HAMPTON ROADS TRANSIT

Smart Cities & Innovation Committee

Thursday, March 9, 2023 ◆ 12:00 pm

AGENDA

1. **Introductions & New Business**
   - The Honorable Andria McClellan
   - Ms. Tiffany Dubinsky, AICP, VA DRPT Transit Technology & Innovation

2. **Smart City Updates**
   - Ray Amoruso, HRT Chief Planning & Development Officer
   - Michael A. Price, Sr., HRT Chief Information/Technology Officer

3. **Open Discussion**

4. **Adjournment**

Hampton Roads Transit, 3400 Victoria Boulevard, Hampton, VA

Smart Cities Innovation Committee

March 9, 2023

Ray Amoruso, Chief Planning & Development Officer

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Norfolk Innovation Corridor (NIC)

- The **Norfolk Innovation Corridor (NIC)** is an area paralleling the Elizabeth River Trail that stretches from Norfolk State University to Old Dominion University and includes the Eastern Virginia Medical Center Complex.

- The NIC serves to attract and retain technology companies while serving as a magnet for a talented and diverse workforce.

SMART Grants

The Bipartisan Infrastructure Law established the Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program

Eligible Organizations include:

- a State;
- a political subdivision of a State;
- a public transit agency or authority

SMART Grants

Eligible Projects include:

- Coordinated automation
- Connected vehicles
- Sensors
- Systems integration
- Delivery/logistics
- Innovative aviation
- Smart grid
- Traffic signals

SMART Grants

The SMART Grants Program includes two stages:
  - *Stage 1 Planning and Prototyping Grants*
  - *Stage 2 Implementation Grants*

- The program structure is based on a belief that *planning, prototyping, and partnership are critical* to advancing the state of the practice for data and technology projects in the public sector.

SMART Grants

- USDOT anticipates that only recipients of Stage 1 Planning and Prototyping Grants will be eligible for Stage 2 Implementation Grants and anticipates funding projects of up to $2,000,000 per project for Stage 1 and up to $15,000,000 per project for Stage 2.

NIC Potential Project

Establish a partnership between the City of Norfolk and HRT and the private sector to test a prototype Autonomous Vehicle Route between the end of light of light rail at EVMC and Old Dominion University

NIC Potential Project

Submit a Stage I SMART grant request to USDOT in order to study the following:

- Partnership
- Route
- Technology interface with HRT and city systems
- Understanding of O & M annual costs
- Demonstrate AV technology viability
- Identify Risks

NIC Potential Project

Depending upon outcome of Study the city of Norfolk and HRT could submit a Stage 2 grant request to implement an AV Pilot route serving the Norfolk Innovation Corridor

Questions

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SCIC
Technology Update

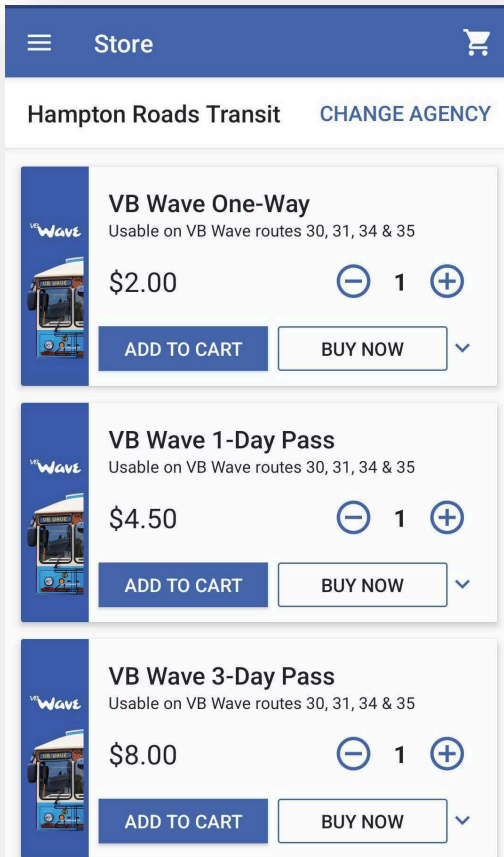**Michael A. Price, Sr., CIO/CTO**

3/9/2023

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Technology Overview

- Mobile Fare Collection System
  - Updates, Timeline and Next Steps

- Intelligent Transportation Systems
  - Turn-by-turn Navigation
  - Automatic Vehicle Location (AVL)

- Onboard Network Infrastructure
  - Video Surveillance System
  - Camera Placements

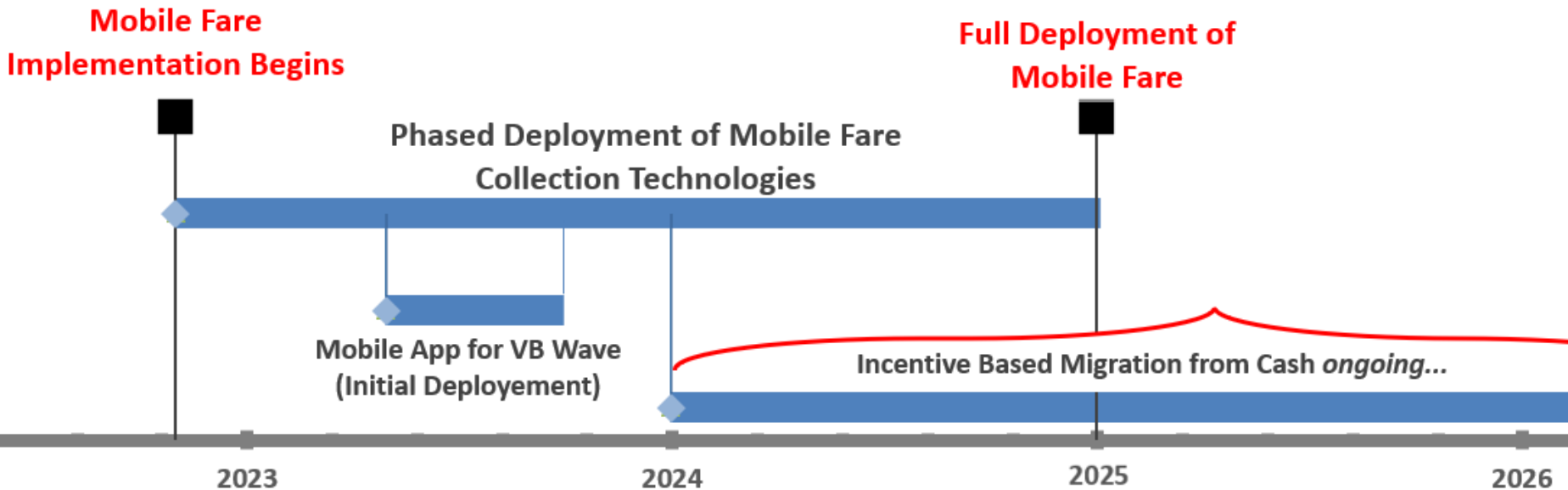- Cyber Security Assessment 2nd Qtr.

Mobile App for 2023

- Initial deployment phase with long-term vendor

- Phased deployment of solution building towards full system launch

- Gives HRT staff & customers familiarity and training ahead of larger deployments

- Retail cash payments (InComm)

Estimated Deployment Timeline

- Timeline estimates for full implementation proceeding faster than initial target despite supply chain issues
- Order of technology deployment may change, but overall schedule remains on track

Mobile Fare Implementation Begins

Full Deployment of Mobile Fare

Phased Deployment of Mobile Fare Collection Technologies

Mobile App for VB Wave (Initial Deployement)

Incentive Based Migration from Cash *ongoing...*

2023   2024   2025   2026

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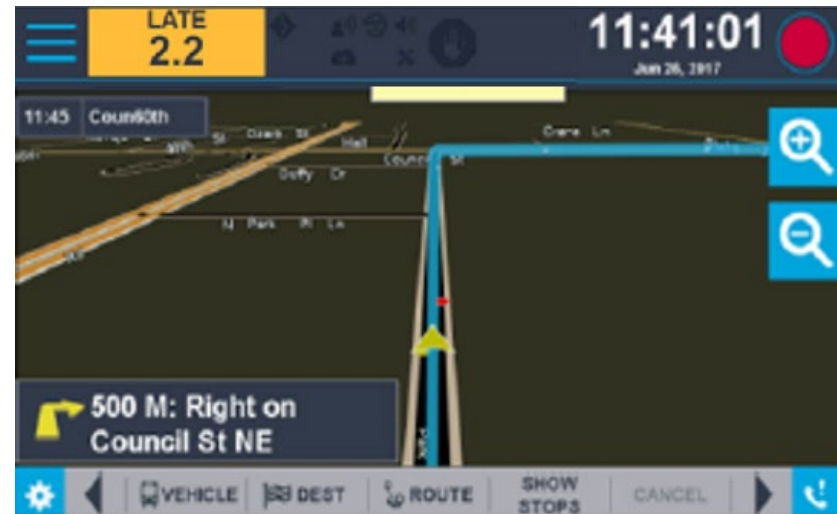
Mobile Fare Collection System

Next Steps

- Deployment of app and retail cash payments for the VB Wave 2023 season service

- Finalization of design, phasing and implementation plans

- Order equipment and hardware for validators, ticket vending machines

- Engage parties on civil work, construction and permits required at Light Rail Stations, Ferry and Transit Center locations

- Incentive-Based Migration (IBM) Committee engagement to develop customer migration plans

Intelligent Transportation Systems

- ## Turn-by-turn Navigation Pilot on fixed route buses

  o On buses equipped with newer CAD/AVL hardware *(computer-aided dispatch/automatic vehicle location)* – estimated 2/3 of fleet

  o Provides visual & audio instructions to operators – improved service

  o Multiple display options

  o Indicates approaching stops

- ## AVL data over cellular network on fixed route buses

  o Radio location dead-zones reduction

  o Reduced onboard hardware footprint (antenna & cables)

  o Enhanced vehicle visibility; location updates frequency every 15 seconds

  o Redundant communication channels to vehicles
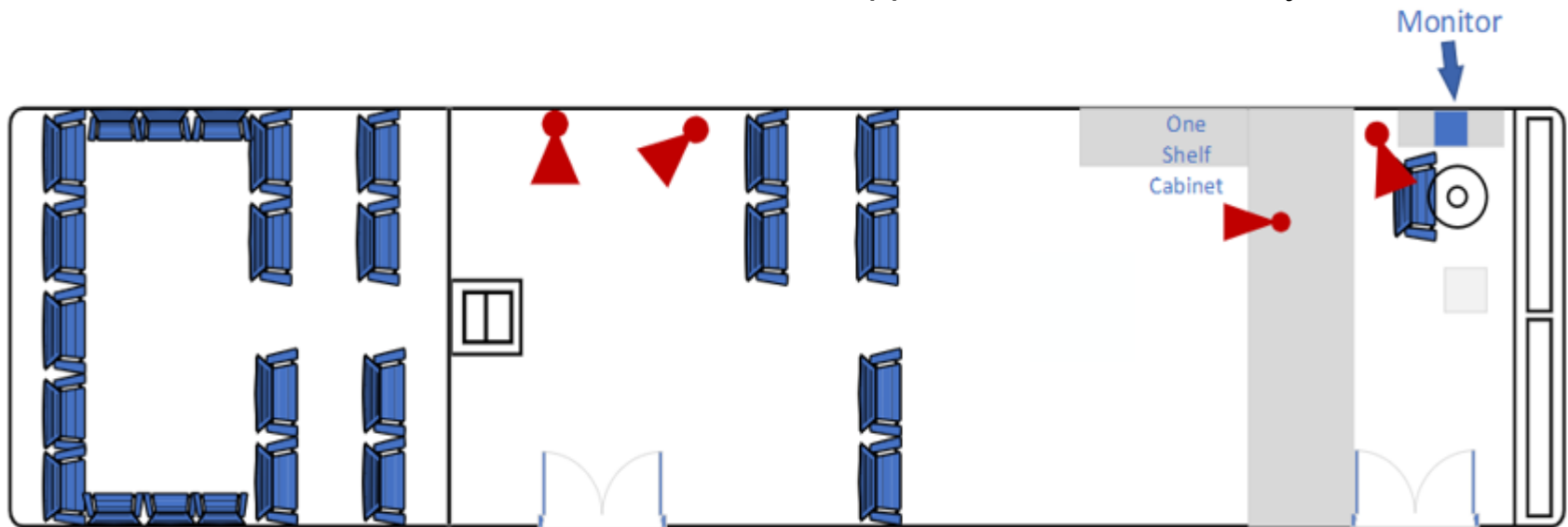
Revenue Vehicle CCTV System

Mode	Fleet Size	CCTV	CCTV Retrofit Projects	Wireless Offload
Bus	302	66% Legacy SafetyVision 34% new Luminator	Bus Video Surveillance	Planning Phase
Light Rail	9	100% Luminator	Completed in 2018	Upgrade LRT Video Recording Equipment
Ferry	3 +2*	100% Legacy SafetyVision	Video Surveillance to cover ferries as well	

*2 new ferries to be delivered this year.
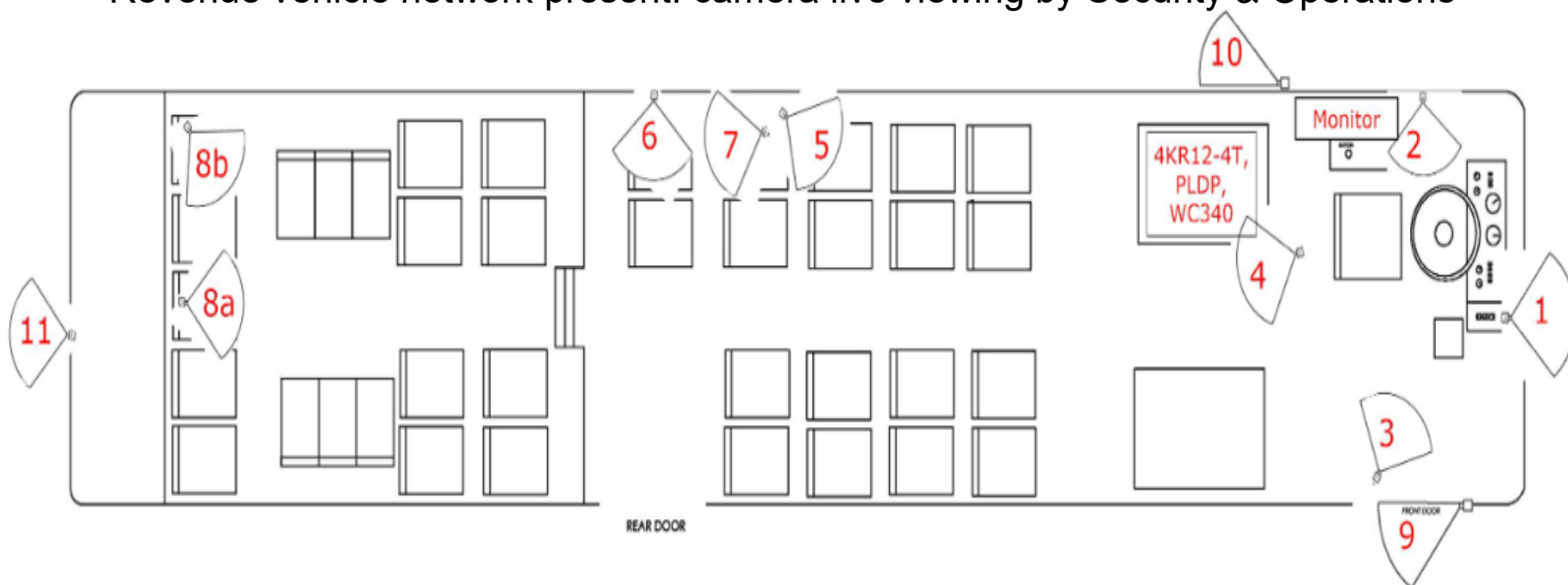
Current Layout – 1200 Series

1999, 2001 Gillig (35 feet) – Quantity: 27

- SafetyVision Pro and 7000s, four-to-six cameras
  - No cameras – outside front & back, right & left of bus or front-facing
  - Cameras positioned at driver's seat and inside bus/passenger cabin
  - Low resolution imagery captured, limited storage space, manual video retrieval process
  - No revenue vehicle network established to support current or future systems

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New Layout – 1200 Series, 1208

- ## Reviewed, verified & approved by Safety & Security
  - 11 cameras – Increased internal & external monitoring and 4k front-facing camera
  - High resolution imagery, up to 30-day storage, wireless video offload capability
  - Transit wi-fi amenity equipped
  - Revenue vehicle network present: camera live viewing by Security & Operations

Onboard Network Infrastructure

Transit Wi-Fi Amenity Service	Video Surveillance System	Mobile Fare Collection System	Future On-Board Next Generation "Always Connected" Systems			
			Computer-Aided Dispatch / Autonomous Vehicle Location System	Public Announce-ment System	Passenger Counting System	Passenger Information System

Revenue Vehicle Networking (CradlePoint IBR Routers with 5G Cell Modem, Wi-Fi, Ethernet ports)

5G Transit Mobile Data Services

Questions?

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2023 SCIC Meeting Schedule

HRT's Hampton Office 3400 Victoria Blvd	HRT's Norfolk Office 509 E. 18th St., Bldg 4
March 9, 2023	June 8, 2023
September 14, 2023	December 7, 2023

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