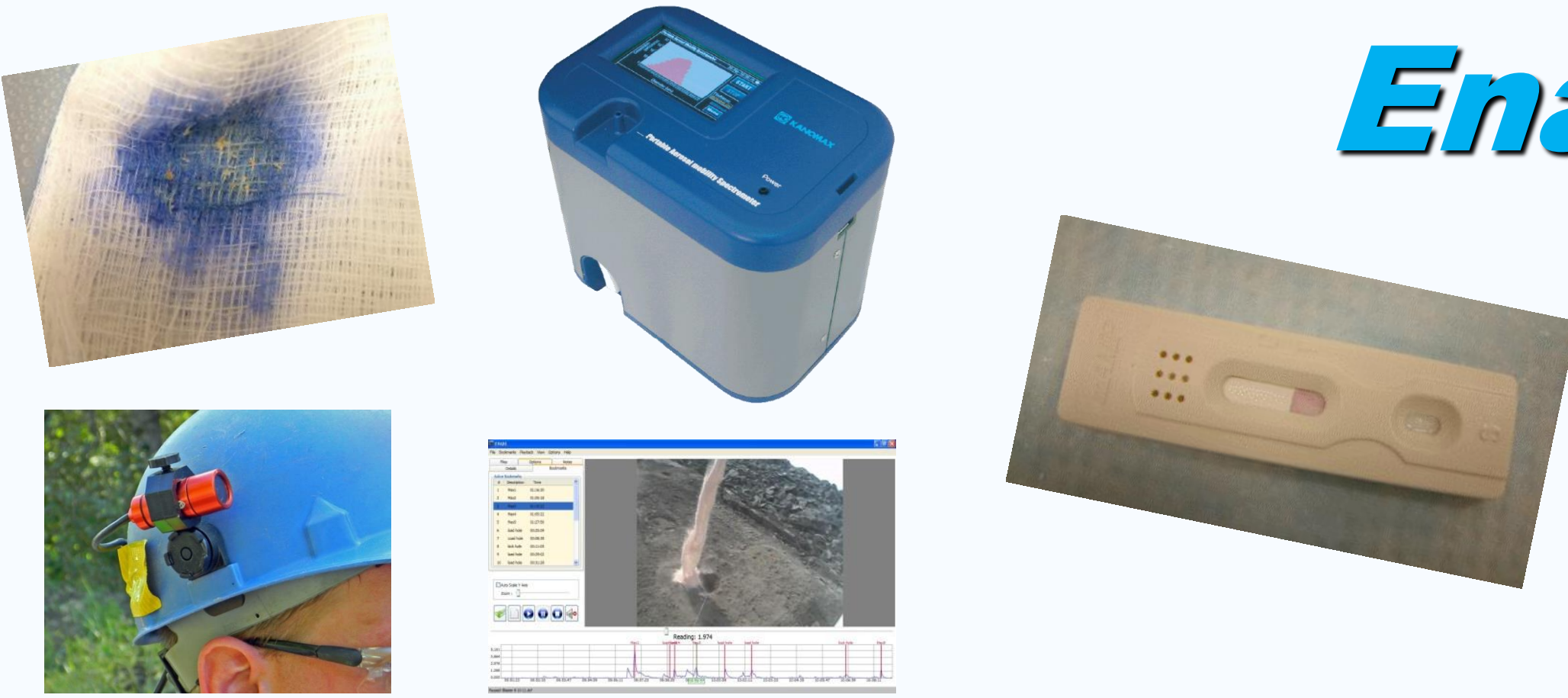# NIOSH Center for Direct Reading and Sensor Technologies
Enabling safety, health, well-being, and productivity

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Introduction to the Center

The NIOSH Center for Direct Reading and Sensor Technologies (NCDRST) was established in May 2014 to coordinate research and develop recommendations on the use of these 21st century technologies in occupational safety and health. The NCDRST is a virtual center hosted by the NIOSH Division of Applied Research and Technology.

Strategic Goals

1. Coordinate a national research agenda for direct reading methods and sensor technologies;
2. Develop guidance documents pertinent to direct reading methods and sensors, including validation and performance characteristics;
3. Develop training protocols; and
4. Establish partnerships to collaborate in the Center's activities.

History

To address the needs of the occupational safety and health community, NIOSH began an initiative in 2008 to advance the development and use of Direct Reading Exposure Assessment Methods (DREAM) in occupational exposure assessment.

The NIOSH DREAM initiative focused on development of new methods and monitors, validation of current technologies, and development of guidance on the use of these technologies.

Since 2008, the use of sensors has increased exponentially as countless remote wireless sensors are now employed for monitoring the environment, work sites, disaster relief, "smart" buildings and facilities, agriculture and health. Smart phone technology has also helped to drive sensor technology. Wearable and even implantable sensors are being developed that could aid in exposure assessment and clinical practice.

NIOSH researchers have developed a number of direct reading methods and monitors and are exploring new ways to use these technologies to improve occupational safety and health.

Path Forward for the 21st Century

NIOSH efforts align with conclusions of The National Research Council report on *Exposure Science in the 21st Century : A Vision and a Strategy* released in September 2012, which identified direct reading methods and monitors as being an important driver for the future of exposure sciences.

Through its activities, partnerships, and collaborations, NIOSH intends to advance the development, validation, and application of these technologies to occupational environments.
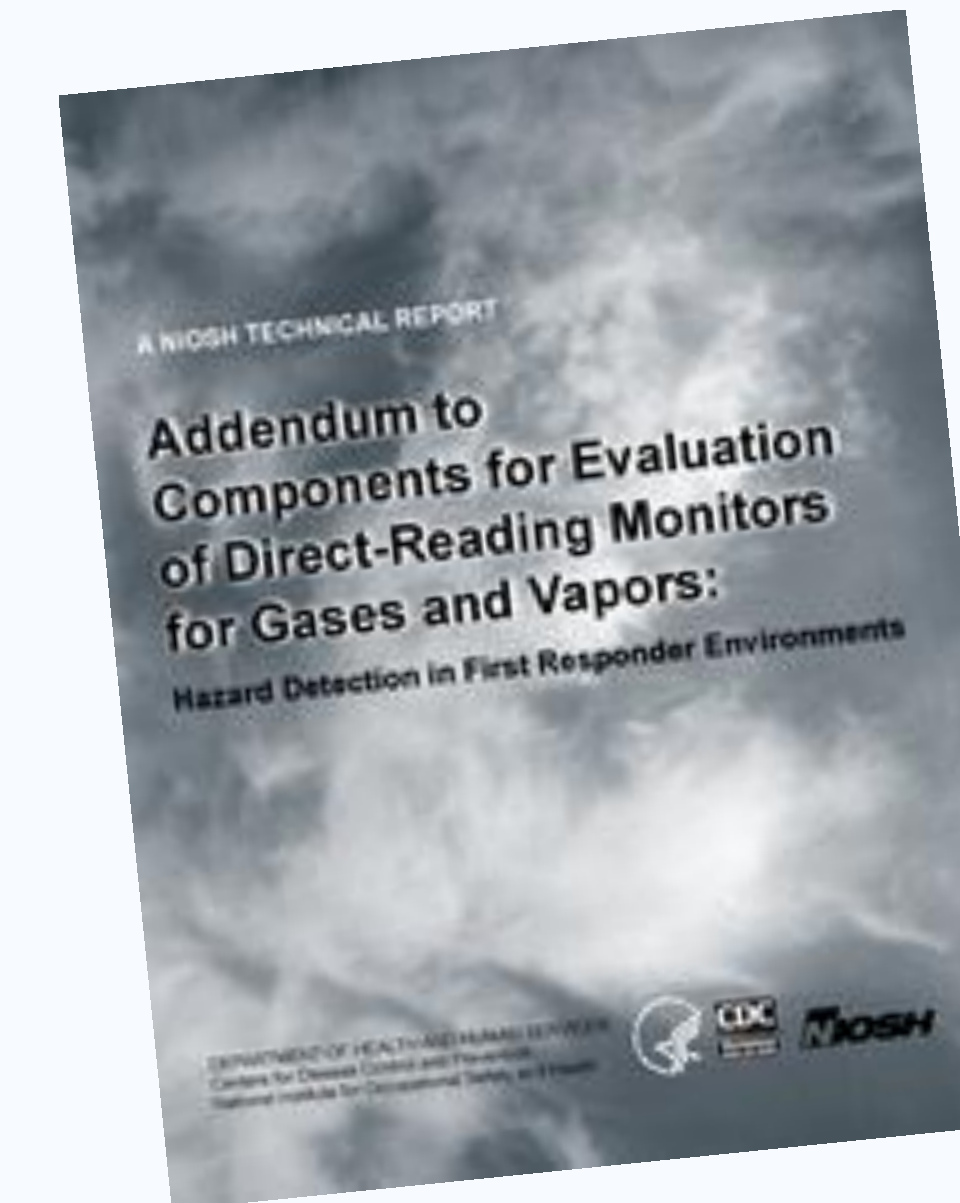
NIOSH Sensor Program Examples of Guidance, Resources, Methods, and Opportunities

### Components for the Evaluation of Direct Reading Monitors for Gases and Vapors
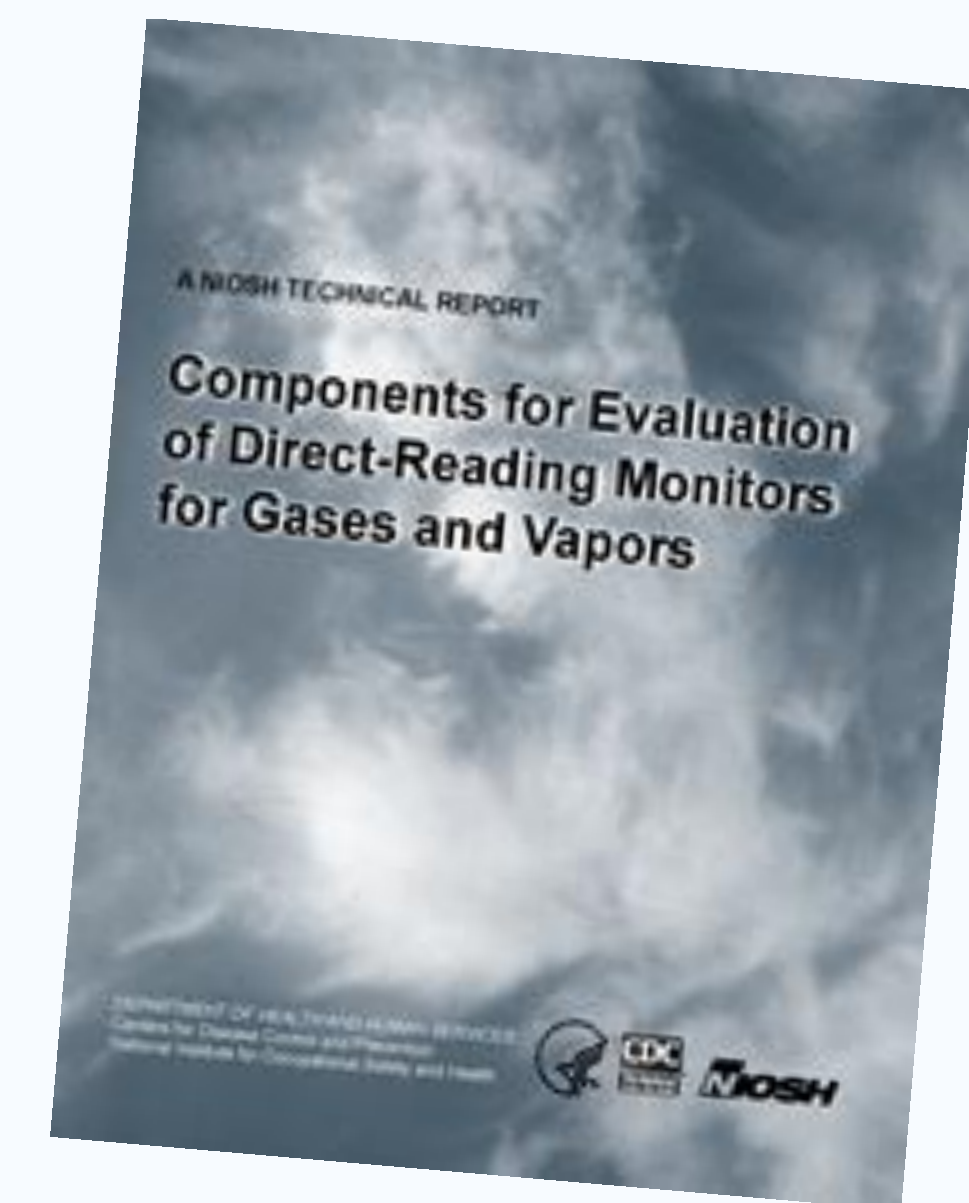
DHHS (NIOSH) Publication No. 2012-162

Addendum for Hazard Detection in First Responder Environments

DHHS (NIOSH) Publication No. 2012-163

NIOSH Manual of Analytical Methods: *A Story of Impact*

DHHS (NIOSH) Publication No. 2012-113

Lead Colorimetric Method

MethAlert and MethChek

Personal Dust Monitor (PDM)
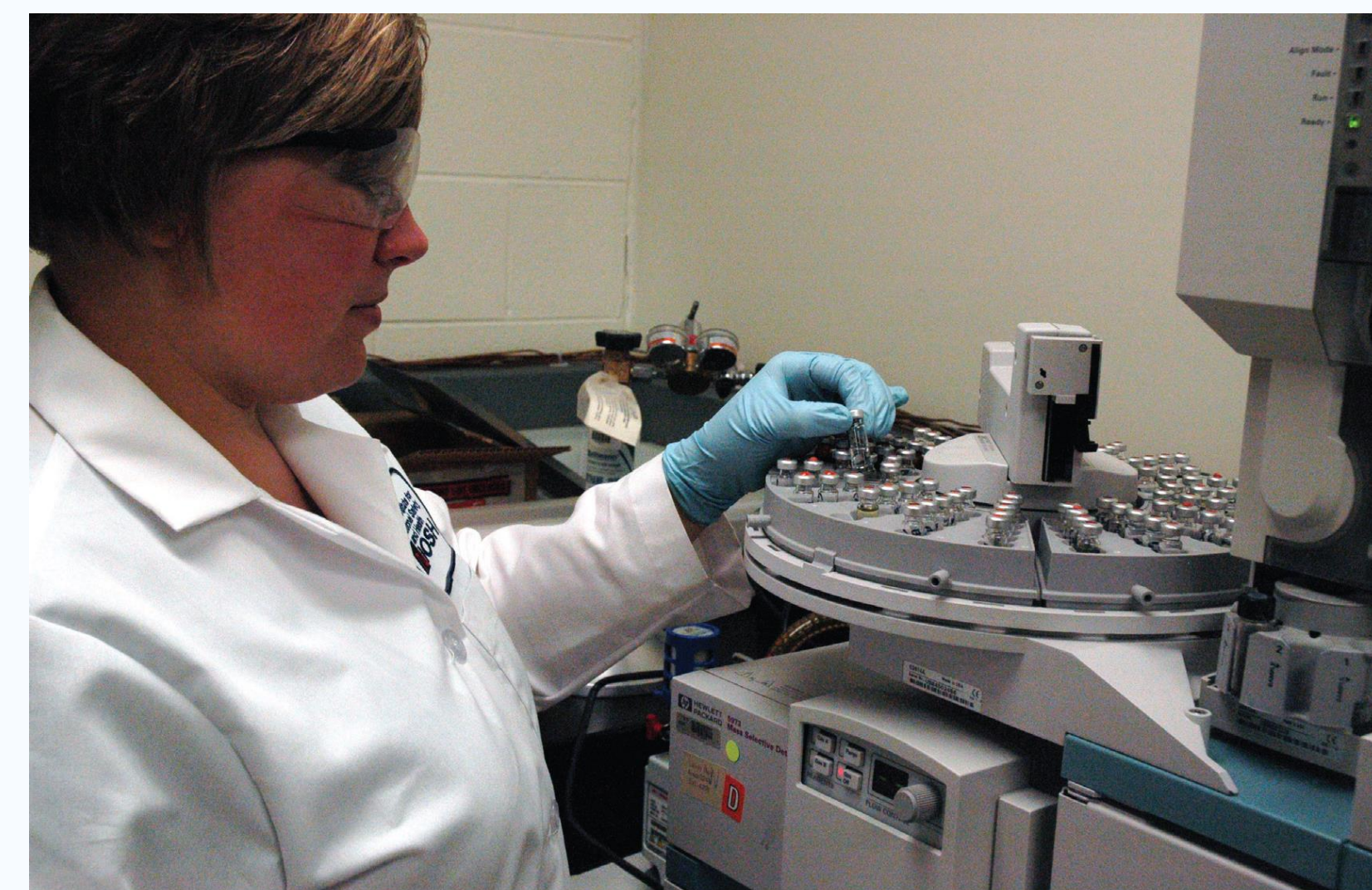
Extramural Funding Opportunities

Our NIOSH Extramural Grants Program is described at: http://www.cdc.gov/niosh/oep/default.html.

Specific information about several of our standing research announcements that include interests in sensors and sensor technologies can be found at:

ANNOUNCEMENT NO. PAR-13-129: Occupational Safety and Health Research (R01); Contact Person: Maria Lioce, MD , (404) 498-2530; (Expiration Date: May 8, 2018).

ANNOUNCEMENT NO. PAR-12-200: NIOSH Small Research Grant Program (R03); Contact Person: Linda Frederick, Ph.D. , (404) 498-2530; (Closing Date: September 8, 2015).

ANNOUNCEMENT NO. PAR-12-252: NIOSH Exploratory and/or Developmental Grant Program (R21); Contact Person: Linda Frederick, Ph.D. , (404) 498-2530; (Closing Date: September 8, 2015).
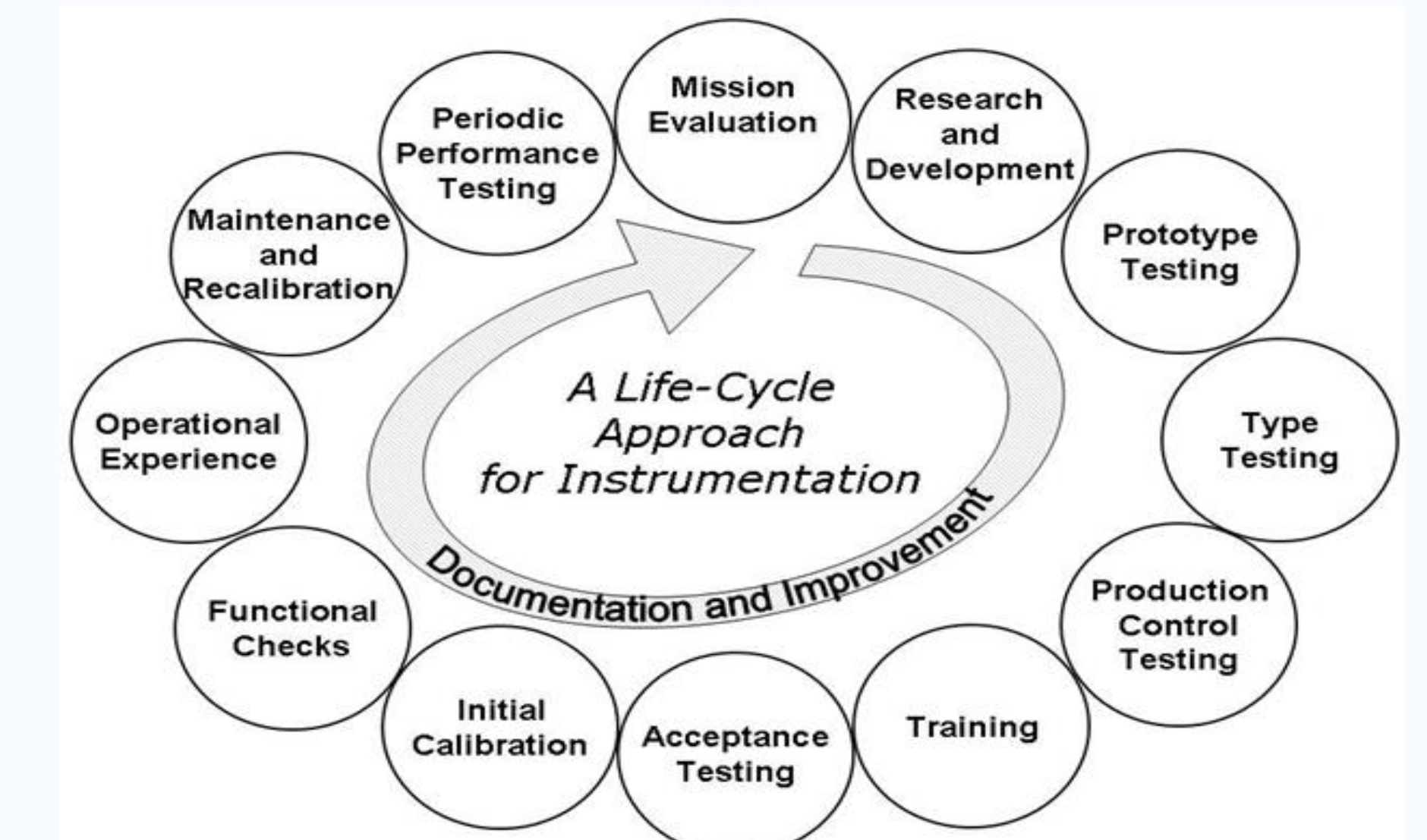
Life-Cycle Approach to Direct Reading and Sensor Technologies

A harmonized vision with the Nanotechnology Signature Initiative on Sensors, as well as consensus standards partners.

Roles and Responsibilities for Sensor Informatics

	Set Mission Objectives	Determine Relevance	Collect	Validate	Store	Share	Analyze and Model	Apply	Confirm Effectiveness
Customers	x	x						x	x
Creators		x	x	x					x
Curators			x	x	x	x			
Analysts		x					x		x

We welcome opportunities to partner

We can partner to develop and apply direct reading and sensor technologies to:

- **Anticipate,**
- **Recognize,**
- **Evaluate,**
- **Control, and**
- ***Confirm***
success in proactive understanding and management of potential hazards, exposures, and resulting risks to safety, health, well-being, and productivity by applying a science- and practice-based approach to build and sustain *leaders, cultures, and systems* that are relevant and reliable and over which we have influence.

Use ARECC. PREVENT a wreck.

Hoover et al., Synergist, 22(1): 10, 2011

Information and Collaboration Contacts

Questions and comments are welcome to
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