



WIDE / ARENA-PAC Update

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WIDE Project / ARENA-PAC

ADVNET 2023 – October 5, 2023



**AI³ (Asian Internet
Interconnection Initiatives)**

Developing resilient satellite connectivity in the Asia Pacific to support R&E infrastructure and for emergency situations and promoting inclusion.

Since 1996



SOA (School on Internet)

(26 partners in 11 countries)
Using R&E infrastructure to provide quality education via collaboration among universities in Asia.

Since 2001



AI3 & SOI Asia partners and



Philippines:	1 Institution/2 Universities
Indonesia:	5 Universities
Timor Leste:	1 University
Malaysia:	2 Universities
Cambodia:	1 University
Thailand:	2 Universities
Myanmar:	2 Universities
Nepal:	1 University
Vietnam:	2 Universities
Bangladesh:	1 University
UNESCO Jakarta	
APNIC	

Network Partners

GOREX: Guam Open Research & Education eXchange
PREGINET: Philippines Research, Education and Government Information Network
IDREN: Indonesia Research & Education Network
APOnet: Asia Pacific Oceania Network
CINJI: Coalition of Interoperable Networks for Japan and International
WIDE Project



- ARENA-PAC is a project of APIDT Infrastructure Pty Ltd, and operated by WIDE Project started in 2020.
- Establish submarine cables in Asia-Pacific for collaboration with global research network community
- **Operated by WIDE Project (WIDE/AI³/SOI-ASIA) with APNIC**
- Starting with Tokyo-Guam 100G and other cables
- Full collaboration with existing RENS in the region such as NSF, Internet2, TEIN, APAN and so on.
- Finance by APIDT-I (Asia Pacific Internet Development Trust Infrastructure Pty)

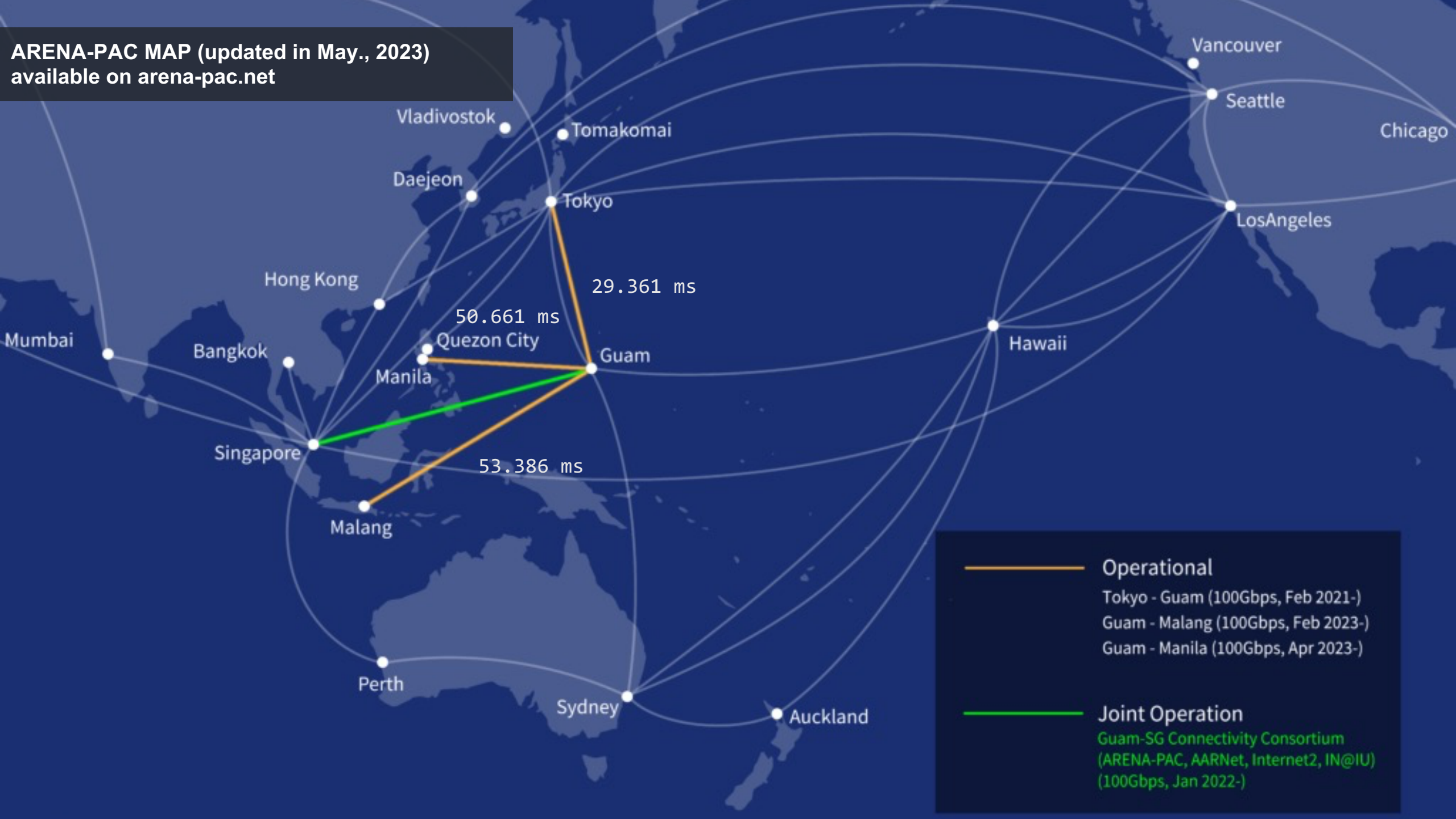
ARENA-PAC Mission

1. To develop intra- and inter-regional backbone infrastructure with research and education network partners.
2. To promote the operation and development of a **new Pacific topology**.
3. Mission to Asia Pacific to connect the **Asia Pacific region** to the rest of the world globally.

ARENA-PAC MAP (updated in May., 2023)
available on arena-pac.net



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available on arena-pac.net



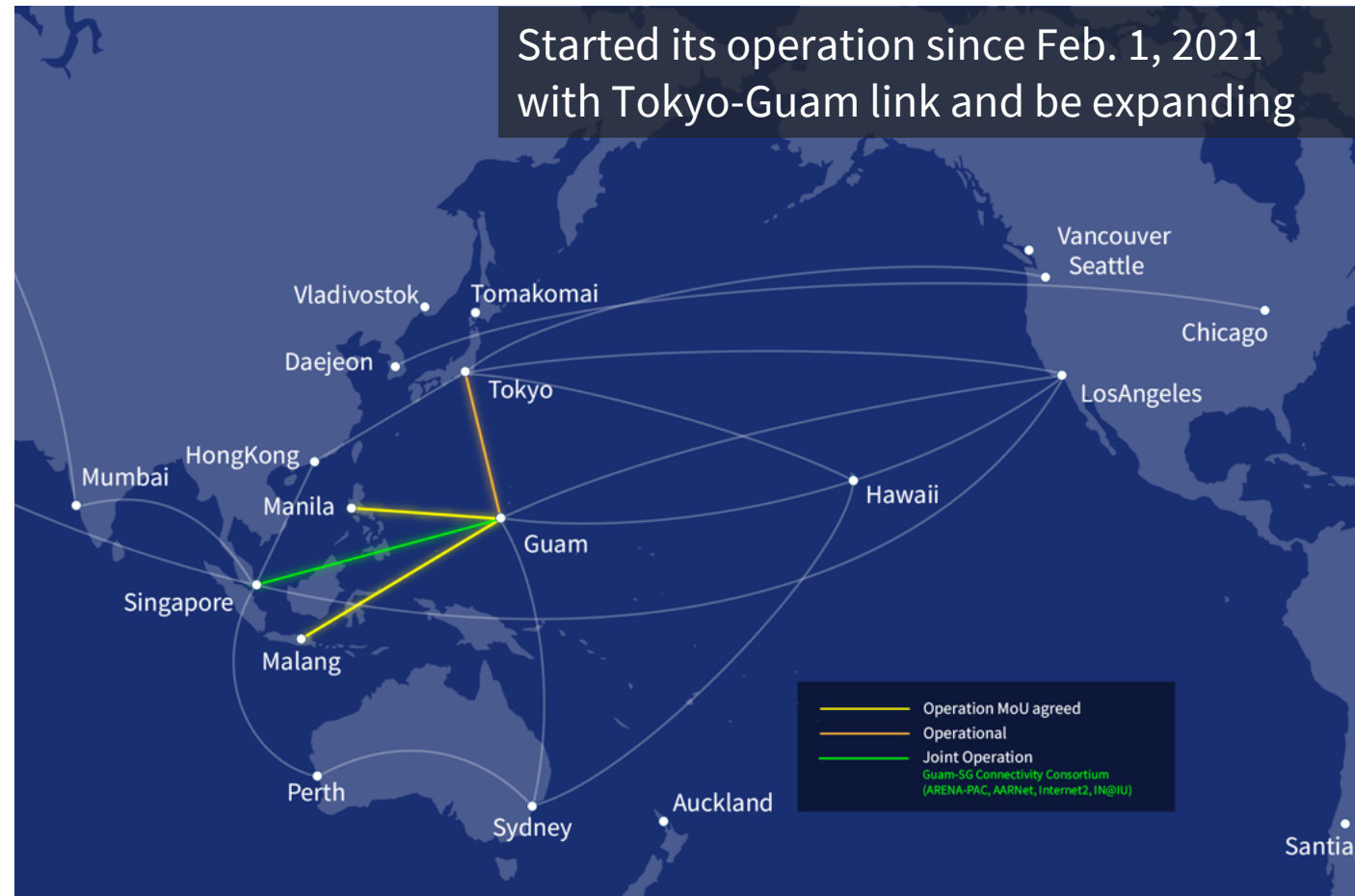
- Operational
 - Tokyo - Guam (100Gbps, Feb 2021-)
 - Guam - Malang (100Gbps, Feb 2023-)
 - Guam - Manila (100Gbps, Apr 2023-)
- Joint Operation
 - Guam-SG Connectivity Consortium (ARENA-PAC, AARNet, Internet2, IN@IU) (100Gbps, Jan 2022-)

ARENA-PAC Operations



ARENA-PAC (AS141682)

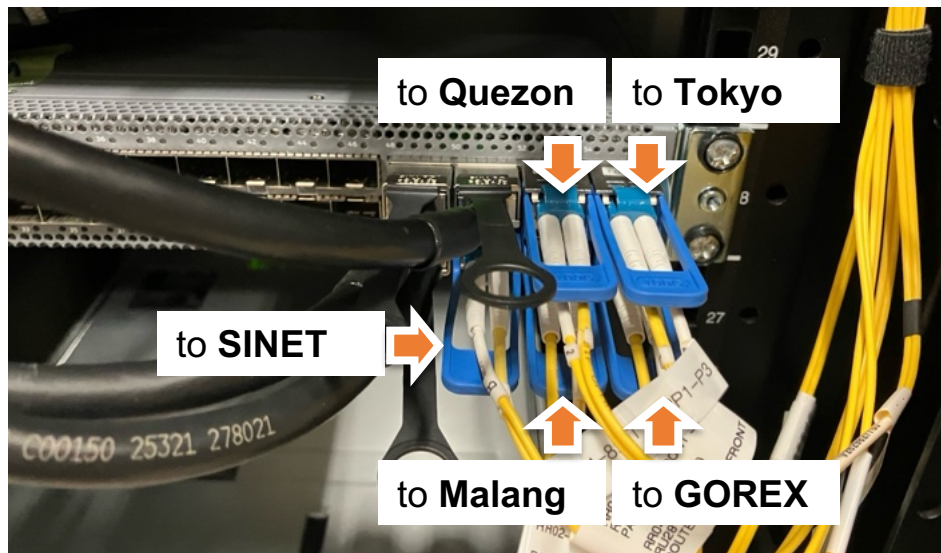
- Interconnection with other research and educational networks (RENs)
 - Tokyo
 - WIDE Project, GXP-Tokyo
 - Guam
 - GOREX (L3)
 - Univ. of Hawaii, UoG, AARNet, SingAREN, REANNZ, TransPAC
 - AARNet through GOREX (L2)
 - SingAREN through GOREX (L2)
 - SINET (direct)
 - Malang
 - IDREN, UB
- Research/educational traffic delivery
- Research collaborations on ARENA-PAC and interconnected RENs



Guam: Core site of ARENA-PAC

Equipment Installed to Guam site (Partially)

- Core site of ARENA-PAC
 - BGP full-route capable **router**
 - MX204 (Still configuring)
 - **Switch** with 100 GbE ports
 - QFX5120-48Y-8C (Connect all sites of **ARENA-PAC** & **GOREX**)



Details: Guam-Indonesia Circuit

Guam-Malang (Indonesia)

- Circuit to Malang
 - 100 Gbps
 - Aug. 31, 2022: Contract signed with Telkom Indonesia
 - This link is **UP**
- Collaboration with **IDREN**
 - Datacenter site at University of Brawijaya
 - Aug. 31, 2022: MoU signed with IDREN and University of Brawijaya
 - Feb. 1, 2023: Operation started (direct connection to UB/IDREN)
 - Mar. 20, 2023: Equipment installed



OPERATIONAL INAUGURATION OF **ARENA-PAC INDONESIA 100 Gbps**

KEIO UNIVERSITY
TOKYO, JAPAN



100Gbps

GUAM

100Gbps

UNIVERSITAS BRAWIJAYA
MALANG, INDONESIA

Tech Demo of
8K Uncompressed
Audio-Video
Bi-directional
Streaming ~ 50 Gbps

Auditorium Algoritma
Fakultas Ilmu Komputer,
Universitas Brawijaya

Collaboration Complex
Hiyoshi Campus,
Keio University

WED August 9th
2023

SUPPORTED BY

ARISTA ASTRO SEIKO WIDE

Telkom
Indonesia

Telin

慶應義塾大学
Keio University
Tokyo, Japan

GXP-TOKYO

SINET6 JUNIPER
NETWORKS

APNIC

ASIA PACIFIC
INTERNET
DEVELOPMENT
TRUST



Prof. Widodo, S.Si., M.Si., Ph.D. Med.Sc
Rector of Universitas Brawijaya



Ir. Heri Akhmadi
Duta Besar Indonesia untuk Jepang



Prof. Jun Murai
Keio University

OPERATIONAL INAUGURATION OF ARENA-PAC INDONESIA 100G



Tech Demo of
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Auditorium Algoritma
Fakultas Ilmu Komputer
Universitas Brawijaya

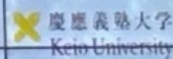


Collaboration Complex
Hiyoshi Campus
Keio University



August 9th
2023

SUPPORTED BY



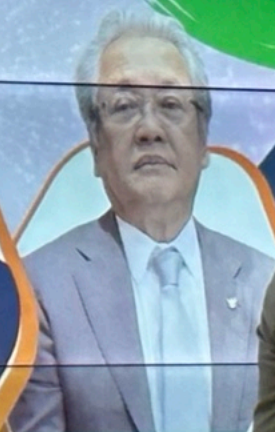
ARISTA

SEIKO

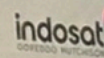
WIDE



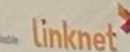
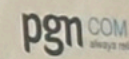
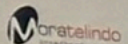
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Ir. Heri Akhmadi
Duta Besar Indonesia untuk Jepang

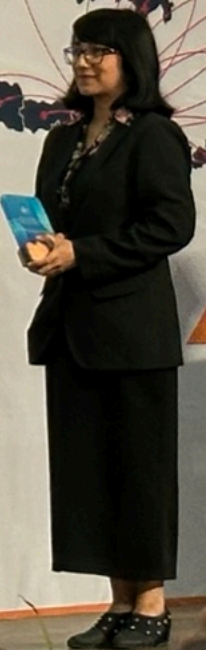


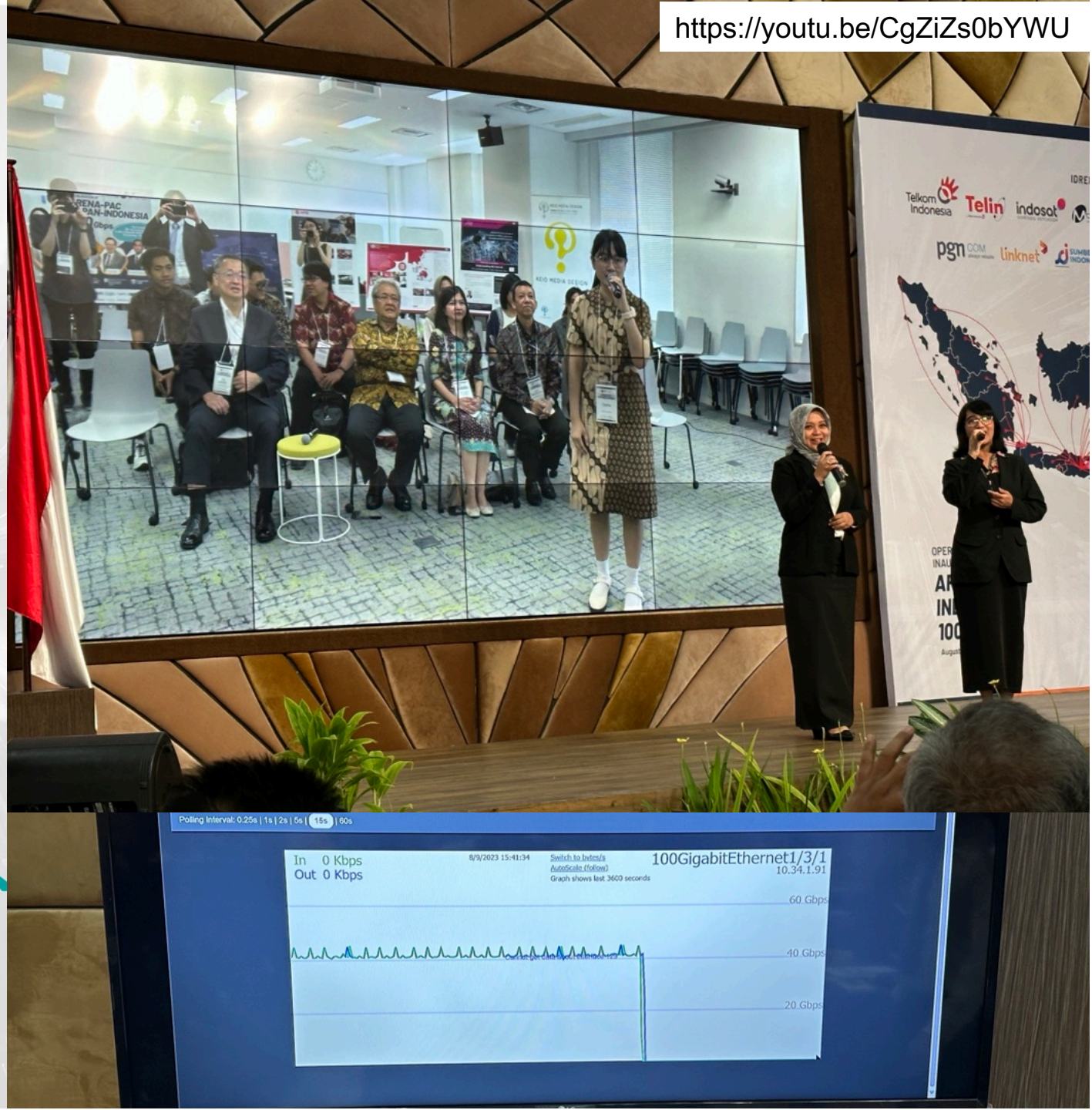
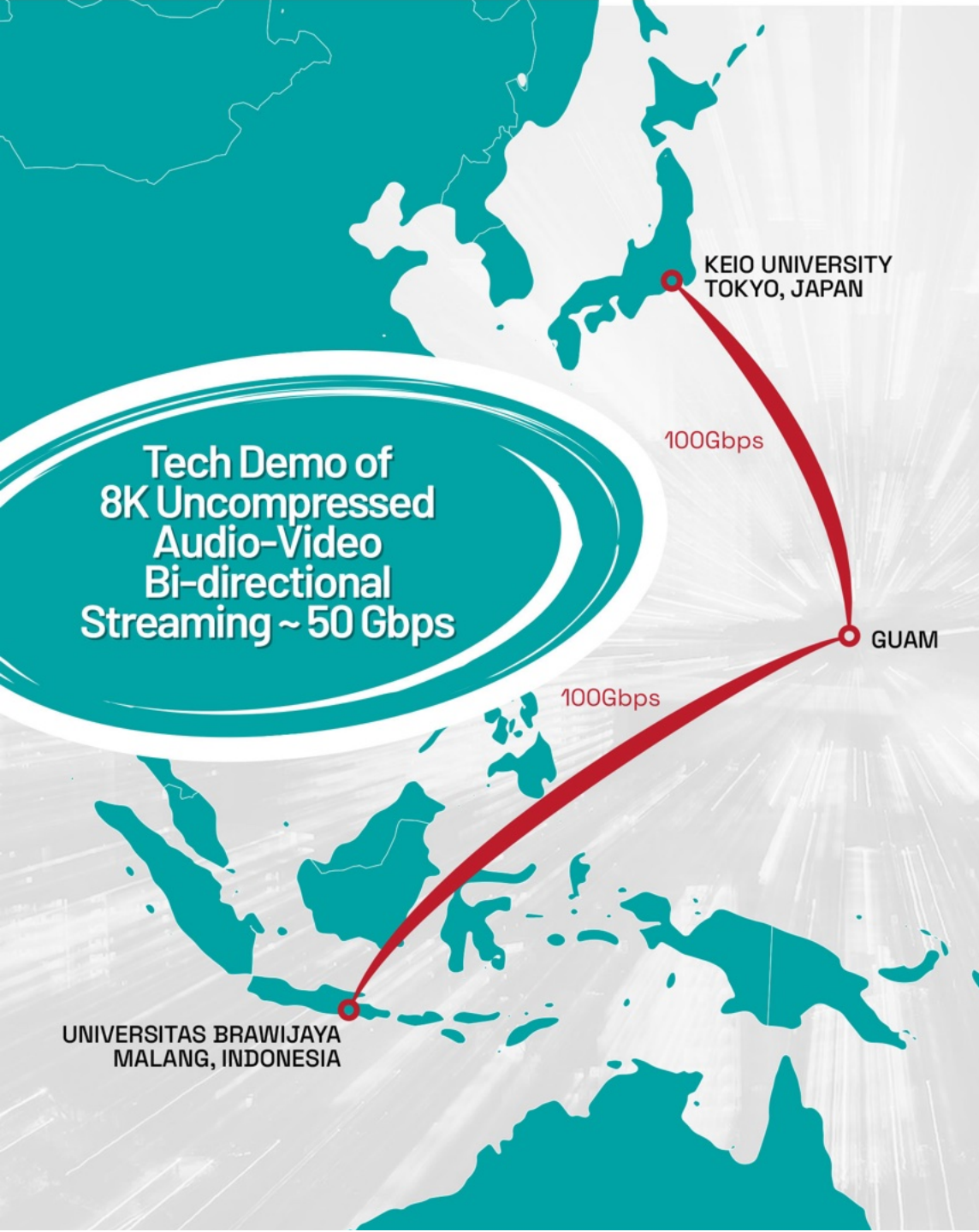
IDREN PARTNERS



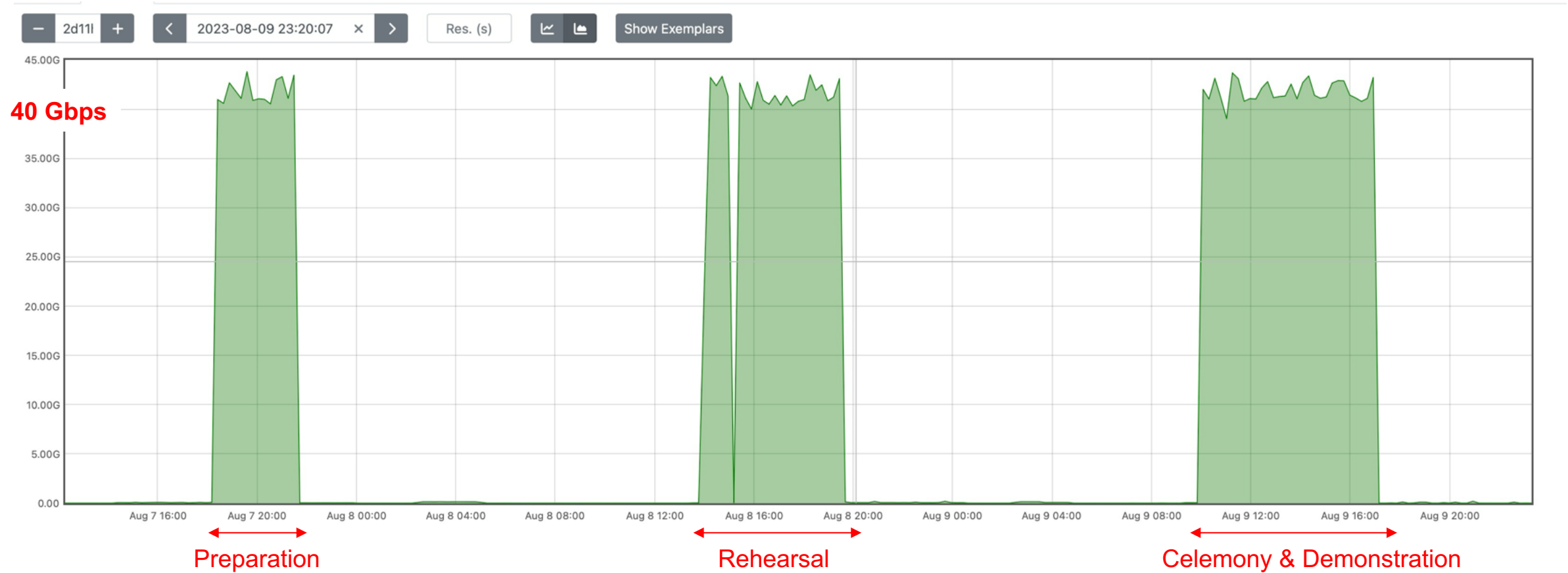
OPERATIONAL
INAUGURATION OF
ARENA-PAC
INDONESIA
100 Gbps

August 9th, 2023





Uncompressed 8K audio/video traffic



Details: Guam-Philippines Circuit

Guam-Quezon City (Philippines)

- Circuit to Quezon
 - 100 Gbps
- Collaboration with **ASTI/PREGINET**
 - Endpoint and Peering at ASTI
 - Nov. 15, 2022: MoU signed with DOST and ASTI
 - March 2023: Circuit got ready (waiting for equipment)
 - September 19, 2023: Link up!
 - September 20, 2023: BGP up



Summary

ARENA-PAC Operations Timeline

- Feb. 2021: **Tokyo-Guam**, connection with **GOREX**
- Jun. 2021: **APOnet Agreement**
- Dec. 2021 to 2022: **Guam-Singapore** with AARNet, Internet2, IN@IU
- Sep. 2022: Equipment delivered to Tokyo
- Oct. 2022: Equipment installation to Guam
- Dec. 2022: Equipment move and update in Tokyo
- Feb. 2023: **Guam-Malang, Indonesia**, peering with **IDREN** and **UB** (MoU signed in Aug. 2022)
(Equipment delivered / installed March 20)
- July 2023: **Timor-Leste** from Indonesia over VPN through Indonesia (20 Mbps up/down)
- Soon: New Circuit, Connections, and Sites
 - **Quezon, Philippines** – Guam, collaboration with **ASTI/PREGINET** (Oper. MoU signed in Nov. 2022)

WIDE Opt-E DWDM IX

