VCAT

(Visiting Committee on Advanced Technology)

Interaction with NIST Leadership and Government Officials

MEP Advisory Board Meeting

Alan Taub, VCAT Chair

June 24, 2013

NIST's Mission

To promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.

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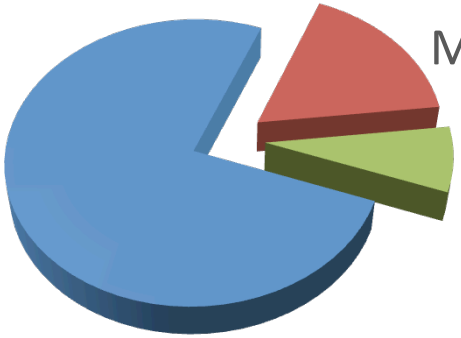
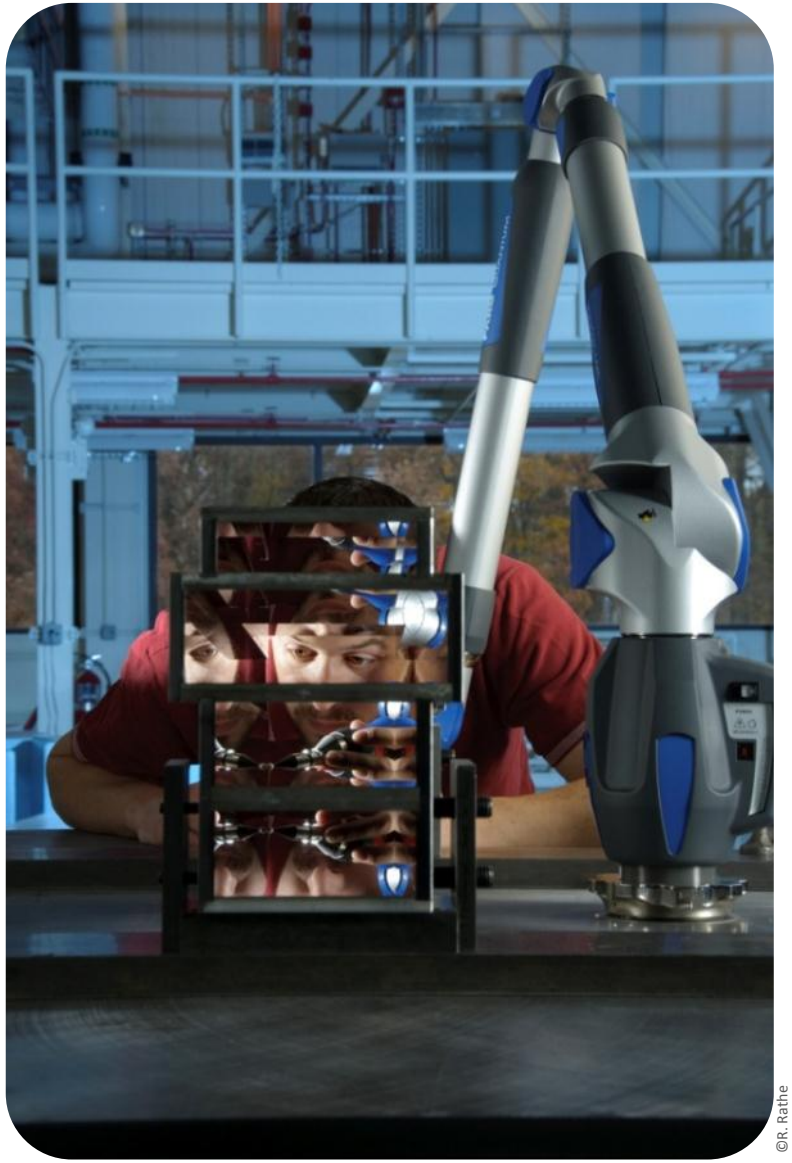
NIST: Basic Stats and Facts

Major assets

- ~ 3,000 employees
- ~ 2,800 associates and facilities users
- ~ 1,300 field staff in partner organizations
- Two main locations: Gaithersburg, Md., and Boulder, Colo.
- Four external collaborative institutes: basic physics, biotech, quantum, and marine science

FY 2012 Appropriations $750.8 M





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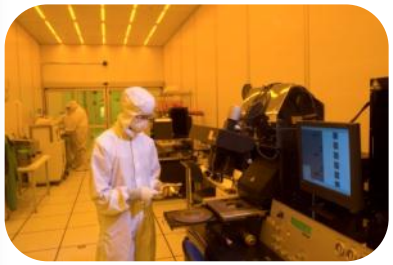
NIST Programs



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NIST Laboratories

- Providing measurement solutions for industry and the nation

Maksim Dubinsky/shutterstock.com

Hollings Manufacturing Extension Partnership

- Nationwide network helping smaller manufacturers compete globally

Poudre

Baldrige Performance Excellence Program

- Strengthening performance excellence in U.S. organizations

VCAT Charter

- Establishment – 15USC278 of the NIST Organic Act and the Federal Advisory Committee Act (FACA)
- **The Committee shall review and make recommendations regarding general policy for NIST, its organization, its budget and the programs, within the framework of the applicable national policies as set forth by the President and the Congress**
- The Committee will function solely as an advisory body, in accordance with the provisions of the FACA.

Members and Organization

(Summary)

- **The Director of NIST shall appoint members**
- **Members selected solely on basis of established records of distinguished service, cross section of traditional and emerging US industries, be eminent in fields**
- No federal government employee, registered federal lobbyist, or foreign agent may serve on VCAT
- Shall consist of 15 members
- Maximum of 2 consecutive 3 year terms (normal 1 term)
- Members serve as Special Government Employees subject to applicable ethics standards
- **Chair and Vice Chair shall be elected by members of the Committee**
- **Committee shall report to the Director of NIST**

2012 COMMITTEE

Dr. Vinton G. Cerf, Chair Google Term: February 1, 2007 - March 31, 2013	Dr. Alan I. Taub, Vice Chair University of Michigan Term: May 9, 2008 - May 8, 2014
Dr. Sujeet Chand Rockwell Automation Term: April 1, 2010 - March 31, 2016	Dr. Uma Chowdhry DuPont (Emeritus) Term: October 1, 2010 - September 30, 2013
Dr. Tony Haymet Scripps Institution of Oceanography, UCSD Term: September 1, 2009 - August 31, 2015	William M. Holt Intel Corporation Term: May 13, 2012 - May 12, 2015
Dr. Karen Kerr University of Southern California Term: June 1, 2011 - May 31, 2014	Dr. Shaygan Kheradpir Barclays Bank Term: April 1, 2010 - March 31, 2013
Dr. Pradeep Khosla University of California, San Diego Term: June 2, 2008 - June 1, 2014	Dr. Roberto Padovani Qualcomm Technologies, Inc. Term: May 1, 2011 - April 30, 2014
Dr. Alton D. Romig, Jr. Lockheed Martin Aeronautics Company Term: April 15, 2009 - April 14, 2015	Dr. Darlene J.S. Solomon Agilent Technologies Term: January 3, 2010 - January 2, 2016
Dr. John J. Tracy The Boeing Company Term: January 7, 2013 – January 6, 2016	

Expectations of VCAT Members

- **VCAT members are expected to expend sufficient time, energy and attention to assure diligent performance of their responsibility.**
- Members are expected to attend meetings of the VCAT and its Committees on which they serve; **review materials distributed in advance of the meetings; and make themselves available for periodic updates and briefings with management via telephone or one-on-one meetings.**
- It is expected that a VCAT member will make every effort to attend all meetings, and attend a minimum two meetings per year.
- New VCAT members shall work to become familiar with NIST including: Members of Senior Management; Vision and Mission, Strategic Plan and Planning Process; Budget, Budget Processes, and the Fiscal Year Budget Cycle; Stakeholder Engagement; Other key Policies; and Practices through attending a NIST-provided orientation session, a review of background materials, meetings with senior executives and visits to NIST facilities.

Members and Organization

(Summary)

- **Committee shall meet quarterly (see revision)**
  - **Amended 11.2.07 "At least twice per year" – We plan 3 meetings**
- Committee will not be compensated except for travel allowances
- Committee may require a staff which shall be appointed by the Director
- **Committee shall provide an Annual Report, through the Director to the Secretary of Commerce for submission to Congress on January 31 of each year (see revision)**
  - Amended 11.2.07 "Annual report not later than 30 days after President's budget is submitted to Congress…." - Hence timing of meetings
- Committee shall not act in absence of quorum
- **Committee shall have executive committee and may establish other subcommittees as it deems necessary**

NIST – VCAT Guiding Principles (2)

- **VCAT focuses on significant policy and high-level organizational and programmatic issues rather than on short-term management and administrative matters.**

- The respective roles of the VCAT and NIST staff are clearly defined and understood.

  - NIST leadership is responsible for providing timely and concise information that the VCAT needs in order to be familiar with NIST and its customers, activities, services, and strategies and plans.

  - **NIST staff's role is to facilitate the work of the VCAT** – and not to attempt to control or perform that work.

  - All VCAT members contribute to the VCAT. NIST leadership provides feedback on the VCAT's performance and contributions, just as the VCAT provides feedback on NIST's performance and contributions in enabling the Committee's work.

General Meeting Format

- Update by the Director
- Focus on NIST priority issues
  - **Convene Subcommittees as needed**
- Highlight specific recommendations and/or findings in support of VCAT Annual Report

VCAT Meeting Agenda Review

Day 1

Session I: Overview

Call to Order
Alan Taub, VCAT Chair
Welcome and Agenda Review
Willie May, Associate Director for Laboratory Programs and Principal Deputy
NIST Safety Update
Richard Kayser, Chief Safety Officer

Session II: Advanced Manufacturing

Overview of NIST Activities in Support of Advanced Manufacturing
Willie May
Update on NIST Extramural Programs in Advanced Manufacturing
Frank Gayle, Deputy Director, Advanced Manufacturing National Program Office
Alex Folk, Program Development Office Director, Manufacturing Extension Program
A Model for Working with Manufacturers – NIST Center for Automotive Lightweighting (NCAL)
Tim Foecke, Director, NCAL and Leader, Materials Performance Group, Materials Science and Engineering Division, Material Measurement Laboratory

EXAMPLES OF VCAT IMPACT

- NIST laboratory safety
  - Consistent attention by VCAT enables strong feedback loop with laboratory leadership

- Advanced Manufacturing Extramural Initiatives
  - VCAT support in response to NIST leadership priority

The NIST VCAT of 2009 makes the following recommendations:

<u>SAFETY RECOMMENDATIONS:</u>

Eliminate common safety concerns. *The VCAT continues to observe safety practices that are not consistent with a world-class safety-focused laboratory. The inconsistencies among individual laboratories suggest that safety is not yet part of a pervasive leadership-driven culture.*

Proactively seek advice from external experts. *First, conduct a series of visits to research laboratories known to have excellent safety records and a strong safety culture. The NIST leadership has already initiated these visits and several best practices have been identified for implementation. Second, the Director should establish an independent, external review committee to assist the organization in monitoring the implementation of world-class safety practices in the laboratories.*

The NIST VCAT of 2011 makes the following recommendations:

<u>SAFETY RECOMMENDATION:</u>

The VCAT expects a report on metrics in use and in development during the calendar 2012 VCAT period. In addition, the VCAT is specifically interested in the measurements taken by NIST to illustrate its progress in improving safety. The importance of this effort cannot be overemphasized.

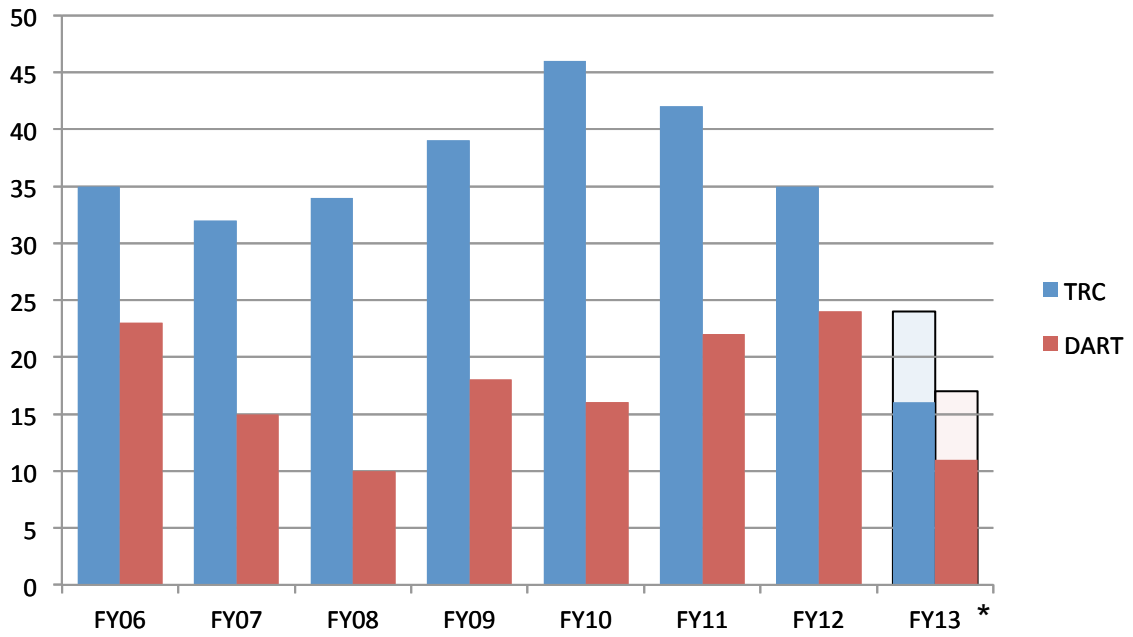
Safety Update

Total recordable case (TRC)

- To a first approximation, an injury that required medical treatment beyond first aid

DART case

- An OSHA recordable that resulted in employee Days Away, Restricted duty, or job Transfer



* FY13 data as of May 31, 2013. Black outline indicates current level extrapolated through the end of FY13.

Absolute number of OSHA cases down in FY 2013

Safety Initiatives

- Changing the culture: OU safety performance goals
  - Derived from OU's priorities
  - Goal is to have a specific area of need for improvement or attention
  - Touch on behaviors and attitudes of a wide variety of staff
- Focus on learning: Working towards driving down common types of incidents
  - What does our accident information tell us?
  - How do we use this information to improve our performance?
- Instilling a shared sense of safety performance: NIST leadership conducting safety 'grand rounds'

NIST has a lead role in the Administration's Advanced Manufacturing Priorities

- Creation of the White House Office of Manufacturing Policy
  - Co-chaired by Secretary Bryson (DOC) and Director Sperling (NEC)
- Launch of Advanced Manufacturing Partnership National Program Office
- Release of NSTC's *National Strategic Plan for Advanced Manufacturing*
- Launch of the National Network for Manufacturing Innovation

Credit: Carnegie Mellon Univ.

Credit: Heritage Global Partners

VCAT Manufacturing Subcommittee Recommendations on Design Principles for the Advanced Manufacturing Technology Consortia (AMTech)

Alan Taub
Chair, VCAT Manufacturing Subcommittee
October 18, 2011

Design Principles for AMTech

- What management models are most effective for the public-private partnerships – specifically AMTech?
  - A good model is the Nanoelectronics Research Initiative (NRI)
    - The NRI has leveraged modest Federal funding with significant co-investment from state and local governments along with industry partners to establish regional research centers and enjoys extensive participation by educational institutions.
  - As a starting point for discussion, we propose that AMTech be managed through consortia, led by industry, that include broad participation by universities and government agencies.

- What are appropriate evaluation criteria for measuring the performance of the awarded teams?
  - Attainment of stated goals and quality of scientific results: published roadmaps, research publications, formation of testbeds, . . .
  - Demonstration(s) of how research outputs address noted technology gaps, . . .
  - Effectiveness of management/oversight to ensure that goals are attained
  - Evidence of risk-taking in the technologies tackled
  - A vision that includes "grand challenges"
  - Successful inclusion of small and mid-sized firms
  - Robust diffusion of technology and commercialization
  - Rigorous tracking and evaluation of economic/technical impacts

ADVANCED MANUFACTURING VCAT RECOMMENDATION (2011):

- *The VCAT encourages building on the recent progress through continued investment and expansion of NIST programs in these areas and the development of a more complete strategic plan to address needs in advanced manufacturing.*
- *With the new leadership role of Secretary Bryson within the Administration for the development of manufacturing policy, the VCAT recommends that NIST should be assigned the lead for coordination of interagency efforts targeting advanced manufacturing.*
- *With its industry focus and non-regulatory mission, NIST should be the primary interface point between the Federal government and the University and Industrial partners that comprise the Advanced Manufacturing Partnership.*
- *The VCAT supports the AMTech program, but the requested funding levels were inadequate for the program to fully accomplish its mission and goals. The VCAT recommends that AMTech be funded at a level that enables the program to have significant impact.*

ADVANCED MANUFACTURING VCAT RECOMMENDATION (2012):

- The VCAT strongly urges Congress and the Executive branch to fund NIST's Advanced Manufacturing programs at the maximum level feasible. Just as the Agricultural Extension program was the backbone of the American farming economy in the 20th century, the Advanced Manufacturing programs will provide a similar role in the 21st century.
- The VCAT recommends that NIST establish additional definitions and metrics beyond job creation and competitiveness for successful outcomes from the Advanced Manufacturing programs. Metrics might include environmental impacts, lifecycle costs, re-use of materials and subsystems, carbon footprint measurement standards, portable on-line measurement systems, and modularity.
- The VCAT is interested in understanding more fully the interaction between the IMIs and other manufacturing initiatives undertaken by NIST. The potential for mutual reinforcement seems very high and should be a strategic goal of the programs.

Proposed Allocation of FY13 Program Increases for NIST (M)

• Restoration of Core Programs	$20
• Advanced Manufacturing R&D	$15
Cybersecurity	$ 5
• Advanced Communications	$ 5
• NIST Centers of Excellence	$ 7
• Disaster Resilience	$ 2

Advanced Manufacturing	**+ $ 15.2 M**
– Advanced Materials (Matls Genome)	$ 5.2 M
– Biomanufacturing	$ 2 M
– Nanomanufacturing	$ 2 M
– Smart Manufacturing	$ 2 M
– Advanced Neutron Technologies	$ 2 M
– Embedded Standards	$ 2 M

BACKUP SLIDES

NIST – VCAT Guiding Principles

- The VCAT and NIST leadership work together to achieve a constructive atmosphere and a relationship that encourages open, yet critical, examination of NIST. NIST leadership encourages the VCAT to provide constructive, candid advice. NIST leadership considers seriously the VCAT's recommendations. NIST leadership is responsible for identifying the priority items that it wants the VCAT to examine.

- The VCAT addresses the NIST priority items in a timely manner with recommendations that NIST leadership will consider.

- The VCAT is encouraged to make recommendations in other areas where NIST could benefit from the Committee's input.