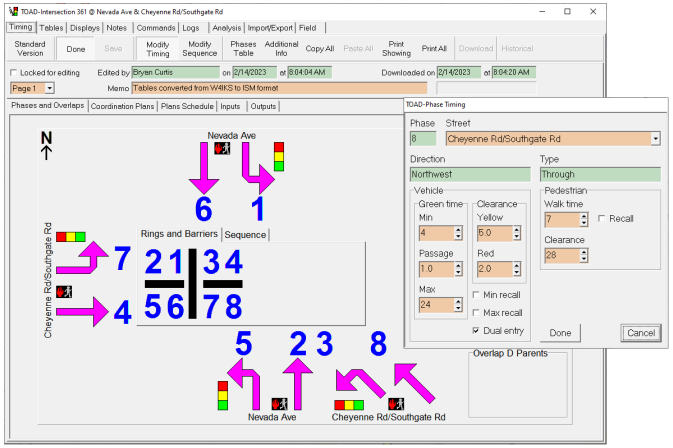
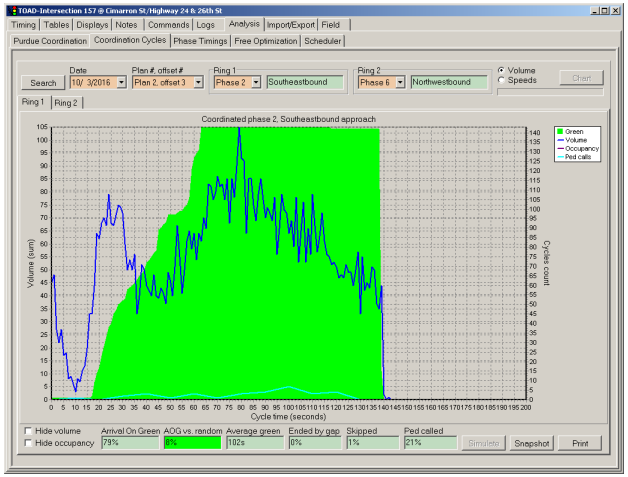
Perception-Based Adaptive Traffic Management

Overview of
City of Colorado Springs'
SMART Grants Funded Project

History of our platform

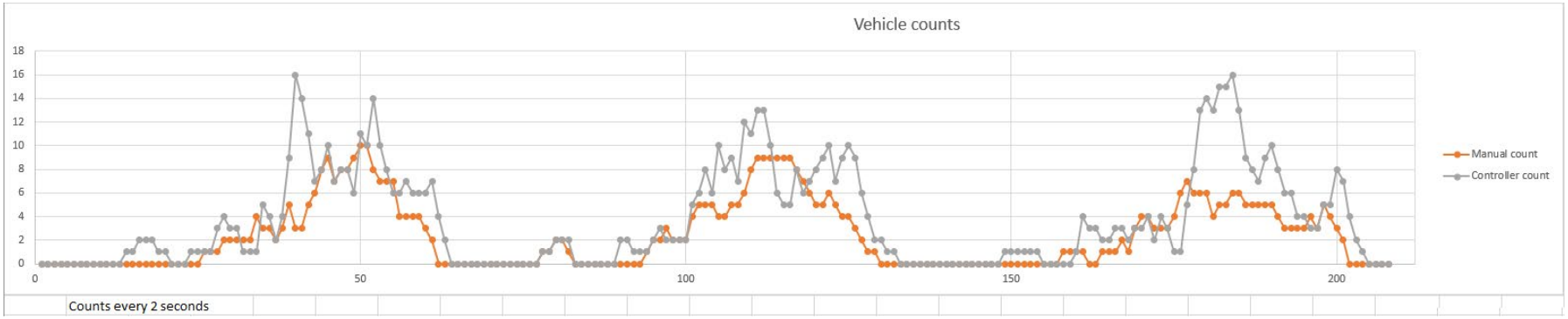
- In house development of central management system, plus traffic management software and controller
- Traffic software migrated to ATC and ATC cabinet





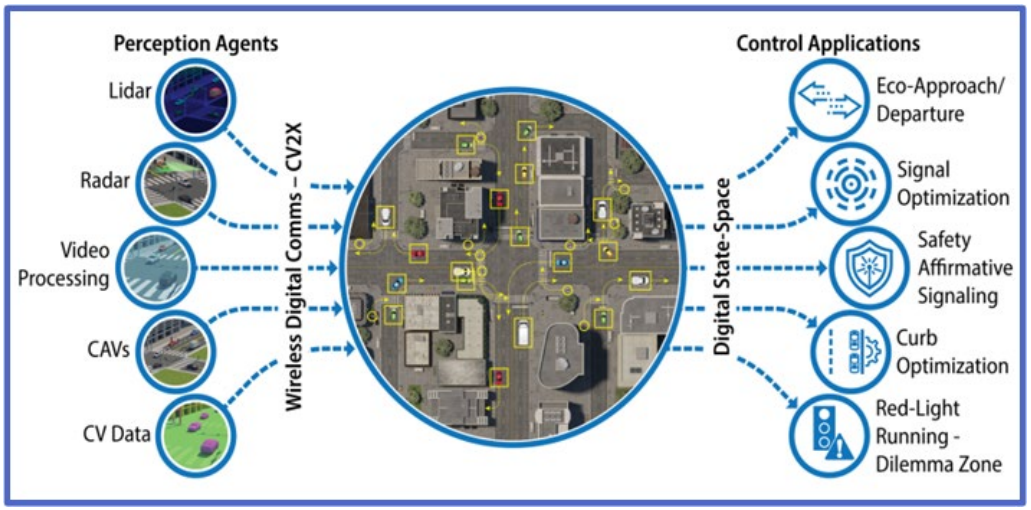
First generation high resolution adaptive

- Radar sensors streaming distance and speed of all approaching vehicles into traffic controller
- Tracking of vehicles 900ft to stop bar to find bi-directional break in traffic and transition when dilemma zones empty
- Peer to peer sharing of vehicle telemetry data to ‘see’ beyond sensors
- BUT speed and distance not enough; need 3D perception of vehicles, pedestrians and other multimodal users for better safety and efficiency



Perception-based adaptive traffic management project

- Partners
  - El Paso County – community integration, urban and rural solutions
  - NREL – sensor fusion for perception of all intersection users
  - ISU – improved, high resolution adaptive algorithm
  - UA – connected vehicle telemetry integration
  - UNCC – simulation and optimization validation
  - Econolite – sensor technologies and traffic management hardware



- Technologies
  - Real-time, 3D sensors – radar, LiDAR, and video analytics
  - Connected vehicles – private and public including busses, plows, and emergency services
  - Weather sensors – microclimate visibility and precipitation
- Objectives
  - Protections for vulnerable road users and emergency service respondents
  - Protections against red light runners during low traction & reduced visibility
  - Optimization for emission and travel time reductions

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Questions? Contact Dan.Sines@ColoradoSprings.gov