

Building Network Expertise and Capacity for International R&E Collaboration

GLIF Am Working Group
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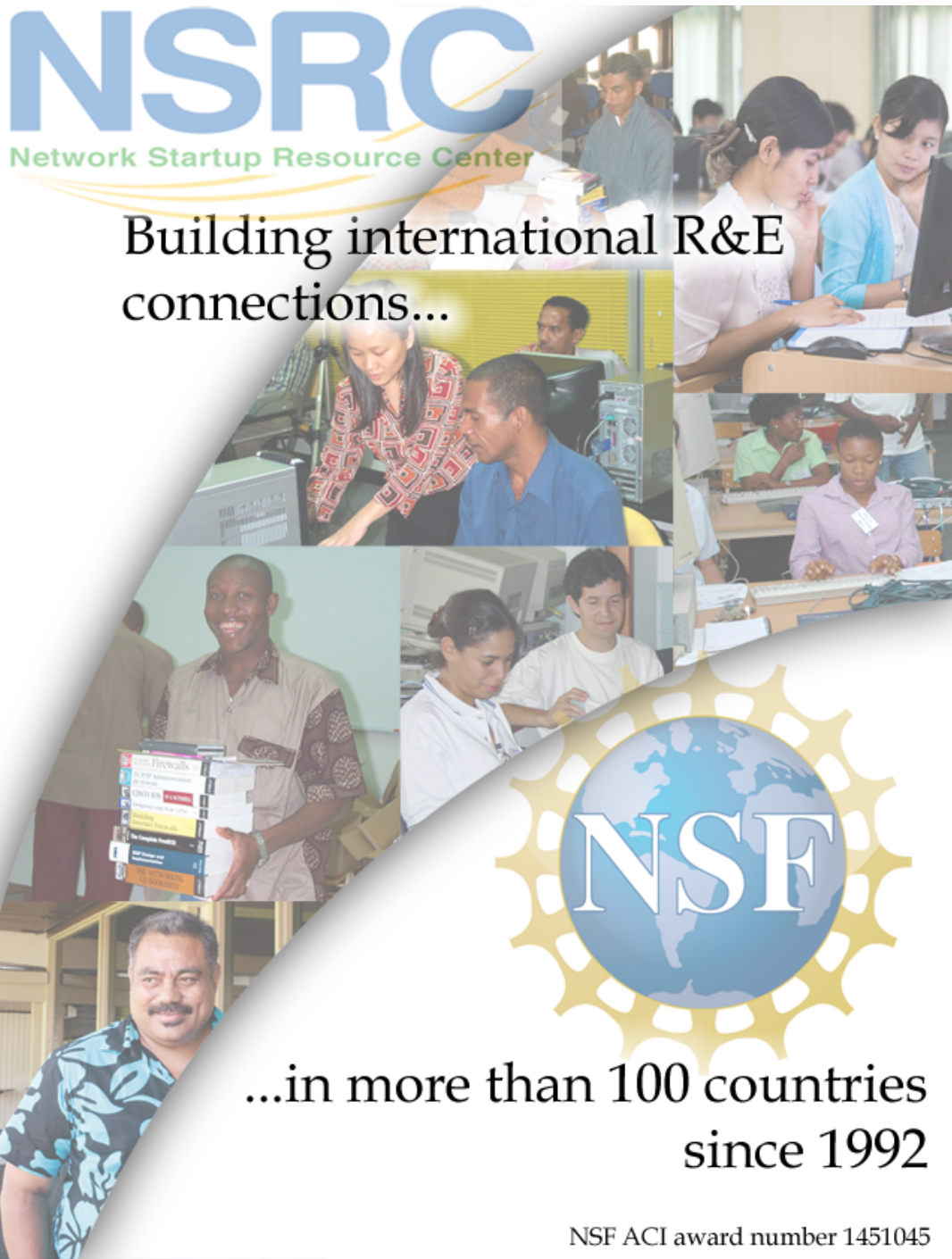
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NSRC

Network Startup Resource Center

Building international R&E connections...



...in more than 100 countries since 1992

NSF ACI award number 1451045



IRNC: Engage: Building Network Expertise and Capacity for International Science Collaboration

- \$3.7M five-year award from NSF IRNC (Oct. 2014-Sept. 2019)
- Additional cash and in kind contributions from APIA, APNIC, Cisco Systems, GEANT, ICANN, O' Reilly Media, RIPE NCC, TEIN*CC and numerous private donors
- Complementary funding and large cadre of volunteer support leverage the NSF IRNC investment in NSRC' s R&E development activities, thereby providing effective use of NSF funds
- Working with other IRNC grantees (University of Hawaii, Indiana University, Florida International University, PRAGMA) and other US entities such as Internet2 and Energy Sciences Network (ESnet)

Who is the NSRC

- Eight University of Oregon personnel, plus students
- Twenty contractors based in: Alicante, Auckland, Banjul, Brisbane, Colombo, Copenhagen, Dakar, Dar es Salaam, Halifax, Ibadan, Kampala, Lomé, London, Nairobi, Quito, Raleigh, Seattle, Toronto, Vancouver and Wellington
- Dozens of long-time volunteers who work for various universities, ISPs and industry from many countries
- Instructor-trainees in all regions of the world
- Core funding from NSF and Google with support from APIA, APNIC, Cisco, DHL, Facebook, ICANN, ISOC, O'Reilly Media and others.



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The NSRC Model

- Technical training and human resource development activities
- Direct engineering assistance
- Participatory development



Enabling International R&E Cooperation

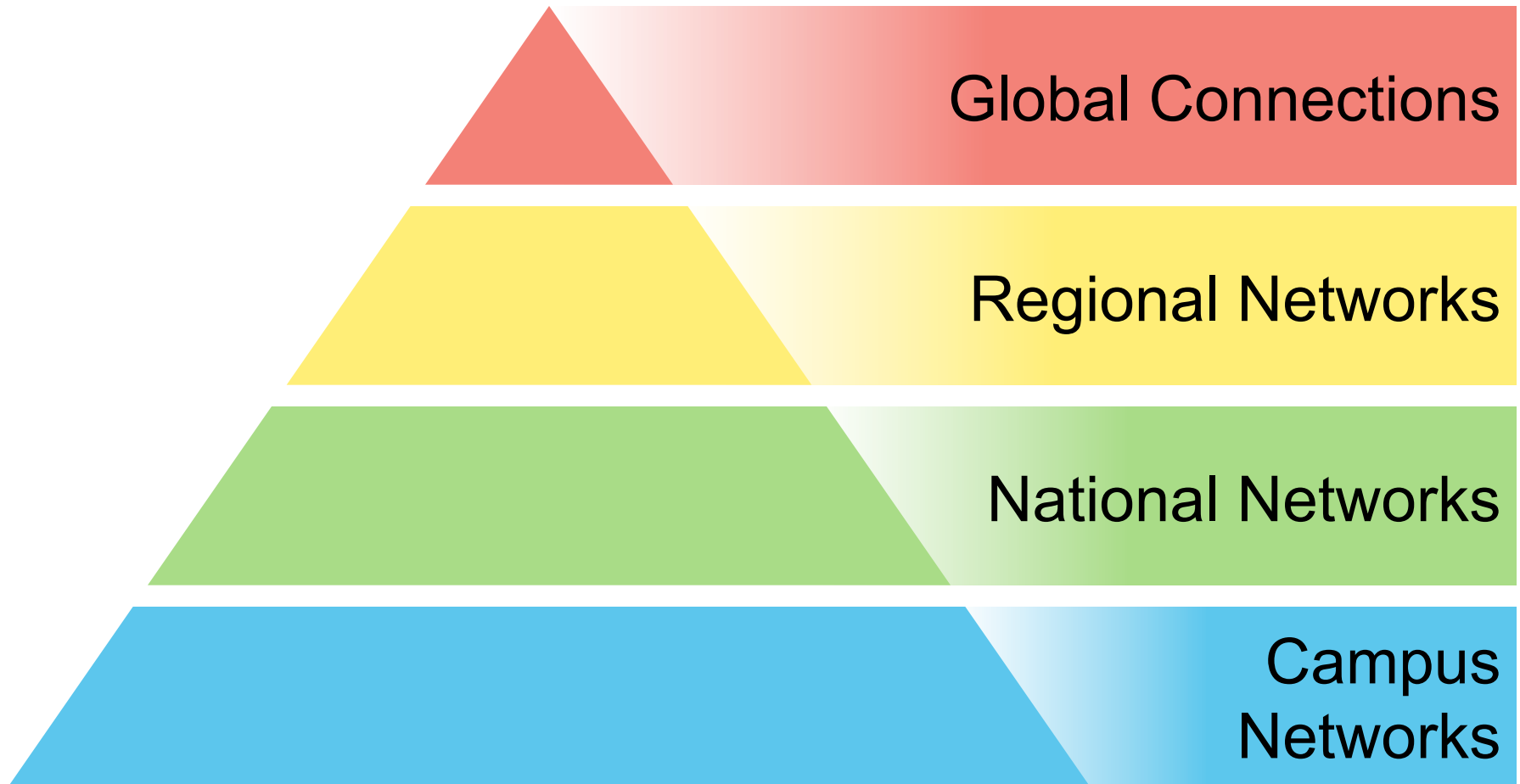
- NSRC's activities are global in scope
- Addresses and solves problems in the field with local partners
- Technical training with Universities, NRENs and regional NOGs
- Direct engineering assistance to improve networks
- Network security and performance monitoring
- Wireless infrastructure to improve both faculty and student access
- DNS stability, security and ccTLD technical assistance
- Leveraging government, industry, and private investments
- Equipment donations improve core infrastructure and IP services
- Surveying network connectivity needs for NSF-supported research activities in emerging regions
- Cyberinfrastructure enables international scientific collaborations



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NREN Ecosystem



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Why Focus on Campus Networks?

- Network is the transport layer
- The campus network is the foundation for research and education activities
- To optimally utilize network capacity, equipment and personnel
- No scientist is connected directly to a national R&E network. They are all connected to campus or enterprise networks for access.

NSRC On the Ground in 2014-2015

Armenia	Haiti	Philippines	Togo
Bangladesh	Indonesia	Portugal	Turkey
Bhutan	Ireland	Rwanda	Uganda
Canada Costa Rica	Italy	Samoa	United Arab Emirates
Czech Republic	Japan	Senegal	United States
Denmark	Kazakhstan	Singapore	Vanuatu
Djibouti	Kenya	Solomon Islands	Vietnam
Ecuador	Laos	South Africa	Zambia
England	Malaysia	Sri Lanka	
Fiji	Mongolia	Tahiti	
Georgia	Mozambique	Swaziland	
Ghana	New Caledonia	Tanzania	
Guam	New Zealand	Thailand	
	Nigeria	Tunisia	



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During 2014-2015*, NSRC worked in 50 countries in 69 locations at 110 events training and assisting more than 4,000 people:

	Africa	AsiaPac	Europe	LA-Carib	NorthAm	Mid-East	Total
Men	1239	1567	155	124	77	135	3297
Women	279	267	83	31	28	39	727

**through August, 2015*

- Facilitated donations of 2.5 tons of network equipment worth \$350,000 to universities, research institutes and emerging NRENs
- Facilitated donations of books worth \$275,000 to 2,500+ people, libraries, and university computing centers
- Arranged for ~\$150,000 in fellowship funding to support dozens of network technicians from Africa, Asia/Pacific and Latin America to attend networking events and science meetings for collaboration with U.S counterparts

Worked with many RENS providing direct assistance and training:

AfREN	Eb@le	KRENA	PREGINET	SudREN	TuRENA
BDREN	erdemNET	KazRENA	REANNZ	TARENA	UbuntuNet
BdREN	GARNET	LERNET	RENU	TEIN*CC	UzSciNet
CAREN	GEANT	MYREN	RWEDNET	TERENA	VinaREN
DANTE	Internet2	MoRENET	RwEdNet	TERNET	WACREN
DrukREN	KENET	MoRENNet	snRER	ThaiREN	ZAMREN

Moving Forward...

- Major goal over the next three years is to provide sustainable technical expertise to support the current rapid build-out of research & education networks (RENs) around the world
- Approach is to expand local network engineering expertise in university IT departments and REN organizations to a sustainable level using a train-the-trainers approach... Connecting the campus network to the national, regional and international Research and Education fabric by working with NRENs in countries requesting assistance
- Urgency and need for scale are driven by high demand for NSRC-level network training/planning services which has been created, in part, by funded programs for REN expansion in numerous regions that are funding capacity/equipment but are not funding technical training/services
- Continued coordination with NSF IRNC, TEIN*CC, PRAGMA, Internet2, GEANT, APAN, APIA, APNIC, UbuntuNet Alliance, WACREN, RedCLARA, CAREN, APNIC, ADB and regional funding organizations



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United Nations
Development Programme



Foundation for Research Development
National Research Foundation

THE KRESGE FOUNDATION

MacArthur Foundation

