UNIVERSITY OF GUAM
UNIBETSEDÅT GUAHAN

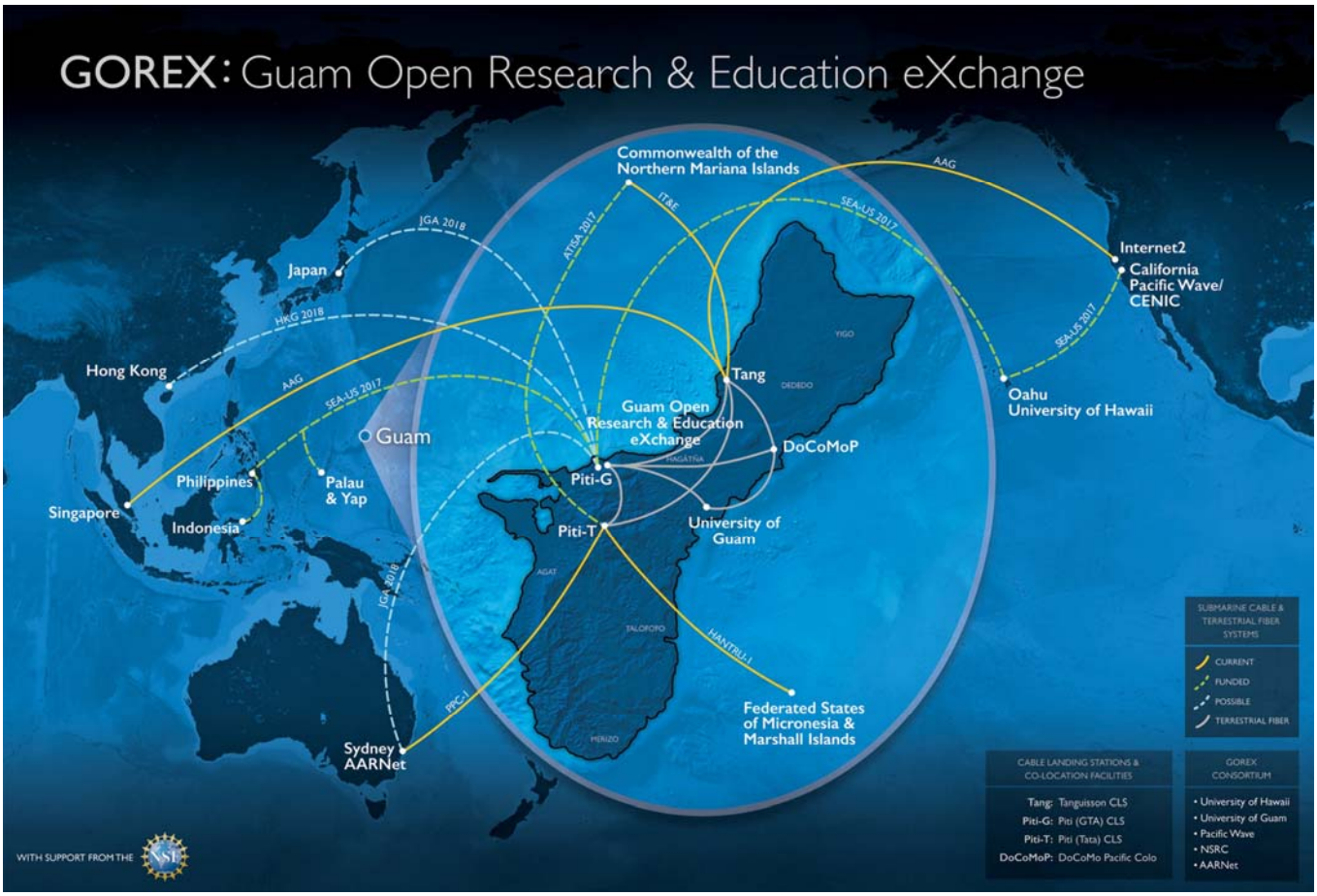
PIREN Pacific Islands Research and Education Network

Guam Open Research and Education eXchange Concept

The Guam Open Research and Education eXchange ("GOREX") will leverage the strategic geographic location of Guam and the major new fiber optic systems landing there by establishing an open R&E exchange to inter-connect the existing, funded and planned high capacity R&E trans-Pacific circuits in a planned manner. Specific purposes are to improve Pacific-wide transport diversity and resilience in support of global R&E networks and facilitate greater access to global R&E networks by Pacific Island nations and communities, including Guam itself, by leveraging the multiple regional fiber systems that terminate on Guam. The overarching goal is to promote increased growth and effectiveness of data-intensive and highly collaborative research and education activities engaging the Asia-Pacific region with the global R&E community.

The initial participants in the GOREX consortium will include the Australia Academic and Research Network (AARNet), the University of Hawaii (UH) and Pacific Wave (PWave), Internet2/SingAREN and the University of Guam (UOG). Additional participation will likely extend to Japan, Hong Kong, and multiple Pacific Islands.

The following diagram portrays this initial concept.



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Links portrayed include current, funded and possible connections as follows:

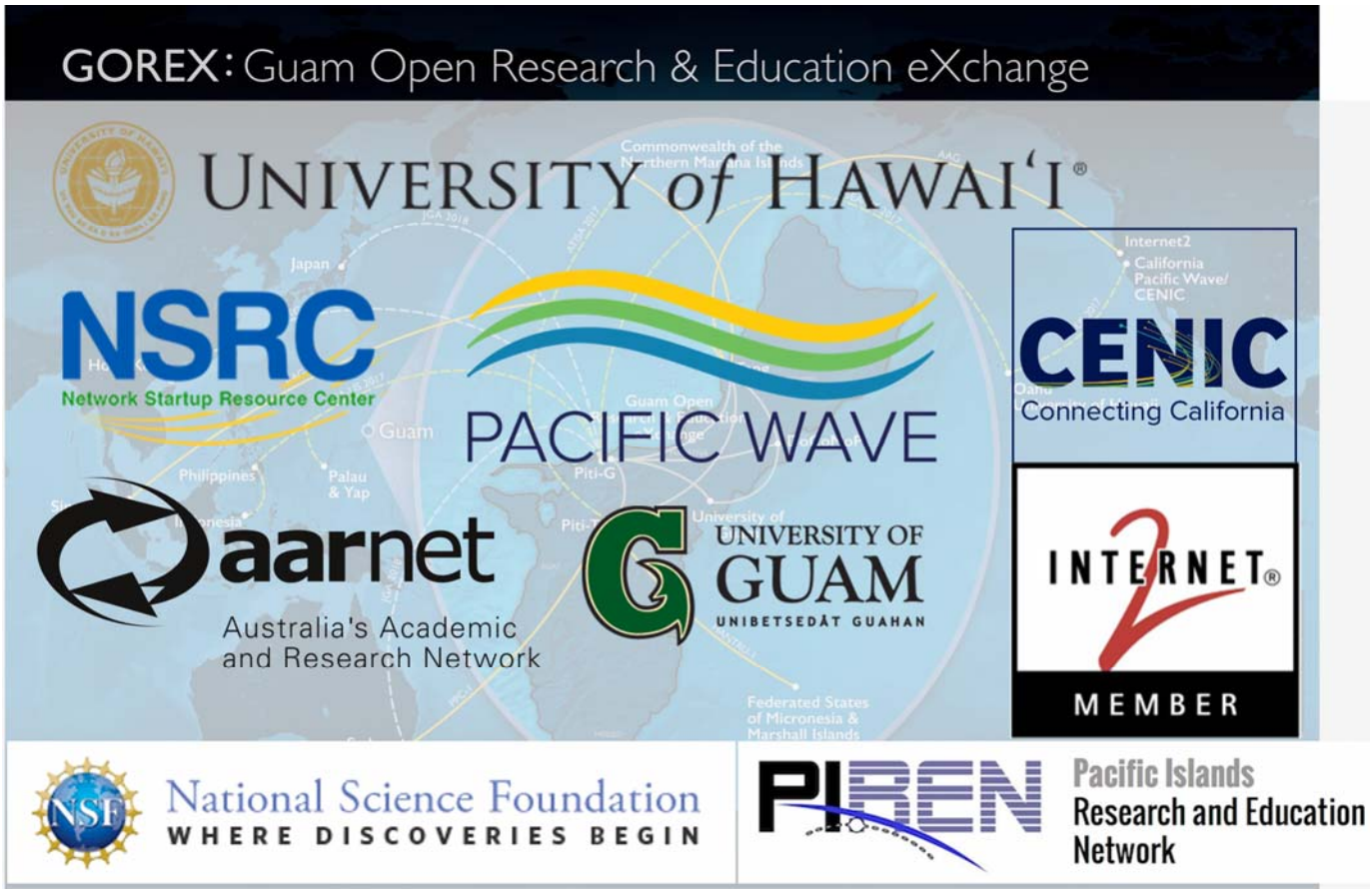
AARNet – Existing path to Singapore via PPC-1 and AAG, currently only transits Guam; Anticipated future higher speed path to Guam over new Japan-Guam-Australia system in 2018,
UH – 100G from Guam to Hawaii and Pacific Wave. Funded with production planned 2017.
SingAREN/Internet2 - Existing 100G path to be AAG/Level3, with likely POP at the DoCoMo Pacific commercial colocation facility connecting UOG.
JP (WIDE?) – via potential future Japan-Guam-Australia system in 2018,
Hong Kong – Available via potential future Hong Kong – Guam system in 2018.
USP/RMI – Available via current AARNet path on HANTRU-1.
College of the Marshall Islands – Available via HANTRU-1.
CNMI – College of the Northern Marianas will be available via ATISA (2017).
Palau and Yap – Available via SEA-US west segment in 2017.

The University of Hawaii will establish the GOREX with all partners as part of its **NSF-funded IRNC PIREN** agreement leveraging PIREN resources with its IRU purchase of new capacity into Guam with State of Hawaii funding. The GOREX will be governed collaboratively with the fundamental principles of providing an open R&E exchange and maximizing value to participants and their respective national and regional R&E networks. We believe that the establishment of the GOX will drive national and regional R&E investment in links to Guam that will result in high value to participants and a more rational and resilient global architecture. The GOX will be operated on a pure non-profit cost-recovery basis with costs shared fairly and transparently among participants. Partners investing in the GOREX, including through the provisioning of substantial submarine fiber connections to the GOREX will provide oversight and lead any governance activities.

Connections to the GOREX may be at Layer 2 or Layer 3, with each organization responsible for the incremental costs of their connection to the GOREX. Depending on the nature of the connection, and the operational standards established for the GOREX by the consortium, connections may be established using organization provided equipment, or via an allocation of a organization-controlled switch port using shared common equipment at the GOREX. The initial costs to establish and equip the GOREX will be borne by consortium members, to include significant UH investment for startup and with commitments for support from Pacific Wave / CENIC, AARNet, and others. Given the limitations and long-term cost of colocation space and power, dedicated equipment for connections established within the GOREX colocation footprint may be limited to connections at 100G and higher. Connections below 100G will generally be via a switch port on shared common equipment, with exceptions granted for those with material plans to migrate to 100G and higher.

Facilities for the GOREX will include approximately four (4) racks of available colocation space, to be acquired by UH as part of its **SEA-US** IRU purchase. The colocation space will support direct access to any systems that land at the GTA Piti Cable Landing Station (CLS): initially SEA-US and the planned Japan-Guam-Australia and HongKong-Guam systems, along access via terrestrial fiber connections to any of the other Guam CLS facilities -- Piti (Tata), Tumon Bay, Tanguisson – as well as commercial colocation facilities of GTA and DoCoMo Pacific.

For inquiries regarding how to participate in GOREX, please send an email to uognoc@uog.edu.



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