Leadership Perspectives

National Institute of Standards and Technology
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LIMS Design & Infrastructure

o Design of NextGen LIMS systems
   o (FLN-TWG recommendations)
   o Artificial intelligence embedded

o Laboratory technology infrastructure needs
   o Networks
   o Databases
   o Remote work
   o Integration of instruments with LIMS
   o Wireless

o Data exchange systems needed for lab LIMS
   o Working group modeled after MDI-DATA-WG

Forensic Connectivity

Case Management Systems

o Development of best practices for case management and case decisions

o Decision making by human case managers assisted by AI

o Human factors ideas that can actually be implemented in labs (cannot be hypothetical)

o LIMS design accommodates best practices developed

o Evaluate the "system" needs and process for each discipline and cross-discipline to make this a reality

o Beta test in public forensic labs

Interoperability of AFIS/ABIS/MBIS Systems

o Working and tested systems with practitioners

o Allowance for regional and national models

o Model agreements for jurisdictions

o Work with DOJ/OJP to ensure grant solicitations require interoperability

Research

o Research needed in pharmacology of new and emerging drugs.

    o Best instrumentation and analysis methods, identification of metabolites, reference sample availability for new and emerging drugs, testing of impairment and other pharmacology of emerging drugs

o More research on per se limits or impairing effects of various drugs

o Statistics in pattern disciplines (LP, Shoe/Tire, Firearms) with real implementation strategy (not merely theory)

o Researchers/POST Docs embedded in the labs with specific projects that lab directors have determined will lead to solutions for research problems (MFRC model requiring labs and researcher integration)

o More biometrics research for MBIS applications and field instrument use (roadside/"in the field" for real-time identification)

Quality Assurance Samples

o Support developmental validation work of collaboratives like NTVIC with samples

o Real world forensic samples for new instrument validations (e.g. blood, etc….)

o WGS, SNPs

o 3D firearms

o Other NIST SRMs (Tox, Drug quant, etc….)

o Blind proficiency testing samples

Technology Implementation Assistance

o 3D Firearms

o LC/MS/MS, LC-QTOF……….

o "Field" screening of **solid dose drugs**

   o (THC, emerging drugs)

o "Field" screening of **toxicology**

   o (THC, emerging drugs)

o Proteomics

o TALK TO THE LAB DIRECTORS (FLN-TWG)

Validation

o Work with NTVIC and SWG groups in strategizing "developmental validation" and "performance verifications" for new instruments and technology

o Review the plans in advance and ensure plans and validations are scientifically published

o Establish developmental validation <u>criteria</u> for each discipline like the FBI QAS for DNA

Technical Leader/Future Technical Leader Training

All forensic disciplines (to include digital, nursing, etc.)

- Measurement uncertainty & budget development
- Designing validation studies
- Technical and scientific writing and publishing
- Data analysis and statistics
- Addressing sensitivity, specificity, etc.
- Process mapping and opportunities identification
- Instrument selection and evaluation
- Work with OJP & forensic orgs on leadership concepts

Analyst Training Programs

- Development of analyst training programs for regional deployment with regional associations or regional training facilities

- Practice samples for new trainees that are realistic to casework

Process Mapping

- Process mapping training for practitioners
- NIST continue to process map general lab processes
- Evaluate efficient processes and offer those recommendations as case studies
  - (e.g. which DNA processes or tox processes are most effective and efficient)

SDO Grants

SDO grant continuation and funding in NIST budget

Eliminate Duplicate Training

- Partner with the NCF-1 and NCF-2 for training officers of the court

- Partner with DOJ TTAs and FTCoE instead of separate training at each federal agency

- Make better use of federal training dollars through collaborative events

LOTS of Training

Black/White Box Studies

- Provide resources for black box and white box studies

- Prioritize more studies to the needs of the community

- Eliminate barriers to participation

  - Overtime

  - Incentives to labs/practitioners

  - Decrease other commitments and distractions

  - Anonymity of participants

  - Disclose analyst experience and qualifications

- Don't criticize participants for non-participation due to lack of resources

Foundational Studies

o More collaborative with forensic science practitioners

o Practical solutions—(i.e. clarity that theoretical ideas are not current possibilities)

o Input from forensic science community regarding what disciplines should be prioritized next and in what context

OSAC

o Time for focus and refinement:
   o Cannot be exponentially expansive for labs to implement
   o Establish a "core" set of standards for a scientific area to ensure are kept updated with the SDO
      o Initial training
      o CE training
      o Certification
      o Methods and instrumentation
      o Others….
   o Identify what standards still need to be developed to establish the "core" in each area

o OSAC to provide <u>fiscal implementation</u> estimate on each standard on registry