Workforce Development
NITRD Middleware and Grid Interagency Coordination Team (MAGIC)

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Success is in the Numbers

- The 23 NITRD member agencies invest approximately $6.5 billion annually in R&D programs that identify, develop, and transition to practical use the advanced networking and IT capabilities needed by the Federal Government and the Nation.

- With this size investment it is critical that not only the advanced networking and IT capabilities produce outstanding outcomes but the workforce development outcomes are equally impressive.

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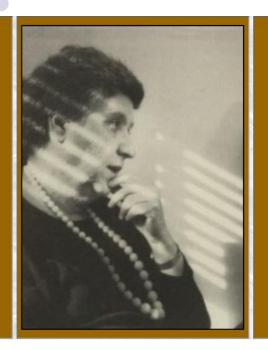
Success is in the Numbers

Dr. Nina Roscher Chemistry Professor, American University (Deceased) NSF PAESMEM1998
Dr. Mary Gray, Distinguished Professor of Mathematics and Statistics, American University, NSF PAESMEM 2001
Dr. Linda Bailey Hayden, Professor Emeritus, Elizabeth City State University, NSF PAESMEM 2003

Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring

Success is in the Numbers

- Cyberinfrastructure for remote sensing of ice sheets

Building Capacity in Polar Science, International Innovations: Disseminating Science Research and Technology, North America edition August 2012. P 32-35.

Guest Editor, Kelly Faulkner, NSF Polar Science, Director of the National Science Foundation's Office of Polar Programs

CyberInfrastructure for Remote Sensing of Ice Sheets

Demographics for the REU students are given in the chart below; women made up 42% to 63% and minorities made up 66% to 89%.

	2010 Number	2010 Percent	2011 Number	2011 Percent	2012 Number	2012 Percent	2013 Number	2013 Percent
Women	11	42%	22	63%	12	55%	13	50%
White	5	19%	12	34%	4	18%	3	11.5%
Black	20	77%	21	60%	17	77%	21	80.8%
Hispanic	1	4%	1	3%	0	0%	0	0
Asian	0	0%	1	3%	0	0%	0	0
Native American	0	0%	0	0%	1	5%	2	7.7%
Total	26		35		22		26	

Plus CReSIS minority graduate student participation went from 7% in yr.1 to 40%

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Over all CReSIS WD programs

- 55% being female students and   80% minority students
  (African American, Hispanic and Native American).

- 44% of the participants who provided information regarding their socio-economic status shared
   they were from single-parent households with an annual income of less than $45,000.

- Discovery of a new world feature: Elizabeth City State University Bay in Antarctica. Malcolm
  LeCompte, Robert Bindschadler, Linda B. Hayden, *Temporal Reduction and Loss of an Ice Shelf
  in Pine Island Bay, Antarctica: 1972 – 2003*, IEEE-GRSS Journal of Selected Topics in
  AppliedEarth Observations and Remote Sensing (GRSS-JSTARS)
  GRSL-00258-2012, IEEE- JSTARS-2012-00405.R1

- **Thousands of K-16 and Graduate Students were impacted**.

SGCI WD Connects Students to Gateway Experts and Technology

SGCI Workforce Development Impact

- Internships

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- Supercomputing Hackathon

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- PEARC Hackathon

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- ADMI Professional Development Seminar

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- Gateway Conference

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SGCI Internships by the Numbers

Year	# Interns	# Male	# Female	# Minority	% Minority	% Women	% Clients Paid
2017	4	3	1	2	50%	25%	39%
2018	6	5	1	3	50%	17%	75%
2019	8	4	4	4	50%	50%	69%
2020	15	11	5	8	53%	33%	53%
Totals	33	23	11	17	52%	33%	59%

Women made up 33% of the participants and 52% were minority.

SGCI Mentoring Model
Building a community of mentors

- Partner with NSF REU community through NCAR led by Valerie Sloan, Director of the NCAR|UCAR GEO REU Network

- Mentoring in a virtual environment webinar

- 81 mentors to date for hackathons, interns and conference

- Mentoring resource toolkit

Provide Mentoring Opportunities

- Gateway conference mentoring
- Internship and coding institute mentoring

Traction - Building a Mentoring Community

SGCI Community Mentors	Number
2020 Internship Mentors	10
2019 Internship Mentors	11
2018 Internship Mentors	6
2017 Internship Mentors	6
2019 Conference Mentors	8
2018 Conference Mentors	12
2017 Conference Mentors	14
2019 PEARC Hackathon Mentors	7
2018 PEARC Hackathon Mentors	7
Total	**81**

Current Status of Past Participants
Where are they now

Associate Software Engineer at Red Hat (Disaiah Bennett)

Graduate Student @ ECSU

Cloub Engineer at Oracle (Jacob Harless)

Technology Analyst @ Bank of America ((Andrea Dumalagan)

System Administrator at IBM SoftLaser ((Hagen Hodgkins)

GIS Reservist at FEMA (Joel Gonzales-Santiago)

Returning Intern at Ohio Supercomputer Center (Michaud Reyna)

DESIGNER 1 @ Newport News Shipbuilding (Derek Morris)

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Suggestions for NITRD members

- Assure that reviewers understand and value WD

- Consider ways to partner with minority professional organizations (MPO). (i.e. joint meetings/events, speakers, etc)

- Consider ways to increase scholarships and fellowships funds

- Consider tier 1 and tier 2 summer research training programs based on the Team concept

Suggestions for Federal Agencies

• Have the MPO to nominate students for a conference travel award from your organization.. You can specify your requirements: Classification, GPA, major, research interest, etc. should be factors.

• Mentor the students during the conference. Attend sessions with them to bring your discipline area relevance to what they hear. Let them know about other opportunities you have for them i.e. internships, AY scholarships, etc

•Name seminars/lecture series after your organization.

• Make presentations as part of the MPO conferences.

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- National Association of Black Geologists and Geophysicists (NABGG)

- Advancing Hispanic/Chicano and Native Americans in Science (SACNAS)

- The Association of Computer and Information Science/Engineering Departments at Minority Institutions (ADMI)

- The National Technical Association (NTA)

Suggestions for NITRD members

- Society of Black Physicists (NSBP)

- National Association of Black School Educators (NABSE)

- National Association of Mathematicians (NAM)

- National Society of Black Engineers (NSBE)

- National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE)

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- Hold Awardees Accountable for Broader Impact Outcomes
  - Results from Prior Funding: Include WD
  - Assure that reviewers hold awardees accountable when proposals are being reviewed
- Invest in Successful MSI-TWI Partners to Help Them Mentor New Partnerships that Involve MSI's
- Conduct strategy sessions with the MPOs and MSIs where they have a voice in the development of the partnership.

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Success is in the Numbers

- NITRD WD programs should not produce average, mediocre or typical numbers.

- NITRD WD efforts should produce FRONT PAGE, JUMP OFF THE PAPER numbers.

- NITRD WD outcomes should

  be as impressive as the science

  and technology outcomes.

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"Any opinions, findings, conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Networking and Information Technology Research and Development Program."

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