Developing a Persistent & Resilient Strategy for Pursuing/Obtaining NSF Funding:
A HBCU Perspective

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ASEE Increasing Participation of Minority Serving Institutions in NSF CISE Programs
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DISCUSSION

- *Introduction & TSU Background*

- *Strategic Initiatives of the College*

- *Working with Research & Sponsored Programs*

- *NSF Opportunities & Awards*

- *Leveraging Industry/Defense Partnerships*

- *Attributes of "**good**" NSF Partnership*

- *Conclusions & MSI Recommendations*

- *Tennessee State University –* public urban and land grant university;

- Established in 1912

- Fall 2019 Enrollment: 8081 Students; 75% Tennessee Residency;

- 375+ Full Time Faculty; 140 Part-Time;

- $50+ Million Research

- President Glenda B. Glover

- **BS Academic Programs**
  - Architectural Engineering
  - Civil Engineering
  - Electrical Engineering
  - Mechanical Engineering
  - Computer Science
  - **Applied & Industrial Technologies**

- **Graduate Programs**
  - Master of Engineering
  - Master of Science in Computer Science
  - **MS – Engineering & Computational Sciences**
  - **PhD – Engineering & Computational Sciences**

Strategic Plan 2015 - 2020

**Increase undergraduate/graduate enrollment (ACCESS)**

- Aggressive recruitment initiatives
- Community College Partnerships
- Pre-college summer engineering programs

Increase retention and academic performance (ACADEMIC QUALITY)

- FE & Practice-Driven curriculum
- Global Experience and/or language
- Innovative Curricula
- Improve instruction/learning quality

Expand scholarships, research & partnerships (AFFORDABILITY)

- ***Increase research in strategic areas & resources***
- Increase scholarship resources
- Support endowment efforts
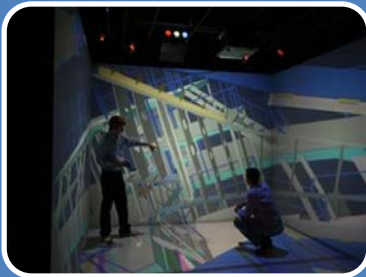- Strong Industry Advisory Council
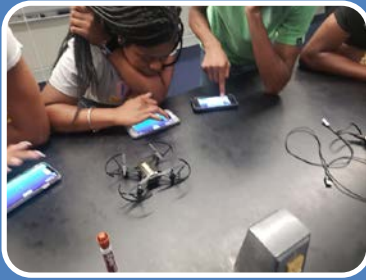
ACCESS

- Pre-College Summer Programs for Recruitment
- Retention of First-Year Students

ACADEMIC QUALITY

- FE Performance of Students
- Curricula Innovation led by FACULTY

AFFORDABILITY

- Identify & Support Key Faculty Researchers
- Working with Research & Sponsored Programs Office
- Identify and pursue Research Funding Opportunities

Where are the Opportunities to Support Strategic Initiatives

Retention Challenge in Engineering

- **NSF HBCU-UP Implementation Grant (2)**
- Industry Support for Pre-College Programs

Academic Programs in the College

- **NSF Targeted Infusion Grants (4)**
- Reform of Graduate Degree Programs
- Reform of Undergraduate Degree Programs

Attracting Research via Grants & Partnerships

- **TIGER Institute – American Recovery & Reinvestment Act 2009**
- CRANE Naval Partnership and Air Force Research Laboratory
- **NSF CREST Miss….and Miss ;-(**
- **NSF S-STEM Miss…and Miss…and FINALLY A WIN!!!!**

Strategic Initiatives & Challenges

Challenges & Gaps	Strategic Activities
Faculty Expertise & Research	• Hiring of New Faculty with research background; • Retool mature faculty with emerging research areas; • Pursue emerging areas for funding;
Faculty Availability & Workloads	• Negotiate teaching workloads with Academic Affairs; • Release (reduced) time for newly hired faculty; • Encourage "seasoned" faculty to mentor;
Grant Preparation	• Collaborate with Research & Sponsored Program in Writing; • RSP personnel assigned to college for proposal submissions; • Multi-disciplinary proposal teams of faculty;

Strategic Initiatives & Challenges

Challenges & Gaps	Strategic Activities & Opportunities
Grant Awareness	• NSF Strategic Areas and Industry Opportunities; • Participate in NSF Webinars/Seminars/Review Panels
Industry Partnerships for Research	• Faculty Summer Research Internships (NSWC Crane); • White Paper submissions to Military and Industry Organizations; • Industry advocate representative and **"host";** • Mutually beneficial for industry/academic partnerships; • R1 University Research Partnerships;
Post-Award & Execution of Grants	• Support from Research & Sponsored Programs; • Internal organization of Grants VS Contracts challenge; • Relationship with NSF Program Director/Manager and industry sponsor;

Attributes of MSI-NSF Grant

| Attribute	What Makes it Work
Program Director/Manager & Principal Investigator	• Communication and participation in NSF Events; • Submission of reports and feedback; • Stability of PI and project team;
Research & Sponsored Programs Office	• Infrastructure to support NSF requirements • Personnel to support Post-Award activities; • Intervention when necessary with G&A; • Strong support from AVP/VP for RSP;
Project Execution	• Faculty workload adjustment for grant success; • Project spending with G&A support; • Relationship with NSF Program Director/Manager; • Timely project reports;

College of Engineering

Strategic Developing Research Centers

Joint Center for Biomedical Science & Engineering

Center for Advanced Materials & Manufacturing

Center for Data Sciences, Analytics, and Cyber-Security
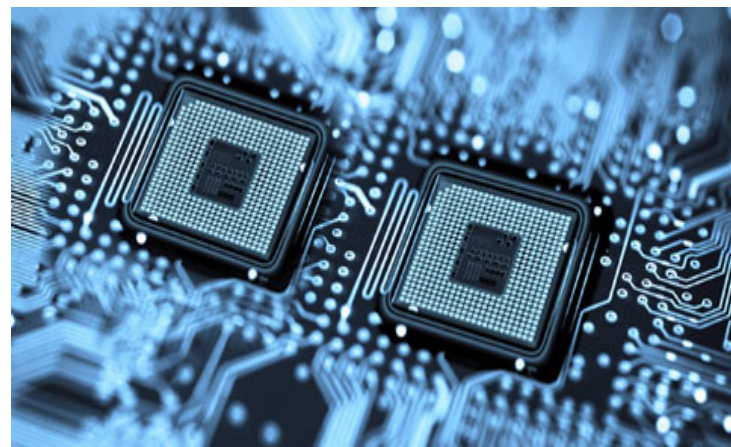
CONCLUSIONS - *What MUST MSIs do to attract more RESEARCH Funding?*

- **Faculty Development……with research opportunities;**
- **Hire & Support more Graduate Students….with funding;**
- **Work with NSF with "Research Capability" Opportunities;**
- **Collaborate with sister *MSIs* and R1 Academic Institutions;**
- **Examine/Reform grant/contract process in RSP and the university;**
- **Higher Admin support;**

College of Engineering

THANK YOU ASEE & NSF!

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