

# PIREN/GOREX

Alan Whinery  
and others

JET

04/25/17



# Think About

- Your requirements in the Pacific
- Your resources in the Pacific
- Opportunities for collaboration



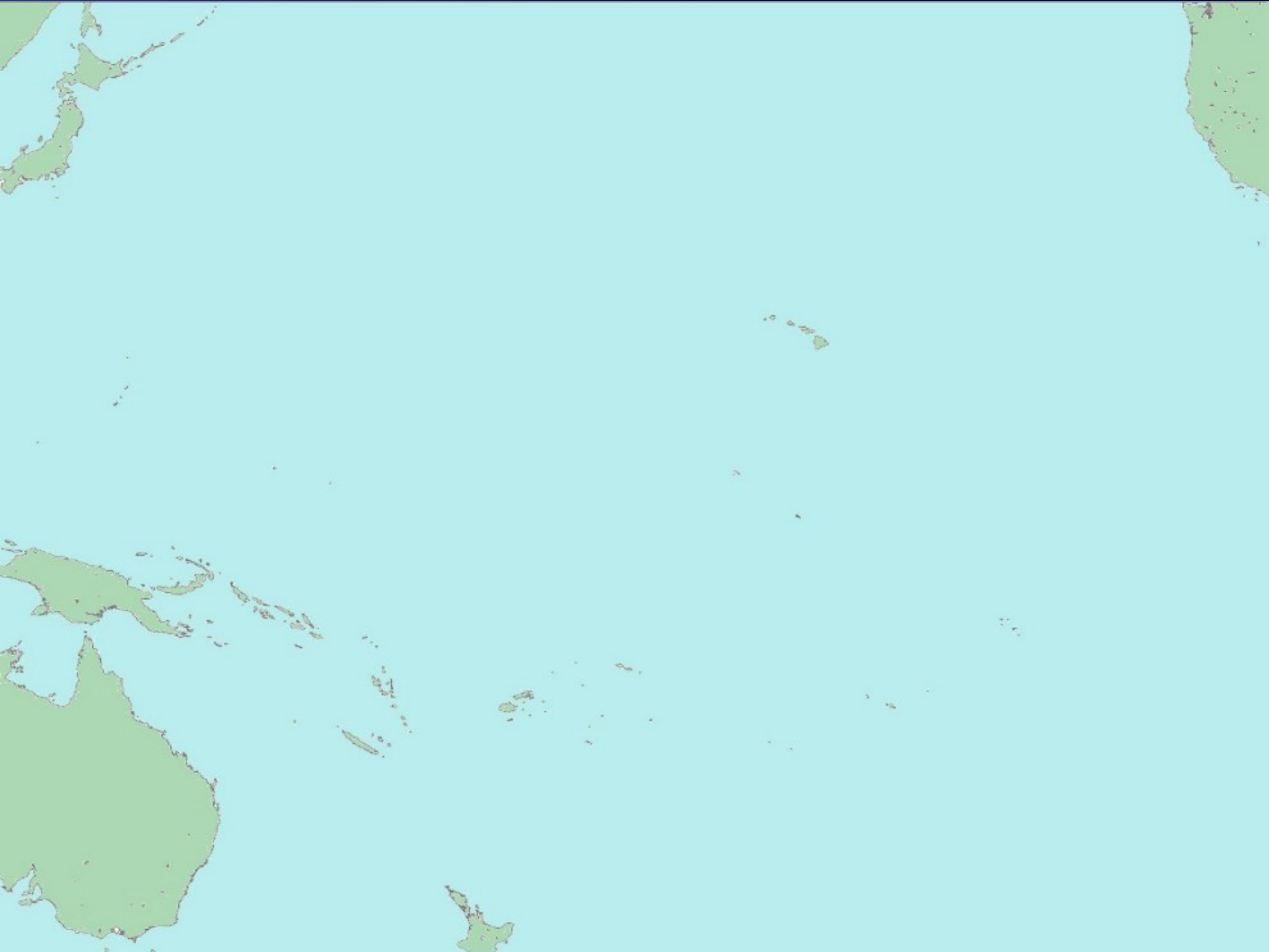
# PIREN: Pacific Islands Research and Education Network

## DRAFT

1-14-17





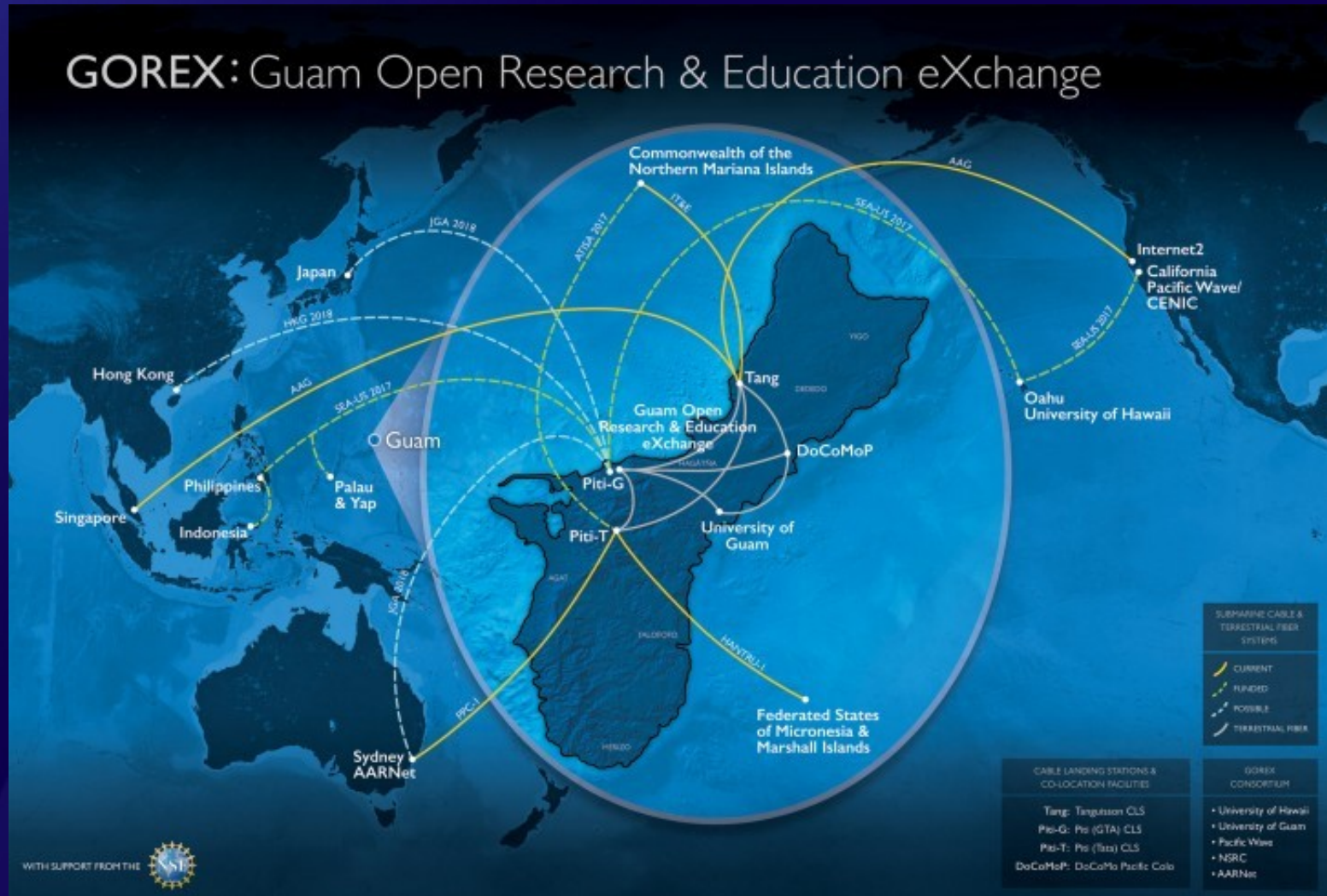




	Location	Area (sq km)	Major City/State	Population (July 2012 est)	Internet Usage (Jun 2012 est)	Population Penetration	GDP (PPP) per capita (ranking out of 228 - as of 2012)	School Life Expectancy (Yrs)	REN	Cable Landing	To	Active
Pacific Island Nations	Cook Islands	236	Rarotonga	19,937	6,000	30.1%	117	12	USPNet			
	Fiji	18,274	Suva	890,057	247,275	27.8%	158	13	USPNet	SCCN ICN, Tonga	AUS & HI Vanuatu Tonga	Active 2013 2013
	Kiribati	811	Tarawa	101,998	10,074	9.9%	145	12	USPNet			
	Marshall Islands	181	Majuro	68,480	7,260	10.6%	180	12	USPNet	HANTRU-1	Guam & Micronesia	Active
	Federated States of Micronesia	702	Pohnpei, Kosrae, Yap, Chuuk	106,487	22,213	20.9%	187	--		HANTRU-1	Guam & Marshall Islands	Active
	Nauru	21	Yaren	9,378	480	5.1%	153	9				
	Niue	260	Alofi	1,556	1,100	70.7%	144	13	USPNet			
	Palau	459	Koror	21,032	6,360	30.2%	125	15		foreshadowed	Guam	2014
	Papua New Guinea	462,840	Port Moresby	6,310,129	135,000	2.1%	179	--	PNG-ARNet	APNG-2 PPC-1	Australia & Guam	Active Active
	Samoa	2,831	Apia	194,320	17,940	9.2%	140	12	USPNet	SAS	Am Samoa HI	Active
	Solomon Islands	28,896	Honiara	584,578	34,313	5.9%	170	9	USPNet	SOC to PPC-1	Guam	2013
	Tonga	747	Nuku'alofa	106,146	26,479	24.9%	133	14	USPNet	Tonga-Fiji	Fiji	2013
	Tuvalu	26	Funafuti	10,619	4,300	40.5%	169	11	USPNet			
	Vanuatu	12,189	Port Villa	260,155	19,172	7.4%	156	10	USPNet	ICN	Fiji	2013
Territories	Norfolk Island (AUS)	36	Kingston	2,572	700	27.2%	--	--				
	French Polynesia (FR)	4,167	Papeete	274,512	144,518	52.6%	67	--		Honotua	HI	Active
	New Caledonia (FR)	18,575	Noumea	260,166	128,138	49.3%	81	--		Gondwana-1	AUS	Active
	Wallis and Futuna (FR)	142	Mata-Utu	15,850	1,337	8.4%	164	--				
	Tokelau (NZ)	12	--	1,331	800	60.1%	218	12	USPNet			
	Pitcairn Islands (UK)	47	--	54	--	--	--	--				
	American Samoa (US)	199	Pago Pago	54,947	3,040	5.5%	126	--	USPNet	SAS	Samoa HI	Active
	Guam (US)	544	Hagatna	159,914	90,000	56.3%	85	--		AAG, AJC (SEA-US) HANTRU-1, CNMI		Active Active Active Active
	Northern Mariana Islands (US)	464	Saipan	96,417	15,980	16.6%	97	--				



# Guam Open R&E eXchange



GOREX is envisioned to be a Layer 2 meet-me point located in Guam. The goal is to exchange traffic among R&E participants in Guam. Partners include: AARNet, Internet2, UH and UoG.



SEA-US Cable will connect CENIC/PW – UH/Oahu – Guam – Piti-G  
Nearing completion!



# SEA-US Makaha - CLS

- ❖ CENIC/PW complete – Hermosa Beach
- ❖ April 3 - SEA-US cable brought on shore at Makaha beach and into the CLS
- ❖ Cable ship enroute to Guam - anticipated landing before end of April





# GOREX - progress

- ❖ TPRE Meeting – Jan 18, 2017 Honolulu, HI
  - 29 participants, 13 institutions, 5 countries attended
  - GOREX engineering breakout group
    - Participants – AARNet, I2, UH, PW/CENIC, JP, SingaAREN, UoG
    - UH 100G circuit from Guam to Oahu via SEA-US complete Summer 2017 – lands at Piti-GTA CLS
    - UH in discussion with colo sites – preferred would be in Piti-GTA CLS
    - If chosen, I2, AARNet and UoG would need on island backhaul to Piti-GTA
    - UoG desires a 10G from campus to GOREX site
  - More details at TPRE meeting @ 3:30PM today





# UoG IT Cyber-Team Activities - 2017

- Jan. 2017 - PTC 2017
- Feb. 2017 - APRICOT - Ho Chi Minh City
- Mar. 2017
  - **PhNOG** and IN@IU PerfSONAR / Science DMZ Training in Philippines
  - CENIC 2017 Conference, San Diego, CA
    - UH President David Lassner - Keynote Address - *View From The Pacific-Strategic Directions*
      - [https://www.youtube.com/watch?v=-uQHqf\\_006o](https://www.youtube.com/watch?v=-uQHqf_006o)
    - NSRC/CENIC Fellowship for UoG AVP Research and Sponsored Programs
      - <https://www.youtube.com/watch?v=OmHqY7lFYcM>
- Apr. 2017 - NSF EPSCoR (Guam Ecosystems Collaboratorium) Reverse Site Visit, Washington, D.C. - GOREX Highlights
- Apr. 2017 - Internet2 Global Summit, Washington, D.C.



# UoG IT Operations and NOC Team

- Team is composed of:
  - 8 Operations and NOC Staff – Rotate to provide 24/7/365 Data Center Coverage
  - Team works with Campus Facilities and Maintenance in the event of a Power Outage
- Facility has redundant Generators and HVAC
- Data Center Modernization in process



# NRSC Workshop UoG July 2016



30 participants from Guam,  
Micronesia, Marshall Islands,  
Northern Marianas and Palau

President Robert Underwood  
welcomes the workshop  
participants.





# PIREN Outreach

- ❖ March 28 meeting – Pacific Postsecondary Education Council - Presidents meeting
  - UoG, Guam CC, College of Micronesia, Northern Marianas College, U Marshall Islands, Palau CC, American Samoa CC
  - Shared progress on GOREX, much higher level of interest and understanding of opportunities
  
- ❖ April 27 meeting with PolyREN in Tahiti
  - OPT French Polynesia – 1Gbps R&E for Honotua
  - UH ready to provide connectivity at termination in HNL
  - RENATER actively engaged and supporting development of domestic portion of PolyREN to connect R&E locations on Tahiti and Moorea to each other
  - Connects to the “free” 1GBPS to HI and to global R&E network fabric
  - Stakeholders: French, American, and local French Polynesia research and education institutions



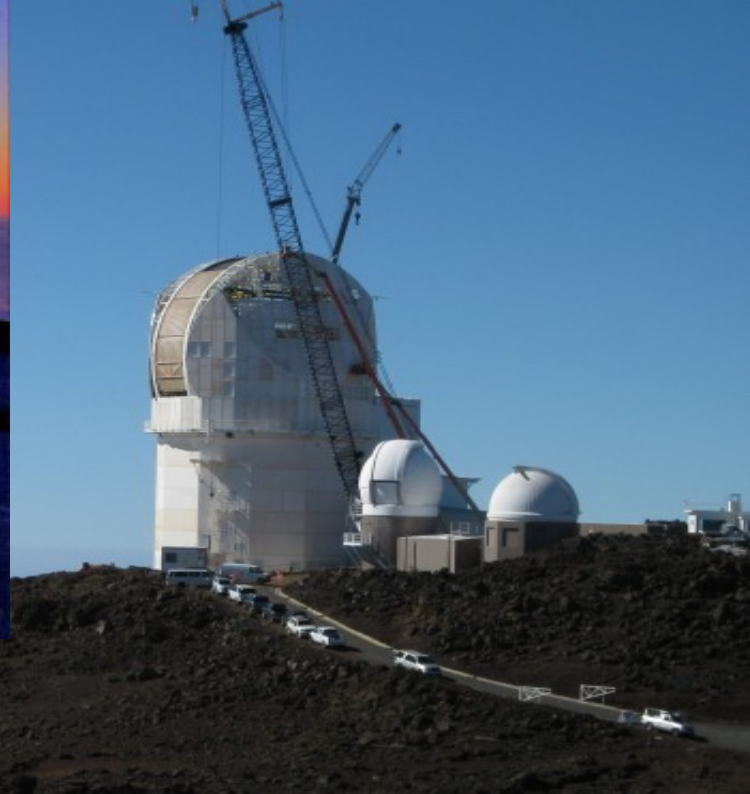


# PolyREN Approach in French Polynesia





# Science Drivers





# Assisted Evolution in coral reefs to support adaptation to climate change



Hawaii and HIMB

**Assisted Evolution (AE)** accelerates naturally occurring evolutionary processes to enhance stress tolerance by:

Selectively breeding

Modifying partnerships/symbioses

Manipulating environmental experience



Australia and AIMS

Use these “assisted” corals to:

- Restore damaged reefs
- Re-connect fragmented reefs
- Increase resilience on vulnerable reefs
- Green grey structures



MOOREA and GUMP



# Expectations for rest of 2017

- Completion of SEA-US – expected operational by Summer 2017
- Ongoing discussions with partners to implement GOREX
- Increased partnerships with UoG – improving campus CI

## ❖ Meetings this week

- TPRE follow-on – 3:30 PM today! Rm 7 Renaissance DC

