NJDOT – Transportation Systems Management

"Improving Lives by Improving Mobility"

Smart Traffic Signals

South Jersey Transportation Planning Organization

Citizens Advisory Committee Meeting

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NJDOT – Transportation Systems Management

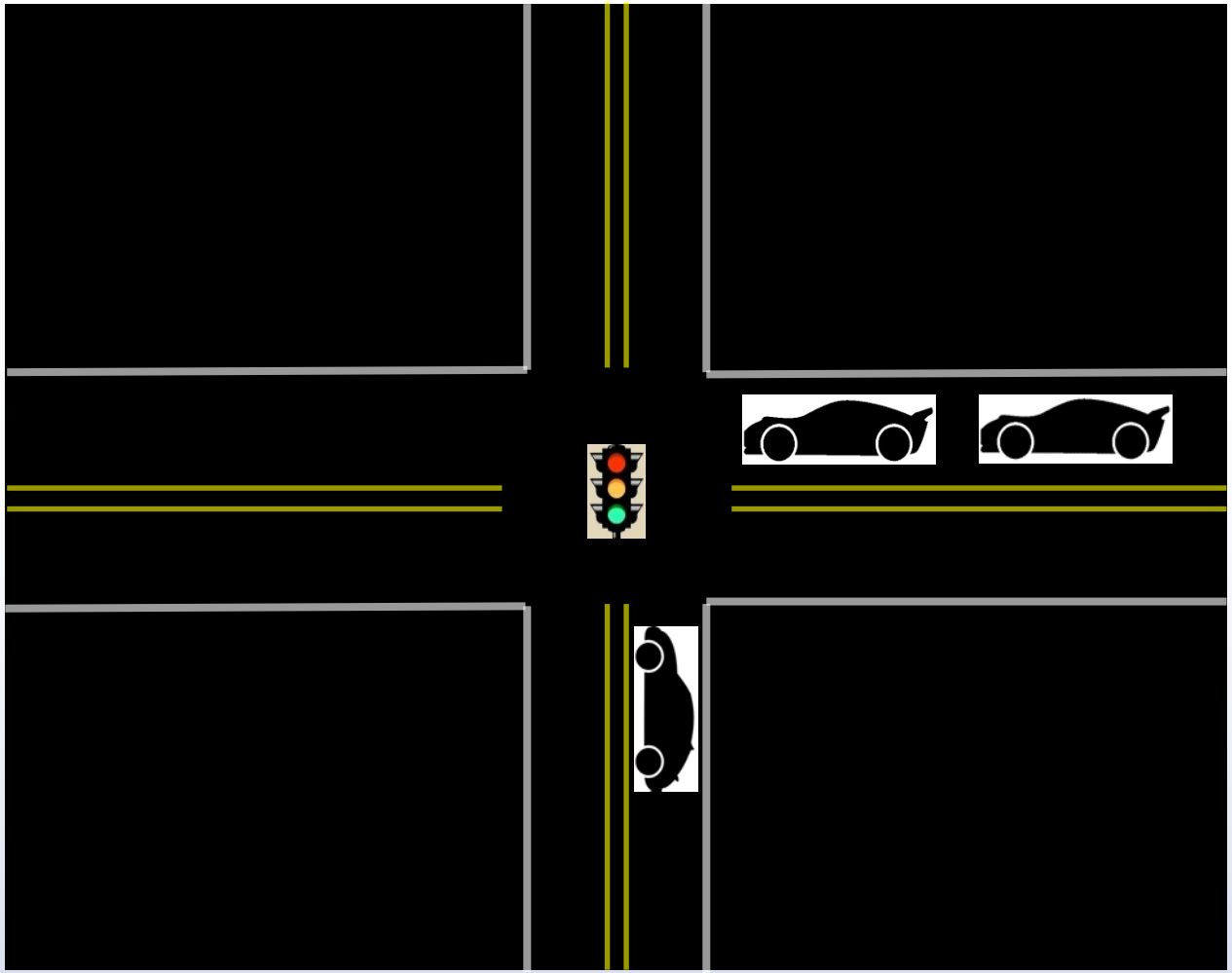
Outline

- What is a “Traditional” Traffic Signal?
- What is a “Smart” Traffic Signal?
- Where we use Smart Traffic Signals
- Why we use Smart Traffic Signals
- How a Smart Traffic Signal Works
- Adaptive Signal System
- Questions

What is a “Traditional” Traffic Signal?

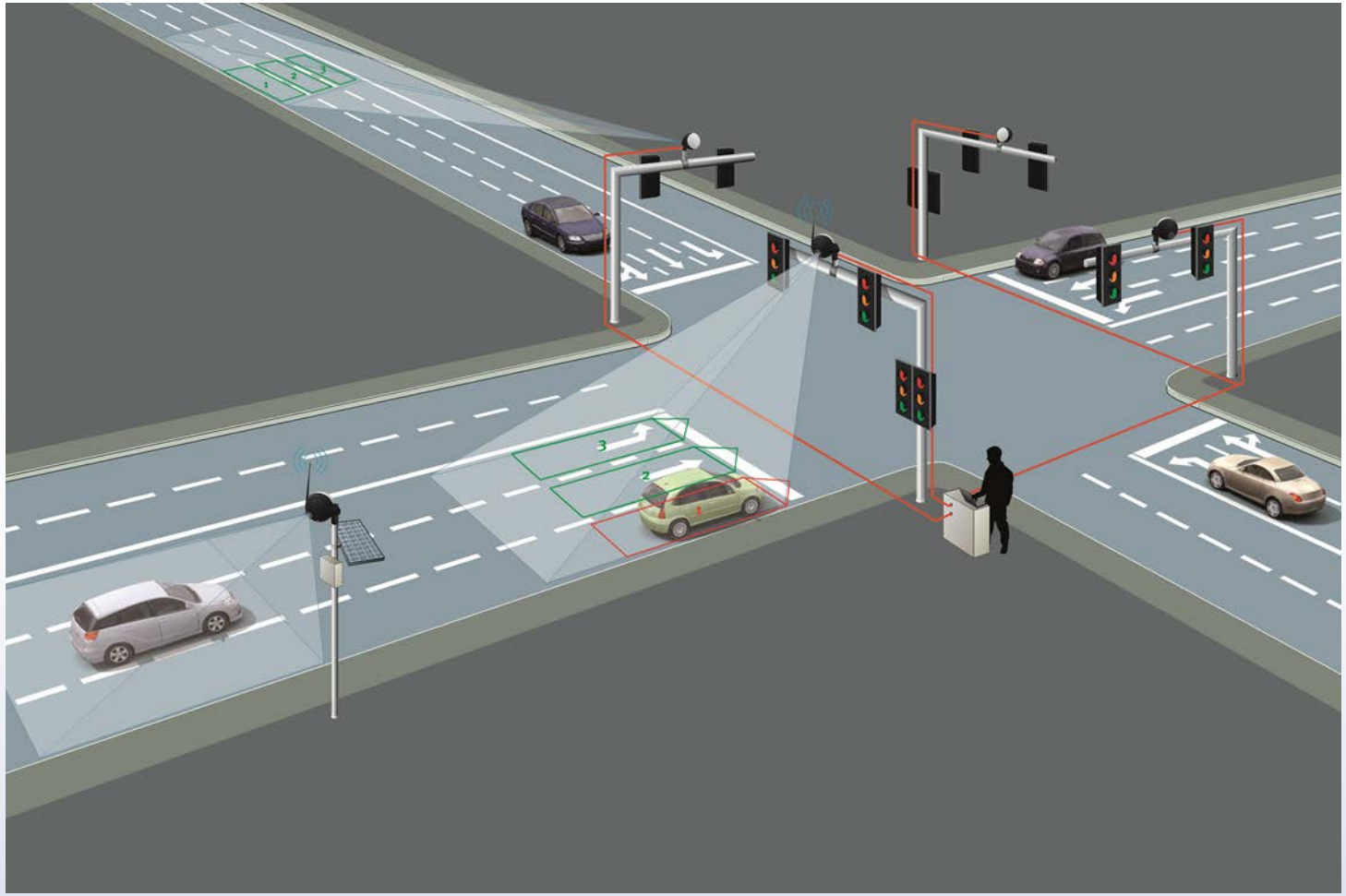
- Pre-determined time for green light.
- Can change based on pre-determined schedule (time of day, day of week).
- Requires extensive data collection (car counting).

60 seconds



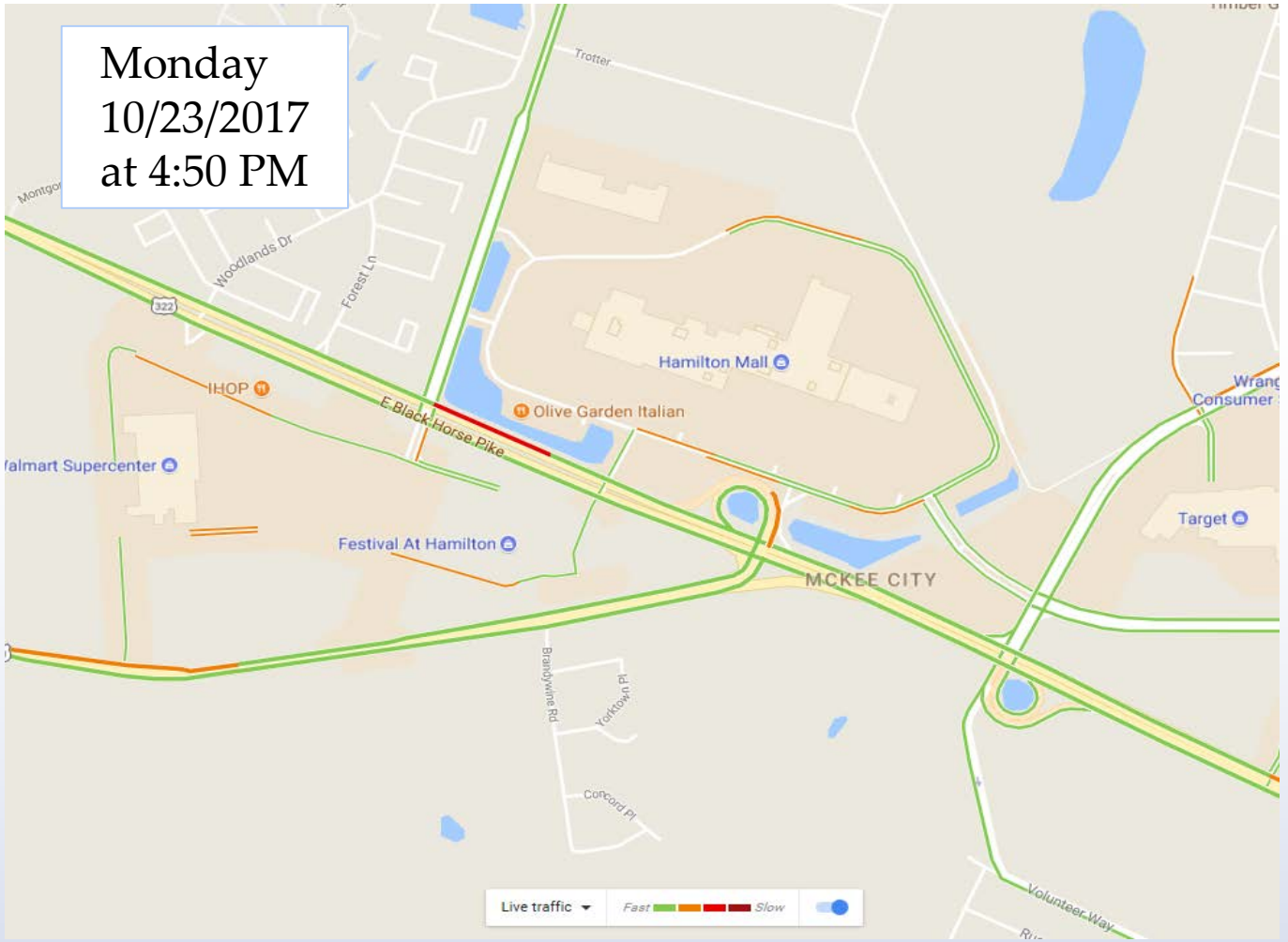
What is a “Smart” Traffic Signal?

- Signal that collects and uses data in real time to optimize the flow of traffic.
- Changes green times based on traffic demand (what is needed at that moment).
- Stores traffic data in controller in order to predict future traffic patterns.



Where we use Smart Traffic Signals

- Major signalized highways
- Busy intersections
- Roadways that support freeways
- Variable traffic conditions

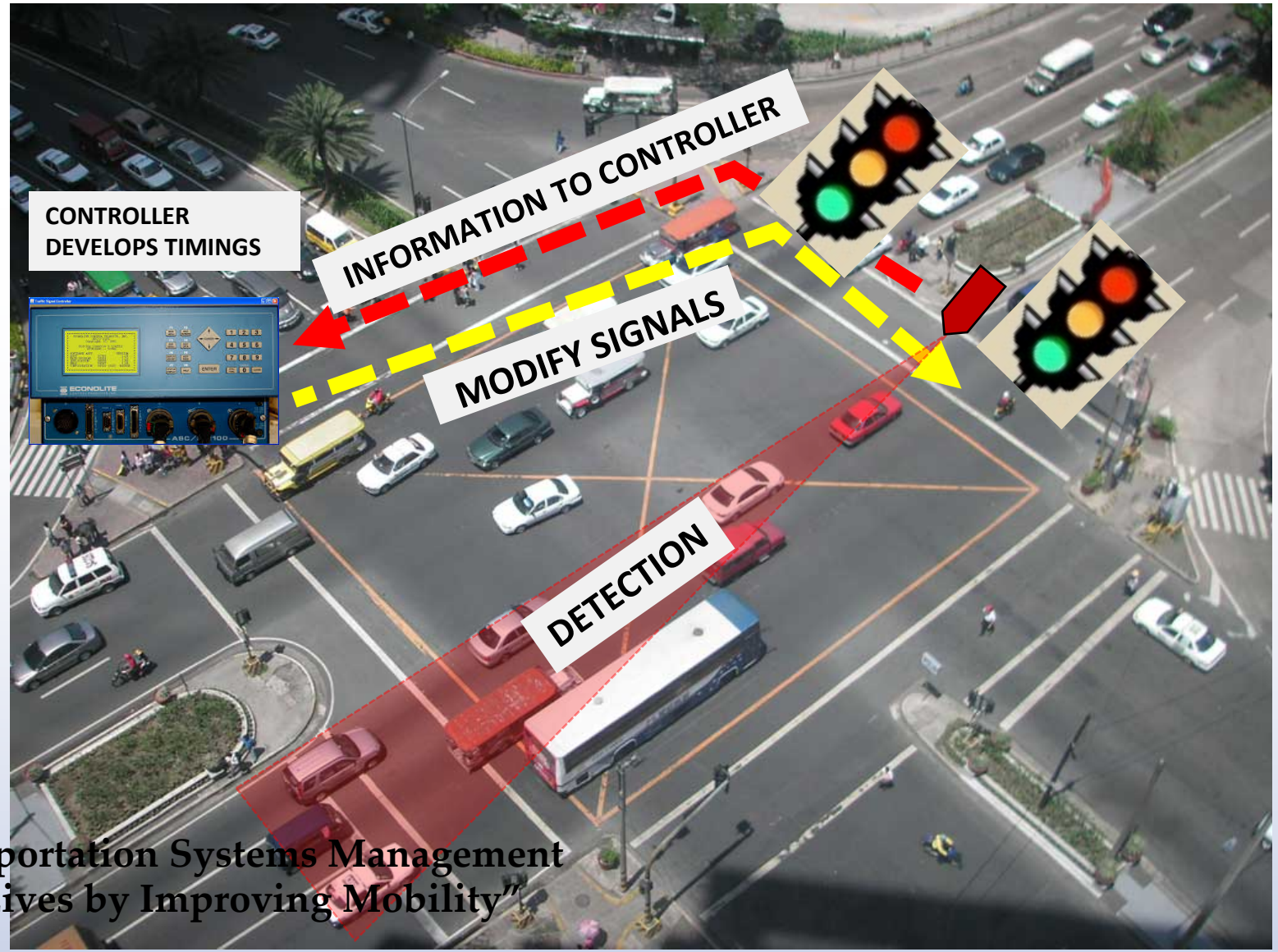


Why we use Smart Traffic Signals

- Improve efficiency of traffic flow
  - Traffic volumes fluctuate based on time of day/week/month/year
- Requires less traditional traffic signal timing updates
- Improve travel times
- Accommodate traffic during events or incidents

How a Smart Traffic Signal Works

1. Detection occurs
2. Sends data to controller
3. Controller sets timings based on demand
4. Modifies signal timings accordingly

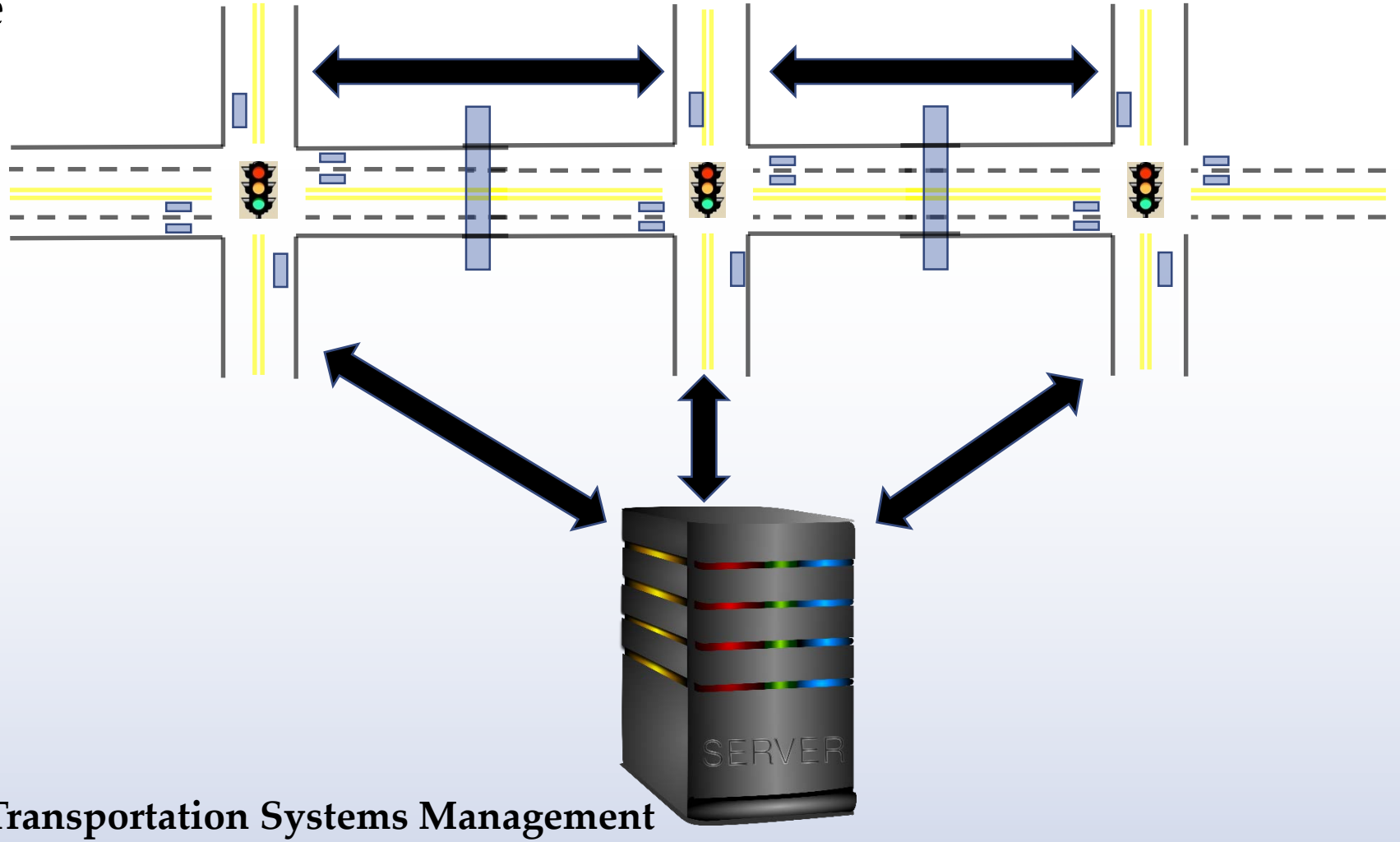


How a Smart Traffic Signal Works

- Skips certain movements at the intersection, only when appropriate.
  - If no cars are present, no need for green time.
- Can increase or decrease green time based on estimated number of vehicles and wait times.
  - The more cars that wait longer, the more green time should be provided.
- Can increase or decrease green time based on how well traffic moves through the intersection.
  - If there is nowhere to go (gridlock), less green time may be needed.

Adaptive Traffic Signal System

- Intersections communicate among each other.
- Intersections operate in order.
- Signals can be monitored and controlled remotely, if needed.




Question?