Improving Signal Performance Assessment Without Adding Equipment in the Street!

A presentation to the SBCCOG IWG

September 2021

Moonshadow

SHAPING A SMARTER TRANSPORTATION EXPERIENCE™
DKSASSOCIATES.COM

DKS

AN EMPLOYEE-OWNED COMPANY

AGENDA

1 / INTRODUCTION

1 / IDENTIFYING THE PROBLEM

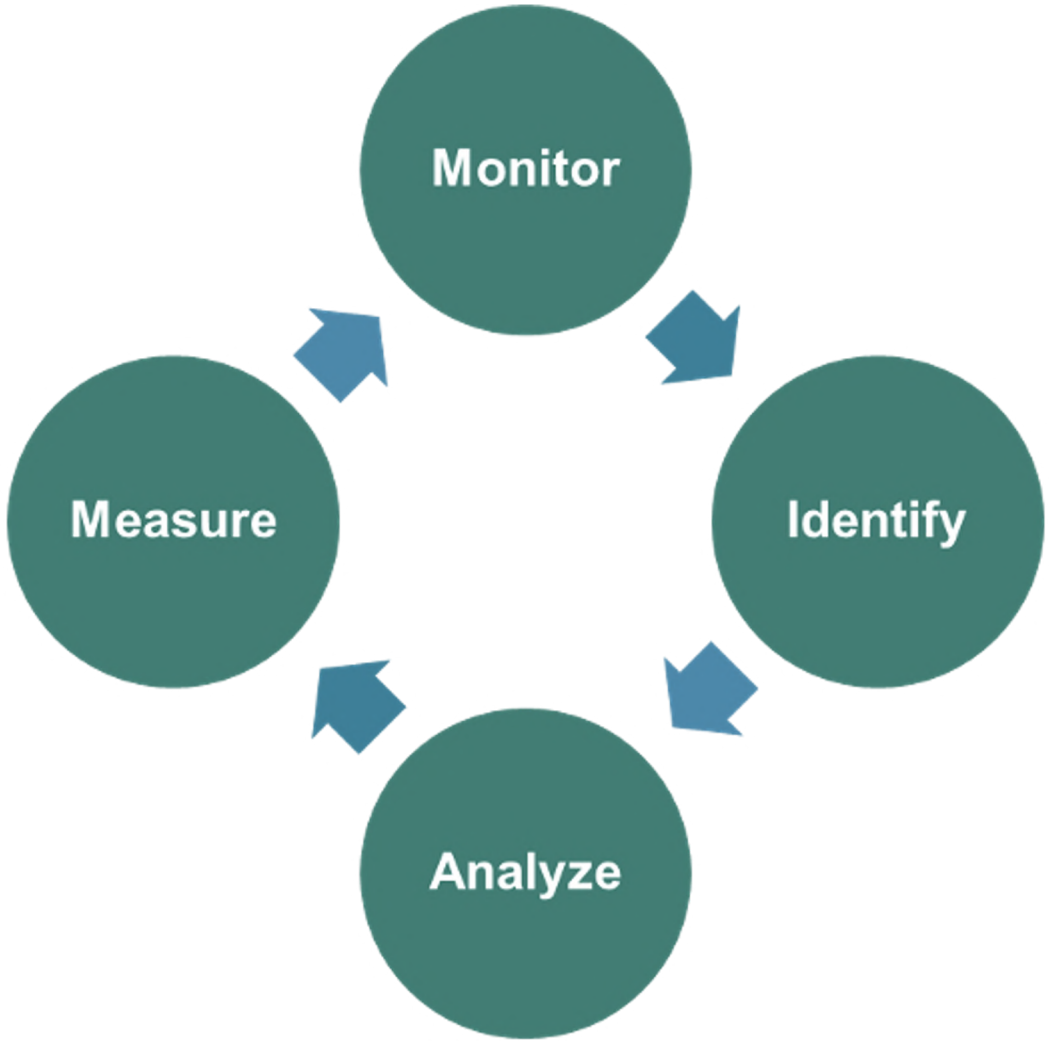
2 / BASIS FOR THE SOLUTION

3 / DEMONSTRATION

4 / Q & A

Signal Network Operational Goals

- Quick Identification of Issues
- Proactive response to those issues
- Efficient intersection and arterial operations via improved timing parameters
- Easier communication of outcomes to engineers, decision makers and the public



Identifying the Problem

1. Traffic signal timing maintenance is a continuous process

2. Collecting the data to be able to assess network/signal performance is arduous and expensive:

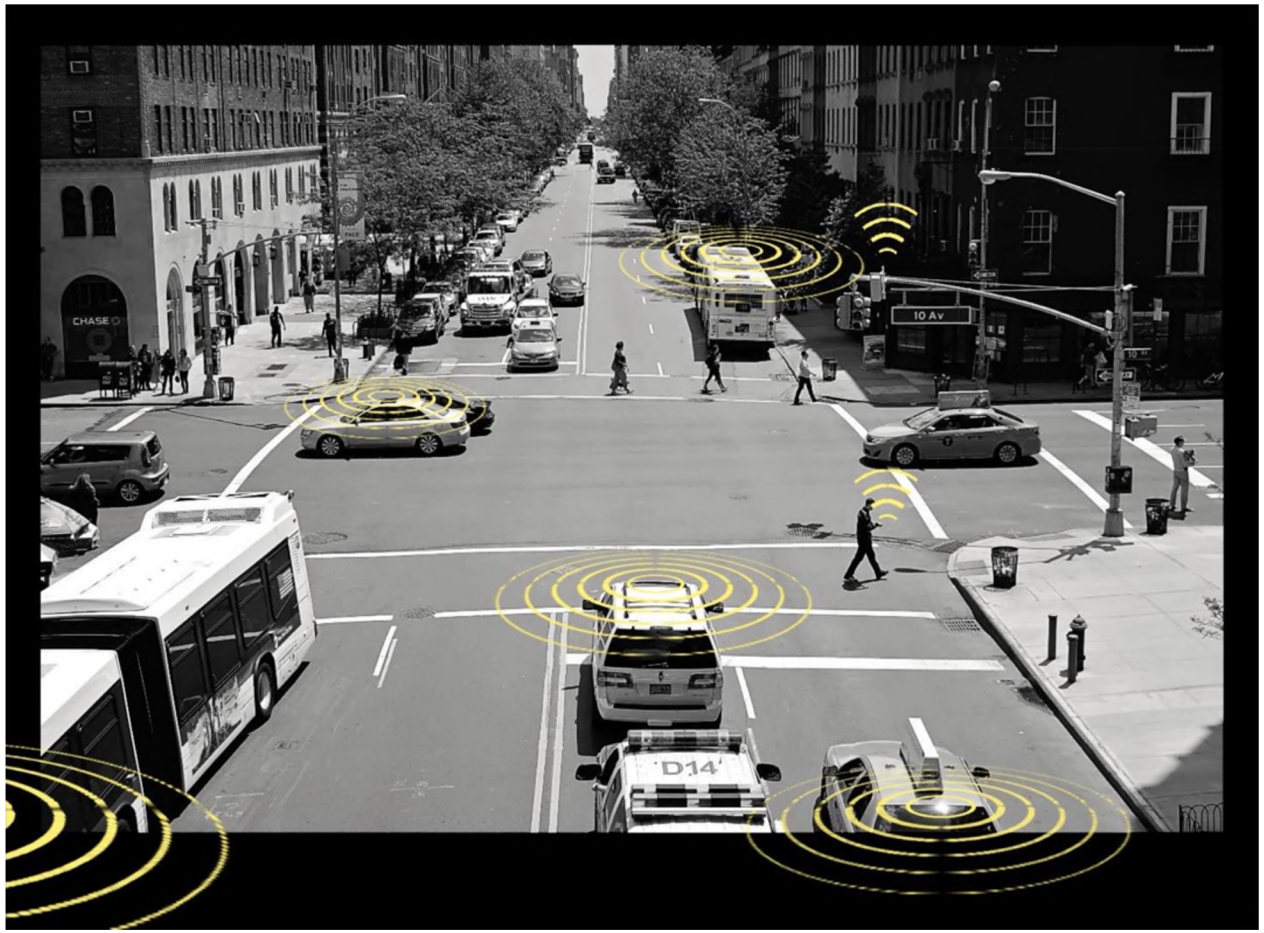
    - Infrastructure-based data collection is inadequate
    - Manual data collection (e.g., floating car runs) is costly when seeking to provide sufficient data points
    - Signal controller-based ATSPMs requires detection and ATC controllers and can be overwhelming

Basis for the Solution

1. Connected Vehicles, mobile apps and infrastructure generate data about movement

2. Data that are collected frequently (e.g., every few seconds) can form the basis for the assessment of network/signal performance when suitable data analytics are applied

3. There are currently over 12 million vehicle in the US providing relevant data



Applying the Solution

What is needed is a combination of a suitable data source (or sources) a capable software platform and the application of transportation engineering principles in data analytics:

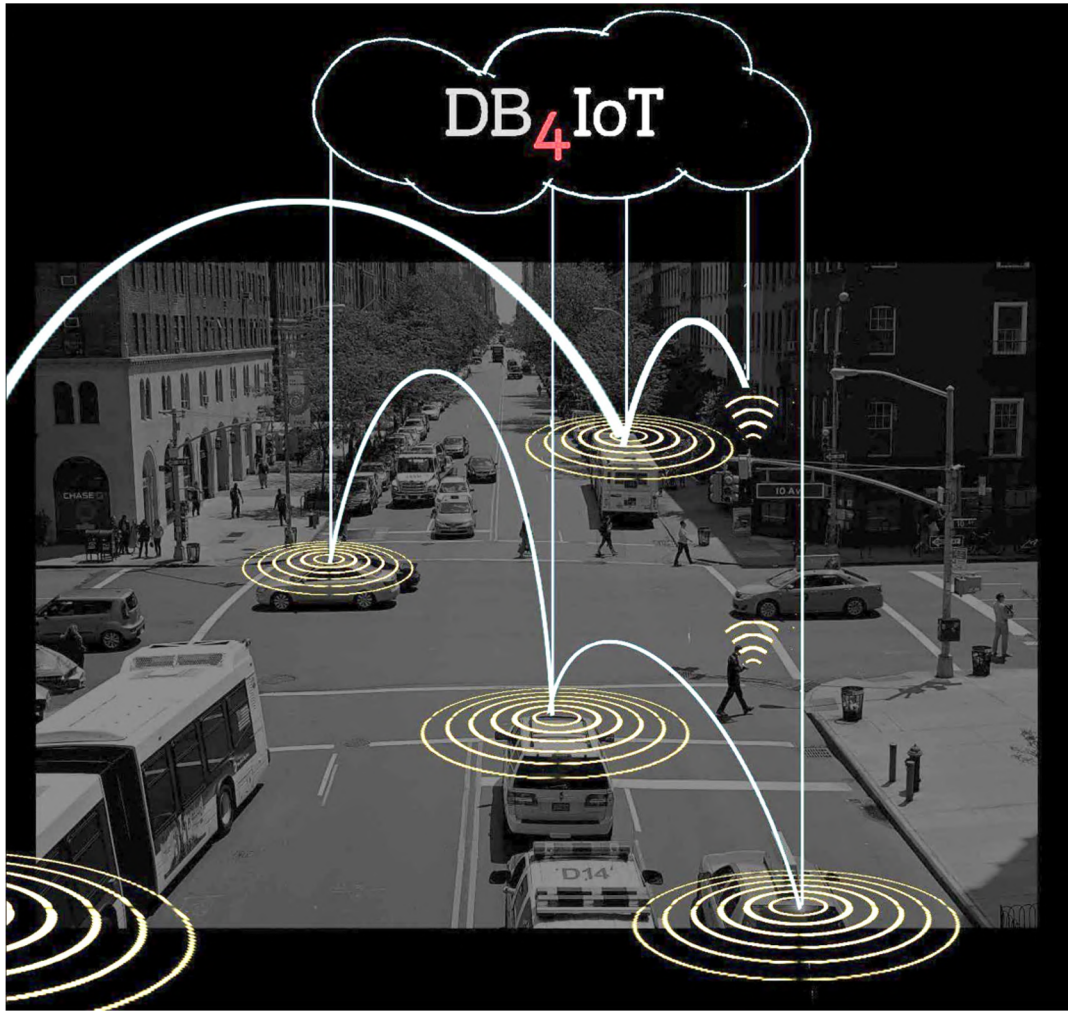
Data sources:

- An automotive OEM providing anonymized vehicle data every three seconds that the vehicle is in use

Applications Platform:

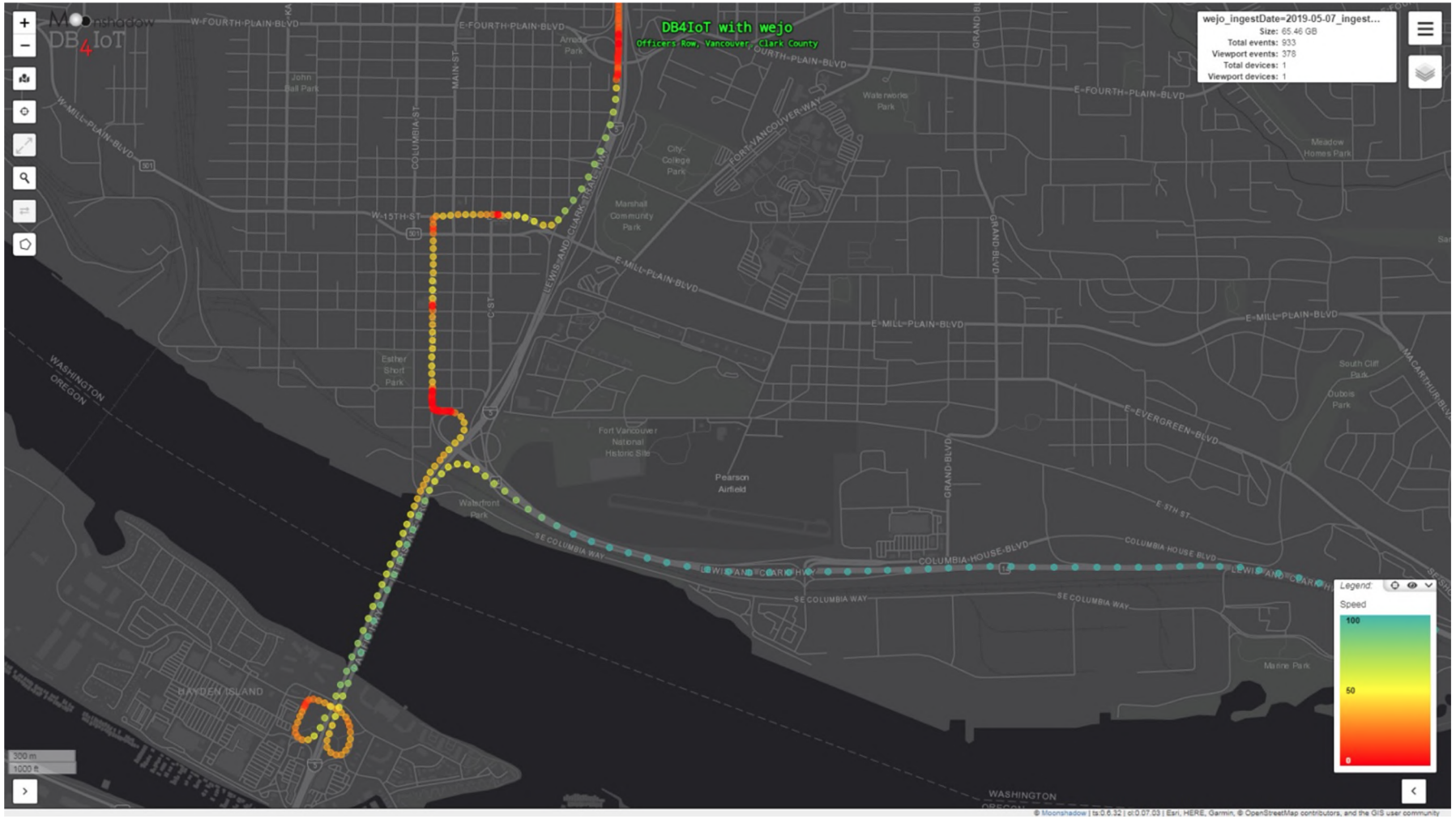
- Moonshadow's DB4IoT

Moonshadow's DB4IoT



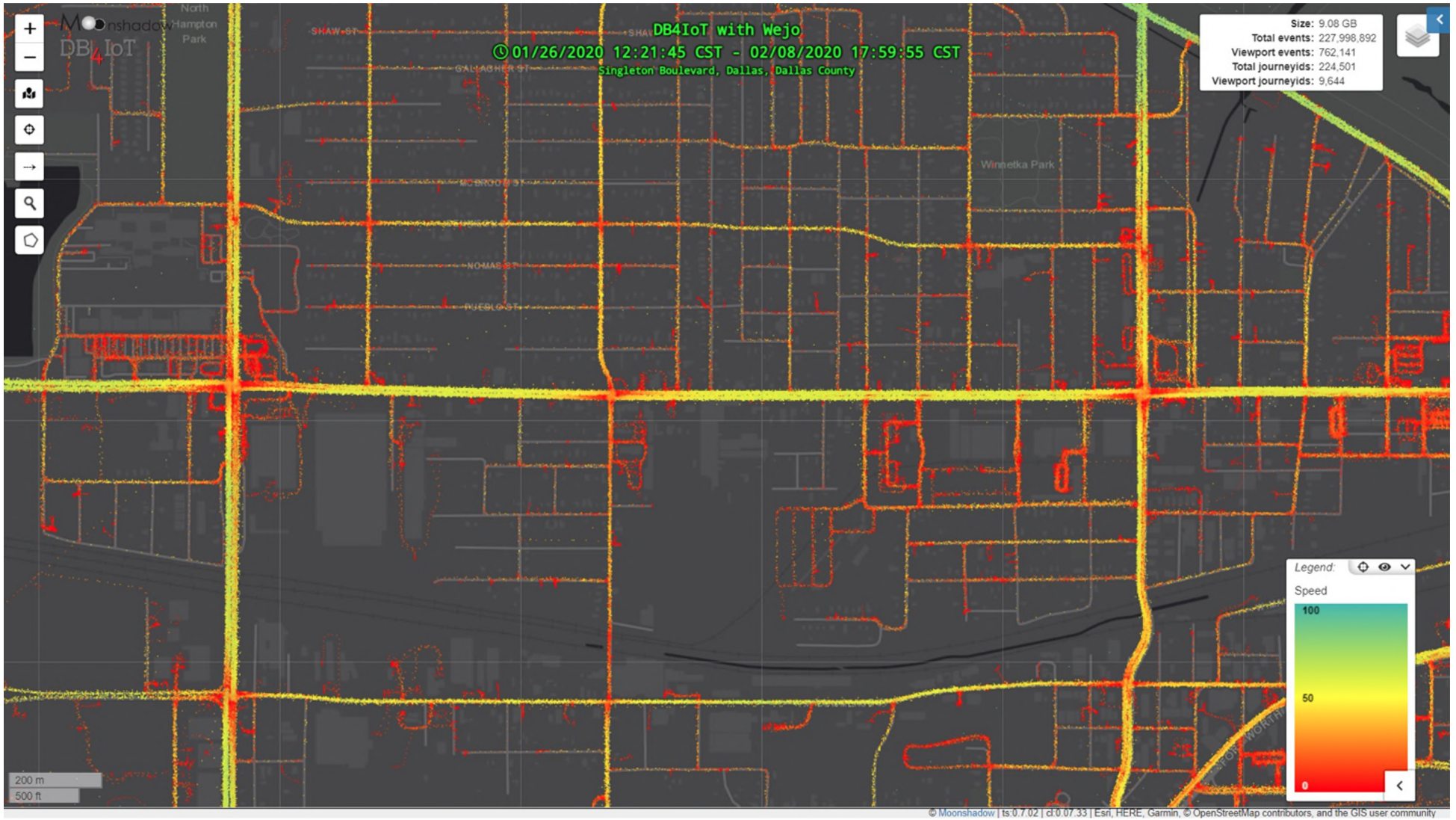
- DB4IoT stores CV and other data in the cloud
- Software as a Service platform
- Performs data analytics
- Generates maps, charts and tables
- Access via web browser to generate queries

Trip Details



- Every connected vehicle generates waypoint breadcrumbs
- Look at a trip detail - Every dot is a vehicle waypoint

Data from millions of vehicles are combined



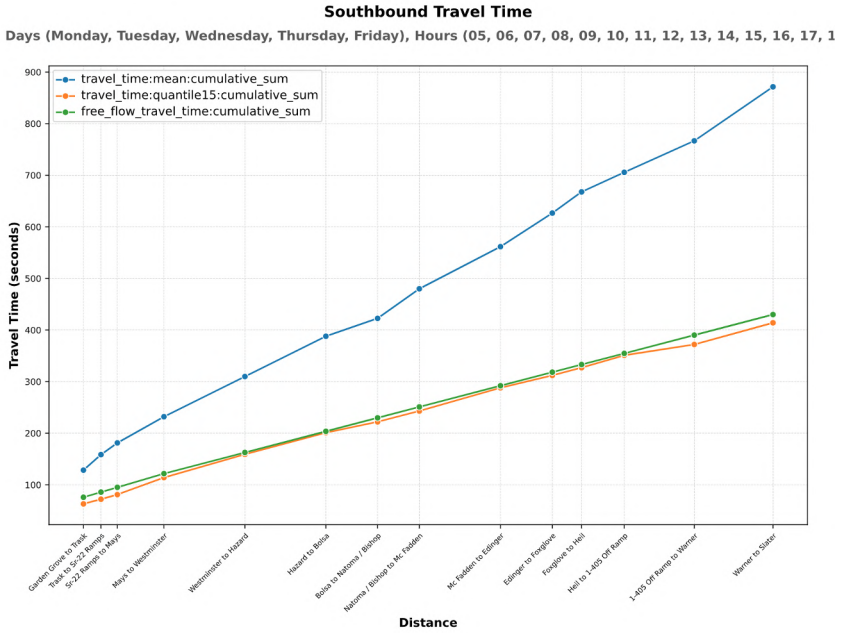
Safety Insights

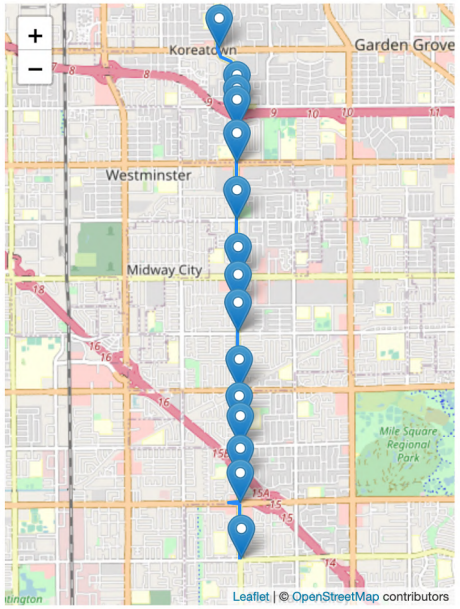
Safety Insights

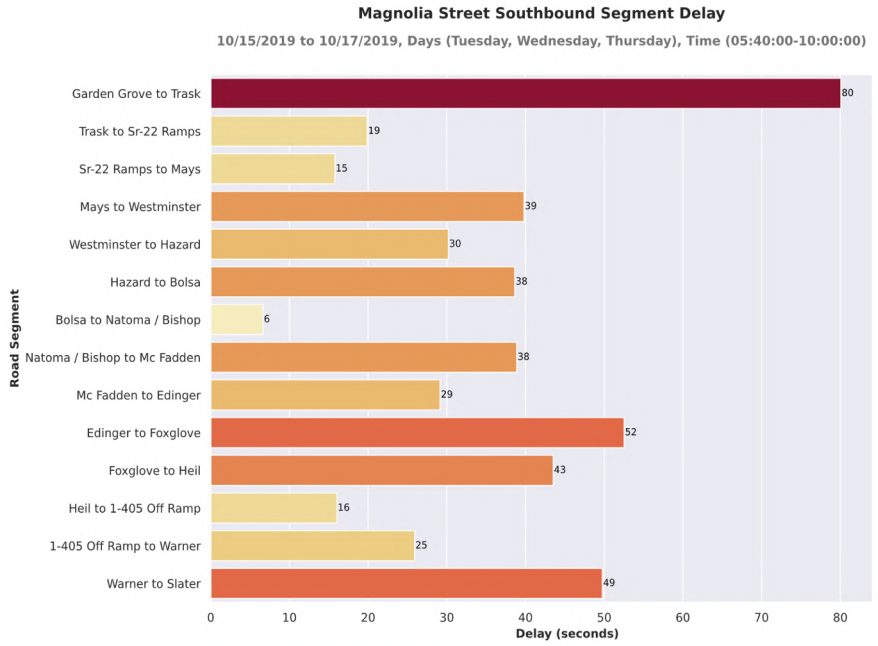
DKS and Moonshadow have partnered to create:

Arterial Insights

An online tool to measure the operational performance of corridors using connected vehicle data







ARTERIAL INSIGHTS DEMONSTRATION

Arterial Insights Performance Measures

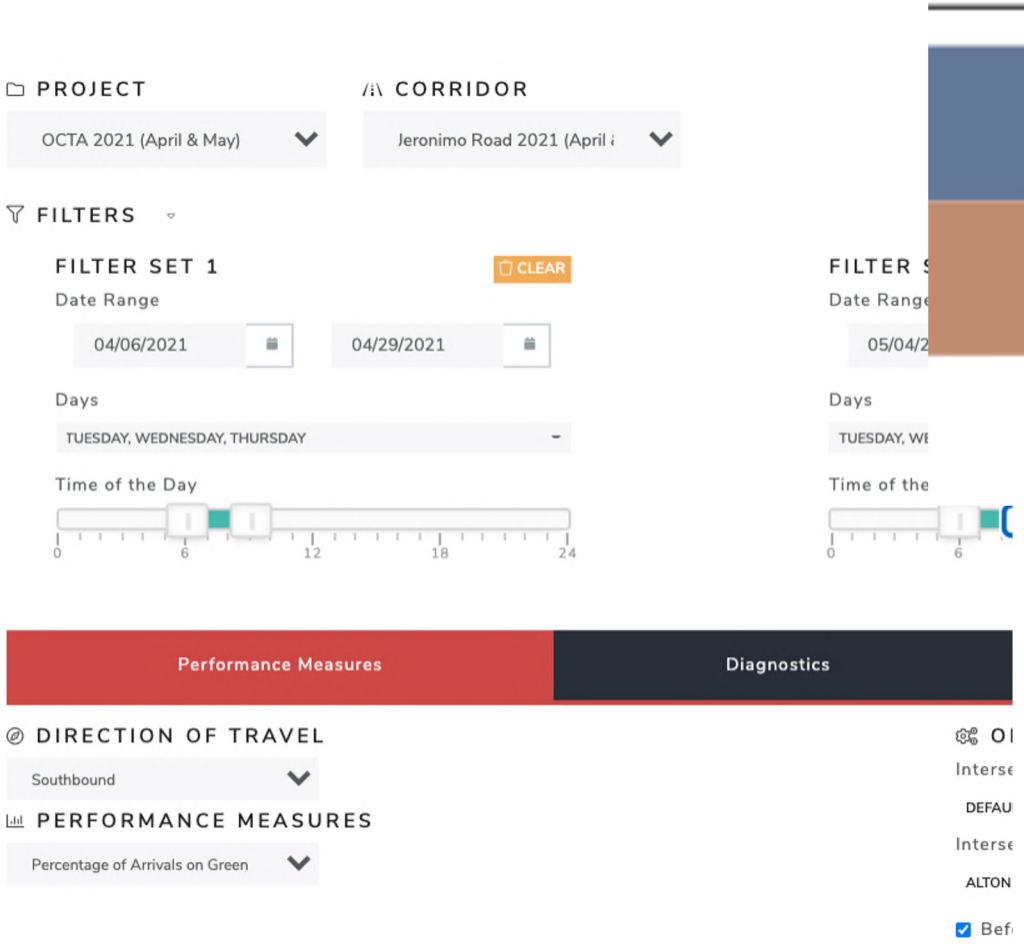
Available now:

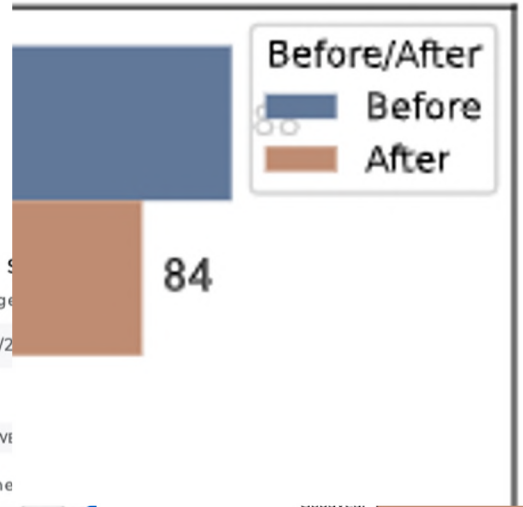
- **Travel time**
- **Speed**
- **Delay**
- **Arrivals on Green**
- **Stops per segment**
- **Probe volume**

Coming soon:

- **Split failure**
- **Intersection arrivals**
- **“Before and After”**

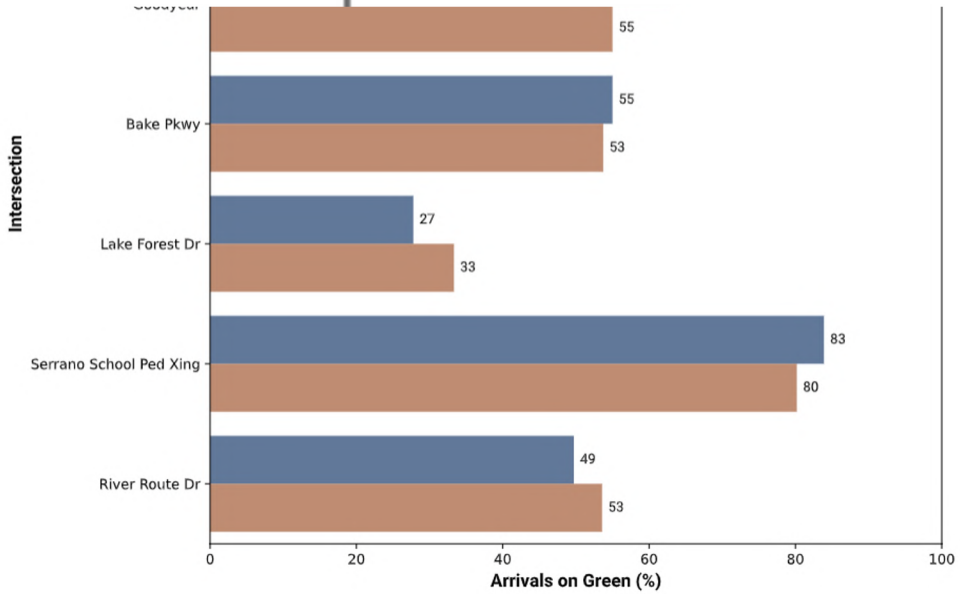
Before and After





Filter Set 1
04/06/2021 to 04/28/2021
Days (Tuesday, Wednesday, Thursday)
Time (06:00:00-09:00:00)

Filter Set 2
05/04/2021 to 05/19/2021
Days (Tuesday, Wednesday, Thursday)
Time (06:00:00-09:00:00)



Q&A

Contact Information

DKS Associates

Alan Clelland
alan.clelland@dksassociates.com

Moonshadow

Eimar Boesjes
eimar@moonshadow.com

THANK YOU!

THANK YOU!