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Innovation Awards

Innovation Award winner: Rapid Flow Technologies

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Ever sat at a red light at 2 a.m., no cars on the road, waiting for it to change?

If the people behind Rapid Flow Technologies have their way, your wait will be over.

Rapid Flow Technologies, a Carnegie Mellon University spin-off, has developed an innovative approach to traffic signal control, combining research from artificial intelligence and traffic theory with its Surtrac technology, developed through CMU's Traffic 21 initiative.

INNOVATION: Rapid Flow Technologies Inc. is already installing its smart traffic control system at intersections across Pittsburgh. Sensors program lights to make traffic run smoother.

The technology creates adaptive traffic signals, optimizing signal performance for the traffic that is actually on the road. This artificial intelligence technology improves traffic flow for both urban grids and corridors.

"Traffic signal control in urban environments really hasn't changed in 50 years," said

Stephen Smith, CEO. "The vast majority of signals are preprogrammed in advance. Some traffic engineer does a study, counts cars and then builds a timing plan that will allocate green time to the intersection. That's put into the controller, and it runs that plan forever and ever."

Smith started the company in 2015 with a former student, Greg Barlow, who now serves as CTO.

Smith said the company was launched in 2009 after seed money was provided by the Hillman Foundation to come up with solutions for traffic congestion in Pittsburgh.

"We were one of the groups that got some of that seed funding and came up with the core ideas that is Surtac, the system that controls the system," he said.

Rapid Flow's system monitors traffic in real time using cameras, radar or some other type of detection method, according to Smith.

"We build these timing plans generated in real times to match the actual traffic that's on the road," he said. "The system optimizes the length of green in each direction based on the volume of traffic that's coming through."

The Surtac system also alerts traffic signals in the vicinity about what volume of traffic can be expected, he added.

A Pittsburgh demonstration project on nine intersections reduced travel time by 26 percent, Smith said, adding that the city currently has a network of adaptive traffic signals at 50 traffic intersections and plans to expand to 150 more in the next three years.

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What the company does: Provides smart traffic infrastructure for smart cities, including intelligent urban traffic signal control and low-cost sensor networks for detection and analysis of real-time traffic conditions

Employees: 6

Richard Cerilli
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Pittsburgh Business Times