NIST FORENSIC SCIENCES

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

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?

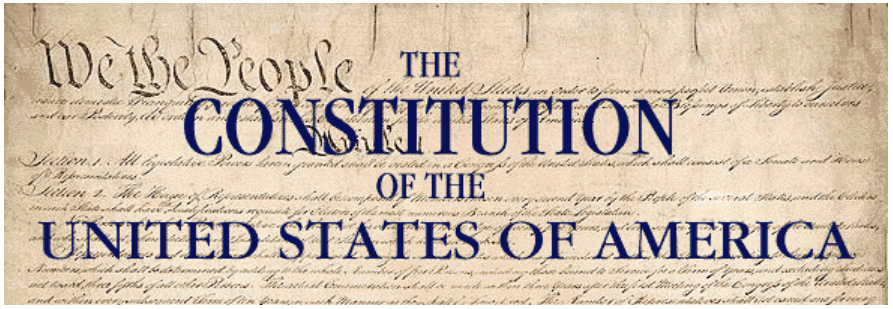
NIST's Enabling Legislation - 15 U.S.C. 272.2b

> (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**;

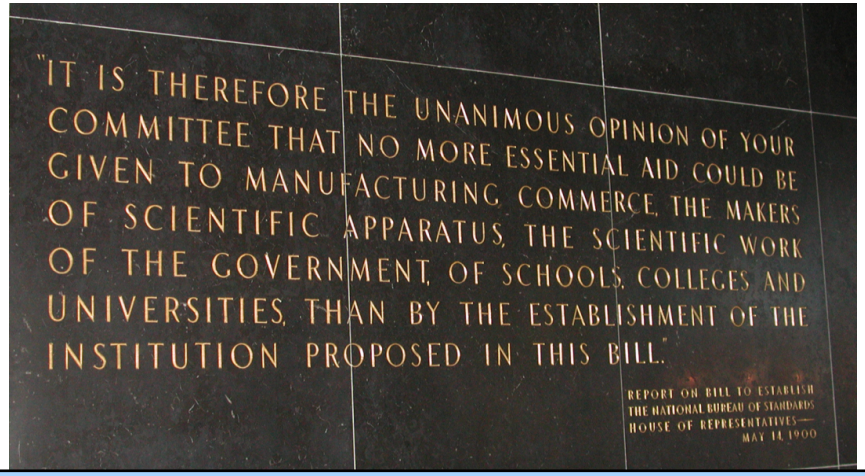
- **Estimated 460 NIST staff are committee members of 119 national and international SDOs**
- **NIST identified more than 50 times** in the 286-page NAS Report "Strengthening Forensic Science in the United States – A Path Forward"

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



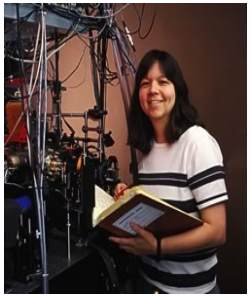
***Unique Mission within the Federal Government* …**

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

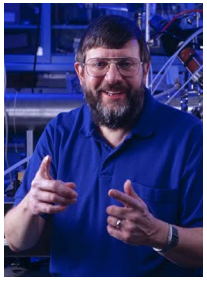
A world-leading measurement science and standards program

- **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

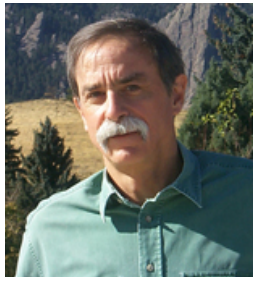
Dan Shechtman
2011 Nobel Prize in Chemistry
based on work while Visiting Scientist at NIST



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

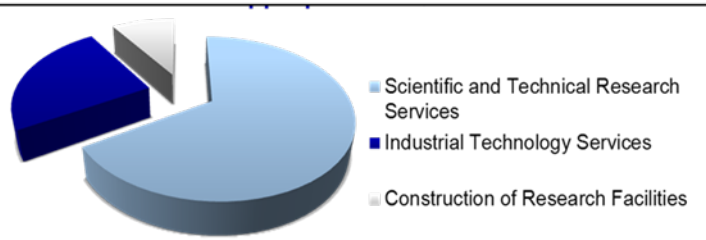
John Cahn
1997 National Medal of Science and 2011 Kyoto Prize in Materials Science

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

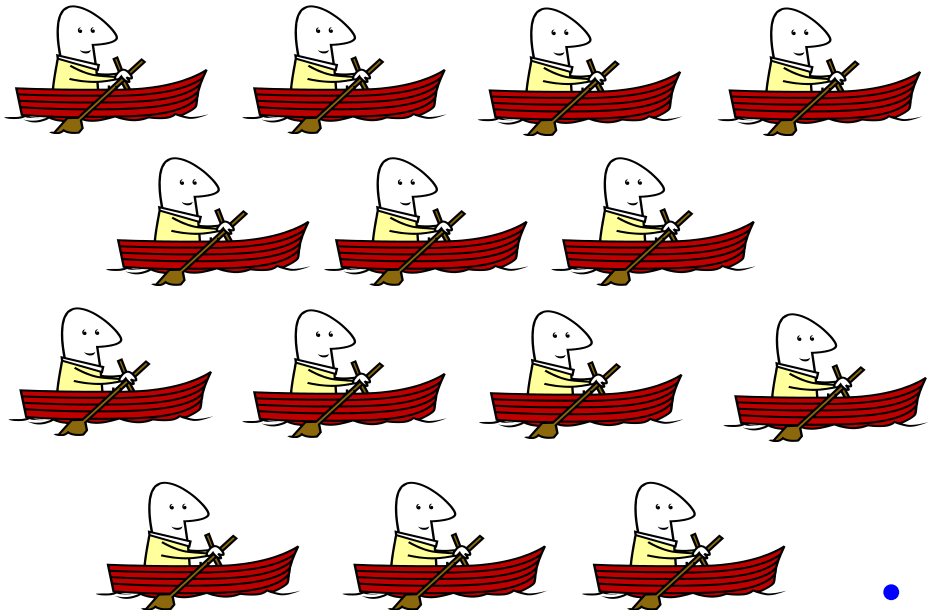
Some Concerns about Current Scientific Working Groups (SWGs)

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

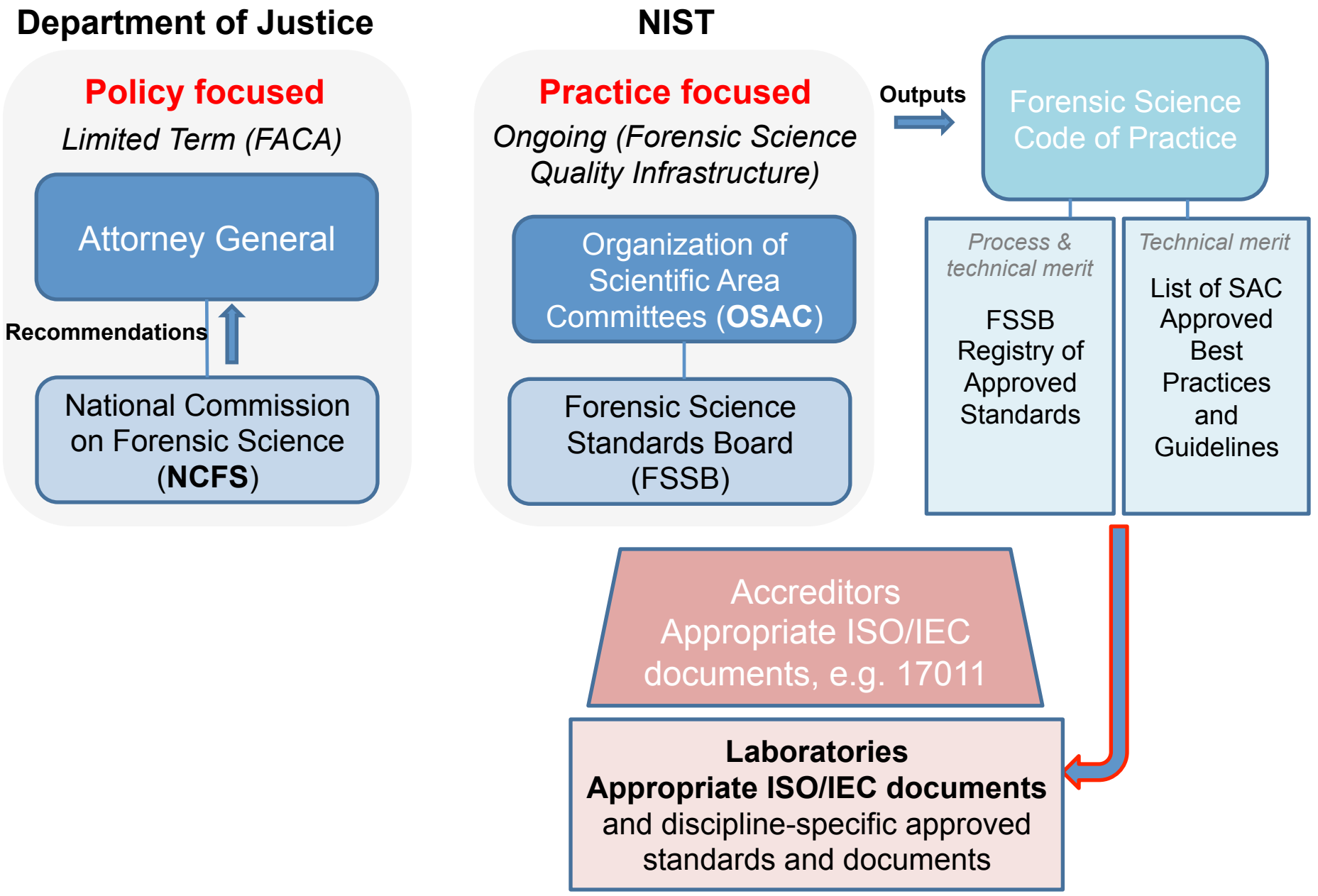
- Need regular source of funding
- Need membership criteria
- Need to produce specific, enforceable standards
- Need mandate for community to follow
- Need follow-up to measure impact of work

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*

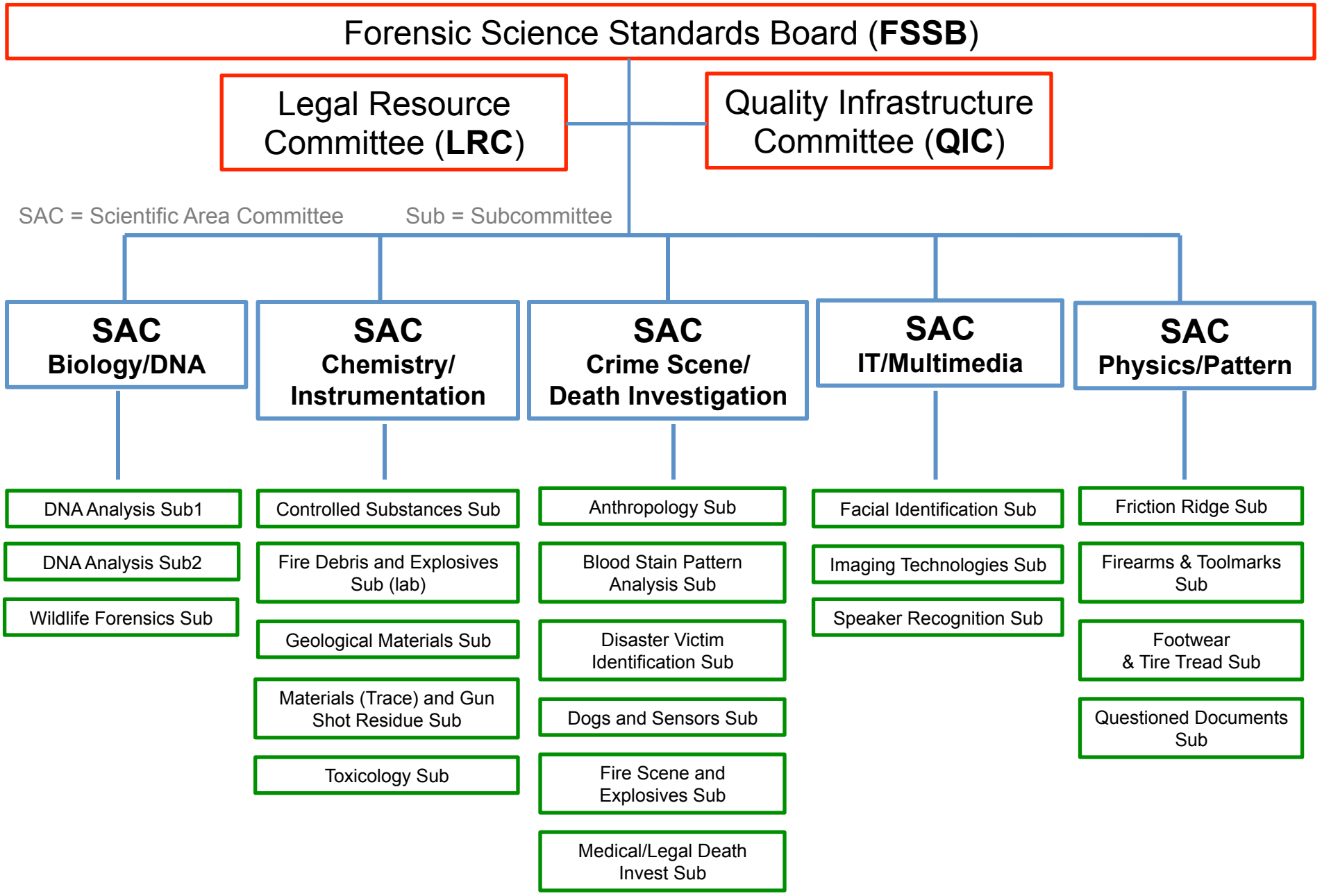
- Met with SWG Chairs at NIST on June 18, 2013
- Collected public input through Notice of Inquiry (NOI) published in Federal Register (Sept 27 – Nov 26, 2013)
- NIST planning team developed a proposed infrastructure (Dec 2013/Jan 2014); discussions with AAFS, AFTE, IAI, NAME, and SOFT
- 30-minute presentation 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

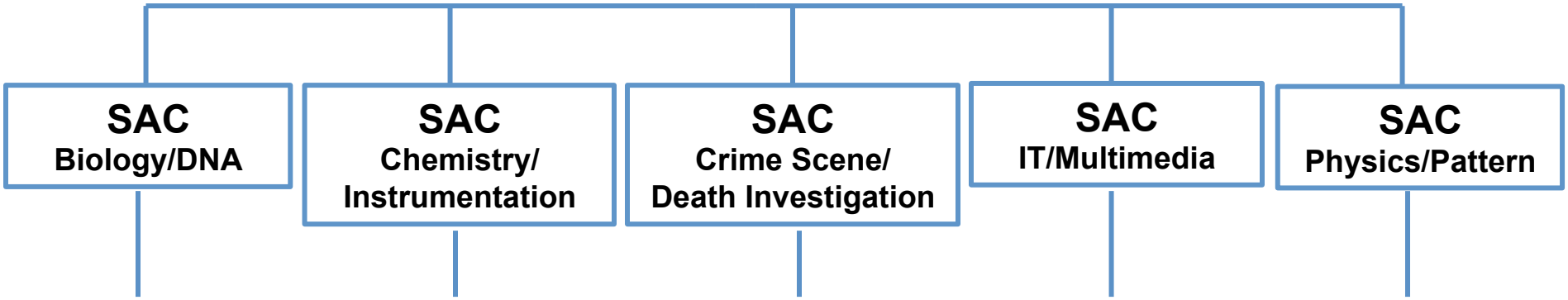
In general, **the responses support the proposed structure offered in the next slide**.

- **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
- 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)

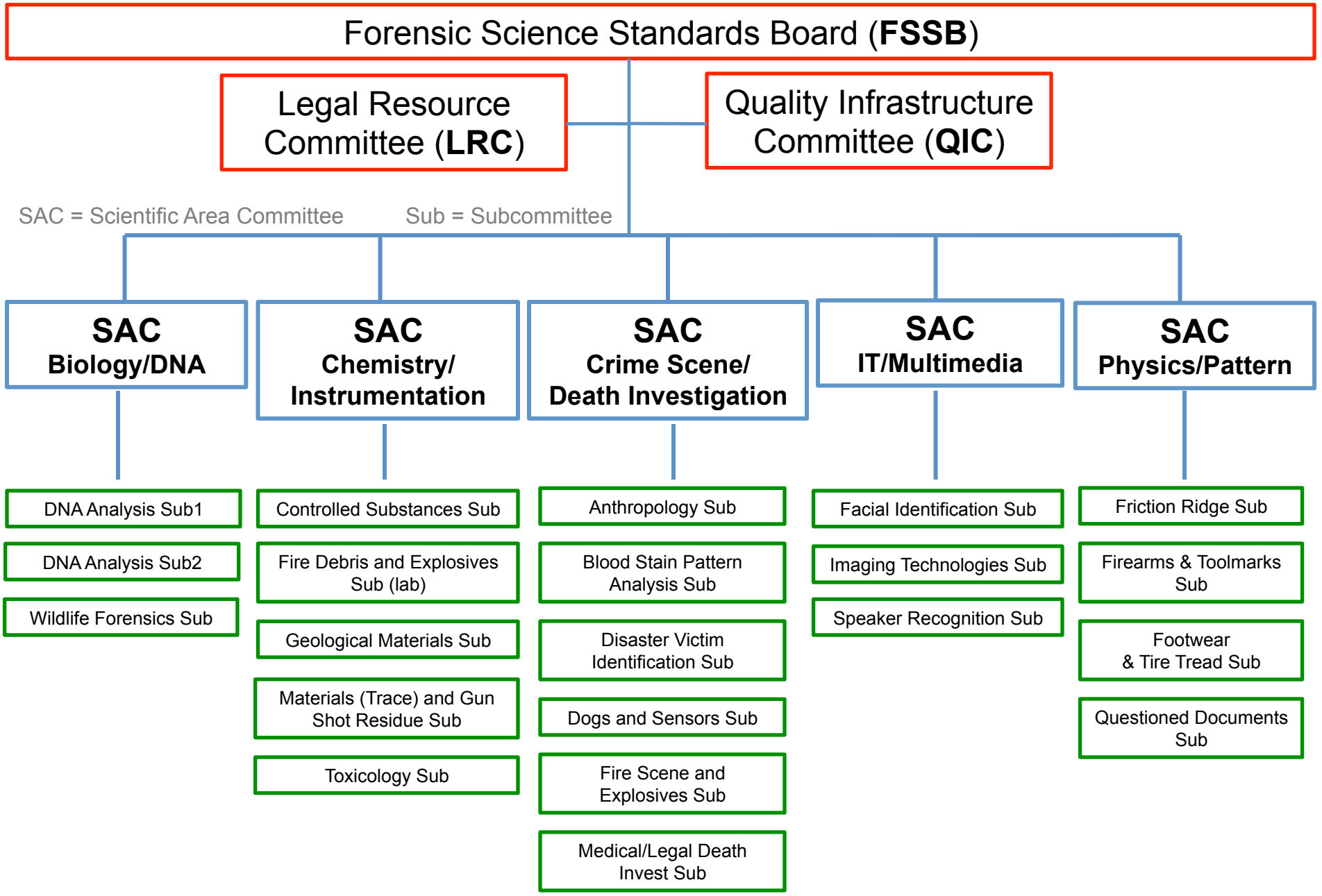


Scientific Area Committees (SACs)



- **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.)

Organization of Scientific Area Committees (OSAC)



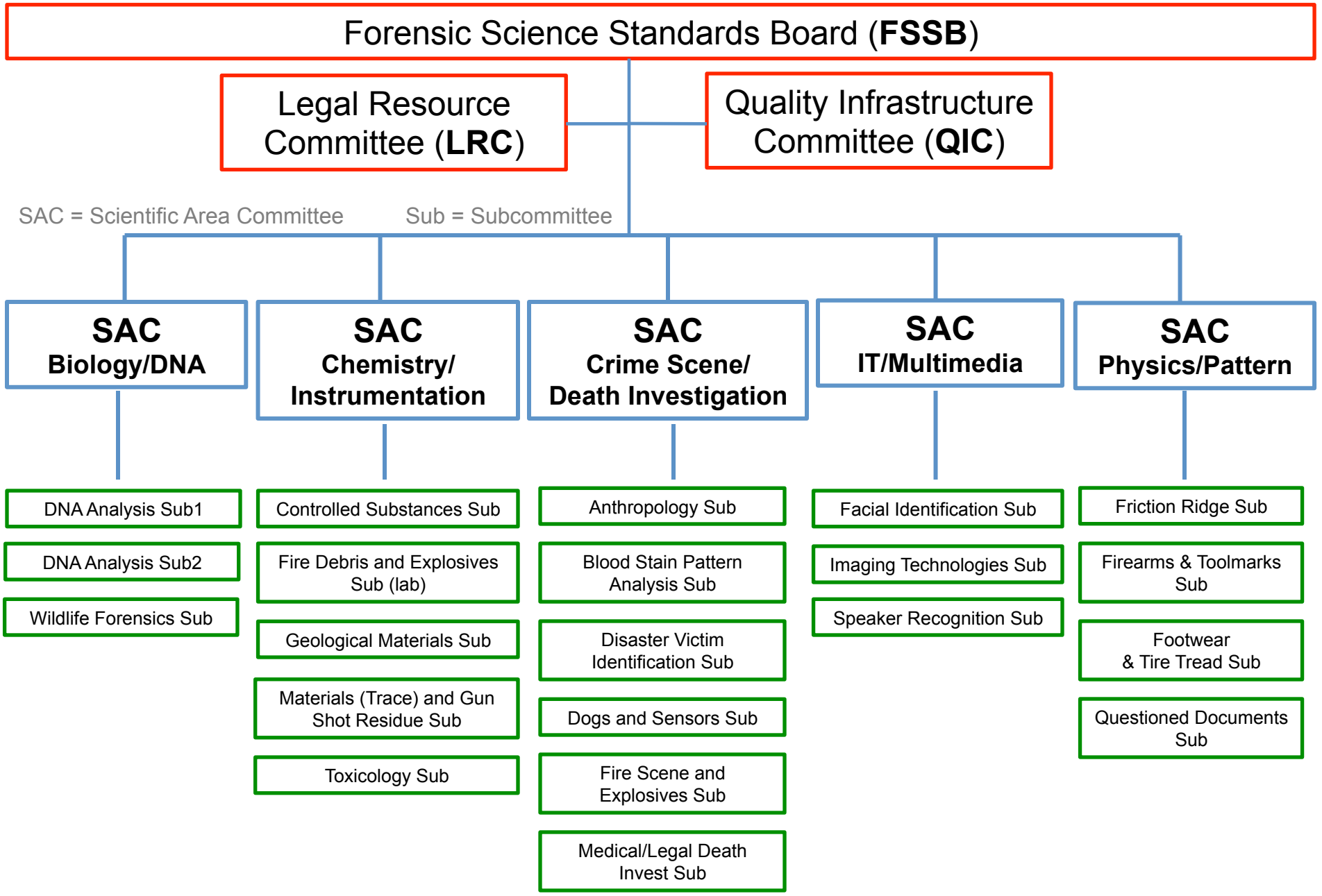
SAC Subcommittees

- 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

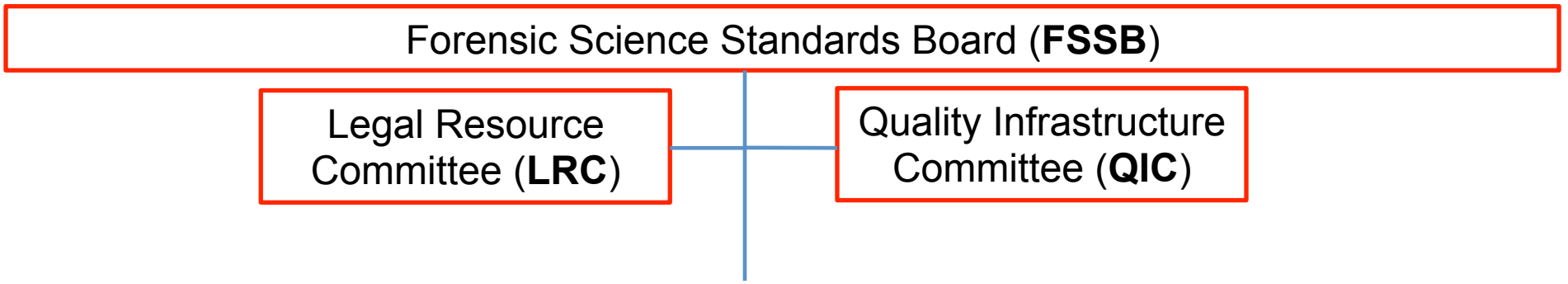
Where the real work will happen
Many aspects and participants may map to current SWGs

- **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**
  - *Practitioner is defined as someone actively doing or managing casework*

Organization of Scientific Area Committees (OSAC)



OSAC Oversight and Support



- **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**

OSAC Membership

- **Initial selection of FSSB, LRC, QIC, 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, 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 in 3 to 5 years

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

NIST FORENSIC SCIENCES

www.nist.gov/forensics