

## *V2X SUMMIT SPEAKER*

---

### **Dr. Chris Atkinson**

*Office of the Assistant Secretary  
for Research and Technology  
U.S. Department of Transportation*





*UNITED STATES*  
DEPARTMENT OF TRANSPORTATION

# Advanced Research Project Agency – Infrastructure (ARPA-I)

V2X Summit – August 24, 2022

Dr. Chris Atkinson

Deputy Director for Advanced Research, OST-R

# Overview of ARPA-I

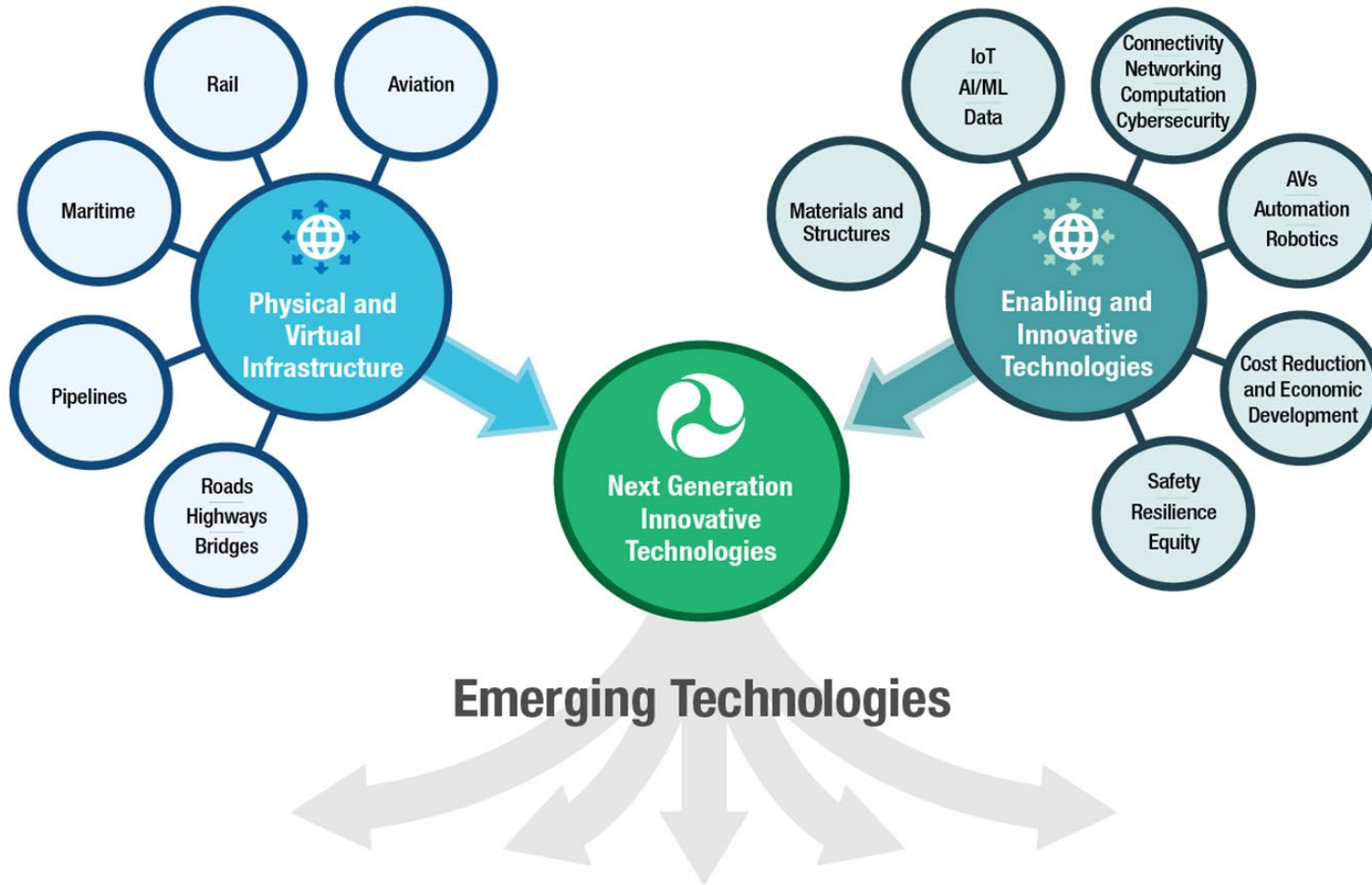
---

- The Infrastructure Investment and Jobs Act (IIJA) of 2021, known as the Bipartisan Infrastructure Law (BIL), authorized the establishment of the **Advanced Research Projects Agency - Infrastructure (ARPA-I)**, a new agency housed within OST-R.
- “Infrastructure” refers to “any transportation method or facility that facilitates the transit of goods or people within the United States.”
- ARPA-I will invest in innovative technology projects that industry is unlikely to undertake due to technical and financial uncertainty.
- ARPA-I will collaborate with technology innovators from the public, private, and academic sectors – including with minority-serving institutions – to develop transformative solutions for infrastructure and transportation systems.



# The Goal of ARPA-I

## Develop Innovative Infrastructure Technologies and Solutions for Transportation



- ARPA-I will be to Transportation as DARPA is to Defense, and ARPA-E is to Energy
- Develop innovative solutions to persistent problems in infrastructure and transportation
- Unleash US innovation and creating new infrastructure R&D ecosystems
- Ensure the US has a 21<sup>st</sup> Century Infrastructure System and will reach the goal of net-zero GHG emissions by 2050
- Develop infrastructure that will create the safest, most efficient, climate friendly and resilient transportation system in the world



# Topics of Interest for ARPA-I

---

## Advancing DOT priority goals: Transformation, Safety, Climate, and Equity

### Materials, Structures, and Construction

- Zero or negative carbon materials for infrastructure; extremely durable and resilient concrete; accelerated construction processes (3D printing of pavement, bridges, tunnels, water infrastructure, and high-speed rail beds), accelerated construction of seawalls and shoreline reinforcement

### Digital Infrastructure for Mobility

- Connectivity; 6G and edge computing for automated vehicles (AVs); intrinsically assured AI and ML for AVs; virtual LIDAR and ubiquitous machine vision; digital twins; HD mapping of infrastructure and topology

### Automated Surface, Air, and Maritime Vehicles

- AV development, testing and validation; vehicle connectivity and networking (V2X); freight and logistics automation; fully electrified transportation – in-situ charging, V2G
- AI-enhanced ATC and ATM; assuring safety for autonomous aircraft; infrastructure modifications for AAM integration; autonomous shipping

### Cross-cutting and Enabling Technologies

- Advanced PNT – millimetric accuracy (including signals of opportunity); cybersecurity (once and for all) – intrinsically secure networking and data transmission for mobility infrastructure; digital twins of transportation systems and infrastructure; AR and VR for travel replacement

