



Arterial Management Division

City of Austin's Transit Signal Priority & Emergency Vehicle Preemption System



May 2nd 2023



Description

Transit Signal Priority: operational tools used to reduce travel time of transit vehicles through the modification of signal timing. The two primary methods of modifying signal timing are:

1. Early Green
2. Extended Green

Emergency Vehicle Preemption: operational tool used to interrupt normal signal operation to provide a green indication to an emergency vehicle.



History

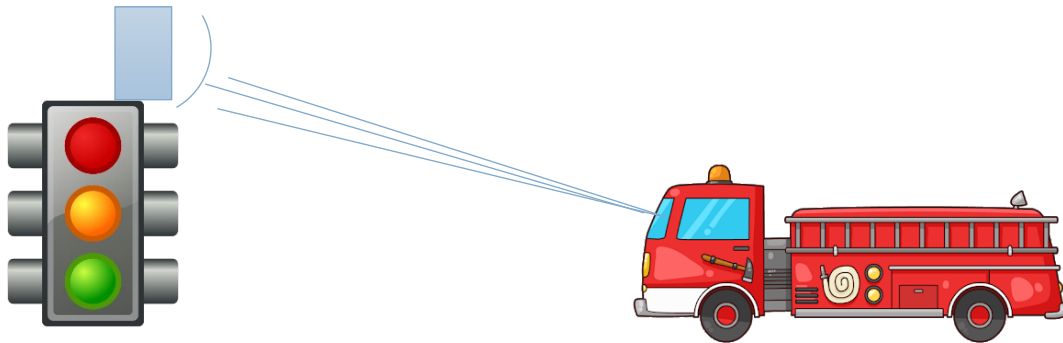
Timeline	EVP	TSP
Early 90's	Opticom Deployment	
2011	AFD, EMS, ATD discuss state of the system and future plans	Procurement of KITS signal software and TSP module
2012		Deployment of KITS
2013-2014		Deployment of TSP along Route 801 & 803
2017-2020	CAMPO – Grant submittal for Centralized EVP and TSP system, award and defunding	
2021	ATD identifies internal funding for project and begins procurement process to modify KITS	
2022	System development commences	
2023	Ongoing	Deployment to 50+ intersections
2024	City Deployment	



EVP

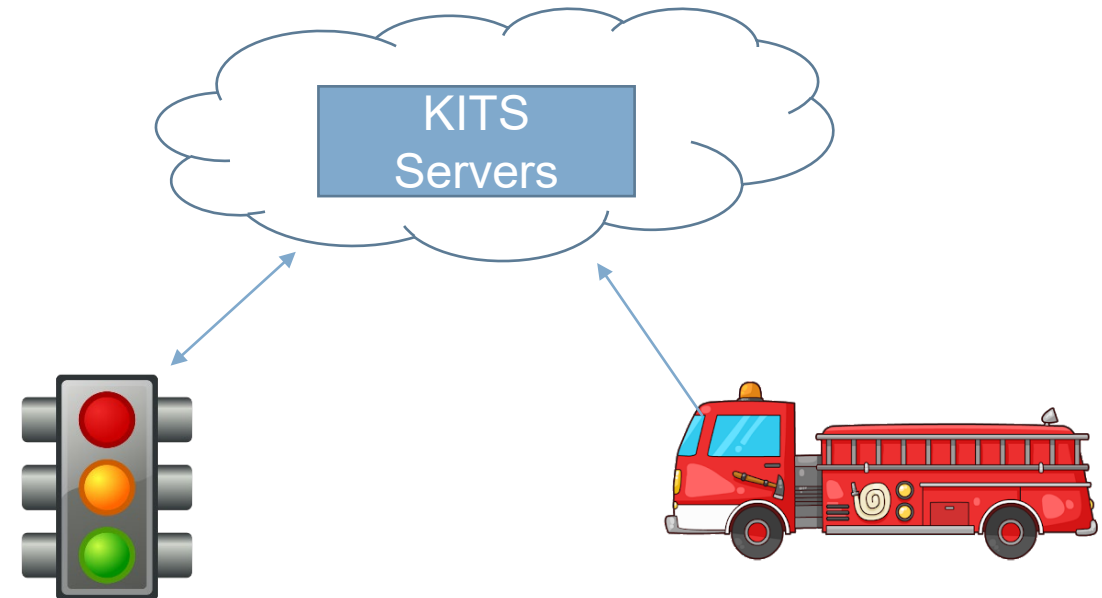
Existing

- Line of sight optical emitters and receivers
- Requires a receiver per direction
- Prone to hardware **maintenance** issues:
 - misaligned or obscured receivers
 - damaged emitters
 - cable issues
 - incompatible emitter/receiver



Proposed

- Vehicle GPS location relayed to KITS system
- Detection zones within KITS trigger a preemption call to the traffic signal
- Relies on existing Communication system
- **No additional signal field equipment to maintain!**





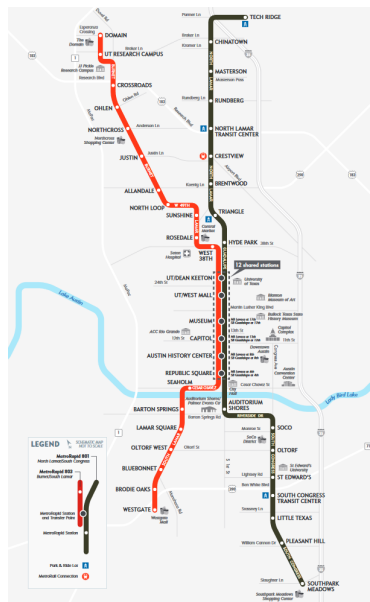
TSP

Existing

- Only along Route 801 & 803
- All logic is in CapMetro CAD system
 - GPS location of vehicles
 - Trigger zone locations
 - Business logic
- CapMetro request green extension and the KITS system grants all requests

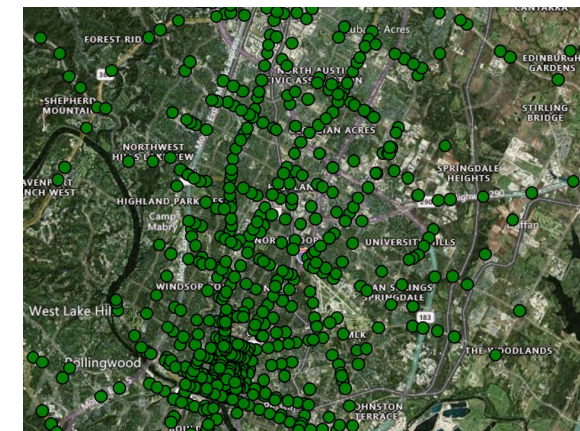
Current issues:

- Latency
- Not scalable



Proposed

- Deploy at signals throughout the City
- KITS receives location data for all transit vehicles every ~3 seconds from Swiftly
- KITS applies business rules to determine if TSP is granted
- If transit vehicles are within a TSP zone then a TSP request will be issued to the controller
- Controller will adjust the signal timing to either provide an early green or a green extension
- Ability to scale citywide



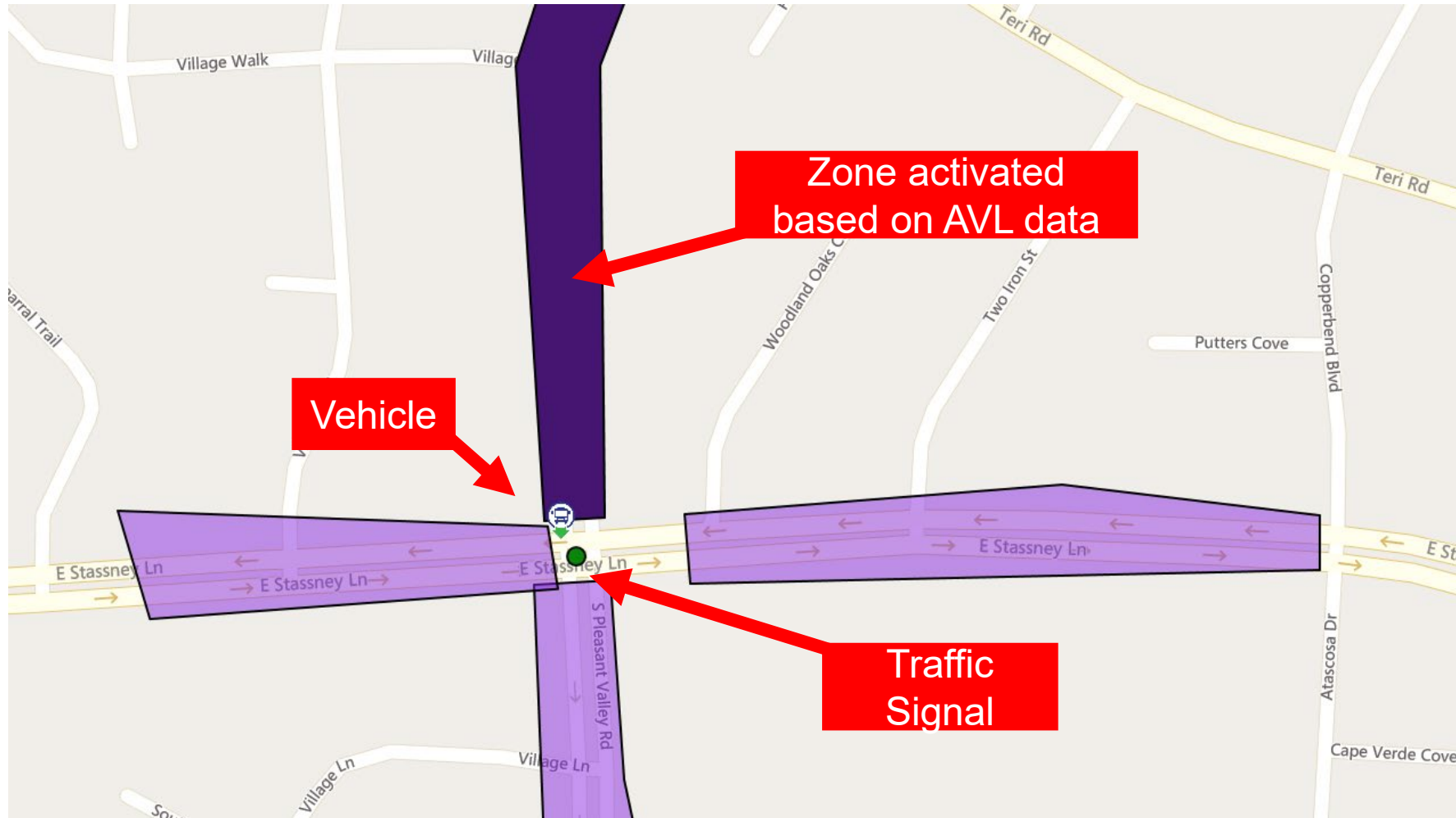


Status

- TSP system
 - Pilot project completed for 15 signals
 - Phase 1 deployment to 50 signals completed
 - Phase 1 monitoring underway
 - Report development underway
 - Citywide deployment to begin by EOY 2023
- EVP system
 - Backend software development completed as part of TSP development
 - Ongoing efforts to get reliable low latency vehicle location data

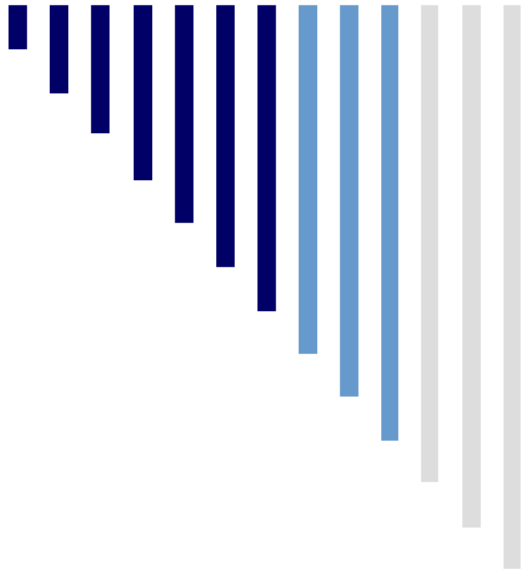


Status





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THANK YOU!

