

FAMPO ITS Study

Parking Management / Travel Information

FAMPO Policy Committee

May 21, 2018

Project Goals

Develop an engaging, supplement for Smart Scale application to leverage innovative and evolving technologies in the realm of “smart parking” at non-VRE park-and-ride lots in the I-95 corridor

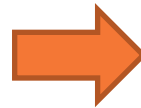
1. Reduce motorist dissatisfaction with a lack of real-time parking availability information
2. Better utilize parking capacity
 - oversubscribed vs. underutilized lots
3. Leverage opportunities to support and better facilitate Vanpools/Shared Ride transportation
4. Focus on “asset-light” solutions (i.e. lower capital costs)
5. Leverage existing and future 3rd party Apps/Services wherever possible

The Challenge

In the 6-year timeframe of this application – mobility will evolve

- Travel in the corridor will grow
- Technology will evolve to enable new mobility options
- Technology will improve in all related areas

This impacts both parking demand and the way technology can address existing issues



Evolving Mobility Ideas/Concepts

- Could a self-driving cars park themselves in a different lot if arrival lots is full? Would they take up less space?
- Will self driving vehicles or “rideshare” services (Uber/Lyft/etc.) support first/last mile connections to transit/shared ride?
- Will apps/services emerge that list all options and costs to the travelers in order to pick the best option in real time?
- What impact will alternative vehicle ownership models have? (Subscription or “as-a-service” ownership models)

We cannot predict which transformative technologies will ultimately resonate, but we can provide underlying data that supports the most mobility options

Research Results

- Uncertainty was evident in online research/literature review
- No clear consensus on any major trends
 - Various parties know **exactly** what is going to happen
- Costs for similar services varied by orders of magnitude
 - Particularly noted in parking systems
 - Expensive legacy systems/solutions (older models) continue to have traction
 - VRE experience demonstrates both discrepancies and opportunities
- Interviews proved far more insightful

Interviews

- A number of agencies contacted
 - FAMPO
 - VDOT
 - GWRideConnect
 - DRPT
 - VRE - Consultants/Vendors
- Local projects identified offer insights
 - VRE Parking System
 - DRPT upcoming ridematch app effort



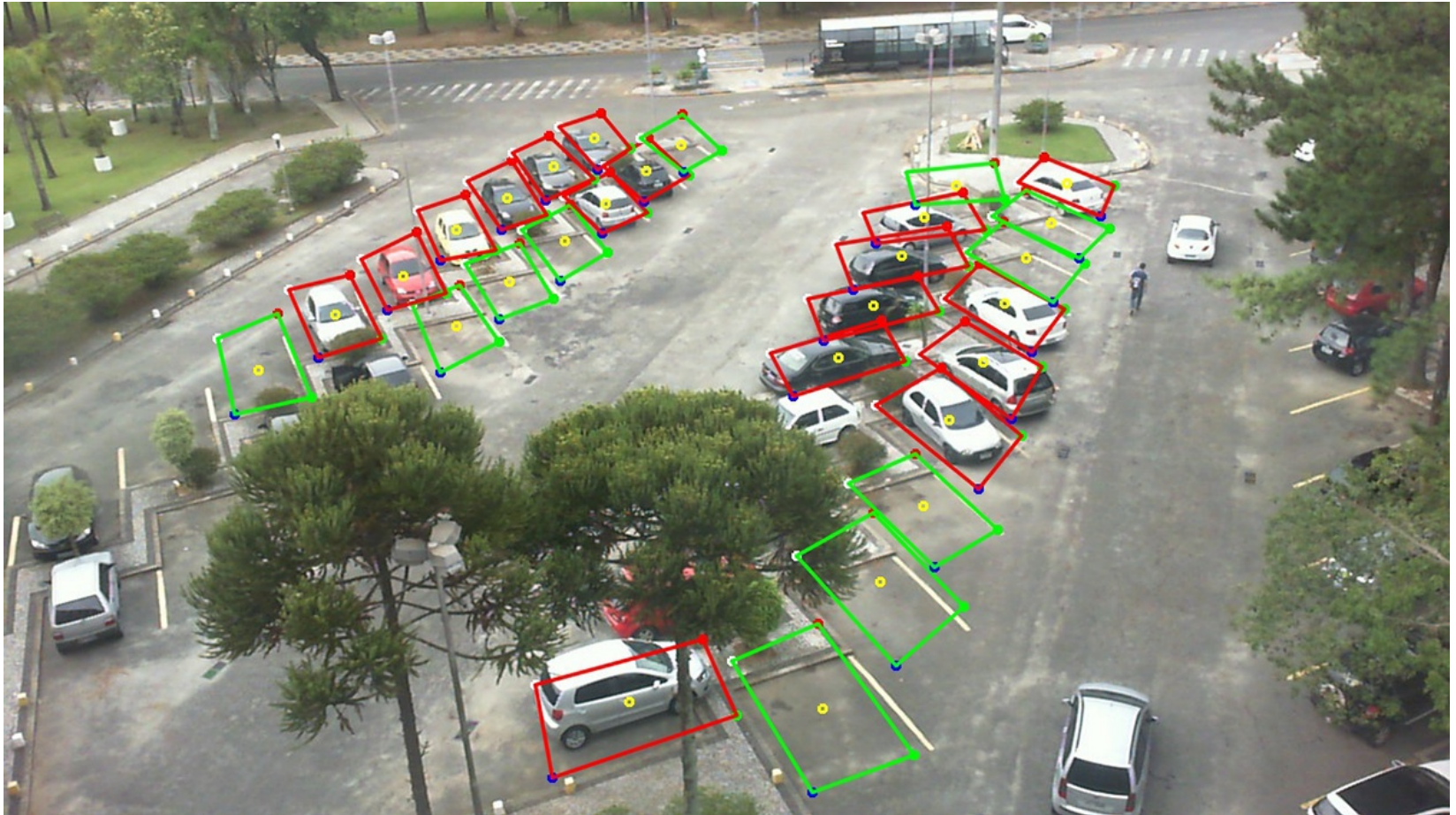
Parking ITS

- Real time parking availability is needed regardless of how mobility evolves
 - Highly likely to happen <6 years
 - Assume system would have a website/app support already
 - Linked to VDOT's **SMARTERROADS**
- Fixed infrastructure (power, communication) assumed to become less of a barrier/cost
 - Connections are what inflate the costs of these systems
 - Solar/batteries eliminates need for electrical connection
 - 5G communications could provide data links

Parking Availability – Possible Technologies

- Vision-based (Camera) systems
 - Well-functioning turnkey solutions are already here – will only get better with time
 - Added security benefit
 - Infrastructure & cost are current limitations
 - Future enhancements possible with application of machine learning/Artificial Intelligence, in-car guidance, etc.
- Real time satellite imagery
 - EarthNow (AIRBUS, Softbank, Bill Gates...) aims to offer turnkey solutions
 - Surface lot parking availability is candidate (cost? timing?)

Parking Availability/Monitoring



Parking Recommendation

Recommendations for inclusion in SmartScale Application

- FAMPO wants to provide a better customer experience by eliminating some of the uncertainty involved with parking at its non-VRE lots – new and existing
- It is likely FAMPO may have implemented low-cost count-based systems at some locations within the next 6-years. This application would complete, augment and/or supplant their functionality
 - Assumes an existing interface with VDOT SMARTERROADS
- FAMPO would tender a RFP for a complete (turn-key) parking monitoring solution which includes real-time, individual space monitoring and in-vehicle guidance

Parking Recommendation

- Vendors are likely to include additional functionality as part of their bids or as add-ons
- A vision-based system was assumed for costing purposes
- It was assumed that 5G connectivity and solar would negate the need for prohibitively expensive cabling efforts
- Computational power would be Software as a Service (SaS) and included in the package price
- Using current costing as a guide, a rough estimate of \$8,000-\$12,000/100 spaces for installation and \$500/month for communications/SaS component
- The Application Program Interface (API) would continue to be VDOT **SMARTERROADS** for third party applications

Available Seat/Vanpool/Rideshare

- Vanpool and traditional carpool matching is currently not dynamic – Commuters or GWRideConnect (on behalf of commuters) must contact individuals for information (carpool group or Vanpool provider)
- Vanpool reporting for FTA Grants (Section 5307) is currently cumbersome and laborious due to data requirements
- Seats go empty – sluggers sometimes picked-up to maintain minimum ridership
- Both CommuterConnections and DRPT are releasing RFPs to address these challenges
 - DRPT work (Richmond area) will likely provide lessons learned and partnership opportunities

Available Seat/Vanpool/Rideshare

- Recommend development of a app/mobile web site
 - Enhanced ride matching (minimize need for users or GWRideConnect staff to call-around)
 - Simplify the FTA grant reporting/possibly payment process
 - Make empty seats available
 - Will require Vanpool operator buy-in
 - On-demand carpooling may be an option
 - Tie-in to 3rd party services
- Cost: approximately \$125,000-\$150,000 to start with \$25,000 annual costs (SaS and updates)

Available Seat/Vanpool/Rideshare

■ Assumptions

- GWRideConnect will need to continue to maintain a separate database for privacy and other necessary reasons
- CommuterConnections will not have an application that fully supports the commuter/vanpool operator needs in the FAMPO region
- Trips/users involved would not represent a potential/profitable market for other mobility services
 - i.e. market will not be cannibalized by Uber/Lyft/Etc.