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Creating an Intelligent Transportation System for Atlanta's first Smart Corridor

Challenge

The City of Atlanta's (the City) North Avenue's daily influx of drivers, cyclists and pedestrians keep it abuzz with activity. Unfortunately, its popularity makes it ripe for traffic jams, collisions and heavy emissions outputs.

Solution

The North Avenue Smart Corridor (the Corridor) acts as a "living lab," experimenting with traffic theory and technology-driven solutions for safe, efficient and environmentally-friendly mobility. The City selected Arcadis to manage the Intelligent Transportation System (ITS) design and support day-to-day operations.

Impact

20-35% collision reduction along the Corridor (depending on exact location). Bicyclists and pedestrians can safely traverse crosswalks without pushing a button.

6 seconds/intersection saved for emergency vehicles by preemption system (on average).

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North Avenue is one of Atlanta's critical passages, connecting business, education and transport hubs that propel commerce. The daily influx of drivers, cyclists and pedestrians keep it abuzz with activity. Unfortunately, the constant traffic makes the Corridor ripe for collisions and heavy emissions outputs.

Atlanta aims to change that. As part of its Renew Atlanta initiative, it's turned North Avenue into a "living lab" to test technology-driven solutions for safe, efficient and environmentally-friendly mobility.

Digitizing the traffic ecosystem

The North Avenue Smart Corridor project team, which also included the Georgia Institute of Technology and the Georgia Department of Transportation, prioritized connectivity. They selected Arcadis to design an ITS that would allow technologies from various third-party vendors communicate seamlessly.

Rigid signal timing is out, and an adaptive sensing system is in. A network of hundreds of internet of things sensors at 26 signalized intersections combines artificial intelligence with traffic theory to support the flow of transit and protect citizens.

Advanced video detection systems and vehicle-to-infrastructure communications between the system and travelers track traffic statistics such as speed and volume. It even identifies modes of travel, allowing bicyclists and pedestrians to safely traverse crosswalks without pushing a button.

When an emergency arises, it prioritizes the fire engines and ambulances responding to calls. Similarly, the system can accommodate special traffic patterns used for events like the Super Bowl, which the city hosted early 2019.

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The Smart Corridor will continue to evolve. Arcadis installed a digital mobility center nearby where Arcadis experts and project team members continually monitor the network and test potential improvements. It's also prepared to support autonomous vehicle technology, should that be needed in the future.

The power of data is a two-way street

Atlanta is maximizing the value of the real-time data they're capturing by sharing it with travelers via a free mobile app. The app incorporates users into a network of knowledge, sharing details like signal phase timing and safety hazards like speeding while in a school zone or approaching a dangerous curve.

The app does much more than help users time the green lights and read traffic signs, though; it warns drivers of impending rear-end collisions and cautions cyclists/pedestrians of vehicles traveling above the speed limit.

Progress regarding safety has been remarkable, with accidents down 20-35 percent along different sections of the Corridor. The new system also consumes less energy than before, supporting the team's mission to improve the environment along with mobility and safety.

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Award-winning advances

Looking ahead, the City hopes North Avenue will serve as a platform for "smart city" efforts around Atlanta. The project has garnered accolades locally and nationwide, including:

- 2018 ACEC Engineering Excellence Awards – National Recognition Award.

- 2018 ACEC Georgia Engineering Excellence Awards – State Award Winner, Technology Systems.

- 2018 ACEC Georgia Engineering Excellence Awards – 2018 ACEC People's Choice Award.

- Georgia Intelligent Transportation Society – 2017 Project of Significance Award.