

Challenge Initiatives: Evaluation Types and Objectives

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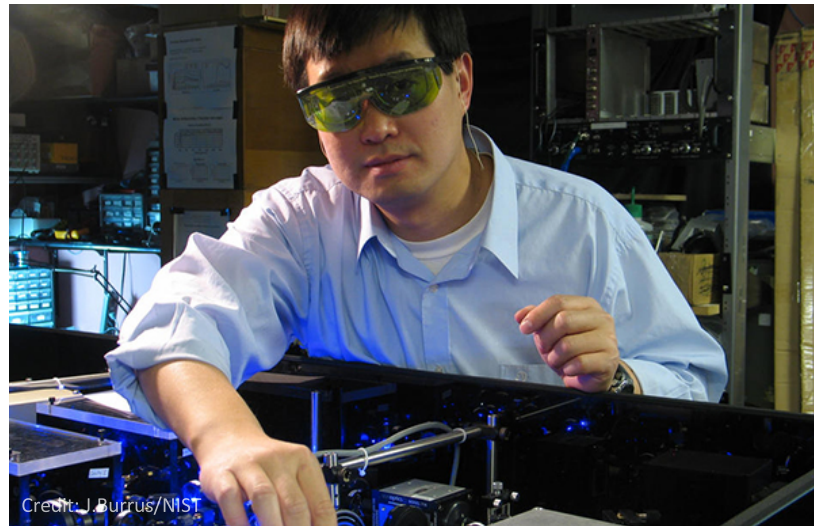
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NIST Mission



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 AT A GLANCE

Industry's National Laboratory



3,400+
FEDERAL
EMPLOYEES



5
NOBEL PRIZES



2 CAMPUSES
GAITHERSBURG, MD [HQ]
BOULDER, CO



3,500+
ASSOCIATES



10
COLLABORATIVE
INSTITUTES



400+
BUSINESSES USING
NIST FACILITIES



14
NATL OFFICE FOR
MANUFACTURING
INSTITUTES

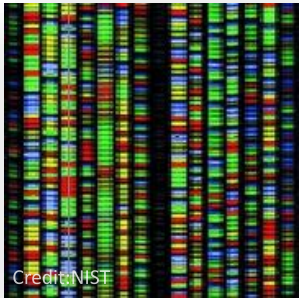


51
MANUFACTURING
EXTENSION
PARTNERSHIP CENTERS

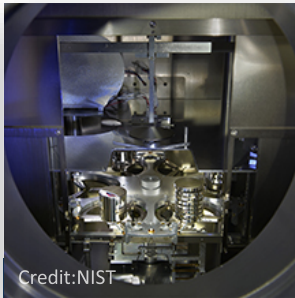


U.S. BALDRIGE
PERFORMANCE
EXCELLENCE PROGRAM

NIST Laboratory Programs



**Material
Measurement
Laboratory**



**Physical
Measurement
Laboratory**



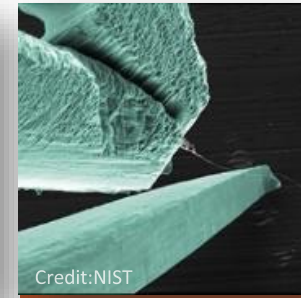
**Engineering
Laboratory**



**Information
Technology
Laboratory**



**Communication
Technology
Laboratory**



**Center for
Nanoscale
Science and
Technology**



**NIST Center
for Neutron
Research**

The Information Access Division

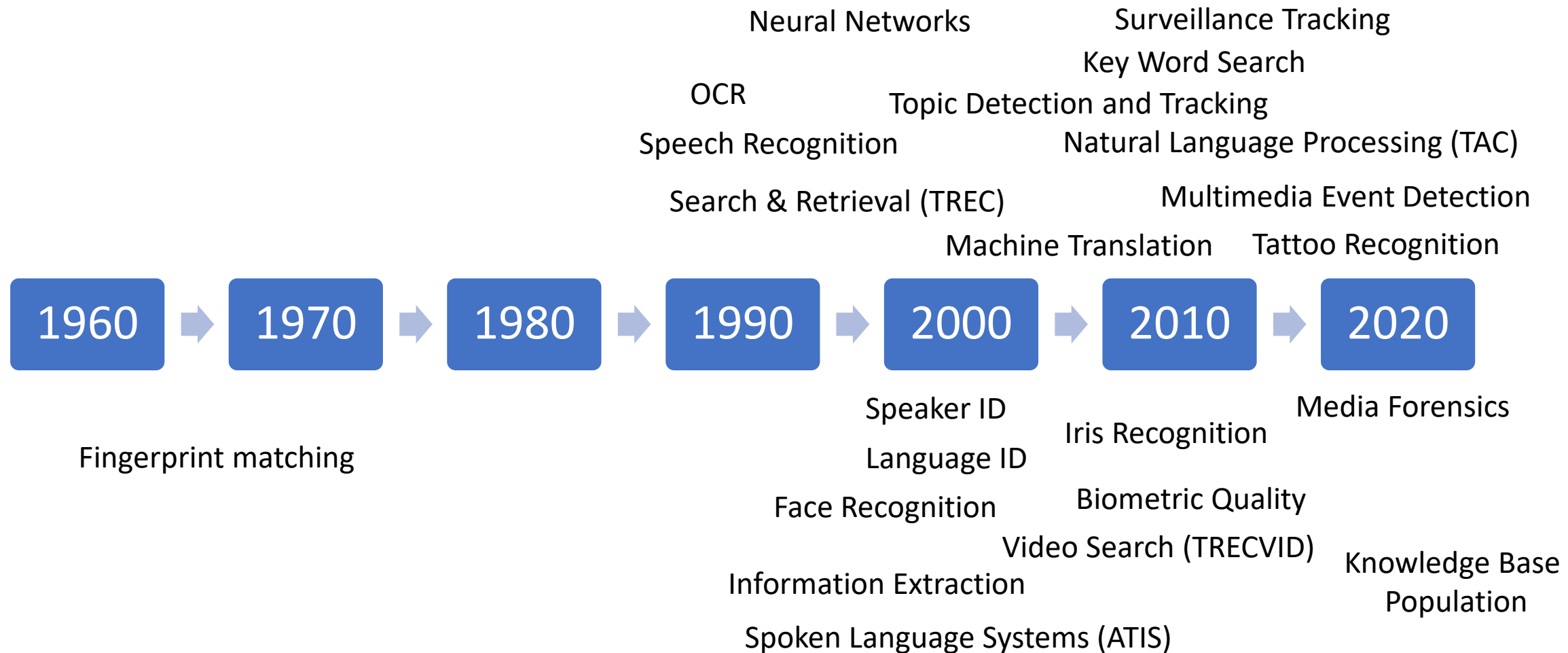
Fosters trust in technologies
that make sense of complex information
relating to human *action, behavior* and *characteristics*
through

Measurement

Evaluation

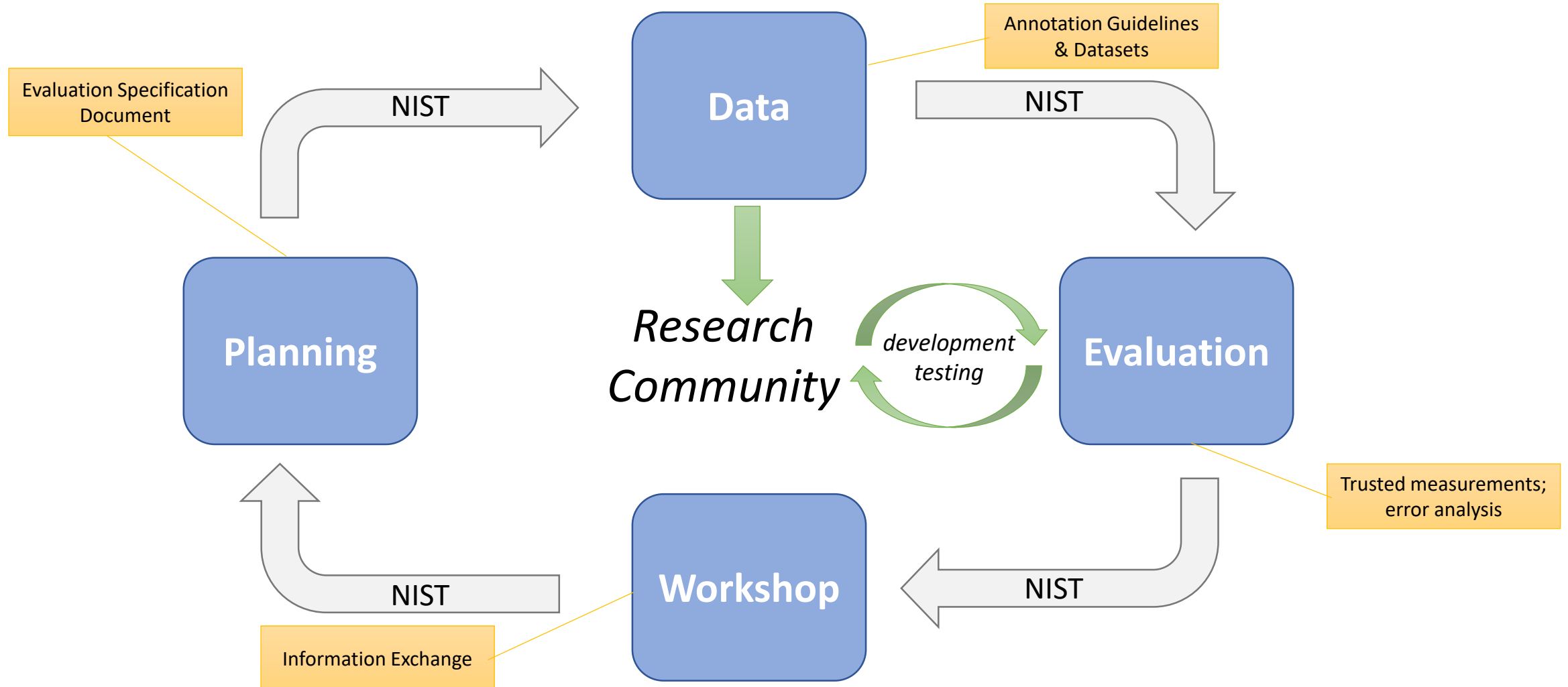
Standards

AI-Centric Nature of NIST Evaluations



Basic Evaluation-Driven Research paradigm

7



Evaluation Styles supporting Research

Simple Challenge Problem: *lowers the barrier of entry*

- NIST distributes evaluation kits (*everything*)
- Sites self report improvements over a baseline

Honor System: *timely evaluation of 100s of systems*

- NIST distribute “blind” evaluation data
- Sites return system output

System Delivery: *data reuse; procurement decisions*

- NIST distributes specifications and validation tools
- Sites deliver turnkey systems

Prize Challenge: **(solution seeking)**

- Varied approaches (sometimes gates or levels)
- Often competing for prize money
- Expands community to outside field of interest

Progress: *tracking state-of-the-art; algorithmic improvement*

- Same data used in consecutive years
- NIST distributes data, sites delete after processing

Leaderboard: *flexibility in researcher schedule*

- Ongoing evaluation
- Supports both “honor system” or “system delivery”
- References remain blind

Assessor: *used when exhaustive annotation is not feasible*

- Sites return system output
- System output pooled for human assessment (*precision and recall*)

Prize Challenges

- Public Safety Communication Research Prize Challenges
 - 2018 - VR NAV HUD Prize challenge – 6 Finalist, \$125,000 Prize
 - 2019 - UI/UX Haptic Interfaces Prize Challenge – \$425,000 Prize
 - 2020 – CHARIoT Challenge



**CHARIoT
CHALLENGE**
Advancing First Responder Communications

HOSTED BY
NIST

**PUBLIC SAFETY
COMMUNICATIONS
RESEARCH**

<https://www.nist.gov/itl/iad/mig/openasr-challenge>

Example of OpenASR Challenge

Challenge.gov

Here, members of the public compete to help the U.S. government solve problems big and small. Browse through challenges and submit your ideas for a chance to win.

The poster features a background image of three first responders (a woman, a firefighter, and a police officer) overlaid with a blue circuit board pattern. A large green shield in the center contains the text '\$1,100,000 IN TOTAL PRIZES'. To the right of the shield, there are two icons: a pair of glasses and a laptop with a bar chart. Below the poster, there is a row of logos for challenge partners: Magic Leap, First Responder Network Authority, FIRSTNET (Built with AT&T), MSA (The Safety Company), and blueforce DEVELOPMENT.

\$1,100,000
IN
**TOTAL
PRIZES**

**Build Augmented
Reality Interfaces for
First Responders**

**Emulate Smart
City Data for
Disaster Scenarios**

CHALLENGE PARTNERS:

Magic Leap
**First Responder
Network Authority**
FIRSTNET
Built with AT&T
MSA
The Safety Company
blueforce
DEVELOPMENT

The PEER Challenge

National Institute of Standards and Technology
PARTNERS ENGAGED IN EXTRAMURAL REPORTING (PEER)

Do YOU have the best idea to help organizations receiving federal R&D grants and contracts comply with Bayh-Dole reporting requirements?...

Open Until: 11/20/2020 05:00 PM ET

[View Details](#)



Innovative Ways to Destroy PFAS

PER- AND POLYFLUORALAKY SUBSTANCES

U.S. Environmental Protection Agency

INNOVATIVE WAYS TO DESTROY PFAS

EPA & partners seek non-thermal technologies & approaches that destroy PFAS in aqueous film forming foam (AFFF) without generating hazardous...

Open Until: 11/23/2020 11:59 PM ET

[View Details](#)



Adult Ed Challenge

U.S. Department of Education

RETHINK ADULT ED CHALLENGE

Design pre-apprenticeship programs that better prepare adult learners for apprenticeships and beyond.

Open Until: 11/25/2020 11:59 PM ET

[View Details](#)



National Geospatial-Intelligence Agency (NGA)

SOUNDSCAPES PRIZE COMPETITION

NGA is seeking innovative methods of identifying, analyzing, and modeling sound and acoustic scene indicators to uniquely classify audio recordings...

Open Until: 11/27/2020 05:00 PM ET

[View External Challenge Details](#)



NASA
CO₂ Conversion
Challenge

National Aeronautics and Space Administration

CO₂ CONVERSION CHALLENGE PHASE 2

Get Out of Your Element

Open Until: 11/30/2020 06:00 PM ET

[View Details](#)



U.S. Environmental Protection Agency

NEXT GEN FERTILIZER INNOVATION CHALLENGE

This Challenge aims to identify concepts for novel technologies for fertilizers and other product technology innovations that can reduce the...

Open Until: 11/30/2020 11:59 PM ET

[View Details](#)



Department of Defense - Department of the Navy, Naval Information Warfare Center Pacific

AI TRACKS AT SEA

This challenge solicits software solutions to automatically generate georeferenced tracks of maritime vessel traffic based on data recorded from a...

Open Until: 12/02/2020 03:00 AM ET

[View Details](#)



Naval Information Warfare Center (NIWC), Atlantic

PALMETTO TECH BRIDGE PRIZE CHALLENGE 2021

Seeking innovative technology concepts for Robotic Process Automation (RPA), as well as, Precision Navigation and Timing (PNT).

Open Until: 12/06/2020 11:00 PM ET

[View Details](#)



Department of Health and Human Services - Office of the Assistant Secretary for Health (OASH), Office of Women's Health (OWH)

REDUCING DISPARITIES IN BREASTFEEDING INNOVATION CHALLENGE

The U.S. Department of Health and Human Services' (HHS), Office of the Assistant Secretary for Health (OASH), Office on Women's...

Open Until: 12/09/2020 11:59 PM ET

[View Details](#)



Department of Defense, Office of Naval Research, Naval Information Warfare Center Pacific

FLEET VISUAL INFORMATION CAPTURE CHALLENGE

Fleet Vi is a no-fail mission designed to document with video, for the purpose of being released to the media,...

Open Until: 12/11/2020 11:59 PM ET

[View Details](#)



Department of the Interior - Bureau of Reclamation

CANAL SAFETY CHALLENGE

Discovering solutions to improve public safety and reduce drownings in canals throughout the U.S.

Open Until: 01/14/2021 07:00 PM ET

[View External Challenge Details](#)



Federal Aviation Administration

2021 FAA CHALLENGE: SMART AIRPORT STUDENT COMPETITION

The FAA challenges undergraduate and graduate students to develop innovative ways to use smart technology in and around airports to...

Open Until: 02/04/2021 11:59 PM ET

[View Details](#)



Department of Health and Human Services

INNOVATIVE TECHNOLOGY SOLUTIONS FOR SOCIAL CARE REFERRALS

Opportunity to create and modernize health IT platforms to foster connections between health care systems and community based organizations in...

Open Until: 12/14/2020 05:00 PM ET

[View Details](#)



NASA

NASA LUNAR DELIVERY CHALLENGE

Landing on the Moon with all that we need is just the beginning. Now we have to unload it.

Open Until: 01/19/2021 05:00 PM ET

[View External Challenge Details](#)



National Institutes of Health - National Institute on Minority Health and Health Disparities

ENVISIONING HEALTH EQUITY ART CHALLENGE

A competition to share original artwork that reflects an America where health disparities are a thing of the past

Open Until: 02/05/2021 11:59 PM ET

[View External Challenge Details](#)



Department of Health and Human Services - Office of the Assistant Secretary for Health (OASH), Office on Women's Health (OWH)

HHS HYPERTENSION INNOVATOR AWARD COMPETITION

Innovative methods of blood pressure monitoring and follow-up in women during pregnancy and/or postpartum

Open Until: 01/06/2021 11:59 PM ET

[View Details](#)



U.S. Department of Energy

SMART VISUALIZATION PLATFORM PRIZE CHALLENGE

Bring the Earth to Life with a New Intuitive Visualization Tool for Subsurface Environments!

Open Until: 01/22/2021 08:00 PM ET

[View External Challenge Details](#)



Department of Health and Human Services - Administration for Community Living

BLAZING NEW TRAILS FOR COMMUNITY BASED DIRECT SUPPORT PROFESSIONALS

Innovations to Transform the Direct Support Professionals Workforce

Open Until: 02/21/2021 11:59 PM ET

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