The Challenge to Unify Disparate Bluetooth Traffic Data

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Outline

- The Bluetooth Detector
- Background & Introduction
- The problem
- Possible solutions
- Practicality
- Implementation
- Benefits
Bluetooth Basics

- Collect MAC addresses from passing Bluetooth devices
- Apply timestamp to each collected MAC address event
- Match MAC addresses to generate movement information based on locations and elapsed time
Background and Introduction

- The Florida Bluetooth Environment
  - Half dozen types approved for use in Florida listed on the APL
  - Hundreds deployed in various districts throughout the State

- Typical Use of BT detectors
  - Corridor origin-destination studies
  - Calculate travel times
  - Determine roadway speeds
  - Tracking freight movements
The Problem

- Lack of a uniform data format

- Lack of interoperability between competing products: no consistency in encryption...proprietary key
Possible solutions

- Develop a software solution to decrypt the scrambled MAC addresses that allows a common data set
- Develop an algorithm that finds the common MAC addresses to create the common data set
- Through updating the FDOT Standards and Specifications, and the Approved Product List (APL) require the output from all Bluetooth detectors to provide the raw, unscrambled, non-truncated MAC addresses
Practicality

- Precedent is already there...traffic counters provide a standardized output that is recognizable by the polling software application.

- The MAC address data being collected is not being created by the device...a date/time stamp is added as the value-added by the device.

- Like radio waves, the MAC address signal is broadcast in the public environment, and only needs encryption for downstream dataset use.
Implementation

- Existing devices in the field would be grandfathered into the program...with the vendor providing a key to decrypt the data back to the raw complete format.

- New devices after the implementation day will directly provide the raw addresses without any conversion required.

- FDOT will apply a single statewide encryption to any address dataset so Privacy requirements are maintained.

- An FHWA encryption standard would be preferred to allow a nationwide dataset for all States’ use.
Benefits

- Florida and other States’ DOTs
  - Statewide utilization of existing deployed devices for comprehensive studies
  - Better stewardship of resources...reduce duplication of effort

- FHWA: regional, corridor and national-level studies

- Industry Itself:
  - Competition enhances technology developments
  - A level playing field allows the best valued products to rise to the top
  - The increased utility and opportunities for use should increase the market for the industry as a whole
Moving Forward

- This presentation is being offered in order to create a dialog concerning this initiative

- The Florida APL exists to provide safe, efficient, and economical transportation equipment for use on Florida’s roadways. The continuous review and updating of the standards and specifications for all devices ensures the list stays relevant.
Questions?

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