

# BOMA Pittsburgh

## March 3, 2022

# Stan Caldwell Executive Director

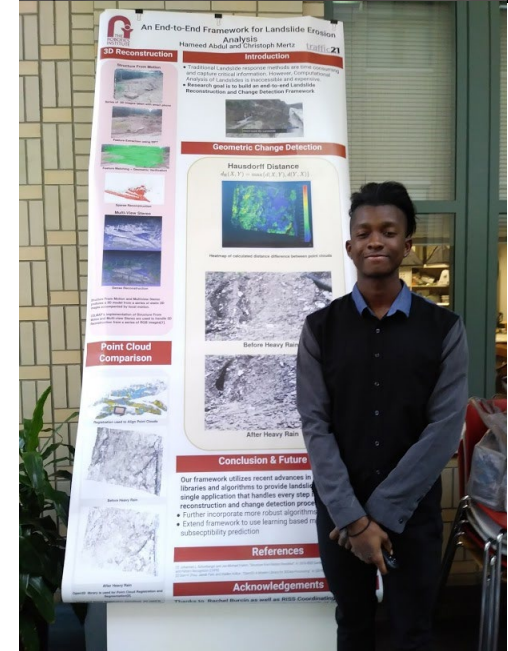
# Traffic21

A transportation research institute of Carnegie Mellon University

# Mobility21

A USDOT NATIONAL  
UNIVERSITY TRANSPORTATION CENTER

Carnegie Mellon University



# CMU's Metro21 Smart Cities Institute

Karen Lightman, Executive Director



# A Smart City: A “System of Systems”

Far greater than an assembly of technologies and data



Safe mobility



Net zero energy



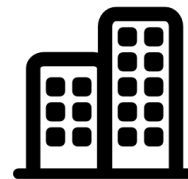
Clean air and water



Economic prosperity



Safe and healthy citizens



Smart buildings and infrastructure

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# Trends Driving Intelligent Transportation Systems

- Sensors
- Data Analytics (real time and predictive)
- Cyber Physical Systems
- Edge Computing
- Internet of Things
- 5G and Advanced Wireless
- Advanced Battery Technology

# Technologies Disrupting Transportation

Automation

Connectivity

Shared Use

Electrification

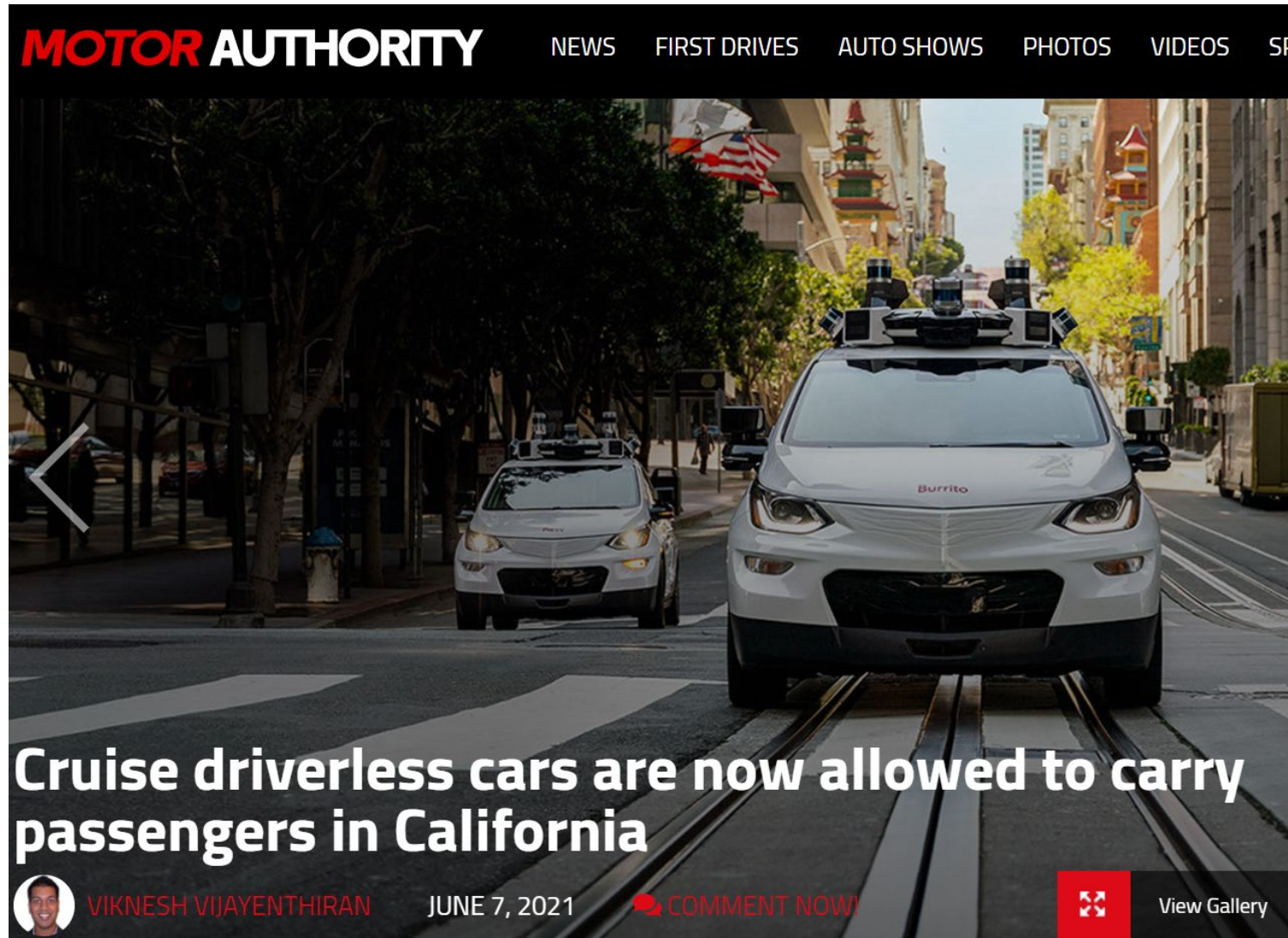
Novel Modes; Drones,  
Hyperloop, etc.

# Smart Transportation Impacts on Buildings

- Parking impacted by automation, shared vehicle use, and remote work and services.
- Electric Vehicle Charging, including drones.
- Automated package and people delivery by both ground and air transportation



# Business Model of Driverless Taxis





# Shift from AV Taxis to Freight Delivery Via Cute Sidewalk Vehicles and Large Trucks

- UPS and Waymo Autonomous Van Package Delivery Testing
- Amazon Acquires AV Company Zooko for over \$1 Billion



# Autonomous Trucking



- **Daimler Trucks AV Testing Group** partnering **Torc Robotics** with developing Level 4 AV Truck with new facility in New Mexico
- **Waymo** testing heavy duty trucks in Texas
- **TuSimple** teaming with delivery and trucking companies to develop the first AV freight network. fleet of 41 autonomous-capable trucks are pulling 13 loads per day between Arizona and Texas.
- **FORU Trucking**, a technology logistics company, and **Trunk**, a service provider of autonomous driving technology for trucks
- **Locomotion** On Road Testing Autonomous Relay Convoy Technology

# Automated Vehicles Respond to COVID-19

- Columbus Re-launches EasyMile Leap Shuttle for Food Delivery
- GM Cruise Makes Food Bank Deliveries in San Francisco
- Nuro Delivering Medical Supplies in California
- Beep and Navya Delivering COVID-19 Tests at Mayo Clinic in Florida
- Neolix Delivers Medical Supplies in Wuhan and Disinfects Roadways



# Initiatives to Explore Drone Deployment

- Intelligent Transportation Society of America Emerging Technologies Committee UAS Task Force
- Pennsylvania Department of Transportation UAS Task Force Advanced Air Mobility Subcommittee

# Drone Terminology

- UAS – Unmanned/Uncrewed Aircraft Systems
- UAS – Urban Air Mobility
- RPA – Remotely Piloted Aircraft
- EVTOLS – Electric Vertical Take Off and Landing Systems
- Vertiports
- EVTOLS Ridesharing



# UAS Applications Impacting Buildings

- Small Drones for Inspection or Maintenance
- Package Delivery
- People Delivery





# Vertiports are coming...

AUTONOMOUS VEHICLES

🏆 SUCCESS STORY

## Why Lilium Established its First U.S. Vertiport in Orlando

JAN 13.2021

By [Amanda Roche](#) · Director, Marketing and Communications

German-based startup **Lilium** announced the company is locating the first U.S. vertiport hub for its revolutionary on-demand, emissions-free electric jet service in Orlando's **Lake Nona**. Lilium plans to create 143 new high wage jobs in the next five years and construct 56,000-square-foot, state-of-the-art facility, which will serve as its first U.S. location.

# Considerations for Buildings

- Power between Buildings and Vehicles
- Communications Infrastructure (IOT)
- Consider New Methods of People, Goods and Information Accessing Buildings

# Questions

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