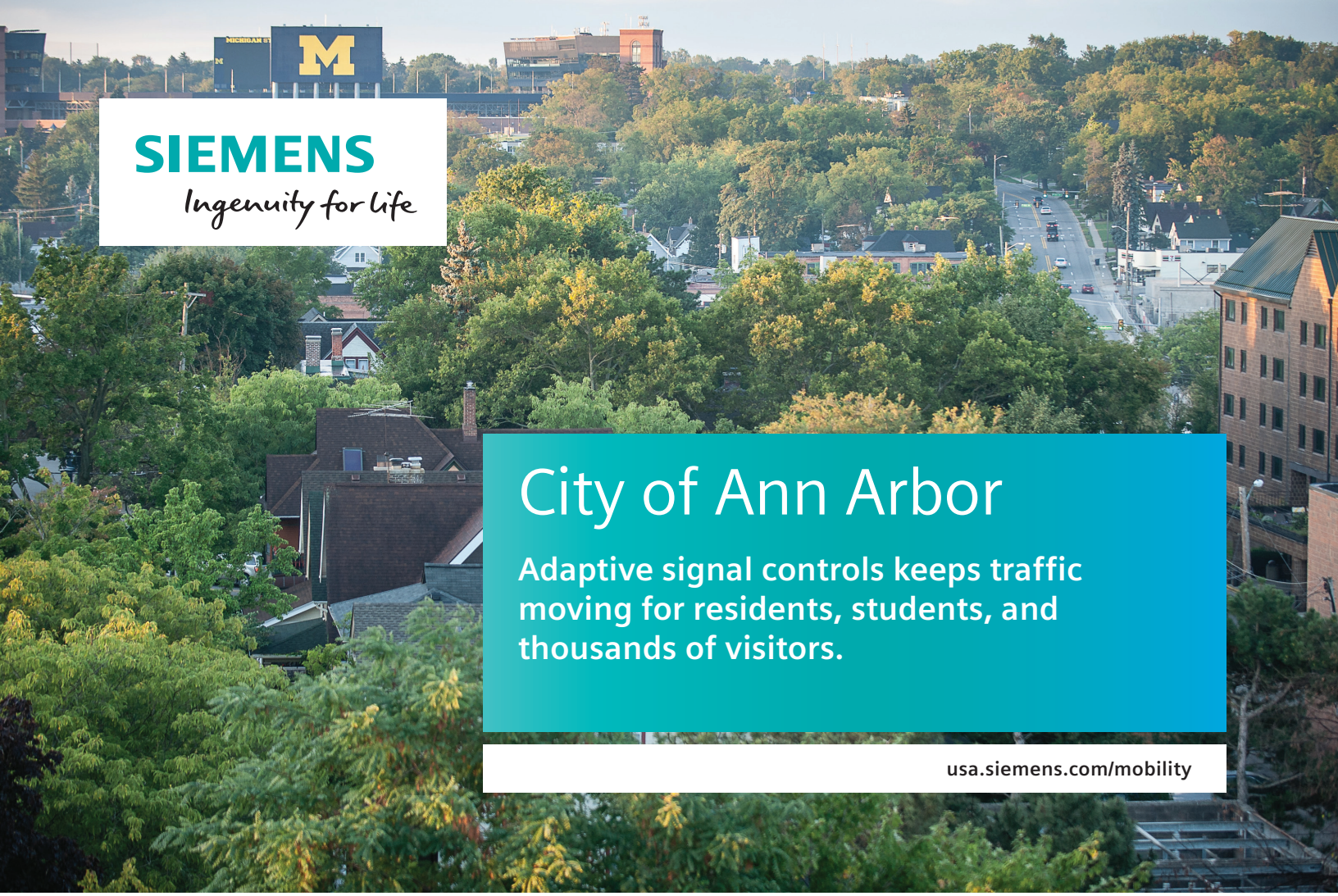

SIEMENS

Ingenuity for life

City of Ann Arbor

Adaptive signal controls keeps traffic moving for residents, students, and thousands of visitors.

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In the City of Ann Arbor, traffic is anything but predictable. Its population of 115,000 residents swells to 185,000 when school is in session. On an average weekday, 130,000 commuters come to Ann Arbor for work, while another 40,000 go to work elsewhere. Special events can happen any day, or night, of the week and draw thousands. Football games at Michigan Stadium cans double the number of cars in town.

Since 2005, Ann Arbor has employed the SCOOT adaptive traffic control system from Siemens along critical arteries throughout the city. Using an intelligent approach to traffic management, SCOOT helps keep traffic flowing making it easier to work, learn, live, and play in Ann Arbor.

Client Objectives

To keep traffic moving in a city like Ann Arbor, it helps to be able to stay a step ahead. For many growing cities, that means expanding its transportation infrastructure to reduce congestion. For Ann Arbor in the early 2000s expansion wasn't an option. "We were pretty built up," recalls Kevin Braun, a member of City staff working on traffic operations and network communications. "The number of motorists were increasing, but there wasn't a place to expand the main corridors." Additionally, unpredictable traffic patterns often caused by events at the University rendered traditional timed traffic signals less effective. "We needed to find a more efficient way to move traffic here," says Braun.

The city had been evaluating adaptive traffic signal control systems. These systems use sensors and a computer algorithm to dynamically change traffic signals based on real-time conditions. Ann Arbor officials believed these intelligent technologies would help relieve congestion caused by daily traffic as well as special events on campus.

"Progressive traffic flow was traditionally achieved by scheduling traffic signals with fixed timing plans. SCOOT provides greater flexibility in servicing all modes of traffic with real-time data."

Luke Liu
Traffic Engineer
City of Ann Arbor

SCOOT reduced weekday travel times in Ann Arbor by 12% and weekend travel times by 21%.

Siemens Solutions
Ann Arbor selected the SCOOT system from Siemens as its adaptive traffic signal control system. SCOOT (short for Split Cycle Offset Optimization Technique) adds a dynamic component to traditional static control systems.

Traditional systems rely on pre-programmed controls to manage traffic flow. Traffic signals may have a morning setting that accommodates traffic from one direction. During the evening rush the program can switch to allow traffic to flow more easily in the opposite direction. The drawback of these systems is that they cannot adapt to conditions on the road; congestion may worsen if traffic does not follow a consistent pattern.

SCOOT eliminates many of these problems. By placing additional sensors within the traffic corridor that can communicate with the SCOOT software and traffic signals, the timing of lights can be continually optimized based on real-time conditions. Detectors are placed about 300 to 400 feet back from an intersection. The system tallies vehicles approaching the light and makes signal adjustments before a line forms.

A key feature of SCOOT is its ability to manage the flow along major corridors while considering traffic on the side streets. “In addition to cars moving in and out of the city, we need to be aware of cars on side streets going home or to the main arteries,” notes Luke Liu, Ann Arbor traffic engineer. “SCOOT does a good job of monitoring all movements and optimizing traffic all at once.”

SCOOT began operating in Ann Arbor in April 2005 and was rolled out along most of the city’s main arteries. Its most recent deployment was along the Ellsworth Corridor, a route that runs alongside Interstate 94.

Client Results
StreetLight Data, a mobile analytics provider, conducted a study of the SCOOT system employing GPS technology.

The study tracked traffic movements through the Ellsworth Corridor before and after SCOOT deployment. The results showed a 12% decrease in weekday travel times and a 21% decrease in weekend travel times when SCOOT was employed.

Before implementation a driver had a 15% chance of navigating the corridor in less than 3 minutes. With SCOOT, the likelihood increased to more than 70%.

In addition to enhancing traffic flow, the SCOOT system also helps Ann Arbor enhance traffic operations by continuously optimizing network traffic flow.

“Progressive traffic flow was traditionally achieved by scheduling traffic signals with fixed timing plans,” says Mr. Liu. “SCOOT provides greater flexibility in servicing all modes of traffic with real-time data.”

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