Chicago Connected Signals & Advanced Traffic Management System
IDOT Fall Planning Conference, Peoria
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Including stops it takes about 4 to 5 minutes to travel one mile
7 to 8 min/mile or more during rush hours

Source: Google Maps
Signal timing and coordination have a significant impact on congestion

- ~3000 traffic signals in the network
- Signals are coordinated using clock time
Are the lights synchronized?
Are the lights synchronized?

Source: Google StreetView
Are the signals timed correctly?

Traffic Count for Roosevelt & Michigan
Source: Miovision Pilot Study
Is the left turn arrows turned-on only when there is a vehicle to turn?

Clark & Roosevelt
Source: Miovision Pilot Study
Signal Synchronization
- Need communication to signals
- Adjust signal timing to mirror changing traffic conditions
  - Need continues data on traffic counts, signal performance measures
  - Remotely change signal timing
- Left turn actuation
  - Video detection system
- Good central signal system
Fiber costs lots of $$$ per mile
  - Chicago has 4000 miles of arterial streets
  - Limited resources for maintenance

Establish communication to the signal controller with a cellular modem
  - Cheaper to install compared to fiber
  - Ongoing monthly service fee

Repair existing fiber where possible

**Cellular/Fiber Hybrid Signal Interconnect**
One camera for actuation, detection and counting
Real-time traffic counts at the intersection
Stop-bar and advance detection
Support for Connected Vehicles

PEDESTRIANS DETECTED

V2I PEDESTRIAN ALERT
New Central Signal System

- Upgrade existing central signal system with an advanced signal system
- Detailed signal performance measures
- Capable of adaptive signal control
- Integration with ATMS
Proposed in the 1990s with a core facility and Advanced Traffic Management System (ATMS) to centralize traffic management.

In 2015 CDOT started the implementation of the Advanced Traffic Management System (ATMS).
Chicago TMC is now refers to ~25 Intelligent Transportation Systems projects of which the ATMS is the hub. The ATMS and the other ITS projects together will create an integrated software system and infrastructure (TMC) for centralizing command and control of traffic management operations in Chicago.
911/CAD Integration
311 Integration
Travel Midwest Integration
Central Signal System Integration
Traffic signal database and work order management
Automated enforcement camera data
~1800 Surveillance cameras
Dynamic Message Sign Integration
Roadway Permits
Arterial congestion estimates
Bus and Train locations
Cellular Network Plan

[Diagram of cellular network connections and equipment, including Cisco 3850, Live Traffic Data LLC, Internet VPN, Intersection Cabinets, and other network components.]
Questions?

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