



CHARGE
to the
FAST-TRACK ACTION COMMITTEE ON DIGITAL TWINS R&D

SUBCOMMITTEE ON NETWORKING AND INFORMATION TECHNOLOGY
RESEARCH AND DEVELOPMENT
COMMITTEE ON SCIENCE AND TECHNOLOGY ENTERPRISE
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

Official Designation

The Fast-Track Action Committee (FTAC) on Digital Twins (DT) is hereby established by action of the Subcommittee on Networking and Information Technology Research and Development (NITRD) of the National Science and Technology Council (NSTC), Committee on Science and Technology Enterprise (CSTE).

Definition

For the purposes of this charge, a Digital Twin is described as:

A digital twin is a set of virtual information constructs that mimics the structure, context, and behavior of a natural, engineered, or social system (or system-of-systems); is dynamically updated with data from its physical twin; has a predictive capability; and informs decisions that realize value. The bidirectional interaction between the virtual and the physical is central to the digital twin.

Digital Twins seeks to accelerate lab-to-market while providing access to continuous monitoring and simulation to improve resilience, sustainability, energy efficiency, cost savings, public safety, and economic growth. This technology has been proposed as a tool for climate change predictions, smart cities, smart agriculture, smart warehouses, energy delivery, design and testing of autonomous systems, military applications, and more. DT provides the ability to handle increasing urbanization without sacrificing the safety, security, and well-being of both residents and the environment.

Digital Twins have the capacity to revolutionize scientific research, enhance operational efficiency, optimize production strategies, reduce time-to-market, and unlock new avenues for scientific and industrial growth and innovation.

The use cases for digital twins are diverse and proliferating, with applications across multiple areas of science, technology, and society, and their potential is wide-reaching. Yet, a number of key fundamental research areas remain to broadly advance digital twins.

Purpose

The purpose of the DT FTAC is to develop a cohesive strategic plan to advance the foundational research gaps, development, and future directions for DT. This initiative puts NITRD in the forefront of federal R&D coordination that will advance technology and accelerate the use of/early adoption of the DT model to address the Nation's priorities and fast-track agency missions.

Tasks

- Review and assess the findings, conclusions, and recommendations in the National Academies Report: *Foundational Research Gaps and Future Directions for Digital Twins (2023)*
- Identify foundational R&D gaps and opportunities, federal interagency coordination and collaboration in support of advancing the recommendations identified in the report
- Solicit input from relevant stakeholders, i.e., federal, academia, industry, and others to advance the FTAC's goals and objectives
- Develop a strategic plan that lays out the Digital Twins R&D priorities within Federal Agencies

Deliverables

- Present a briefing to the NITRD Subcommittee at the fall 2024 NITRD meeting on the progress made to achieve the FTAC's goals and objectives
- Submit a final draft of the Strategic Plan to OSTP by late January 2025

Membership

The following NSTC departments and agencies are represented on the FTAC on Digital Twins:

Department of Commerce
National Institute of Standards and Technology (co-chair)
National Oceanic Atmospheric Administration

Department of Defense
Air Force (co-chair)
Defense Advanced Research Projects Agency
Office of the Under Secretary of Defense
Navy

Department of Energy
Office of Science (co-chair)

Department of Health and Human Services
Food and Drug Administration
National Institutes of Health

Department of Transportation
Federal Highway Administration
National Aeronautics and Space Administration
National Science Foundation (co-chair)

The following organizations in the Executive Office of the President shall also be represented on the FTAC:

Office of Science and Technology Policy (co-chair)

Cooperating departments and agencies shall include other such Executive organizations, departments, and agencies as the CSTE, NITRD Subcommittee, and/or FTAC co-chairs may designate, as appropriate.

Leadership

The DT FTAC co-chairs shall be federal representatives, named by the NITRD Subcommittee co-chairs.

Resources

The NITRD National Coordination Office shall provide project management along with technical, information technology/networking, and administrative support services to the DT FTAC as part of its responsibilities to the NITRD Subcommittee.

Termination Date

Unless renewed by the NITRD Subcommittee, the DT FTAC will expire upon approval of the final Strategic Plan or 1-year from the approved date below.

Approved:

Dilma Da Silva
Co-Chair, NITRD Subcommittee

May 22, 2024
_____ Date

Craig Schlenoff
Co-Chair, NITRD Subcommittee

May 22, 2024
_____ Date