

Bluetooth Journey Times Adaptor



Bluetooth Journey Times Background

Bluetooth derived data offers a rich source of journey times to feed in to the Cloud Amber Journey Times Engine and congestion map.

A key advantage of Bluetooth detection over traditional ANPR is that Bluetooth detectors have an antenna whose beam can be designed to meet the requirements of a particular scenario. This allows them to be directional, or omni-directional, and with a coverage of up to 100m. ANPR detectors, in contrast, are unidirectional and therefore to cover both directions of a carriageway at least two cameras are required (often more are required to cover multiple lanes). To get a clear view of number plates, the two cameras will often also need to be mounted on separate poles. Bluetooth doesn't rely on line of sight to vehicle number plates; the installation location is therefore more flexible and may potentially be incorporated into existing street furniture.

The above advantages result in:

- A smaller number of detectors required for a given level of coverage (half, at minimum) and therefore a lower capital cost of installation compared with ANPR.
- A lower requirement for infrastructure (poles) and hence a lower capital cost of installation as detectors can be at street level.
- A smaller maintenance overhead thanks to fewer units, less cleaning, and less (potentially more accessible) infrastructure.

The consequential saving in terms of capital cost for a given level of coverage is expected to be at least 50%. A significant saving is also expected in respect of the ongoing maintenance liability.

Bluetooth Journey Times Other Applications

Other Applications include the following:

Detectors

A single Bluetooth detector can be used to approximate the speed of vehicles passing it and can detect an abnormal number of vehicles (queues). This provides the opportunity to detect speed changes and queues more rapidly than is the case when using journey times that rely on vehicles reaching a second detector further along the route. Two detectors can provide journey time monitoring as a direct replacement for ANPR as detailed above. Multiple detectors can be used to provide origin-destination information.

Origin and Destination

Bluetooth detection also offers the opportunity to support event management through origin-destination matrices of people attending events. This could be achieved through the installation of detectors at key event locations and key passenger terminals.

People Throughput

Since Bluetooth detection provides data related to end-user devices, rather than individual vehicles, it potentially offers a better measure of network performance in terms of throughput of people than is the case with traditional monitoring of vehicles. It also offers the potential for monitoring different modes of transport via suitable data processing techniques.

Cloud Amber Bluetooth Adaptors

Cloud Amber is able to supply a number of adaptors to Bluetooth Journey Times Systems as follows:

Bluetooth Journey Times Adaptor (simple)

Integrated in to the Bluetooth system either on site or through a centralised server, Cloud Amber will adapt the 3rd party protocols and processed data to become UTMC compliant and compatible with UTMC protocols and data objects. Cloud Amber will not process any data from the third party.

Bluetooth Journey Times Adaptor (complex)

In addition to integrating with the 3rd party Bluetooth system provider, Cloud Amber will take the raw feed for each of the installed nodes. Using the raw feed, the Bluetooth MAC addresses (like a serial number) will be used to calculate journey times in-between different nodes, much like a traditional ANPR system. In addition, Cloud Amber will use our shortest path algorithm to pre-configure all possible links within the system ensuring swift and simple configuration and maintenance.

Bluetooth Detector Adaptor

Integrated in to the Bluetooth system either on site or through a centralised server, Cloud Amber will adapt the 3rd party protocols to become UTMC compliant and compatible with UTMC protocols and data objects. Cloud Amber will take the raw feed for each of the installed nodes. Using the raw feed, the Bluetooth MAC addresses (like a serial number) will be used to calculate speed and other derived data suitable for the UTMC detector data object.

Bluetooth Origin and Destination Adaptor

Integrated in to the Bluetooth system either on site or through a centralised server, Cloud Amber will adapt the 3rd party protocols to become UTMC compliant and compatible with UTMC protocols and data objects. Cloud Amber will take the raw feed for each of the installed nodes. Using the raw feed, the Bluetooth MAC addresses (like a serial number) will be used to calculate origin and destination data suitable for direct import in to a modelling system.

Bluetooth People Throughput Adaptor

Integrated in to the Bluetooth system either on site or through a centralised server, Cloud Amber will adapt the 3rd party protocols to become UTMC compliant and compatible with UTMC protocols and data objects. Cloud Amber will take the raw feed for each of the installed nodes. Using the raw feed, the Bluetooth MAC addresses (like a serial number) will be used to calculate people flow through, similar to a traditional traffic detector, but for people. It should be noted that Cloud Amber will use an extended version of the detector data object in the short term with whilst the UDG proposes and ratifies a more relevant data object. The upgrade to this is included.

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