) by Wimax Broadband Access. The fifty (50) government offices, nine (9) districts offices and hundred (100) village offices in Vientiane that located not close to the Multiservice Transport Backbone is connecting to national e-Government Service Center through the Wimax backbone.
- ICT infrastructure for rural communities
  - OFC connection for governor offices and e-government provincial center in 8 Province
  - Satellite and Microwave connection for governor office and e-government provincial center in another 8 provinces
  - One Wimax base station connecting to 10 department in each provinces

E-Government infrastructure

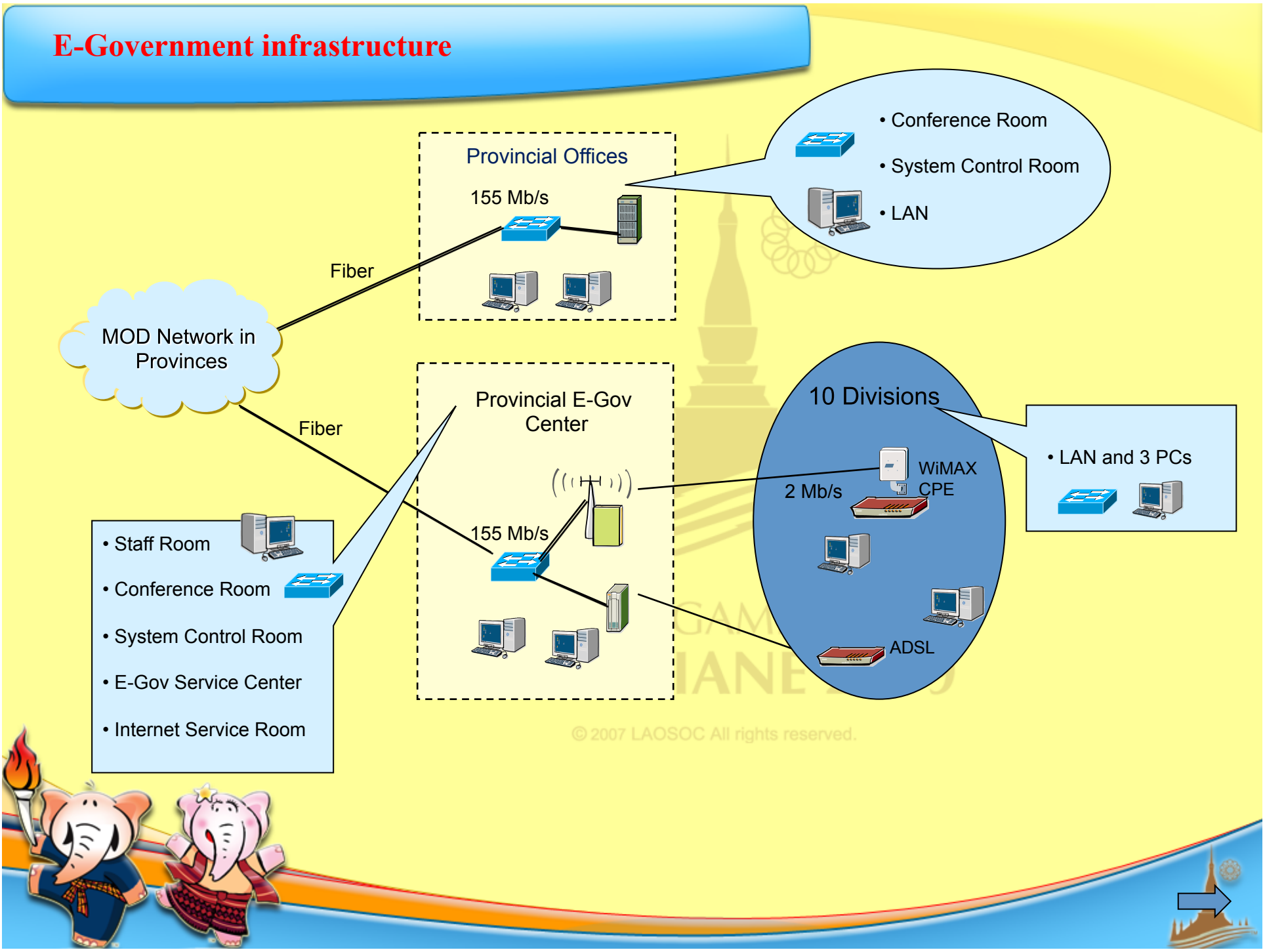
100 KM of 48 cores fiber in 5 routes were installed Vientiane



E-Government infrastructure

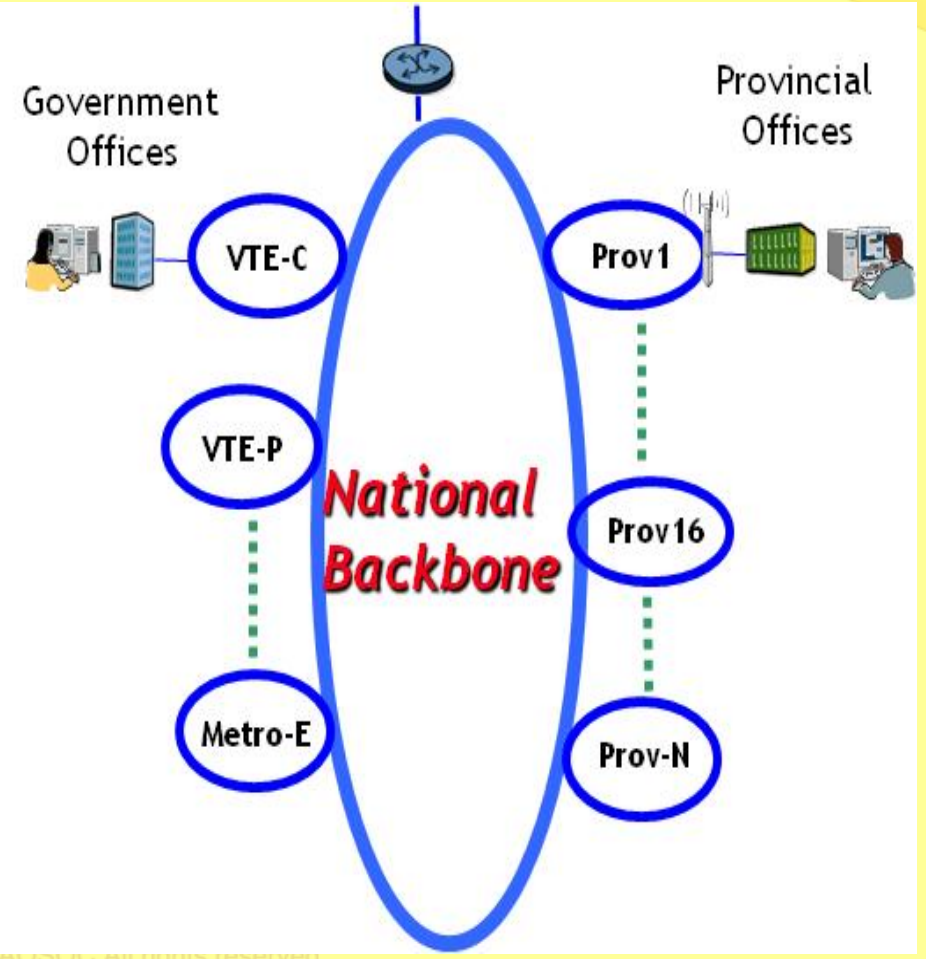
10 WiMAX Base-Stations with capacity 60Mbps per base connecting to 250 office with the capacity 2 Mbps in Vientiane

E-Government infrastructure



National Transmission Backbone

- OFC 2160 KM (1800KM Direct buried + 300 KM Aerial + 60KM Duct buried)
- Transmission Backbone Network (1678MCC +1662SMC)+ Metros,
- Control Center
- Access network to PMO & GTPA
- Video Protection
- Lawful Interception
- IP-PBX for government office in VTE



National Transmission Backbone

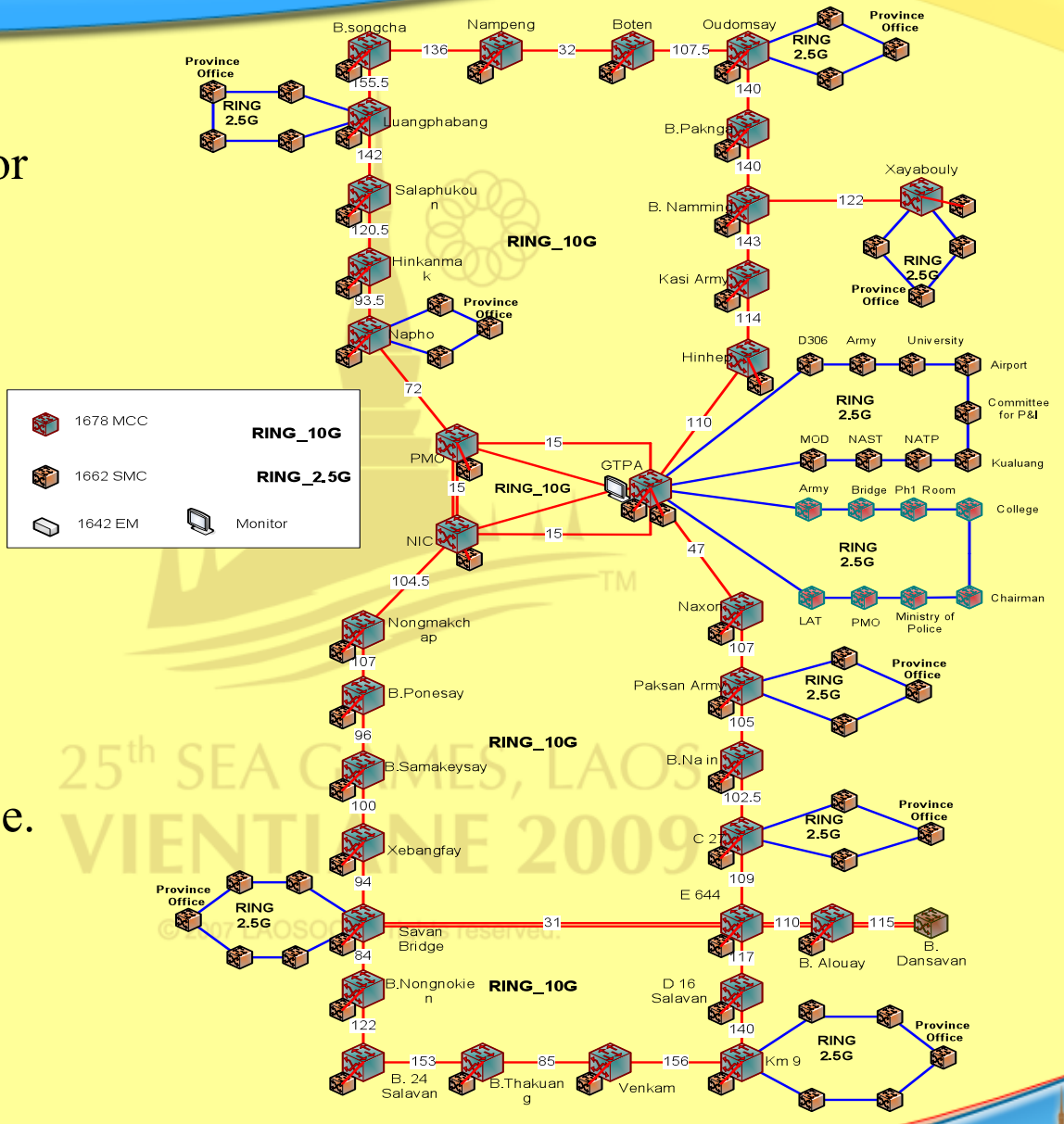
National Backbone:
- STM-64 Backbone (SDH) or
- 10Gbps IP (Ethernet)

Provincial Capitals
- STM-4 Rings (SDH) or
- 2.5 Gbps IP (Ethernet)

In big provincial capitals

National Security
- STM-4 Rings (SDH) or
- 2.5 Gbps IP (Ethernet)

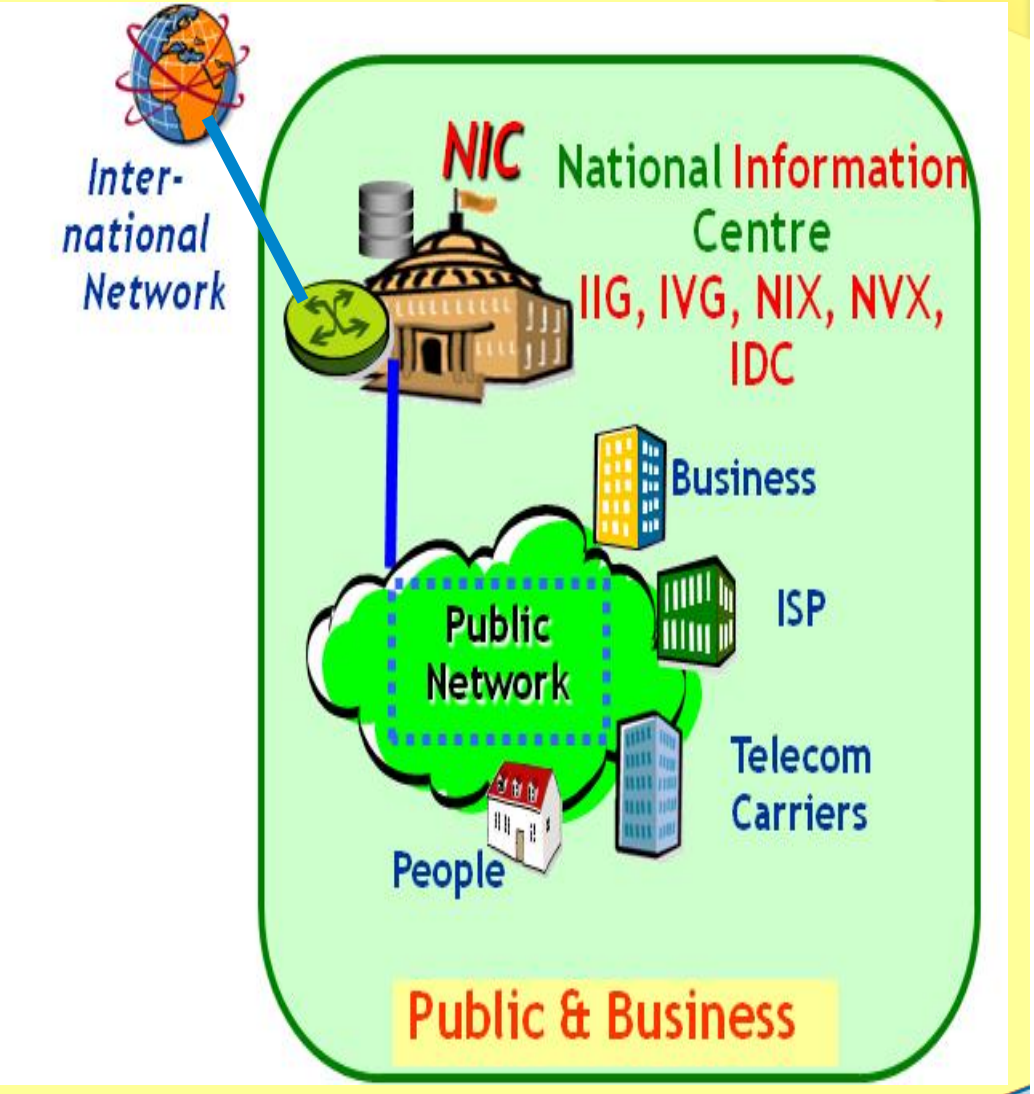
To connect MoD, Army, Police.



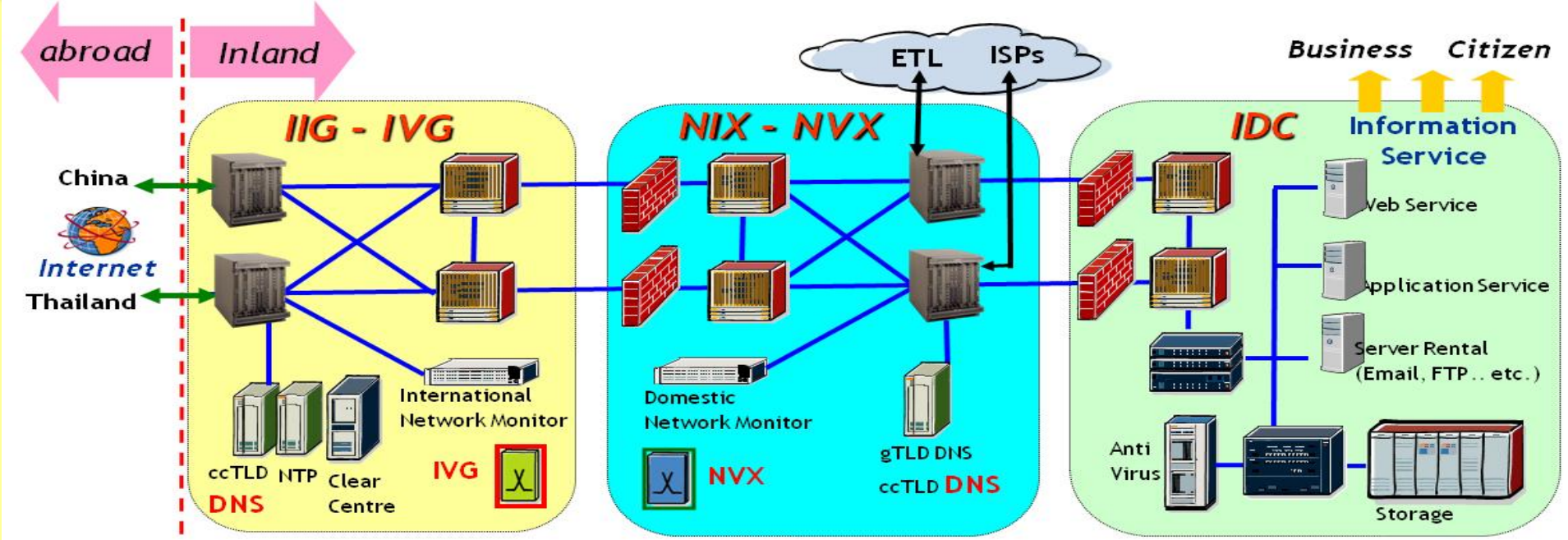
National Transmission Backbone 2010-2012

National Internet Center

- National Voice Exchange
- International Voice Gateway
- National Internet Switching
- International Internet Gateway
- ccTLD.LA
- Security Emergency Response
- National Data Center
- Call Center

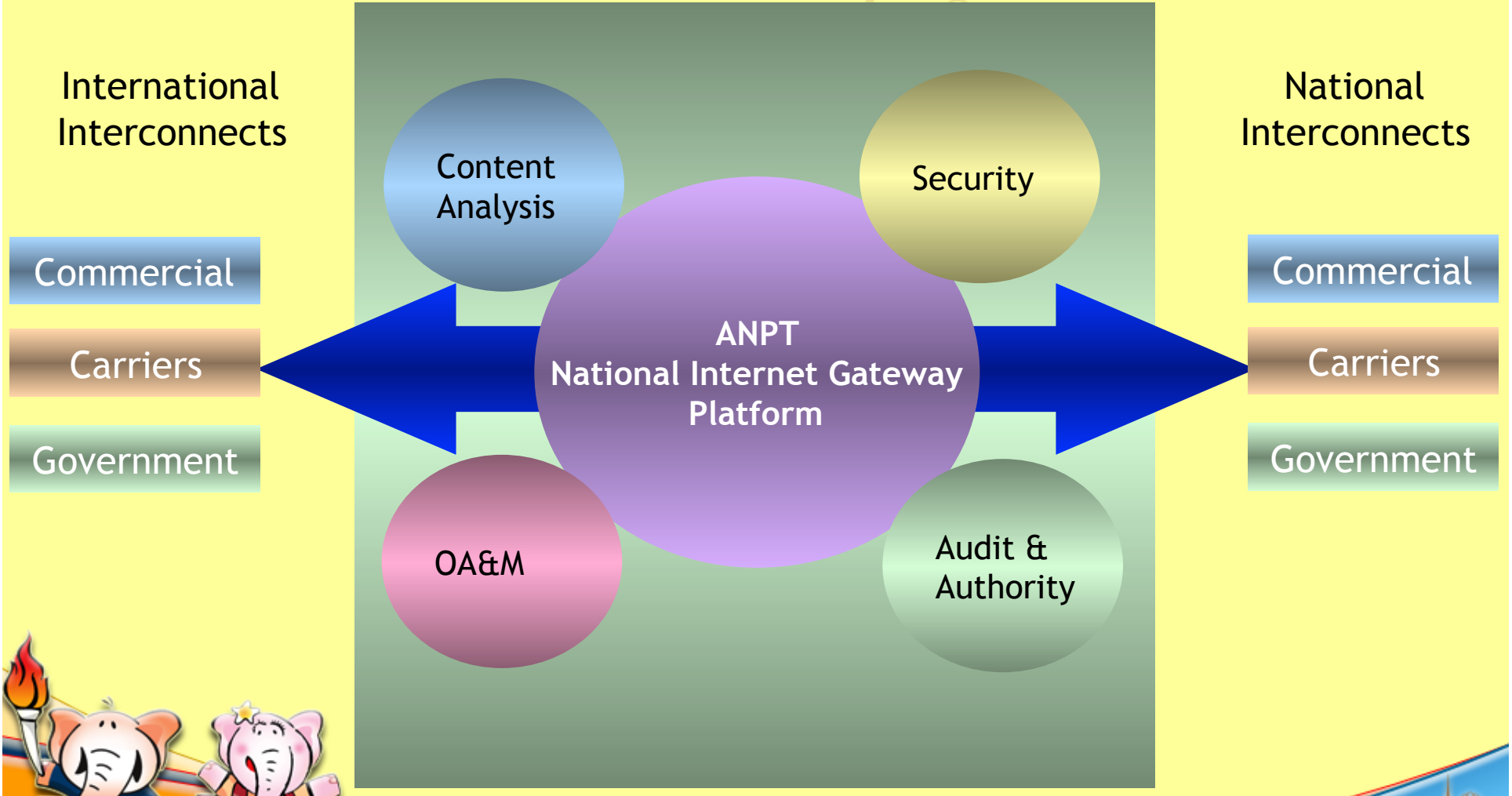


National Internet Center

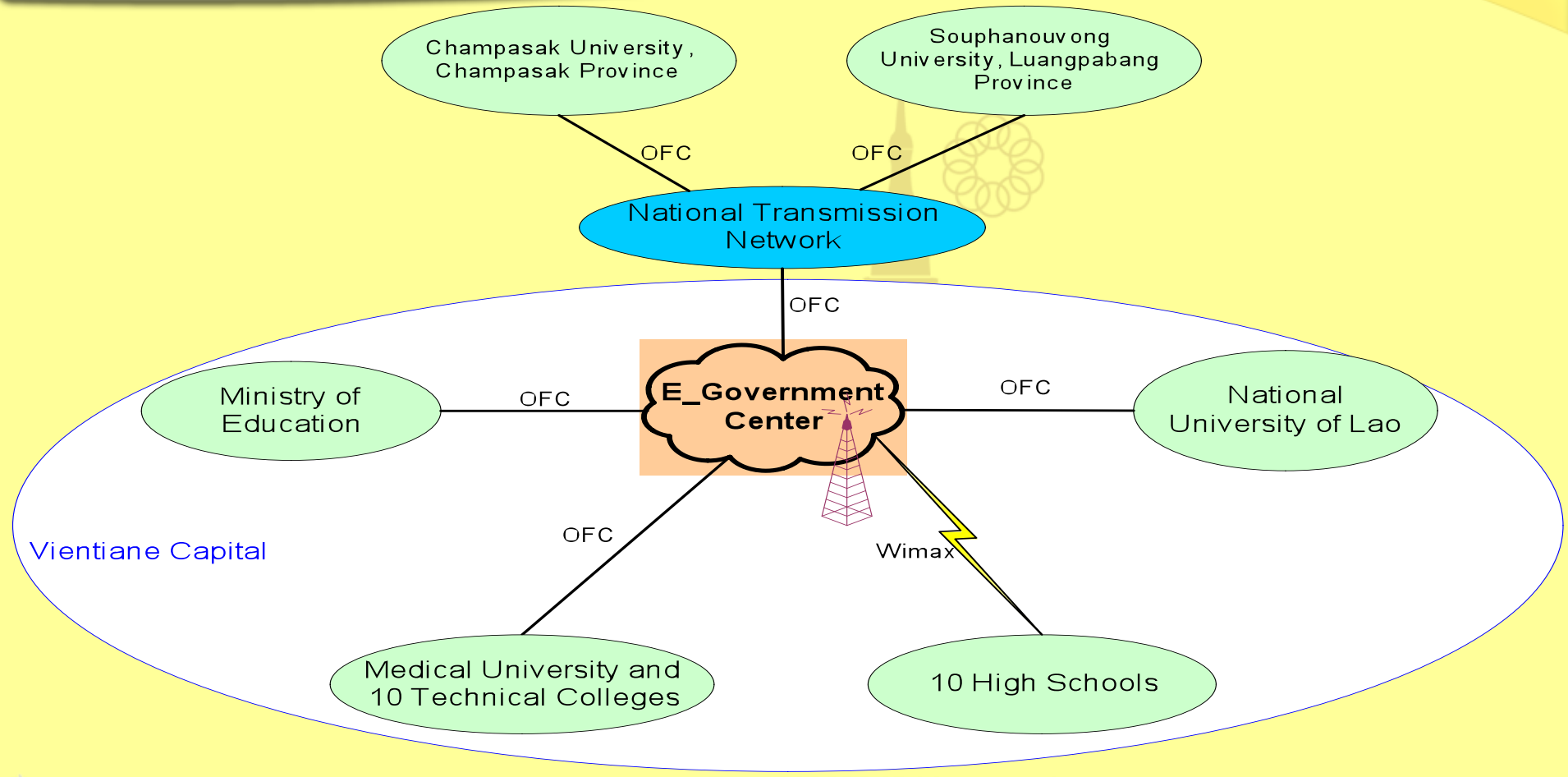


National Internet Center

Work Model of the National Internet Centre



Research and Academy Network



Telecom and ISP operators

There are five telecom operators and 12 ISPs. The number of telecom operators and ISPs has not changed since 2005 because new licenses will not be issued until 2009.

Among the telecom operators, Enterprise Telecom of Laos (ETL) has installed the most extensive infrastructure:

- 3,969 Km OFC
- 400 base stations covering all 139 districts,
- 550 home location registers
- 40 general portal radio service base stations
- 450 intelligent networks to support the prepaid system
- 29,000 Public Switched Telephone Network (PSTN).
- ETL also has OFC connections to China, Thailand, and Vietnam.

Telecom and ISP operators

The Lao Asia Telecom Enterprise (LAT)

- 500 KM OFC from Vientiane to the 4 provinces in the north.
- 8 provinces in the south are sharing the ETL OFC
- The remaining 3 provinces are using VSAT.
- 173 GSM base stations covering 88 district offices.
- There are 10,000 PSTN lines in 17 sites serving seven provinces.
- The LAT also has OFC connection to Vietnam.

The Lao Telecom Company (LTC)

- 1,000 KM OFC connecting 3 provinces in the north and 5 provinces in the south.
- 500 GSM base stations covering all 139 districts
- 120,000 PSTN line capacities with 49 sites covering all 16 provinces.
- LTC has only microwave and satellite connecting to Thailand.
- LTC operates the IPSTAR service

Telecom and ISP operators

The Lao Millicom Company (TIGO) is leasing fibre optic lines from ETL and LTC to connect to their mobile base station in the province, and it uses microwave for the interconnection of its mobile base station in Vientiane. Recently, TIGO introduced the Enhanced Data Rates for GSM Evolution (EDGE) system, which allows its mobile phone customers to connect to the Internet. The company is also installing Worldwide Interoperability for Microwave Access (WiMAX) base stations in Vientiane.

Lao Sky Telecom has invested around USD 5 million to establish a Code Division Multiple Access (CDMA) network in Vientiane, which it hopes to launch at the end of 2008. The company also has a fibre optic connection to Thailand.

Telecom and ISP operators

Among 12 ISPs, it seems that only Planet Online Company has its own network infrastructure. It has set up a WiMAX hotspot in Vientiane and some provincial cities, and it is using the ETL and SKY gateway to connect to the Internet backbone. Planet is also planning to invest around USD 5 million to establish WiMAX base stations in Vientiane and three big provinces.

While others ISP are using the infrastructure of Telecom operators

TIEN 3 in Laos

The first initiative were taken in 2003 by National University of Laos, IT research institute (Science technology and environment agency) with the technical support from KTH university from Sweden. At that time SIDA has provided assistance in establish the Internet Exchange Point at ITRI and the Research and Academy Network Center at NUOL. However proposal for connection to TIEN2 was rejected due the project was ended and the related authority in Laos also did not make the request to the ASEM.

After EU has approved for TIEN 3, the NUOL together with Asian Institute of Technology in Thailand and the University in Korea were make another initiative to extended the TIEN3 to Laos. But still not success (Nobody in Laos know about the progress of this request)

TIEN 3 in Laos

The barriers:

- Laos is landlocked country and don't have the direct access to OFC backbone. Therefore the connection must go through it's neighbor country, which service charge maybe added.
- The TIEN3 Network of neighbor country did not expanded to the border of the countries, therefore it must be connect through the service operator of those country which will be another service charge.
- NUOL of Laos wish to have the direct cable cross the border, but the government did not allowed. The connection must go through the telecom operator in Laos which will be another service charge.
- ITRI having the microwave and satellite connection to Thailand proposed to be the gateway, but it was rejected by NUOL and AIT. NUOL wish to have the similar equipment, but do not have the budget support from Govt.
- The role of ownership (NUOL, NAST-SMIT, NAPT-ASEM)
- The coordination and communication.

Conclusion

• There are many physical infrastructure (Passive), but did not make use the infrastructure effectively. (ex: one province may have 5 OFC cable passed through, but beside the Telecom operator use for the interconnection of their GMS or PSTN, the utilization for other purpose is less then 20 Mbps

• There are lacking of the applications and the security to be run on the passive infrastructure. (Ex: the Bank is not confident to use the telecom operator infrastructure for expanding their ATM network)

•The Internet Fees and Telecommunication fees still considering as very expensive compared to the ASEAN countries.

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