

**VISITING COMMITTEE ON ADVANCED TECHNOLOGY (VCAT)
MINUTES OF THE FEBRUARY 4-5, 2015 MEETING
GAITHERSBURG, MD**

ATTENDANCE:

**Visiting Committee
Members Attending**

Brooks, Rodney
Colwell, Rita
Garvey, Michael
Haymet, Tony
Holt, William
Padovani, Roberto
Prafullchandra, Hemma
Solomon, Darlene*
Tracy, John

VCAT Exec. Dir.

Lellock, Karen

NIST Leadership Board

Boehm, Jason
Brockett, Del
Celotta, Bob
Fangmeyer, Robert
Harary, Howard
Jenkins, George
Kayser, Rich
Kimball, Kevin
Locascio, Laurie
May, Willie
Molnar, Michael
Neumann, Dan
Olthoff, Jim
Porch, Susanne
Rochford, Kent
Romine, Chuck
Royster, Cecelia
Salber, Stephen
Saunders, Mary
Singerman, Phillip
Wixon, Henry

NIST Staff

Acierto, Linda
Allocca, Clare
Andrade, Dorianna
Arrisueno, Gladys
Bailey, Dawn
Balicao, Francisco
Baxter, Laura
Beall, Kellie
Belford-Gemar, Diane
Cherny, Paul
Chin, Joannie
Chou, Kevin
Currens, Chris
Delak, Katya
Denicola, Larry
Evans, Heather
Fasolka, Mike
FitzPatrick, Jerry
Frechette, Simon
Gan, Ron
Gayle, Frank
Gillerman, Gordon
Hight-Walker, Angela
Hogan, Mike
Holbrook, Dave
Holland, Diane
Ivy, Nahla
Jillavenkatesa, Ajit
Jones, Al
Kaiser, Debbie
Lin-Gibson, Sheng
Miner, Laurel
Nelson, Tonia
O'Brien, Tom
Parris, Reenie
Porter, Gail
Roberts, Kamie
Saundry, Claire
Schaefer, Christine
Semerjian, Hratch
Shaw, Stephanie
Small, Judy
Spivack, Richard
St. Pierre, James
Sullivan, Suzanne

Thorne, Roger
Watters, Bob
Yoon, Howard

Others

Bhatia, Joe - ANSI
Faber, Al – Baldrige
Foundation
Harris, Warren – Baldrige
Foundation
Hawes, Bernadine – MEP
Advisory Board
Mayfield, Harry – Lewis-
Burke Associates LLC
Spires, Lonnie – Trescal
Webber, Naomi – Lewis-
Burke Associates LLC
Wessel, Vickie* - MEP
Advisory Board
Wilson, David - Morgan State
University

*Participated Remotely

Wednesday, February 4, 2015

Call to Order – Dr. Tony Haymet, VCAT Chair

Dr. Haymet called the meeting to order at 8:30 a.m. and pointed out the emergency exits. Dr. Haymet announced this would be Al Romig's last meeting. Al was not able to attend the meeting as he is transitioning from Lockheed to a position as Executive Officer at the National Academy of Engineering. Dr. Haymet also announced the departure of Uma Chowdry who decided to end her term on the VCAT early. He thanked both Al and Uma for their service to the VCAT and NIST. Dr. Haymet concluded his remarks by outlining the schedule for the remainder of the meeting.

OVERVIEW AND SAFETY

NIST Update and Agenda Review – Dr. Willie E. May, Acting Under Secretary of Commerce for Standards and Technology and Acting NIST Director

Presentation Summary: Dr. May introduced two new VCAT members and an invited guest. Hemma Prafullchandra, CTO of HyTrust, Inc. joined the VCAT in October 2014. Mike Garvey, President of M-7 Technologies began his appointment in late January. Dr. May also introduced David Wilson, President of Morgan State University attending as an invited guest as he completes the review and vetting process to join the VCAT.

Dr. May shared information on a recent safety incident unveiled during the Material Measurement Laboratory's (MML) 100% chemical inventory. Vials of uranium material that date back many years were discovered in one of the laboratories and appropriate actions were implemented. As a result, MML decided to implement a safety stand down day and inspect all cabinets, drawers, and hoods for other materials. Other NIST laboratories took similar action. As a result of these inspections, 160 materials were found and properly transferred to the radiation safety program.

Dr. May provided information on a number of organizational updates, research activities and staff accomplishments. Dr. May updated the VCAT on the hiring of key NIST leadership position, noting that the announcement of the new MEP Director should be made in the coming weeks and the vacancy for the Director of NIST's Standards Coordination Office would be posted soon.

Dr. May updated the VCAT on the progress of the operational improvement teams focused on acquisitions, agreements, human resources, and legal services. Each group engaged stakeholders across the organization and developed suggestions to overcome barriers and challenges. Having received reports from three of the teams, Dr. May, Mary Saunders, and Phil Singerman have been reviewing the recommendations, and a NIST Town Hall meeting is scheduled to share the findings and discuss implementation plans.

Dr. May presented information on the President's FY16 NIST Budget request of \$1,119.7M which is +\$255.8M over FY15. The FY16 request breaks down into Scientific and Technical Research and Services: \$754.7M (+\$79.2M), Industrial Technology Services: \$306M (+\$167.9M), Construction of Research Facilities: \$59M (+\$8.7M), and includes one-time funding for two NNMI institutes.

Several recent staff awards and recognitions were shared, including Robert Celotta, Daniel Pierce and John Unguris for their work on development of electronic spin sources and detectors. Gretchen Campbell was recognized for her work with Bose-Einstein condensates, and Ian Spielman received an award for the development of quantum simulations using ultra cold atoms.

Dr. May provided information on NIST external review panels and their recent work. The NRC Board on Assessments reviews the quality of NIST research against the finest academic institutions in the world, and other organizations. This year NIST had two labs (Materials Measurement and the Engineering Laboratory) assessed and the reviews are done on a rolling basis, so over about three years, NIST will have an assessment on the quality of the research across the organization.

To examine the effectiveness of NIST's measurement service programs, primarily the standard reference materials, calibration services, and the standard reference data services, NIST invited a panel of members from other national metrology institutes to provide input on NIST's capabilities from a global perspective and allow for key comparisons.

A number of new programmatic efforts were highlighted including, Quantum Information and Computer Science (QuICS), a partnership between University of Maryland, NIST and the NSA focused on maintaining the Nation's leading role in quantum information science. NIST is also partnering with the NFL, Under Armour, and GE to develop state of the art materials for impact mitigation. The Head Health Challenge will accept abstracts through March and in April winning abstracts will be invited to submit a full proposal and sample material.

In the areas of Public Safety Communications, the results of the Wireless Spectrum Auction will provide NIST with \$300M through 2022 to be used to support public safety communications research and will include partnerships with industry and other federal agencies.

Dr. May concluded his presentation with several program updates for the VCAT. In the area of disaster resilience, NIST is holding several more workshops in 2015 as the draft framework continues to be developed and refined. NIST has been working to raise awareness and adoption of the practices outlined in the Cybersecurity Framework along with gathering feedback on the use of the framework. NIST plans to continue outreach on the framework and identify opportunities for improvements. All of the subcommittees under the Organization of Scientific Area Committees (OSAC), the practice-focused organization supporting the National Commission on Forensic Science, have been formed and members now total 422 spanning areas such as toxicology, digital evidence, and DNA analysis and many others. NIST's Center of Excellence program continues to expand with expected announcements of the organizations selected for the community resilience center later in February and forensic science center to be announced Spring 2015.

Discussion: The group discussed the following topics:

- NIST FY 2016 budget request and initiatives.
- The renovation needs of existing NIST buildings and infrastructure.
- The role industry will play in the standards development process related to forensic science.

For more information, see Dr. May's [presentation](#).

Safety Update – Richard Kayser, Chief Safety Officer

Presentation Summary: With regard to safety metrics, Dr. Kayser reviewed NIST's actual number of Occupational Safety and Health Administration (OSHA) recordable and Days Away, Restricted, or Transferred (DART) cases from FY 2011 – FY 2014, emphasizing that both metrics have decreased over this time period. Most of NIST's OSHA recordable and DART cases continued to be due to slips, trips, and falls.

Dr. Kayser updated the VCAT on the shared standard of safety performance effort focused on eliminating common safety issues at NIST. Initially the effort was focused on three areas: using electrical cords safely, eliminating slip, trip, and fall hazards, and properly labeling chemical containers. NIST has decided to expand the scope of the standards to include safe storage practices while continuing efforts in the other areas.

NIST is planning to establish an enhanced workplace inspection program that includes OU-led teams of inspectors along with safety professionals from the NIST safety office. Through this process, semiannual inspections of work areas that involve hazardous activity will be conducted in addition to the annual inspections of common areas and office spaces.

Dr. Kayser provided an update on the actions stemming from the 2014 safety climate survey, including a focus on employee rights, unsafe conditions and practices, incident reporting, safety training, management observations, and re-emphasizing the importance of safety in individual performance appraisals.

Discussion: The group discussed the following topics:

- Continued progress on the improving safety culture at NIST.
- Need for continued/regular clean-up efforts to avoid the issue of legacy materials.

For more information, see Dr. Kayser's [presentation](#).

Changes to Congressional Landscape - Likely Priorities and Impact to NIST- Linda Acierto, Senior Legislative Policy Advisor, Office of Congressional and Legislative Affairs

Presentation Summary: Ms. Acierto outlined recent changes to the Congressional committees with NIST oversight responsibilities. She provided information on the individual members sitting on both the appropriations and authorizing committees and their knowledge of NIST programs and activities. Ms. Acierto indicated that there are some members joining the committees not familiar with the NIST portfolio of activities. NIST is working to provide these members and their staff with briefings on the work of NIST. Several areas of interest to the Committees include how NIST is supporting cybersecurity, industry, standards development, technology transfer, advanced technologies, economic competitiveness and job creation. Ms. Acierto also highlighted how the work and focus of NIST crosses into many other House and Senate Committees beyond those with direct oversight.

For more information, see Ms. Acierto's [presentation](#).

Revitalize American Manufacturing and Innovation Act of 2014 (RAMI) – Mike Molnar, Director, Advanced Manufacturing Office

Presentation Summary:

Mr. Molnar provided a review of the impetus of the National Network of Manufacturing Institutes (NNMI), highlighting the original vision outlined by the President and the recent bi-partisan support resulting in the authorization of the NNMI in the Revitalize American Manufacturing and Innovation Act (RAMI). With the RAMI legislation, DOC and NIST must establish 1) a “Network for Manufacturing Innovation Program” to convene and support a network of Institutes; 2) new “Centers for Manufacturing Innovation”, using open topic, open competition process; and 3) a National Program Office, to oversee and carry out the program.

Mr. Molnar provided an update on the NNMI pilot institutes that now include additive manufacturing, digital manufacturing, lightweight and modern metals, smart power, and advanced composites. He indicated there are three more NNMI - integrated photonics, smart manufacturing, and flexible hybrid electronics – planned for FY 2015. For FY2016, there are plans for five more Institutes based on agency-led topics from USDA, Energy and Defense. In addition, the Department of Commerce is anticipating funding two Institutes through the open topic competition.

Mr. Molnar also outlined the work NIST has been doing to support the entire network. He shared draft ideas for a network structure that includes an executive committee, governance board, technical advisory board, and an executive director as well as Network Council to provide a strong advisory board presence.

Mr. Molnar discussed initial plans for starting the FY2016 Commerce-led Institute by running a two-stage competition. Stage I would involve planning grants to begin to identify the technology areas and industry partners in FY2015. Stage II would be for the actual Institute applications and open to all Stage I awardees.

Discussion:

- A potential NIST role in supporting the existing NNMI centers by serving as the central budget clearinghouse for funding the Institutes.
- The types of topics and industries that submitted NNMI ideas under the request for information effort initiated several years ago.
- The role that geographic diversity plays in the selection of the NNMI sites.

For more information, see Mr. Molnar's [presentation](#).

VCAT ANNUAL REPORT

Deliberations and Presentation on Observations, Findings, and Recommendations of 2014 Annual Report

Dr. Haymet reviewed the draft 2014 VCAT Annual Report and solicited comments from the members as well as NIST leadership on the initial observations, findings, and recommendations for deliberation by the Committee in the following areas:

- NIST Safety Program
- NIST Cryptographic Standards Program
- NIST Disaster Resilience Program
- NIST Role in Advanced Communication

The Annual Report will also comment on NIST's efforts in advanced manufacturing and the VCAT thoughts on the NIST budget and planning efforts. The final report will be available on the VCAT website at <http://www.nist.gov/director/vcat/index.cfm>.

HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP PROGRAM

State of the Program - Hollings Manufacturing Extension Partnership Program - Phillip Singerman, Associate Director IIS, Vickie Wessel, Chair, MEP Advisory Board, Bernadine Hawes, Member, MEP Advisory Board

Presentation Summary: Ms. Wessel provided an overview of the MEP Advisory Board and its priorities in the areas of technology acceleration and local board governance. She indicated the Board is also reviewing the progress of the recompetition of the MEP system and supporting cost share changes for the program. Dr. Singerman highlighted the MEP mission, program structure, strategic focus, and annual budget. He discussed the individual identities of the local centers and their connection to the national program. Ms. Hawes provided the perspective from a local board member and outlined the focus, structure and impacts of the Delaware Valley Industrial Research Center (DVIRC) serving the Philadelphia region of the state of Pennsylvania. Both Ms. Hawes and Ms. Wessel provided additional details on the work of the MEP Advisory board and their individual subcommittees. The subcommittee focused on technology acceleration has defined the concept broadly to include tech transfer, knowledge transfer, technology transition, technology diffusion and deployment. The subcommittee on board governance is working to increase the connectivity between the national program and the local boards and to ensure there is strong accountability at the local level.

Discussion:

- MEP's focus and structure compared to large consulting organizations.
- The use of the Baldrige criteria in evaluating individual MEP centers.
- How individual centers reach manufacturers in their region.

For more information, see the [presentation material](#).

BALDRIGE PERFORMANCE EXCELLENCE PROGRAM

State of the Program - Baldrige Performance Excellence Program - Bob Fangmeyer, Director BPEP, Warren Harris, Member, Baldrige Board of Overseers, Al Faber, President & CEO, Baldrige Foundation

Presentation Summary: Mr. Fangmeyer presented an evolution of the Baldrige program and how the program and the criteria have changed over time to provide a framework for performance excellence. The framework promotes a systems approach to leadership and performance improvement that facilitates increased alignment, integration, and optimization of everything an organization does. Mr. Fangmeyer outlined the program's budget history and explained how it no longer receives federal funding. He also provided several example highlighting the performance and impact of the program and changes to the program's business model and operations to adjust to the loss of the federal investment.

Representing a company that has embraced the framework as well as a member of the Baldrige Board of Overseers, Mr. Harris provided an in-depth summary of how the Tata Group adopted the Baldrige framework. This includes annual assessments conducted by internal staff with the findings reported back to the Board of Directors. The Tata Group has seen significant financial gains over the period they have been employing the framework.

Mr. Faber outlined the plans for the Baldrige Foundation focused on fundraising, advocacy, board development and foundation operations. He presented the Foundation's multi-tiered outreach efforts,

including direct mailings, social media outlets, and annual conferences focused on promoting the Program and garnering support and stewardship.

Discussion:

- How the framework is different from other quality initiatives such as ISO
- The process and structure the Tata Group uses assessing each of its business units.

For more information, see the [presentation material](#).

February 5, 2015

NIST INTERNATIONAL PROGRAMS AND ENGAGEMENTS

Context Setting and Examples of Current NIST Global Engagements - Willie E. May, Acting Under Secretary of Commerce for Standards and Technology and Acting NIST Director

Presentation Summary: Dr. May outlined many of the mechanisms NIST uses in its international engagements, including participating in international metrology and standardization organizations, developing agreements with specific countries, activities with other Federal agencies, and discrete activities at the laboratory staff level. He described specific engagements through international metrology and standardization organizations in the areas of metrology, documentary standards, conformity assessment, and trade and export. He asked the VCAT to provide input into other aspects NIST should consider when deciding to engage in discretionary international activities. He also asked the VCAT for thoughts on emerging issues that may call for NIST to engage internationally.

For more information, see Dr. May's [presentation](#).

Stakeholder Perspective: Joe Bhatia, President and Chief Executive Officer (CEO), American National Standards Institute (ANSI)

Presentation Summary: Mr. Bhatia discussed the U.S. standardization system and the role that ANSI plays alongside of NIST with a focus on the public/private partnership nature. He provided an overview of the interface with a number of regional and international bodies. He outlined how ANSI facilitates on behalf of both the private sector and the government. He also provided information on the current trends in international standardization and commercial areas that affect industry. He described how ANSI is a membership organization, domestically, regionally, internationally with members and representatives from industry, trade associations, professional societies, and government agencies.

Mr. Bahtia outlined how the U.S. standardization system is very diverse and market-driven. While it is private sector-led, the U.S. government plays a pivotal role, and NIST and ANSI have worked together coordinating and collaborating on standards development and conformity assessment. Mr. Bahtia shared that the partnership in the U.S. is key. By working together responses to national priorities, international challenges, and technical and innovation changes can be effectively developed. This dynamic makes the U.S. standardization system quite unique in the world.

Discussion:

- Industry support and participation in the ANSI organization.

- Scale and size of the ANSI organization.
- Impact, scope and diversity of the organization.

For more information, see Mr. Bhatia's [presentation](#).

Stakeholder Perspective: Lonnie Spires, President USA Operations, Trescal

Presentation Summary: Mr. Spires presented an overview of Trescal explaining that it is a third-party calibration laboratory operating on the global scale with nearly 2,000 employees, 71 laboratories, and 95 customer satellite sites. Mr. Spires outlined several global measurement challenges, including advanced communication and mobile technologies with a focus on the importance of developing the next generation measurements in these areas. In his role as President of NCSL, Mr. Spires talked about the long standing partnership with NIST and the collaborations around training and standards development. Mr. Spires outlined some of growing international opportunities in South America and the potential for NIST. He also highlighted increased opportunities for next generation measurement and calibration services and the importance of ensuring global competence in measurement with a focus on educating, training, and developing metrologists.

For more information, see Mr. Spires' [presentation](#).

Discussion:

The discussion session was opened to Dr. May, Mr. Bhatia, and Mr. Spires and included the following topics:

- The importance of NIST international activities and the need to take a strategic approach to the increased involvement.
- The growing impact ITAR requirements are having on all industries.
- NIST's success in serving as a coordinating body across federal agencies and the importance of using that to educate and train federal counterparts on the importance of standards development.
- Continued support for staff exchanges and visits with other NMIs to develop relationships with their foreign counterparts.

CLOSE AND ADMINISTRATIVE BUSINESS

There were no public comments offered.

The VCAT discussed the June 2015 meeting and potential topics to be addressed in upcoming meetings.

Adjournment

The meeting was adjourned at 11:30 a.m. on February 5, 2015

I hereby certify that to the best of my knowledge, the forgoing minutes are accurate and complete.

Karen Lellock, Executive Director, NIST Visiting Committee on Advanced Technology

Dr. Tony Haymet, Chair, NIST Visiting Committee on Advanced Technology