# redEsperansa.tl & Kalohan Akadémiku

## Building Capacity & Open Access for TL

*TLNOG2*
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# WHO WE ARE



"**NNN**" Education & Academic Intitutions & Civil Society:
Not for Profit/Non commercial interest – Non partisan – Non Governmental

# Initial Context

- ICT challenges in Timor-Leste:
  - Expensive
  - Limited access
  - Lack of specific educational infrastructure

# **General objectives**

- Local academic cloud infrastructure (Kalohan Akademiku).

- Normalize Internet as a tool for education, including remote/rural areas - Linguistic inclusion in Tetum.

- Affordable, community-driven Internet.

# Motivation and methodology

- Non-commercial, open, common-good model.

- **Happy to share**: Built infrastructure available to local Communities & Commercial ISP in TL

# Main challenges encountered

- Unstable electricity supply

- No Gateway to wholesale Internet

# **Project adaptations**

- Extensions to realistically achieve objectives
  - IoT and renewable energy / Solar PV
  - Gateways
    - 4G
    - Convebtional Sat
    - **LEO**

**Looking forward for enabling fiber optic IX!**

# **Territorial presence**

- 8 districts

- > 14 Points of Presence (PoP)

# Deployed Infrastructure

- Gateways
  - 4g / Sat /LEO

- Internet access
  - Wifi
  - Fiber Optics GPON

- DC Infraestructure for server virtualization
  - Kalohan Akadémiku / Proxmox

# Kalohan Akadmiku academic services

- To support both the infrastructure deployment and monitoring and academic institutions needs.

- Examples:
  - Moodle platform for eLearning
  - Nextcloud HUB, Keycloak, Zabbix, Grafana, NetBox and other local services.

# IoT and energy innovation

- Weather sensors and energy management with Raspberry Pi.

- Development of solar microgrids with batteries for reliable electricity..

# Training and capacity building

- Courses on networking, fiber optics and Linux administration.

- Knowledge transfer to locals & institutions

# Educational and social impact

- 6,000 direct beneficiaries (schools and academic centers)

- Daily use of technology in the classroom, active e-learning in Gleno

# Lessons learned

- Persistence and flexibility: key to success.
- The need to balance innovation and local context.

# Snapshots & Live Demo

Examples of applications

– Panorama Live Demo (remote network monitoring)

– Persistence, determination and flexibility: key to success.

# Future

- National scalability of fiber and renewable energy.

- Consolidate community governance and economic sustainability.

- Neutral IXP / Internet wholesale.

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# Last but not least

- Call for responsibility: **Avoid Overbuilding**
  - Preserve the beautiful Timor-Leste landscape
  - Save the planet
  - More efficiency & lower costs