



# **NIST Proposed Organization of Scientific Area Committees (OSAC)**

- what were previously called “Guidance Groups”

Presentation for National Commission  
on Forensic Science

February 4, 2014

Washington, DC

Revised based  
on NCFS input

# Agenda

- Structure
- Membership
- Value to forensic science community and criminal justice system
- Legacy data from Scientific Working Groups-SWGs
- NIST experience in coordinating standards development

# Why NIST?

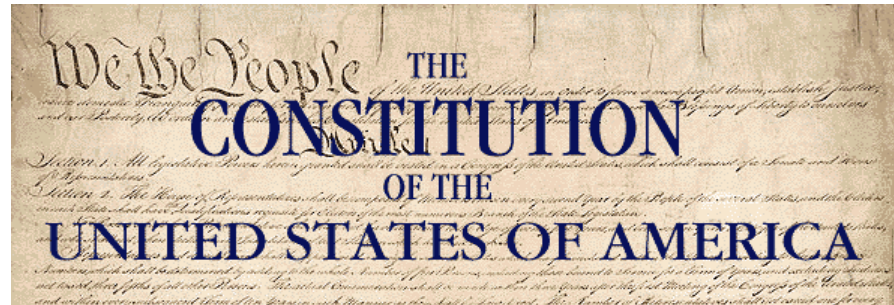
## **NIST's Enabling Legislation - 15 U.S.C. 272.2b**

(10) to cooperate with other departments and agencies of the Federal Government, with industry, with State and local governments, .., and with private organizations in **establishing standard practices, codes, specifications, and voluntary consensus standards;**

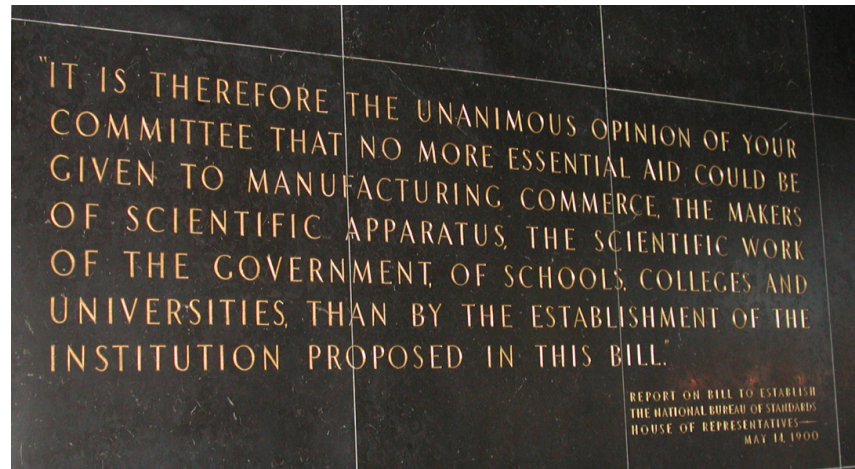
- **Estimated 460 NIST staff are committee members of 119 national and international SDOs**
- **NIST identified more than 50 times in the 286-page NAS Report “Strengthening Forensic Science in the United States – A Path Forward”**

# National Institute of Standards and Technology (NIST)

- Non-regulatory agency within U.S. Department of Commerce
- Founded in 1901 as National Bureau of Standards



Article I, Section 8: The Congress shall have the power to ...  
*coin money, regulate the value thereof, and of foreign coin,  
and fix the standard of weights and measures*



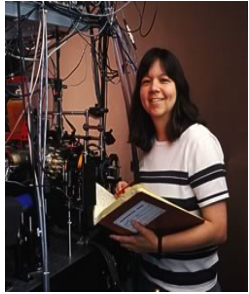
## Unique Mission within the Federal Government ...

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

# NIST: A Premier Scientific Institution

*A world-leading measurement science and standards program*

- Work resulting in 4 + 1 Nobel Prizes since 1997
- Kyoto Prize winner in 2011
- MacArthur Fellowship winners in 2003 and 2013
- National Medal of Science winners in 1998 and 2007
- ~ 10 National Academy Members
- ~120 National Society Fellows
- ~60 National/International Awards/yr



Debbie Jin  
2003 MacArthur  
Genius Grant  
2013 L'Oreal/UNESCO  
"For Women in  
Science" award



Dan Shechtman  
2011 Nobel Prize  
in Chemistry  
based on work while  
Visiting Scientist at NIST



Bill Phillips  
1997 Nobel Prize  
in Physics



Eric Cornell  
2001 Nobel Prize  
in Physics



John Hall  
2005 Nobel Prize  
in Physics



David Wineland  
2007 National Medal of Science  
2010 Nobel Prize



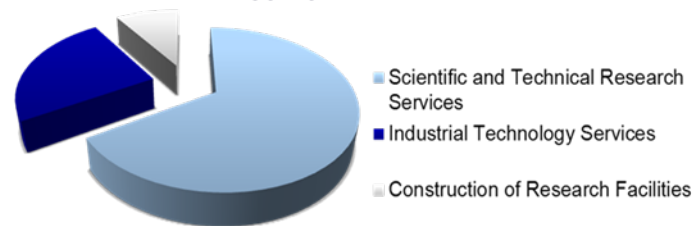
John Cahn  
1997 National Medal of  
Science and 2011 Kyoto Prize  
in Materials Science

# NIST-at-a-Glance

## Major Assets

- ~ **3,000 Employees**; 1800 Scientists and Engineers
- ~ **2,800 Associates** and Facilities Users
- ~ 400 NIST Staff on ~1,000 national and international standards committees

## NIST FY 2013 Congressional Appropriations \$763M



### Plus

- ~ **\$120 M** from other Government Agencies
- ~ **\$50 M** for other reimbursable services

## NIST has two main campuses.....



Gaithersburg, MD  
62 buildings; 578 acres



Boulder, CO  
26 buildings; 208 acres

### + two sites housing NIST radio stations:

- Ft. Collins; 390 acres
- Kauai; US Navy 30 acre site

## and six joint institutes

- JILA – *amo physics*
- JQI – *quantum science*
- IBBR – *biotech – adv. therapeutics*
- HML – *marine bioscience*
- NCCoE – *cybersecurity*
- CHMaD – *“materials by design”*



# Forensics at NIST

**NIST has a long and rich history of work  
in support of law enforcement**

Currently providing research and measurement services such as validated test methods, Standard Reference Materials, and Reference Data in areas such as:

- crime scene investigations
- computer forensics
- fire investigations
- drug detection
- drunk driving testing
- biometrics (fingerprints and handwriting analysis)
- firearms/ballistics
- standards for body armor, nonlethal weapons
- explosives detection technologies
- sports integrity/fairness
- genetics and DNA-based identification



that support the Departments of Defense, Justice, and Homeland Security  
in carrying out their programs.



Harry T. Edwards  
U.S. Court of  
Appeals (DC)  
Co-Chair,  
Forensic Science  
Committee

# Some Concerns about Current Scientific Working Groups (SWGs)

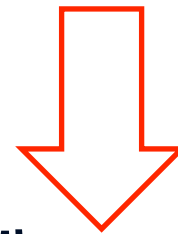
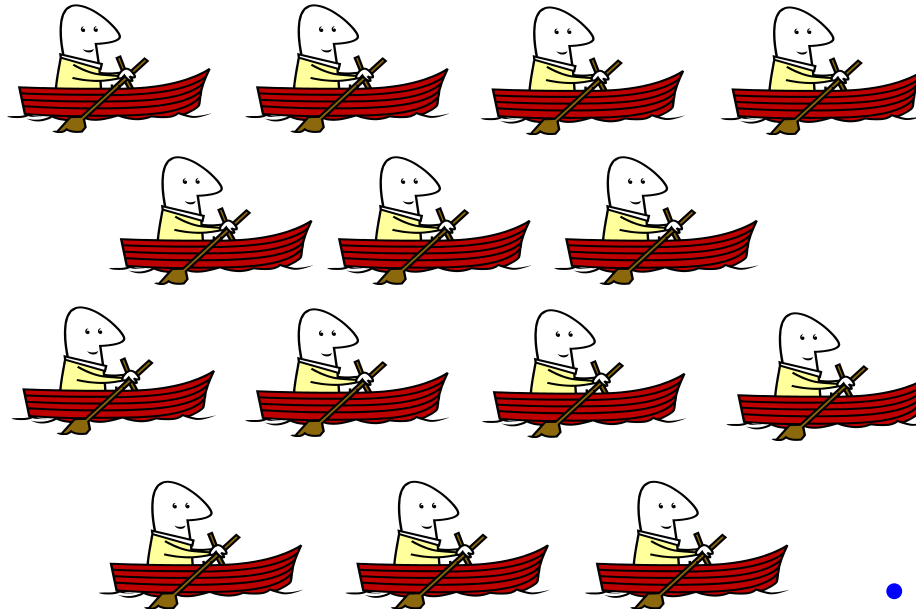
from Judge Harry Edwards, co-chair of the 2009 NAS Committee

- Need regular source of funding
- Need membership criteria
- Need to produce specific, enforceable standards
- Need mandate for community to follow
- Need follow-up to measure impact of work

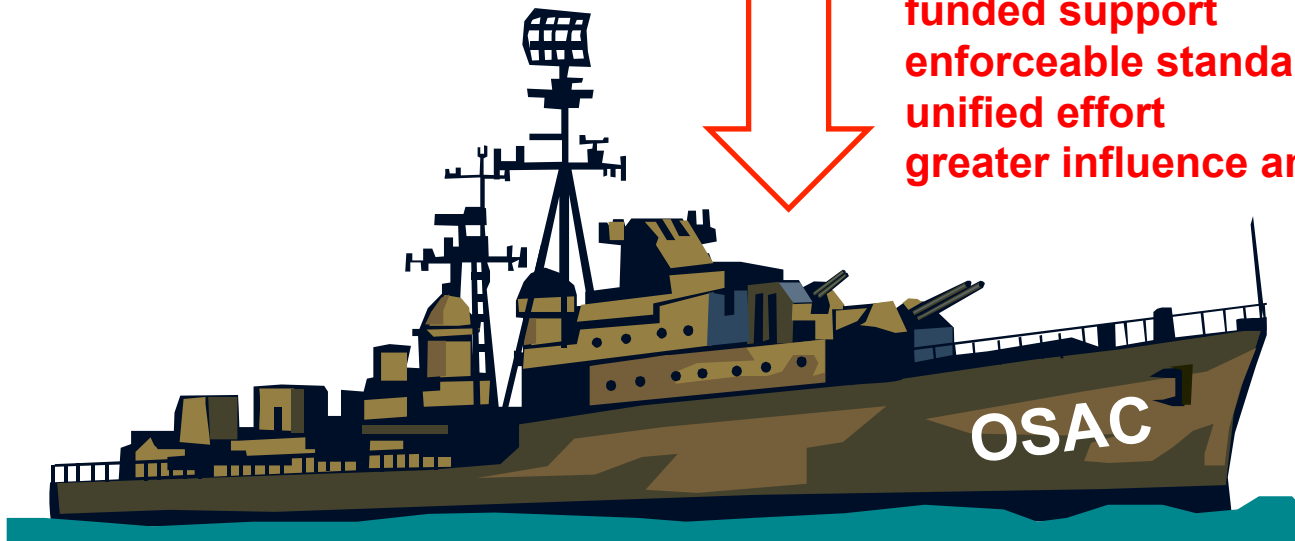
*Source:* Honorable Harry T. Edwards, Presentation at the Superior Court of the District of Columbia Conference on The Role of the Court in an Age of Developing Science & Technology: The National Academy of Sciences Report on Forensic Sciences: What it Means for the Bench and Bar (May 6, 2010)



# Individual SWGs vs. Organized Effort



**funded support  
enforceable standards  
unified effort  
greater influence and impact**



## Department of Justice

### Policy focused

*Limited Term (FACA)*

Attorney General

Recommendations

National Commission  
on Forensic Science  
(**NCFS**)

## NIST

### Practice focused

*Ongoing (Forensic Science  
Quality Infrastructure)*

Organization of  
Scientific Area  
Committees (**OSAC**)

Forensic Science  
Standards Board  
(**FSSB**)

Outputs

Forensic Science  
Code of Practice

*Process &  
technical merit*

FSSB  
Registry of  
Approved  
Standards

*Technical merit*

List of SAC  
Approved  
Best  
Practices  
and  
Guidelines

Accreditors  
Appropriate ISO/IEC  
documents, e.g. 17011

Laboratories  
Appropriate ISO/IEC documents  
and discipline-specific approved  
standards and documents

# Organization of Scientific Area Committees (OSAC)

## Value

- Practitioner generated (forensic scientists)
- Courtroom connected (legal input)
- Scientifically valid (researchers and statisticians)
- Standards enforcement (standards developers & accreditation bodies)

## Public Input – NIST seeks public input – *and we listen*

- Met with SWG Chairs at NIST on June 18, 2013
- Collected public input through Notice of Inquiry (NOI) published in Federal Register (Sept 27 – Nov 26, 2013)
- NIST planning team developed a proposed infrastructure (Dec 2013/Jan 2014); discussions with AAFS, AFTE, IAI, NAME, and SOFT
- 30-minute presentation before the National Commission on Forensic Science at their first meeting (Feb 4, 2014)
- Posting slides and plan on NIST.gov/forensics website following NCFS presentation
- Meeting with all five forensic science accreditation bodies on Feb 10, 2014
- 90-minute presentation at AAFS (with webcast) on Feb 18, 2014

# Notice of Inquiry (NOI) Responses Received

**In general, the responses support the proposed structure offered in the next slide.**

- **82 responses received**

- 12 SWGs commented
- 15 other groups including ASCLD, CAC, CFSO, IAI, Innocence Project, NACDL
- More than a dozen labs and a half dozen companies
- Individuals from 21 states and four countries (UK, Canada, Germany, and Australia)

- **Public posting of comments on [NIST.gov/forensics](https://www.nist.gov/forensics)**

- **Highlights:**

- *Practitioner voice should be a major player*
- *Strongly urged to include all forensic science disciplines*
- *Concern about funding (no “pay-to-play” fees)*
- *Interest in consistent and open support for web postings*
- *Interest in face-to-face and virtual meetings*
- *Encouragement to include existing professional organizations*

# Organization of Scientific Area Committees (OSAC)

Forensic Science Standards Board (FSSB)

Legal Resource  
Committee (LRC)

Quality Infrastructure  
Committee (QIC)

Human Factors  
Committee (HFC)

**SAC**  
Biology/DNA

**SAC**  
Chemistry/  
Instrumentation

**SAC**  
Crime Scene/  
Death Investigation

**SAC**  
IT/Multimedia

**SAC**  
Physics/Pattern

DNA Analysis Sub1

DNA Analysis Sub2

Wildlife Forensics Sub

Controlled Substances Sub

Fire Debris and Explosives  
Sub (lab)

Geological Materials Sub

Materials (Trace) and Gun  
Shot Residue Sub

Toxicology Sub

Anthropology Sub

Blood Stain Pattern  
Analysis Sub

Disaster Victim  
Identification Sub

Dogs and Sensors Sub

Fire Scene and  
Explosives Sub

Medical/Legal Death  
Invest Sub

Facial Identification Sub

Imaging Technologies Sub

Speaker Recognition Sub

Friction Ridge Sub

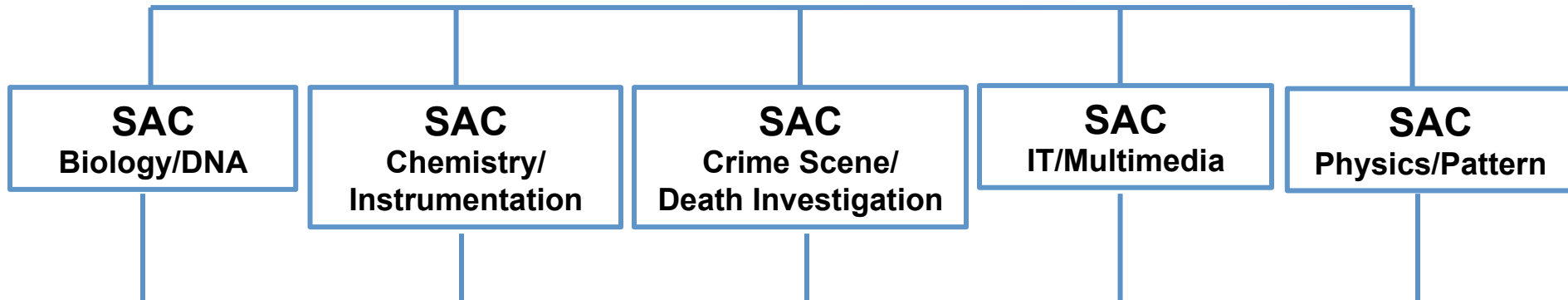
Firearms & Toolmarks  
Sub

Footwear  
& Tire Tread Sub

Questioned Documents  
Sub

SAC = Scientific Area Committee  
Sub = Subcommittee

# Scientific Area Committees (SACs)



- **Sets priorities for subcommittee work** and enables a bigger picture view on topics like report wording and statistical analysis
- Recommends (to FSSB) creating, merging, or abolishing subcommittees
- **SAC meetings will be open to the public** and agendas made available prior to meetings
- **Each SAC is comprised of up to 15 members** including
  - Subcommittee chairs
  - Representatives of professional forensic science organizations appropriate to the scientific area (e.g., AAFS, AFTE, IAI, NAME, and SOFT)
  - Researchers
  - Measurement scientists (including statisticians, epidemiologists, etc.)



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Speaker Recognition Sub

Friction Ridge Sub

Firearms & Toolmarks  
Sub

Footwear  
& Tire Tread Sub

Questioned Documents  
Sub

SAC = Scientific Area Committee  
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# SAC Subcommittees

DNA Analysis Sub1

Controlled Substances Sub

Anthropology Sub

Facial Identification Sub

Friction Ridge Sub

DNA Analysis Sub2

Fire Debris and Explosives  
Sub (lab)

Blood Stain Pattern  
Analysis Sub

Imaging Technologies Sub

Firearms & Toolmarks  
Sub

Wildlife Forensics Sub

Geological Materials Sub

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Footwear  
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Materials (Trace) and Gun  
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Questioned Documents  
Sub

Toxicology Sub

Fire Scene and  
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Medical/Legal Death  
Invest Sub

**Where the real work will happen**  
**Many aspects and participants**  
**may map to current SWGs**

- **Develops and vets formal documents** to be submitted for approval by SAC (in case of guidelines) or SAC & FSSB (in case of standards)
- Communicates activities and progress to SACs
- Each subcommittee has a **maximum membership of 20 voting members** (and up to 5 invited guests per meeting)
  - Distribution goal of **[70% practitioner** (20% federal, 30% state & local, 20% civil or other), **20% researchers** (including statisticians, epidemiologists, etc.), and **10% R&D technology partners and providers]** ← **[Under consideration!]**
  - *Practitioner is defined as someone actively doing or managing casework*

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SAC = Scientific Area Committee  
Sub = Subcommittee

# OSAC Oversight and Support

## Forensic Science Standards Board (FSSB)

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graph TD; FSSB[Forensic Science Standards Board (FSSB)] --- LRC[Legal Resource Committee (LRC)]; FSSB --- QIC[Quality Infrastructure Committee (QIC)]; FSSB --- HFC[Human Factors Committee (HFC)];
```

Legal Resource  
Committee (**LRC**)

Quality Infrastructure  
Committee (**QIC**)

Human Factors  
Committee (**HFC**)

- **FSSB** ensures communication flow among SACs and overall OSAC infrastructure and the forensic science community
- **Approves standards for inclusion in Forensic Science Code of Practice and Forensic Science Registry of Standards**
- **FSSB composed of 16 members** initially appointed by NIST-DOJ leadership and membership selection committee
  - **5 SAC Chairs, 5 representatives** of professional forensics organizations (e.g., AAFS, AFTE, IAI, NAME, SOFT), **5 Members at large** from the research and measurement science communities, **1 NIST ex-officio**
- **LRC** composed of up to 10 judges, lawyers, and legal experts who **provide guidance about the legal ramifications** of forensic standards under development and input on presentation of forensic results to the legal system;
- **QIC** composed of up to 10 standards experts, quality systems managers, and accreditation and certification specialists who are **responsible for writing and updating the Forensic Science Code of Practice**
- **HFC** composed of up to 10 psychologists, quality systems managers, and usability experts will provide guidance on the influence of systems design on human performance and on ways to mitigate errors in complex tasks

# OSAC Membership

- **Initial selection of FSSB, LRC, QIC, HFC and SACs will be by NIST-DOJ leadership/membership committee**
- SAC subcommittee members will be selected by FSSB and SACs (after review by NIST-DOJ committee)
  - FSSB will define term-limits and plan to apply uniformly
  - NIST scientists will participate as standards and coordination experts as appropriate in the FSSB, SACs, and subcommittees
- **Planned Timeline**
  - **Solicit applications and recruit potential OSAC members starting in February 2014**
  - Appoint FSSB and meet in April
  - Appoint LRC, QIC, HFC and SAC membership in May
  - Select subcommittee membership in June (with NIST-DOJ review)
  - Conduct OSAC training virtually over the summer via webinar
  - **Hold in-person meeting in September 2014**

# Administering Organization

- **Funds travel for OSAC participants**
- Handles logistics of in-person and virtual meetings
- **Ensures communication support** including regularly updating OSAC external website
- Responsible for rendering a decision in event of an appeal or dispute
- **NIST will serve in this role** with a goal to transition OSAC support to an independent professional organization with a target of 3 to 5 years, maintaining:
  - Quality and integrity
  - A participative role to ensure science and technology excellence



# Organization of Scientific Area Committees (OSAC)

**Creating a quality infrastructure for forensic science with a connection to accreditation bodies**

- Practitioner generated (forensic scientists)
- Catalog existing SWG documents for continued access
- Courtroom connected (legal input)
- Scientifically valid (researchers)
- Standards enforcement



[www.nist.gov/forensics](http://www.nist.gov/forensics)

# Organization of Scientific Area Committees (OSAC)

- Abbreviations:

AAFS	American Academy of Forensic Sciences
AFTE	Association of Firearms & Toolmark Examiners
IAI	International Association for Identification
NAME	National Association of Medical Examiners
SOFT	Society of Forensic Toxicologists
CAC	California Association of Criminalists
CFSO	Consortium of Forensic Science Organizations
NACDL	National Association of Criminal Defense Lawyers