



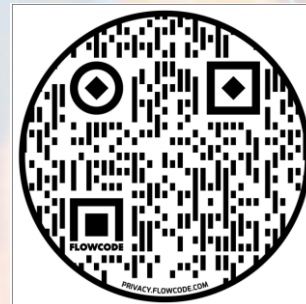
 **HART**

Hillsborough Area Regional Transit Authority

 **HART**

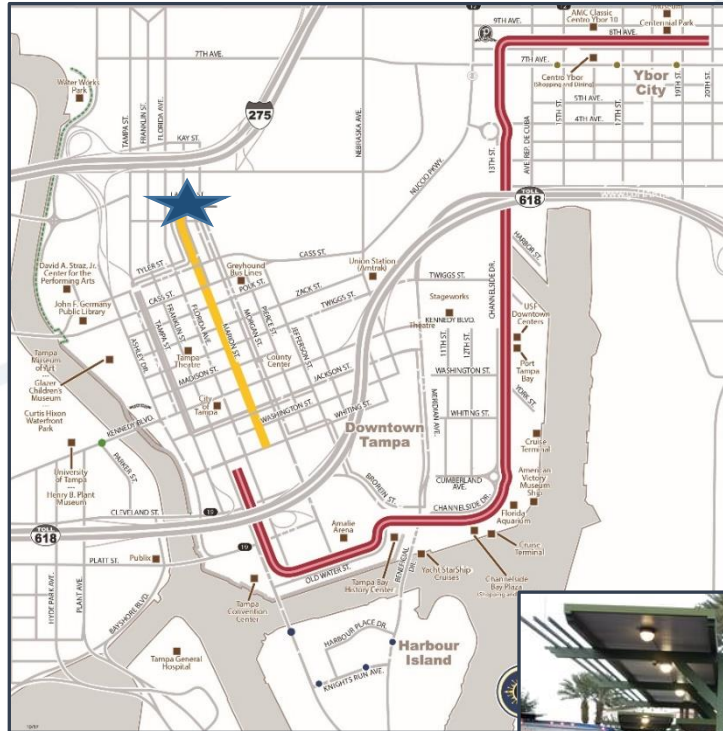
**SMART AV**

*Smart Mobility Alongside Regional Transit*



*Dan Rodriguez-HART*

November 3, 2021



# HART SMART AV Project Overview

- Connects MTC with downtown
- 0.6 miles along Marion/0.2 loop
- 8 signalized intersections with DSRC
- Vehicles traveling near 15 mph
- 10 minute headways
- Operating hours: 6 am – 7 pm
- 1 year pilot; 24 monthly extensions



# HART SMART AV – Project Purpose

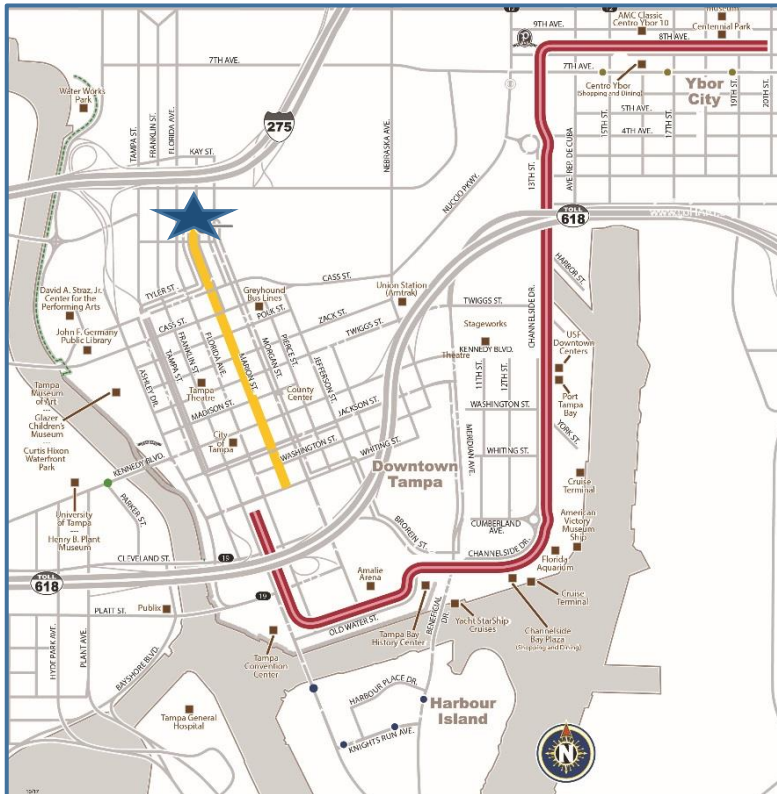
Purpose	Measures of Success
Move People Safely, Efficiently, Sustainably	Number of incidents (safe) Hard braking (safe) Ridership (efficient) Emission (sustainable)
Increase Multimodal Options/Connectivity	Operational hours Quality of service (downtime of AMS) Number of concierge engagements AMS before/after survey
Showcase the City (Encourage innovation)	Complete the pilot Transition to operations (from pilot)
Attract Private Industry	Contribution from private sector



# HART SMART AV – Project Requirements

Requirement	Examples
Operating	Speed, capacity, service duration, ADA capabilities, autonomous capabilities, weather, boarding, VRUs
System	Operational Design Domain, Electric, cameras, communications, advertising, noise, messaging, AC
HAV	Security, monitoring, preprogrammed route, manual operations, crash avoidance, law following
Operations Management	Charging, concierge, AMS Operations Center, Operating Procedures, Operations and Maintenance

# HART SMART AV Project Approach



- Phase I – Prepare for pilot
- Phase II – Conduct testing
- Phase III – Conduct the pilot
- Phase IV – (Optional) Continue the pilot
- Phase V – (Optional) Expand the pilot

# HART SMART AV – Stakeholders





# HART SMART AV – First Responders



# HART SMART AV – Leadership Support





# HART SMART AV – Community Engagement



# Procurement

- Developed concept of operations/ shuttle requirements
- Include NHTSA requirement as evaluation criteria
- Clearly defined success measures
- Defined scope of work/deliverables for proposers
- Develop payment schedule to reflect deliverables/success measures





# Results

HART AV PROJECT PERFORMANCE MEASURES:		May 2021
1	Number of Incidents	Total Incidents: 3
	Repeating Hardware Incident: Defective Router on P131	Hardware: 2
	Hardware: Wheel 1 slippage	Software: 1
	Software Incident: Perception Frozen	Other: 0
2	Number of near misses or "hard braking" events	0
3	Emission	N/A
4	ATS Ridership	152
	No. of Roundtrips	502
5	Operational Hours (does not include planned downtime)	273 available 258 hours operated 99.05% availability
6	Quality of Service (downtime)	<b>Planned Downtime:</b> 0
		<b>Unplanned Downtime:</b> 14h.56m Defective router on P131 Therefore, only US06 was being used. Down time was due to depleted battery and
7	Number of concierge engagements	N/A
8	User AV "before-after" survey	N/A
9	10 minute or less headways	Impacted by traffic signal. Headway is 14-20 minutes depending on
10	Cleaning	
	10A Regular Cleaning	(31) Daily Interior Sanitizations; (5) Exterior Cleanings Shuttle interior is sanitized daily and the exterior is cleaned once a week.
	10B Emergency Cleaning	None
11	Number of successful security breaches into the HAV operating software system	None
12	Desired Capability: DSRC Communications: Successful communications with signal	None



# Lessons Learned

- Apply technology to a transit need
- Be as specific as possible about operating expectations and participant roles
- Identify requirements and optional features
- Involve leaders early to manage expectations and garner support
- Test and verify actual vehicle capabilities

# Lessons Learned

- Involve first responders
- Look for opportunities to reduce vendor and agency risk
- Allow ample time for vendors to respond
- Clearly define “must haves”, “nice to haves” and “aspirational” activities
- Market the product to customers based on success measures
- Get the business community involved



# Where are we now?

- Pilot ended June 30<sup>th</sup> 2021.
- A new route is under evaluation
- Looking for New ridership opportunities
- Looking for Public-Private partnerships for funding opportunities



## Operational Details:

- Tampa Riverwalk along Doyle Carlton Dr. and Highland Ave.
- Hours of Operation: (Tues-Fri.) 4pm to 10pm & (Sat-Sun) 1pm to 10pm
- Stops: Armature Works, Water Works Park, & Straz Center



# Thank You!!

