

# **NIST Centers of Excellence Program: An Update**

**Visiting Committee on Advanced Technology**

**June 11-12, 2013**

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## NIST Centers of Excellence (COEs)

Visiting Committee on Advanced Technology  
June 19-20, 2012

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### Immediate Questions to be Answered

- Nature of the New Centers
  - Aligned with a subset of NIST investment priority areas?
  - OU based?
  - All new or can some resources be used to augment existing Joint Institutes?
  - Pick one winner and invest all the chips?
  
- Governance Model
  
- Basis for Selection

VCAT, June 2012

# Outline for Today's Discussion

- Brief Overview of NIST Centers of Excellence Program
- How do CoEs differ from NIST's Joint Institutes?
- Update on Status and Implementation Plans
  - Initial focus on Advanced Materials Discovery
    - Why?
  - Other areas under consideration

# NIST Centers of Excellence Program

This Program will assist NIST in building new capacity and competencies it needs to carryout its mission in a dynamic and fluid technological environment.

- NIST's ability to impact innovation and competitiveness in a rapidly changing environment requires building of new capacity and competencies.
- Co-locating measurement science capabilities in hubs of innovation will help accelerate tech development.

## NIST will

- Create multidisciplinary centers of excellence to assist in building or expanding capacity in critical areas of emerging technology
- Leverage multidisciplinary capabilities of Centers back into NIST core activities



# Objectives of Centers of Excellence

**Broadly defined, the objectives of the Centers are to:**

- Provide an interdisciplinary environment in which NIST, academia, and industry can collaborate in pursuing research focused on innovations in measurement science and development of new technology focused on emerging areas of national need
- Foster expanded development of expertise in measurement science and its role in innovation through the education and training of scientists and engineers
- Enhance technical innovation through earlier alignment of measurement science with emerging and innovative new fields of research
- Further expand NIST's Laboratory Program's footprint beyond our Gaithersburg and Boulder campuses

# NIST four “Joint Institutes” *...have all become integral parts of our research and measurement service programs*



## **JILA**

NIST + University of Colorado

Institute for Bioscience and  
Biotechnology Research (**IBBR**)  
NIST + University of Maryland College  
Park+ UMD Medical School



## **Joint Quantum Institute**

NIST + University of Maryland + NSA



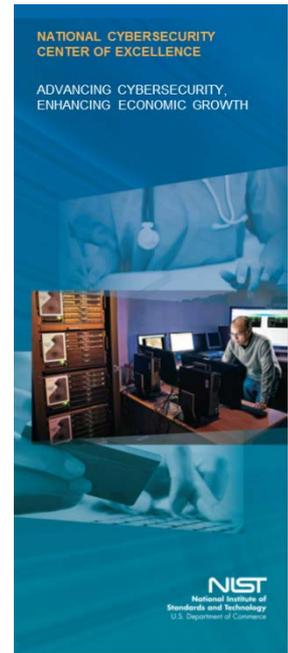
## **Hollings Marine Laboratory**

NIST + NOAA + SCDNR + College of Charleston +  
Medical University of South Carolina



# National Cybersecurity Center of Excellence (NCCoE)

- Public-private collaboration to design, implement, test, and demonstrate integrated cybersecurity solutions and promote their widespread adoption.
- Center hosts “Use Cases” that:
  - Represent complex cybersecurity business challenges
  - Require an integrated solution that has clear benefits for one or more particular industry sectors
- Results from NCCoE projects will be shared with the broad IT user and vendor communities.
- “Use Cases” demonstrate cybersecurity principles and practices that are feasible for businesses and measure them against standards.
  - **Health Care IT Use Case** - Q4FY12
  - **Cloud IT Use Case** - Q1FY13
  - **Continuous Monitoring Use Case** - Q1FY13



The State of Maryland and Montgomery County, Md., will partner with NIST in the New National Cybersecurity Center of Excellence. A Memorandum of Understanding was signed Feb. 21, 2012

*Photo Credit: NIST*



[www.nist.gov/itl/csd/nccoe-022112.cfm](http://www.nist.gov/itl/csd/nccoe-022112.cfm)

[www.nist.gov/public\\_affairs/factsheet/upload/nccoe.pdf](http://www.nist.gov/public_affairs/factsheet/upload/nccoe.pdf)

# Different Niches for new CoEs and Current Partnerships

## NIST Joint Institutes and new NCCoE:

- have proven to be mutually beneficial partnerships between NIST and various academic institutions that have enhanced the depth and quality of NIST research in several areas
- alignment is at the Operating Unit level where:
  - single-OU focused
  - lifetime not specified, but none have been terminated; JILA partnership has existed for ~50 years ; IBBR for 25 years; HML for more than 12 years.

- JILA – *AMO physics*
- IBBR – *biotech*
- HML – *marine science*
- JQI – *quantum science*

## New “Centers of Excellence”:

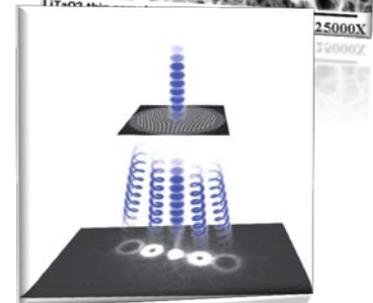
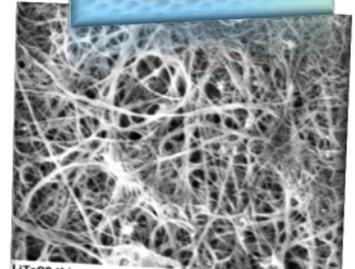
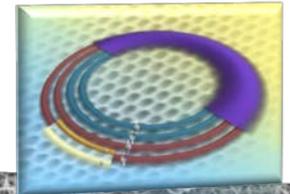
- will be based on cooperative agreements between NIST and academic and/or industrial partners **with the specific objective** of assisting NIST in building new capacity and competencies in critical areas
  - supplements NIST’s IMS (ne Competence Building) Program in that regard
  - expected to exist for time sufficient for NIST to build the sought after capacity
- aligned at NIST Laboratory Program level; multi-lab involvement expected

# Centers of Excellence Program Implementation

- On March 21, 2013, Congress approved the FY13 Full-Year Continuing Resolution to fund the federal government for the remainder of the fiscal year. Included in the budget statement was language instructing NIST to use \$20M of the STRS appropriation line to establish Centers of Excellence (COE):

*“Centers of Excellence.—The creation of centers of excellence is supported, and \$20,000,000 is included, as requested, to establish these centers on a competitive basis.”*

- **with Spend Plan that Requests only \$7M in FY13**
  - due to:
    - Timing of anticipated allocation of funds; still not released
    - Desire to initially standup one pilot center as potential model for others
- **Focus of First New Center – Advanced Materials Discovery**

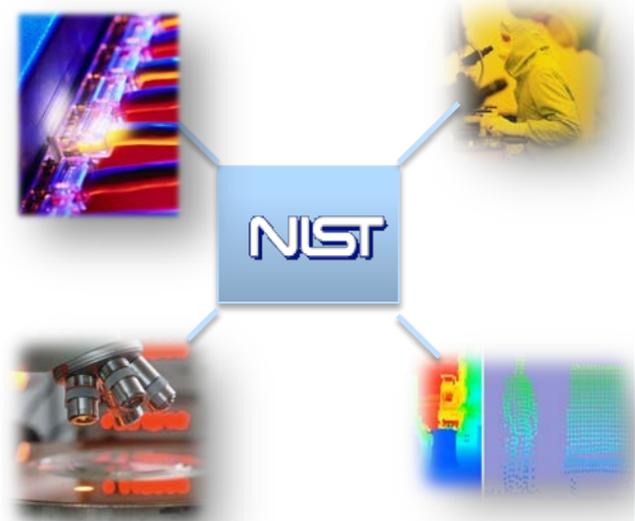


# Centers of Excellence Program Implementation Cont'd

## Funds Requested in FY2014 Budget to Complete Program Build Out

- NIST is working with the IDA's Science and Technology Policy Institute (STPI) to scan research and technology space to identify emerging science/technology areas.
- Input also was solicited from the NIST Laboratory Leadership
- Plan is to establish 2-3 additional competitively-selected centers to assist in new capacity building in emerging areas of national need, including, but not limited to:

- Advanced Communications
- Big Data
- Quantitative Biology
- Complex Systems
- Synthetic Biology
- Carbon-based Nanomaterials
- Clean Energy Systems
- Nondestructive Evaluation
- Disaster Resilience
- Sustainable Engineered Materials



# Expectations of the Advanced Materials Center of Excellence

## New Center is expected to:

- Assist NIST in recapturing a leadership position/role in materials discovery and development to complement NIST's world-class capabilities in materials characterization
- Provide training opportunities for young scientists and engineers in materials discovery and characterization
- Create a targeted recruitment pool for staff in this critical and expanding area
- Demonstrate use of the tools and resources developed through the Materials Genome Initiative for strengthening the U.S. Materials Development enterprise

# What's Next for Establishing Advanced Materials CoE

- Federally Funded Opportunity(FFO) is in final stages of clearance for publication
  - targeted for mid-June launch
  - open for 30 - 45 days
  - publicized through webinars and at key Advanced Materials related and Materials Genome meetings

## A Competitive Proposal Should:

- Provide evidence of resources to support the Center and its activities
- Demonstrate expertise and strong technical research agenda in Advanced Materials discovery (development, modeling, and simulation)
- Clearly articulate plans to engage industry in providing input to direction and focus of Center research
- Substantiate ability to providing a cohesive, collaborative, and multidisciplinary research environment.
- Provide for the use of tools and resources developed by the Materials Genome Initiative that will serve as a foundation for strengthening domestic industry.
- Include plans for:
  - training opportunities for young scientists and engineers in materials discovery and characterization
  - collaboration model for integrating NIST research staff into center activities
  - involvement of under-represented students



**Thanks for Your Attention**

**Questions or Comments?**

