

Solving Traditional Mobility Challenges with New Technologies

**2019 ITS Wisconsin Transportation Conference
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Smart City Solution Case Studies

- Flooded Roads – Sea Isle City, NJ
- Overheight Vehicles – Augusta, ME
- Wrong-Way Drivers – Austin, TX
- Pedestrian Safety – Orono, ME



Flooded Roads – Sea Isle City, NJ

- Problem: Streets frequently flood around the city, leaving drivers with limited mobility options
 - City is located 7 feet above sea level
 - High tide at night creates flooded roads
 - Drivers are unsure which streets are safe



Flooded Roads – Sea Isle City, NJ

- Traditional Solutions
 - Water height level markers
 - Temporary high water signs



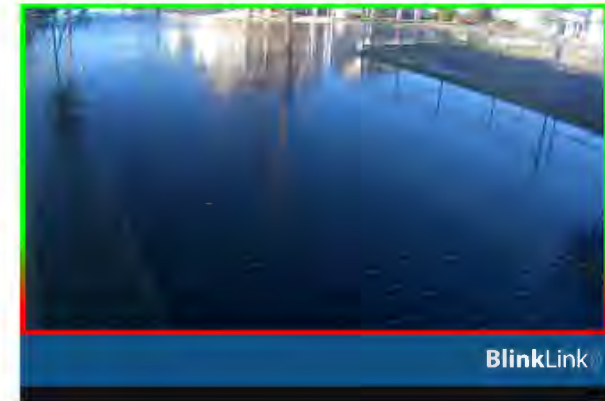
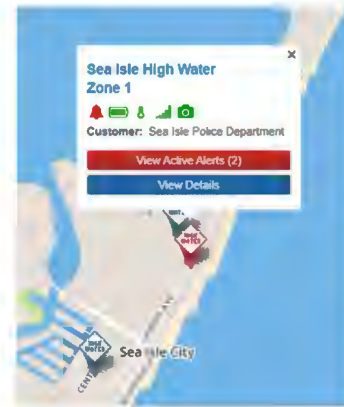
Flooded Roads – Sea Isle City, NJ

- Enhanced Smart City Solutions
 - Sensors to detect current water level
 - LED-enhanced warning signs
 - Only flashes when water is present on road, above a set height threshold



Flooded Roads – Sea Isle City, NJ

- Enhanced Smart City Solutions
 - Real-time notification of affected roads
 - Image verification of alert source



Overheight Vehicle Collisions – Augusta, ME

- Problem: Trucks & trailers travel under an overpass when they exceed the maximum height limit
 - Freeway overpass along I-95
 - Most of the time, overheight vehicles do not stop
 - Collisions damage both the vehicle and the roadway infrastructure



Overheight Vehicle Collisions – Augusta, ME

- Traditional Solutions
 - Upcoming bridge height limit
 - Physical height warning bars



Overheight Vehicle Collisions – Augusta, ME

- Enhanced Smart City Solutions
 - Sensors to detect overheight vehicles
 - Redundant beam-break sensors for increased confidence, vehicle direction detection capability
 - Dynamic triggered blank-out warning signs
 - Illuminates “Overheight Vehicle” warning only when sensors detect an overheight vehicle



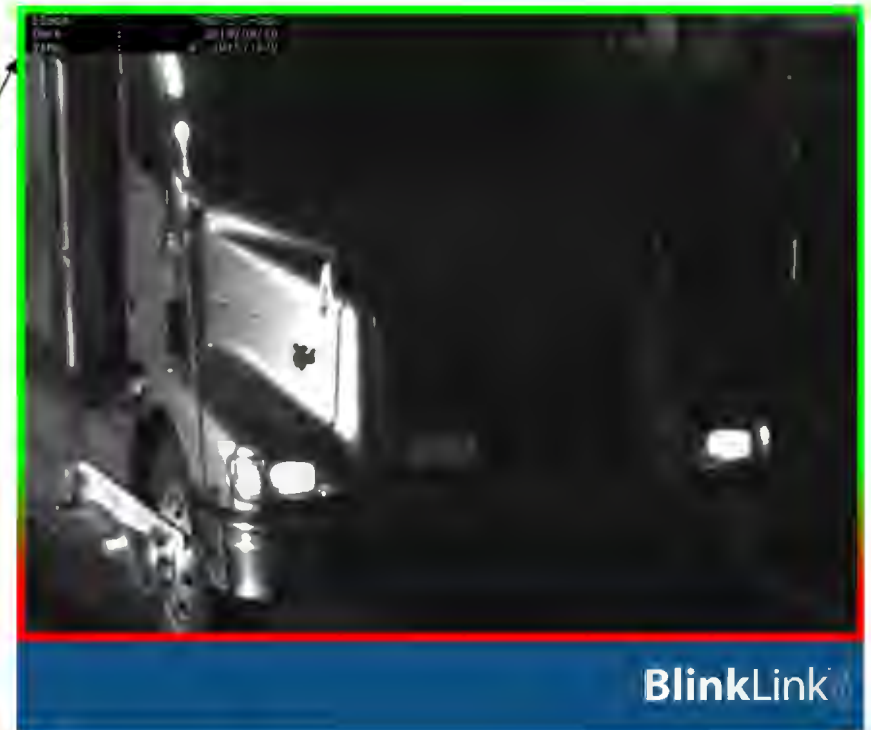
Overheight Vehicle Collisions – Augusta, ME

- Enhanced Smart City Solutions
 - Real-time notification with image of overheight vehicle



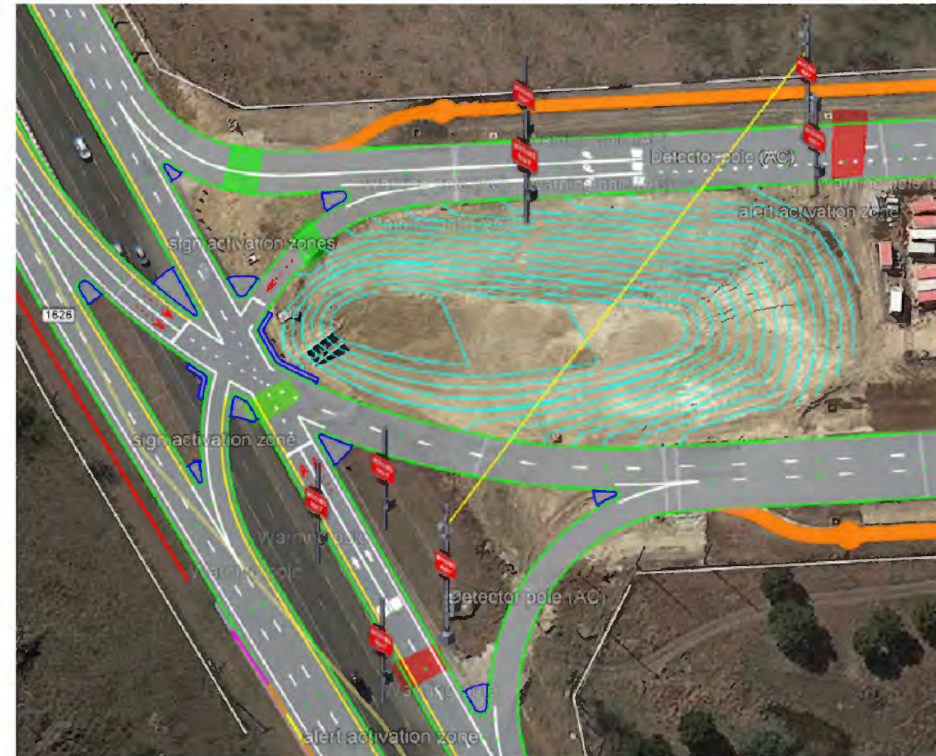
Overheight Vehicle Collisions – Augusta, ME

- Enhanced Smart City Solutions
 - OCR license plate recognition for vehicle identification



Wrong-Way Drivers – Austin, TX

- Problem: Vehicles turning onto a freeway offramp and entering the expressway traveling in the wrong direction
 - New roadway built, 45SW tollway connects State Loop 1 to FM road 1626
 - Impaired, elderly, and confused drivers are the most frequent wrong-way drivers
 - Several offramps are located on hills and curves, so right-way drivers have little time to see and react to a wrong-way vehicle



Wrong-Way Drivers – Austin, TX

- Traditional Solutions
 - Wrong Way signs posted near end of offramp
 - Guide arrows painted on pavement



Wrong-Way Drivers – Austin, TX

- Enhanced Smart City Solutions
 - Sensors to detect wrong-way vehicles
 - Thermal imaging sensors provide accurate vehicle detection in any condition: day, night, rain, snow, sunlight, even detecting vehicles without headlights
 - LED-enhanced wrong-way alerts
 - Red beacons capture driver's attention and warn them of mistake
 - LED-enhanced signage emphasizes "Wrong Way" legend printed on sign



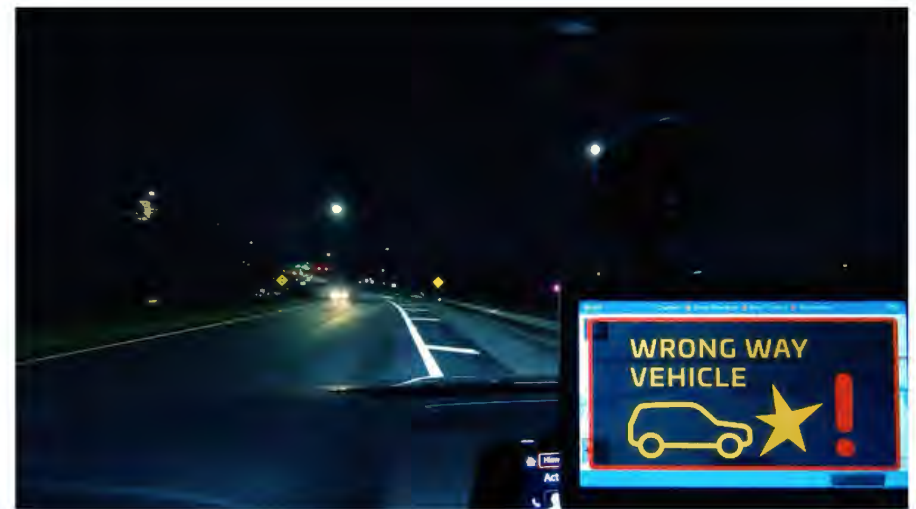
Wrong-Way Drivers – Austin, TX

- Enhanced Smart City Solutions
 - Real-time notification of wrong-way driving incident
 - Image verification of wrong-way vehicle
 - Automatic DMS message plans and CCTV camera control through API software integration



Wrong-Way Drivers – Austin, TX

- Enhanced Smart City Solutions
 - Connected Vehicle messages sent to cars and warnings displayed inside vehicles, to wrong-way and right-way drivers



Pedestrian Safety – Orono, ME

- Problem: Pedestrians crossing the street at non-signalized intersections can be struck by inattentive drivers
 - Student parking lot across street from campus buildings, frequently crossing
 - Busy road with pedestrian crossing has curves and obstructing trees, leaving little time for drivers to see pedestrians



Pedestrian Safety – Orono, ME

- Traditional Solutions
 - Static pedestrian crossing signs
 - Crosswalk indicator lines painted on pavement



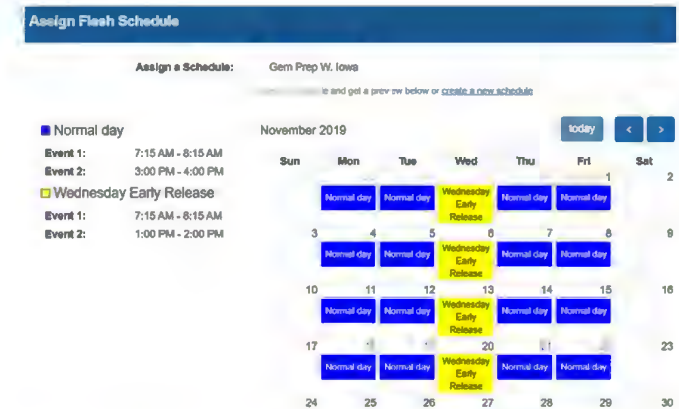
Pedestrian Safety – Orono, ME

- Enhanced Smart City Solutions
 - Sensors to detect pedestrians crossing street
 - Thermal imaging sensors detect pedestrian location and direction, and can be programmed to only detect in certain zones
 - LED-enhanced pedestrian crossing warnings
 - Rapid Rectangular Flashing Beacons (RRFBs) have been proven to be effective at drawing attention of drivers
 - LED-enhanced pedestrian crossing signs provide increased visibility



Pedestrian Safety – Orono, ME

- Enhanced Smart City Solutions
 - Cell modem connectivity allows real-time monitoring and control
 - Programmable flash schedules based on time-of-day for school zones
 - Status monitoring and alerting of system diagnostics such as battery, temperature, and beacon malfunction
 - Connected Vehicle messages sent to cars and warnings displayed inside vehicles for pedestrians in crosswalk ahead



Questions