

RUTGERS

Center for Advanced Infrastructure
and Transportation

100 Brett Road
Piscataway NJ 08854-8058

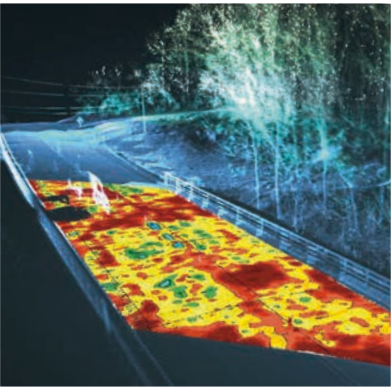
USDOT Region 2 UTC Consortium

- Rutgers, The State University of New Jersey (lead)
- Atlantic Cape Community College
- Columbia University
- Farmingdale State College
- Polytechnic University of Puerto Rico
- Princeton University
- Rowan University
- University at Buffalo

>>cait.rutgers.edu

RUTGERS

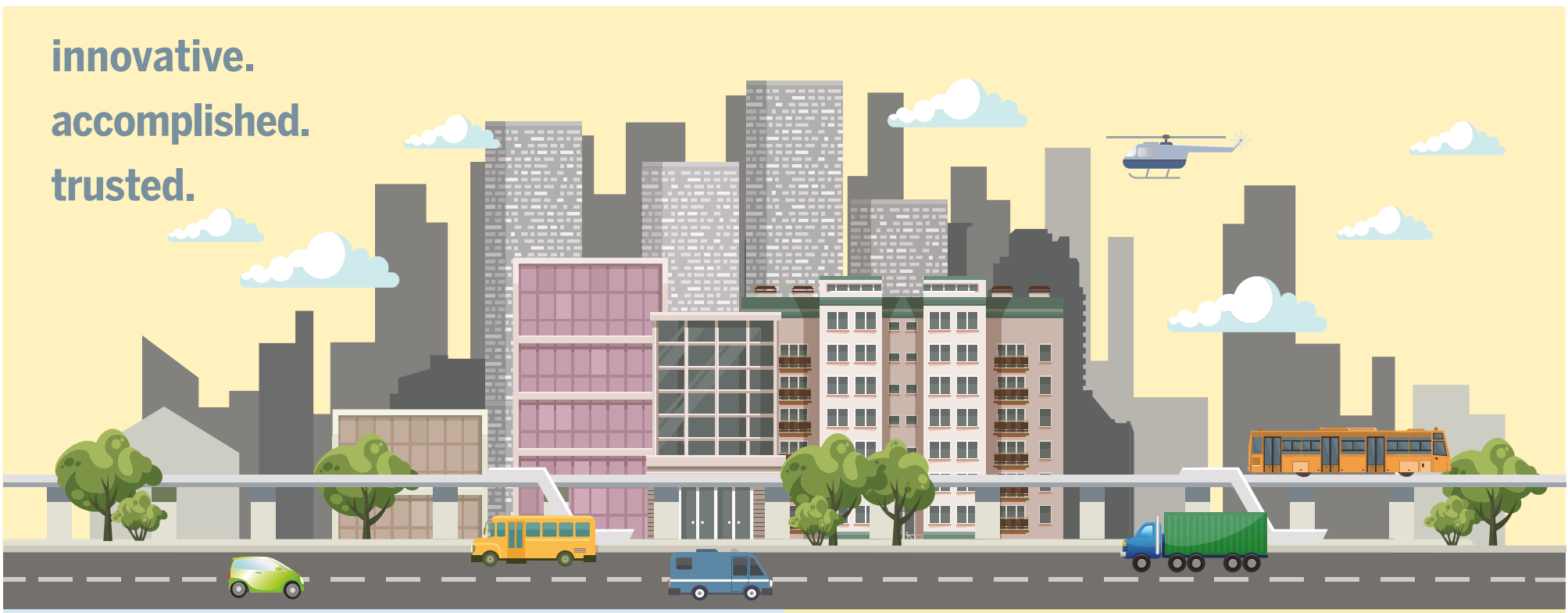
Center for Advanced Infrastructure
and Transportation



innovative.
accomplished.
trusted.

CAIT

innovative.
accomplished.
trusted.



Center for Advanced Infrastructure and Transportation

Starting as a two-man operation with a handful of projects 20 years ago, CAIT has evolved into a robust national leader in infrastructure research. Throughout decades of change and growth, one thing is constant: CAIT’s commitment to take on the abundant challenges in high-use, rapidly aging, multimodal transportation corridors.

We specialize in solutions that go quickly from the lab into the hands of field practitioners, including methods, materials, and tools to assess condition, extend service life, reduce life-cycle costs, and make the country’s critical systems more durable and more resilient. Here are some highlights as evidence of our commitment and progress.

* Data in this document is from 2011–2017 unless otherwise noted.

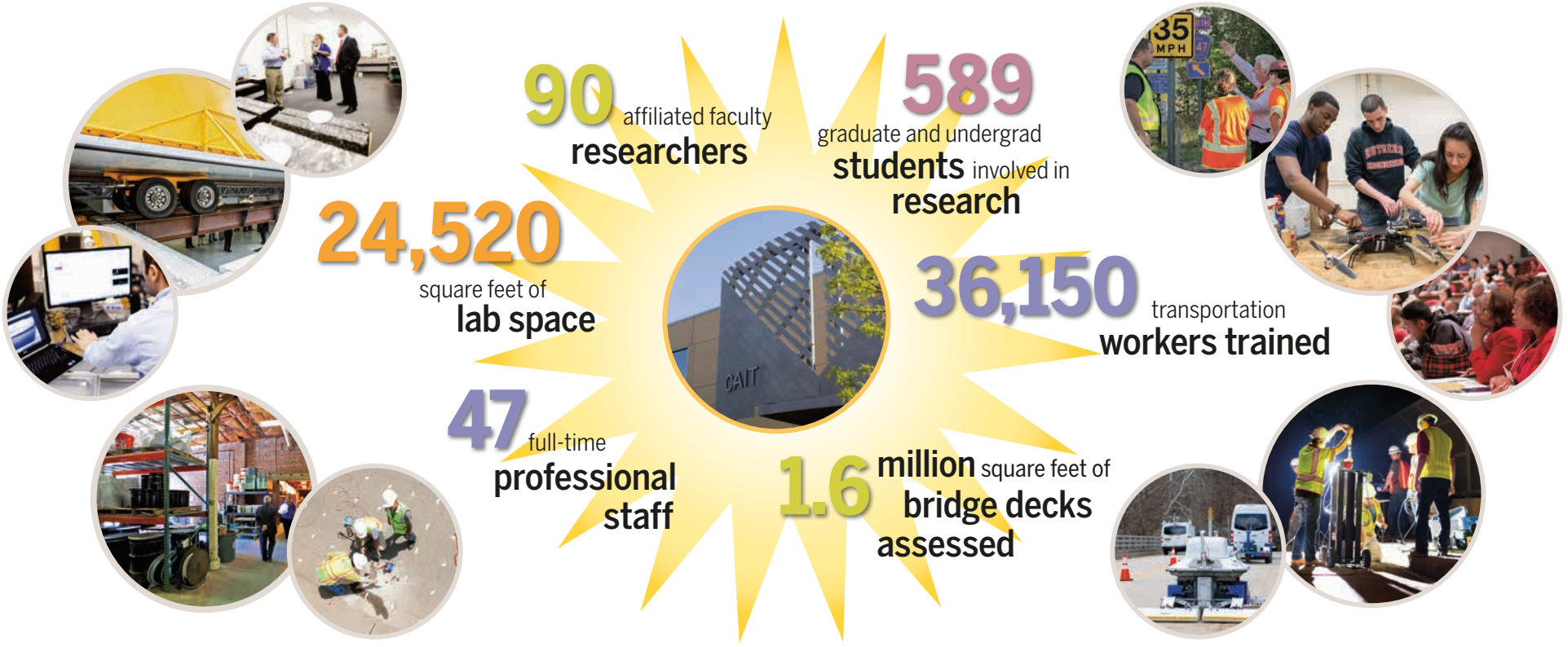


- Competed to maintain its status as a designated **USDOT University Transportation Center** since 1998
- Named one of only five National University Centers in 2013, and currently leading the **USDOT Region 2 University Transportation Center** consortium with nine university partners including three Ivy League schools and one minority serving institution.
- Selected as a **Beyond Traffic Innovation Center** by former USDOT Secretary Anthony Foxx
- Two-time winner of the prestigious **ASCE Pankow Award for Innovation** (2014 and 2017)

innovative technology

real-world solutions

knowledge & resources



technology firsts from CAIT



PTM (Pneumatic Tube Mixing) is a way to treat and “upcycle” dredged material. CAIT demonstrated the technology for the first time in the United States. Sediments like those in the NY/NJ harbor are too soft for construction fill unless a stabilizer is added, such as cement. Instead of carting dredged material to a processing facility, the self-contained PTM system simultaneously processes and places the material on site, saving time and money. When contaminants are an issue, PTM helps keep them from leaching into the soil or groundwater.



THMPER™ (Targeted Hits for Modal Parameter Estimation and Rating) is the first portable system to combine modal impact testing, refined analysis, and finite element model calibration. THMPER delivers a forceful impact that causes a vibration response in the bridge. Sensors collect the data showing the “shapes” the bridge assumes at which frequencies, revealing a lot about load capacity. THMPER processes data on the spot, determining load ratings faster, more economically, and with minimal traffic disruption.



The BEAST® (Bridge Evaluation and Accelerated Structural Testing) lab is the world’s first facility that can condense wear-and-tear that bridges endure over decades into just a few months. The BEAST subjects a full-scale bridge sections to rapid-cycling environmental changes and extreme traffic loading. In this controlled environment, stresses and deterioration can be quantitatively measured quickly and accurately, as opposed to years of field observation. The BEAST can give us a glimpse into the future performance and longevity of bridge materials and components, saving billions in infrastructure costs.



LTBP Bridge Portal was created at CAIT under FHWA’s Long-Term Bridge Performance Program. It is a web-based resource and analysis tool comprising extensive bridge data mined from myriad sources. The amalgamated data sets encompass nearly every characteristic and biographic fact that can influence bridge performance—age, traffic, weather data, maintenance histories and more.



RABIT is the first automated device that can gather comprehensive condition data on concrete bridge decks using multiple NDE technologies simultaneously. It is fast, thorough, and assesses deterioration on and below surface, supporting data-driven maintenance and repair decisions to extend the service life of vital infrastructure.

Photos this page: Students with drone ©Nick Romanenko/Rutgers. Conference audience (far right) ©Steve Goodman. All others ©Drew Noel Photography for Rutgers CAIT.