



GULF LIGHT

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JJ Jamison

jj@juniper.net

GLORIAD

GLORIAD IS:

A cooperative R&E network ringing the northern hemisphere linking scientists, educators and students in Russia, USA, China, Korea, Netherlands, Canada, the Nordic countries, Egypt – and soon India, Singapore – and others with specialized network services; co-funded, co-managed by all international partners.

A Collaborative International Program to Develop/Deploy advanced Cyberinfrastructure between partnering countries (and others) as effort to expand science, education and cultural cooperation and exchange.

A vehicle for the collaborative construction of high performance international links between NRENs. GLORIAD links, in turn, serve as a collaboration platform for large multinational science efforts.

GLORIAD is a Collaborative Effort!



GLORIAD PARTNERS & SPONSORS

GLORIAD is a follow-on to NSF-/Russian MinSci-Funded MIRnet and NaukaNet programs and is part of broader NSF Program called International Research Network Connections (IRNC).

History: 1994 US-Russia Friends and Partners; 1996 US-Russia Civic Networking; 1997 US-Russia MIRnet; 2004 GLORIAD; 2009 GLORIAD/Taj; 2011 GLORIAD/Africa.

GLORIAD Partners: SURFnet, NORDUnet, CSTnet (China), e-ARENA (Russia), KISTI (Korea), CANARIE (Canada), SingaREN, ENSTInet (Egypt), Tata Inst / Fund Rsrch/Bangalore Science Community, NLR/Internet2/NASA/FedNets, CERN/LHC.

GLORIAD Sponsors: US NSF (\$18.5M 1998-2015), Tata (\$6M), USAID (\$7.5M 2011-2015) all Intl partners (~\$220M 1998-2015).

GLORIAD would not be possible without the support of our sponsors and partners!



NREN CRITICAL MASS

One of the (many) functions of regional NREN Exchanges is to create a critical mass of Research & Education (R&E) Institutions large enough to benefit from economies of scale an exchange provides (for bandwidth, services, infrastructure, ...) and to attract non regional NRENs and the R&E institutions they serve.

Pacific Wave is a great example: one of the motivation/business cases behind building Pacific Wave was to create enough critical mass to make it a “Destination” NREN Exchange.

NRENs throughout Asia Pacific know that landing in either Los Angeles; San Francisco; or Seattle gets them free VLAN transit to any other point and to US and other International NRENs.

More direct connectivity among US West Coast R&E Institutions is a benefit of Pacific Wave but was not a primary motivation for creating the exchange (qualifier: this IMHO your mileage may vary).

Pacific Wave has been a great success. It is now a destination US landing point for Asia/Pacific NRENs and has been a catalyst in enabling/driving collaboration between US West Coast R&E Institutions and their peers in Asia/Pacific.



NRENS AND HIGHER EDUCATION IN THE GULF

There are NRENS up and running in the United Arab Emirates and Qatar

NRENS are built and being built in Saudi Arabia and Oman

NRENS are being considered in Bahrain and Kuwait

But there are no NREN Exchanges in the region!

NRENS and NREN Exchanges are as much about building collaborative research and education communities as they are about providing bandwidth and connectivity.

GULF LIGHT: AN NREN EXCHANGE FOR THE GULF

Currently NRENs and individual universities in the Gulf are running their own circuits to Amsterdam, New York and Los Angeles with no cost sharing from the US or Europe and no savings from multi-customer bulk bandwidth pricing.

An NREN Exchange in the Gulf would create a “Destination” Exchange that NRENs in the US and Europe might be willing to cost share to get to.

Gulf NRENs could form purchasing alliances to get group pricing for circuits they could still purchase separately.

ISPs connecting to an exchange in the Gulf might offer discounted rates and an exchange has the potential to create a regional ISP market that would be more competitive than existing national markets.

If Gulf Light grows large enough it might attract transit connectivity from NRENs in countries further East like India and Pakistan ... China, Japan and perhaps others? It would then be able to use these links to provide a no cost path directly to these NRENs for its members.



GULF NRENS TODAY

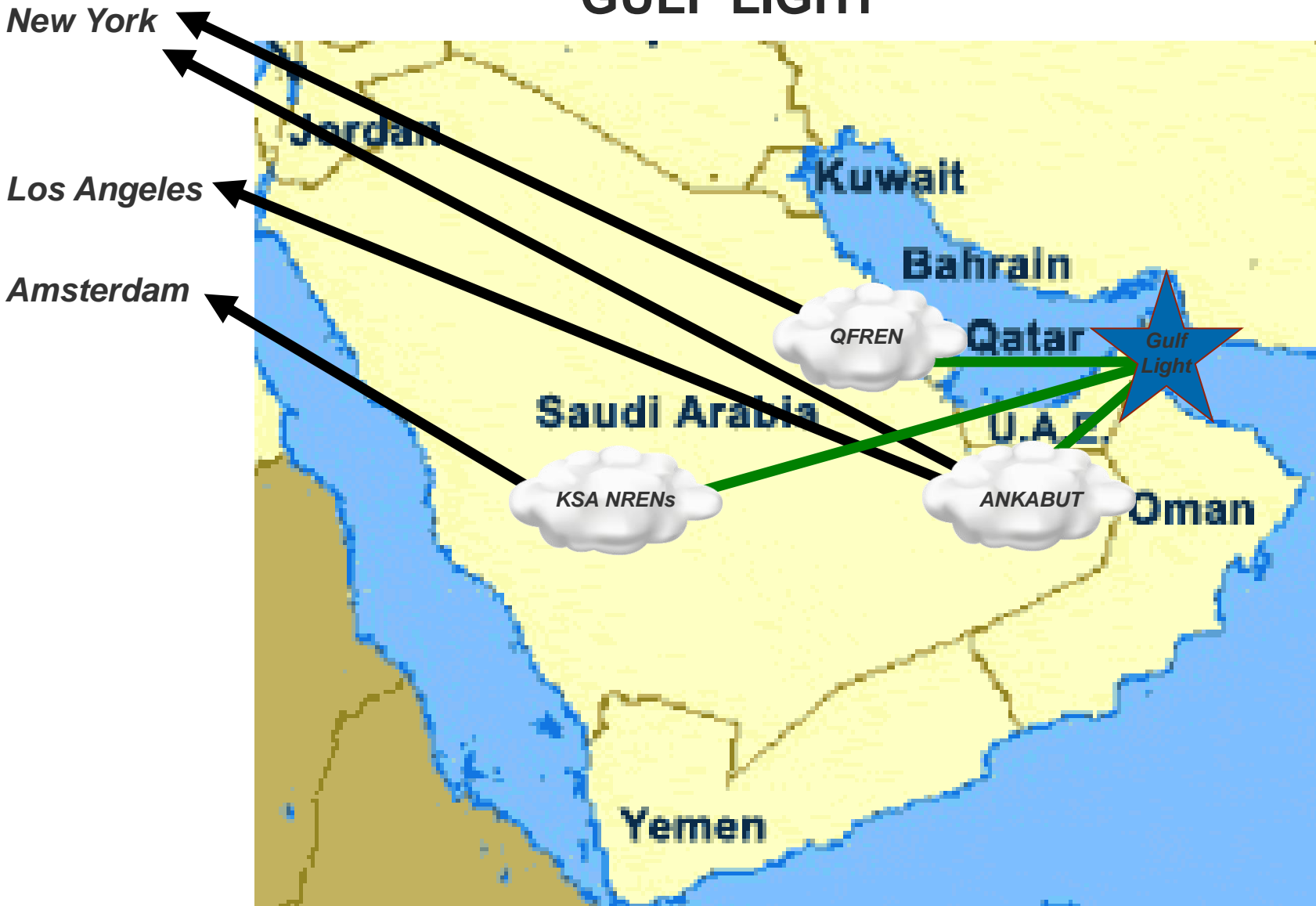
New York

Los Angeles

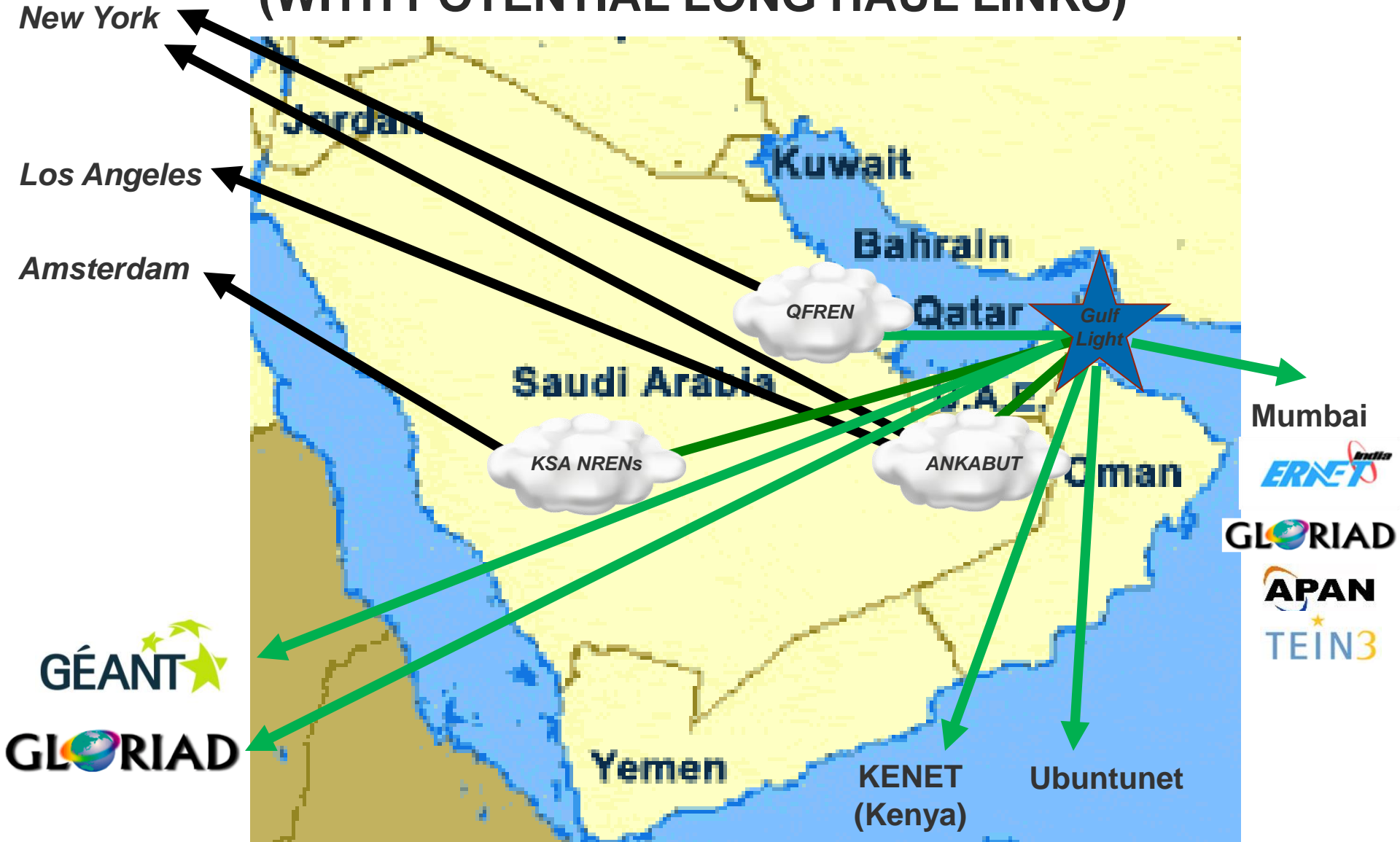
Amsterdam



GULF LIGHT



GULF LIGHT (WITH POTENTIAL LONG HAUL LINKS)



GÉANT
GLORIAD

GLORIAD

GULF LIGHT CAN BE A PART OF ASREN

ASREN (Arab States Research & Education Network) is an Arab League supported effort to build a regional NREN Community for the Arab World.

Like similar efforts in other parts of the world (Internet2, TERENA, CLARA, APAN, ...) it is composed of much more than just infrastructure.

The infrastructure part of ASREN is currently limited to Arab countries on the Mediterranean served by EUMEDCONNECT3 which is co-coordinated by DANTE.

Connecting Gulf Light to EUMEDCONNECT3 (which can be done in Cairo via GLORIAD) would expand ASREN beyond the Med.



THANK YOU

