Location Powers; Our Urban Environment

Actionable Insights from Multi-sensor IoT Systems using the OGC SensorThings API

- sensors are always better when they are together! -

Dr. Steve Liang, P.Eng.

Founder and CEO / Associate Professor

SensorUp Inc. / University of Calgary

steve.liang@sensorup.com

OGC®

Making location count.

About Steve

- Founder and CEO of SensorUp
- Associate Professor, Geomatics Engineering, Uni. Calgary
- Chair and Editor of OGC SensorThings API

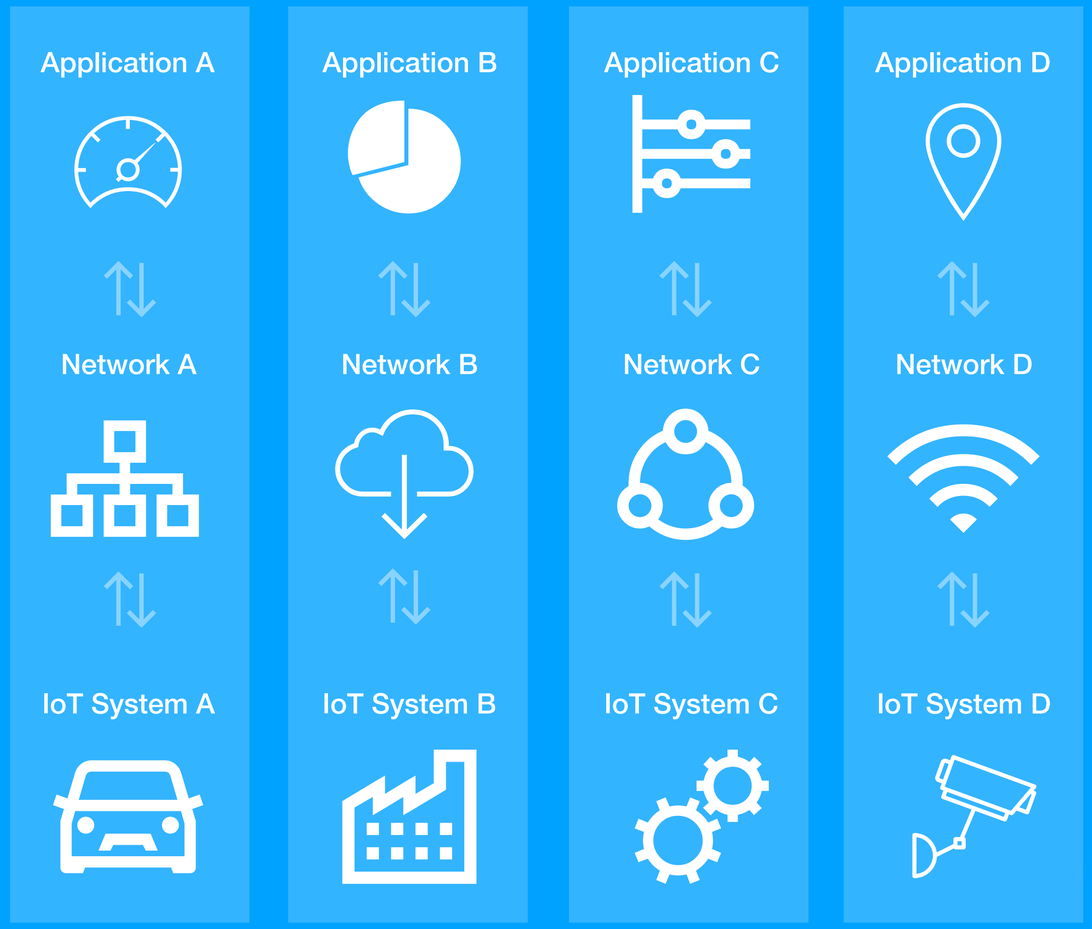
OGC®
Making location count.

SensorUp is the leader in **Internet of Things cloud service platform** for customers who rely on **geospatial** in their IoT Implementations.

Our Cloud-based API allows our customers to rapidly **aggregate** and **coordinate multiple IoT systems**, and then **transform** them into **actionable insights**.

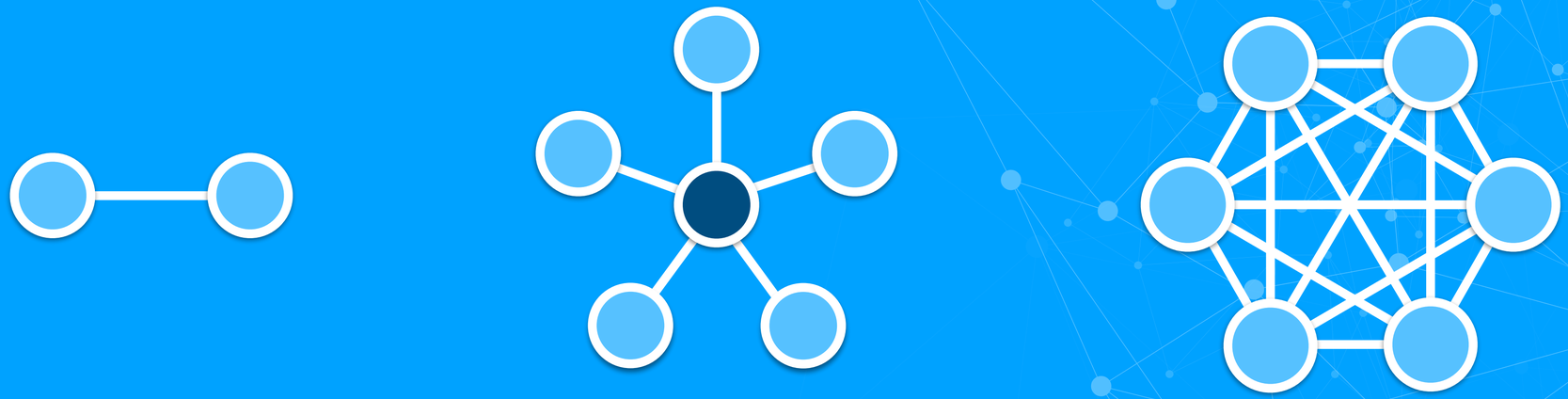
NATO Defence Innovation Award Winner
on Secured Federation of IoT Devices

Consolidating Different Sensor Networks with Open Geospatial Standards-based Software



" Today's IoT Silos Severely Limit the Value of IoT "

Vision - System of Systems



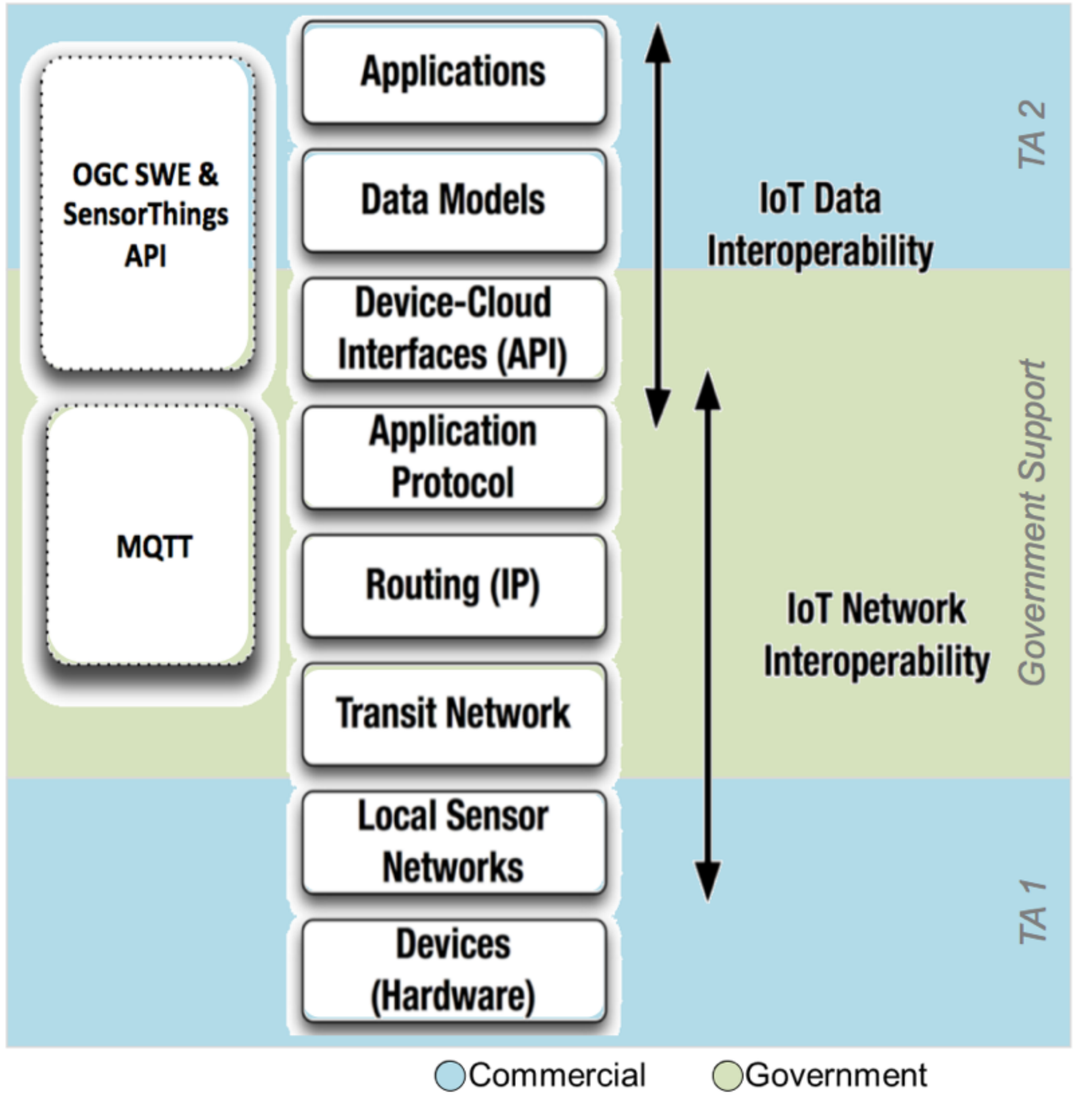
OGC SensorThings API enables network effects for IoT.

Government support: Ocean data testbed / infrastructure

System integration and logistics:

- Data platform construction
  - Cloud storage and processing
  - Availability to mission partners
- Data formatting and quality control
- Float deployment
- Communications with floats
  - Update float behaviors
  - Command effects
- Environmental compliance

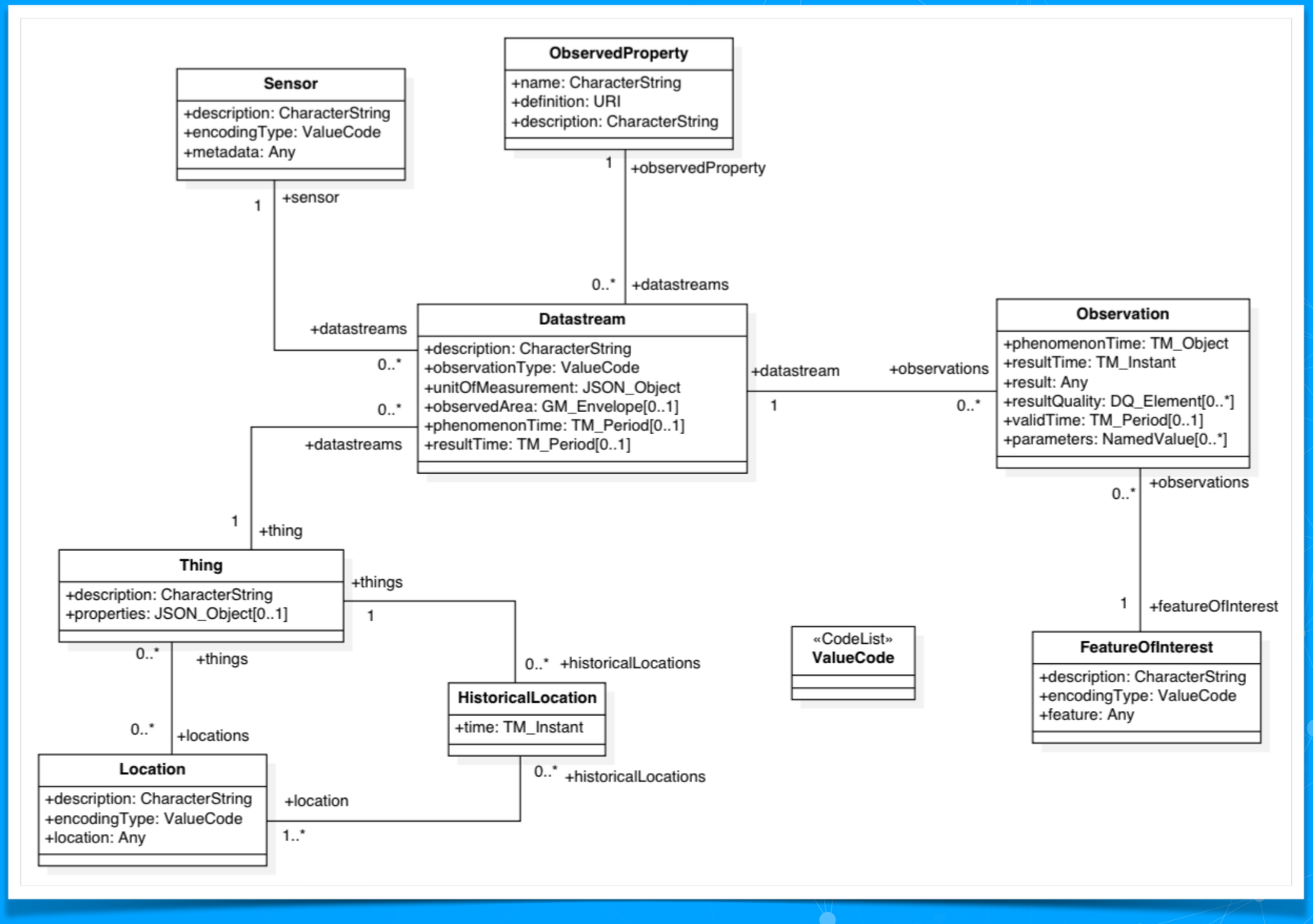
SMEs across ocean sensing and signal processing domains



OGC SWE: Open Geospatial Consortium Sensor Web Enablement
API: Application Program Interface
IoT: Internet of Things
IP: Internet Protocol
MQTT: Message Queue Telemetry Transport

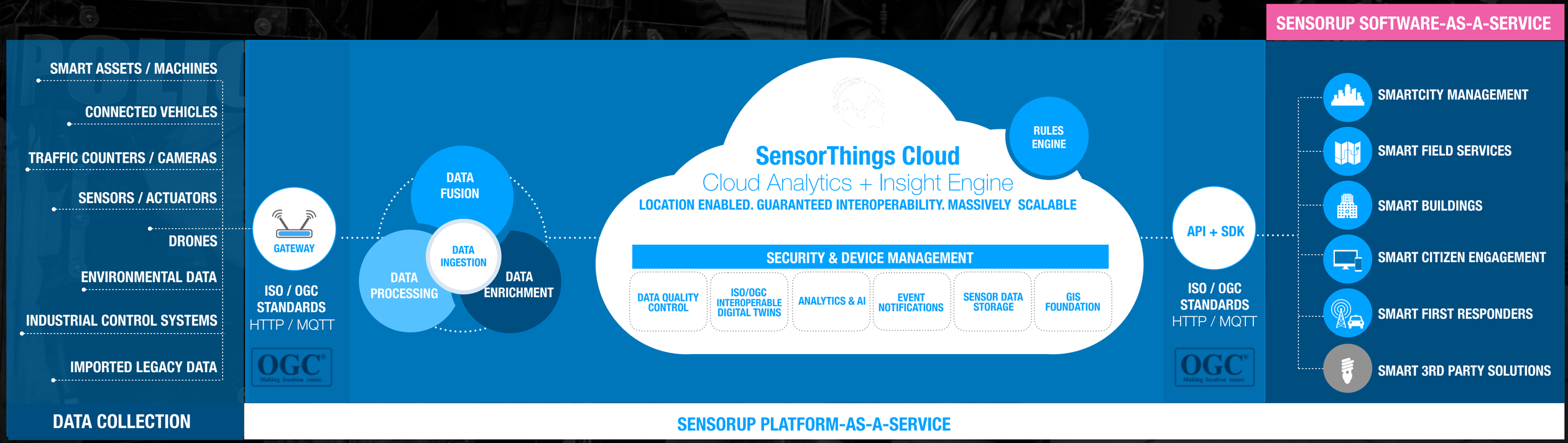
https://www.darpa.mil/attachments/Ocean%20of%20Things%20Proposers%20Day.pdf

OGC Standard-based Data Model and RESTful API



SensorUp IoT Data & Analytics Platform

Aggregate data from disparate sensors and location data rapidly & transform them into actionable Insights



SMART LOGISTICS & FIELD OPERATIONS
optimizing operations, unleash hidden value from IoT and tracking data, and uncover actionable insights

CRITICAL OPERATIONS
IOT - Enabled Situational Awareness will save 60 seconds of response time for every incident

ASSET PERFORMANCE MANAGEMENT
Improve operational efficiencies
by offering a real-time and unified view of asset performance data

sensorup

Some Numbers About SensorThings

Very Mature Ecosystem

2 years

since the publication of the standard

232 papers

found on Google Scholar

9+ server

implementations from different vendors

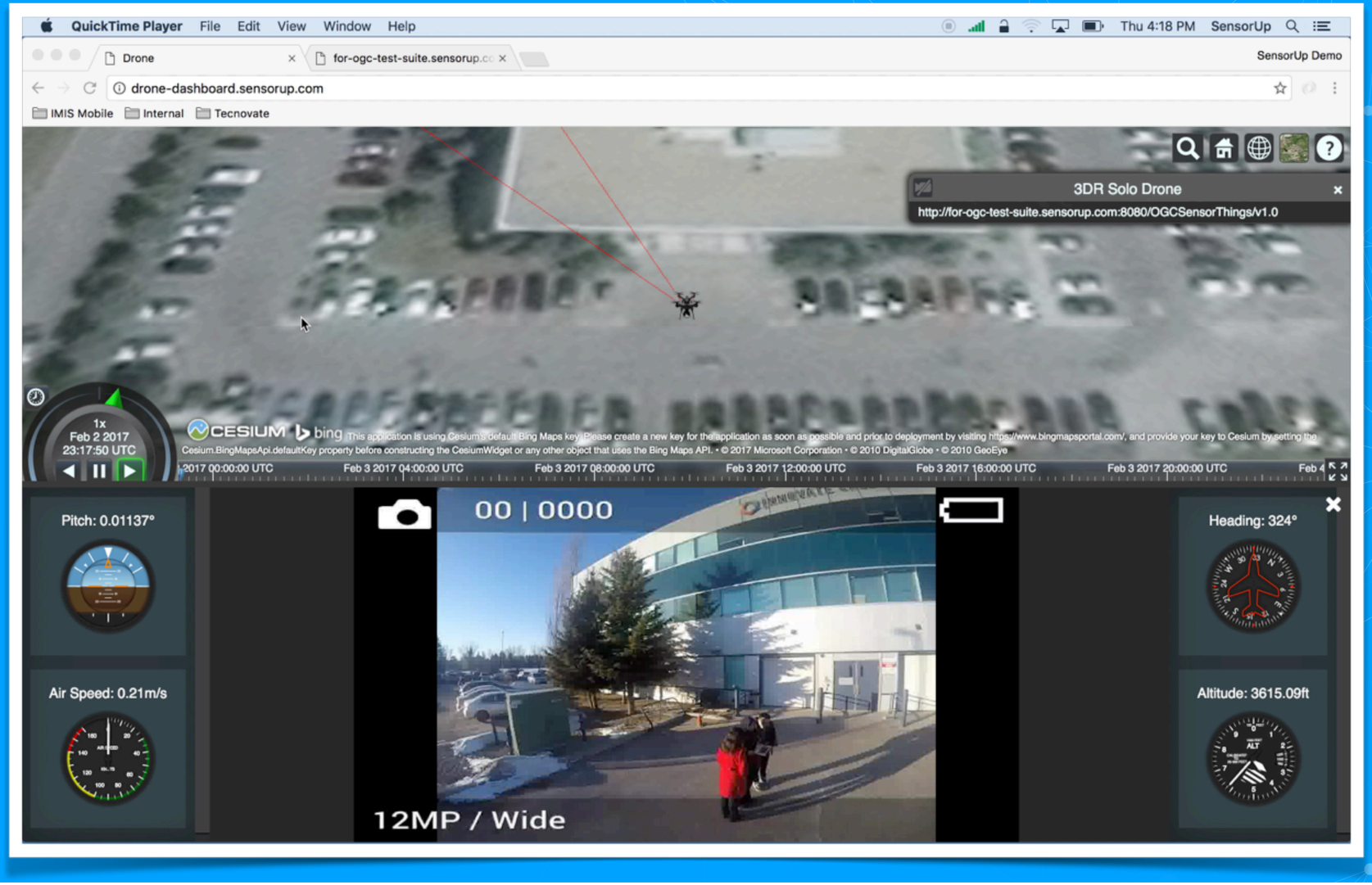
82 repos

found on GitHub

SensorUp is a Reference Implementation of OGC SensorThings API

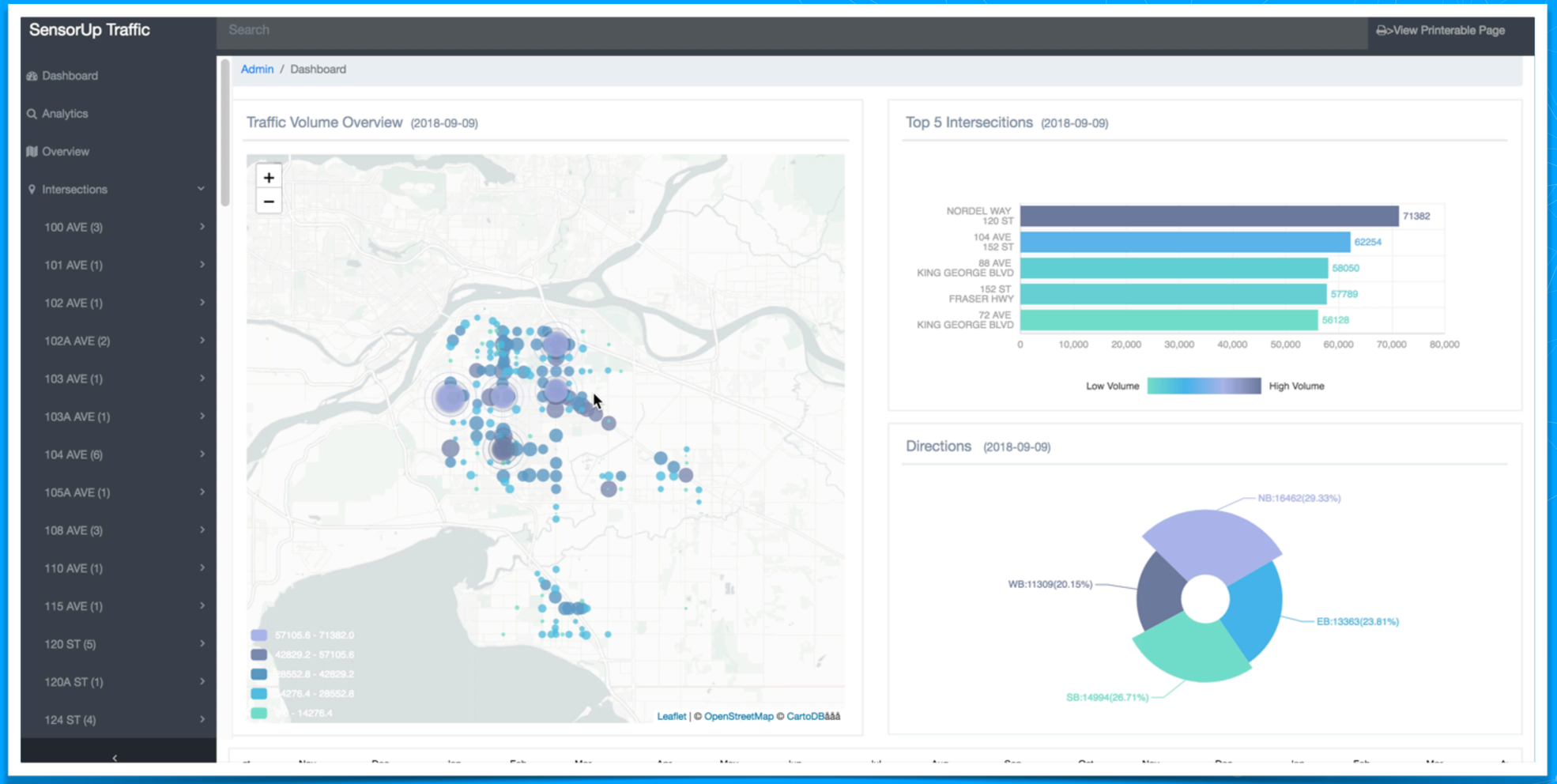
Open Geospatial Consortium (OGC) is the most prominent standard organization for geospatial web services and data.

Connected Drones



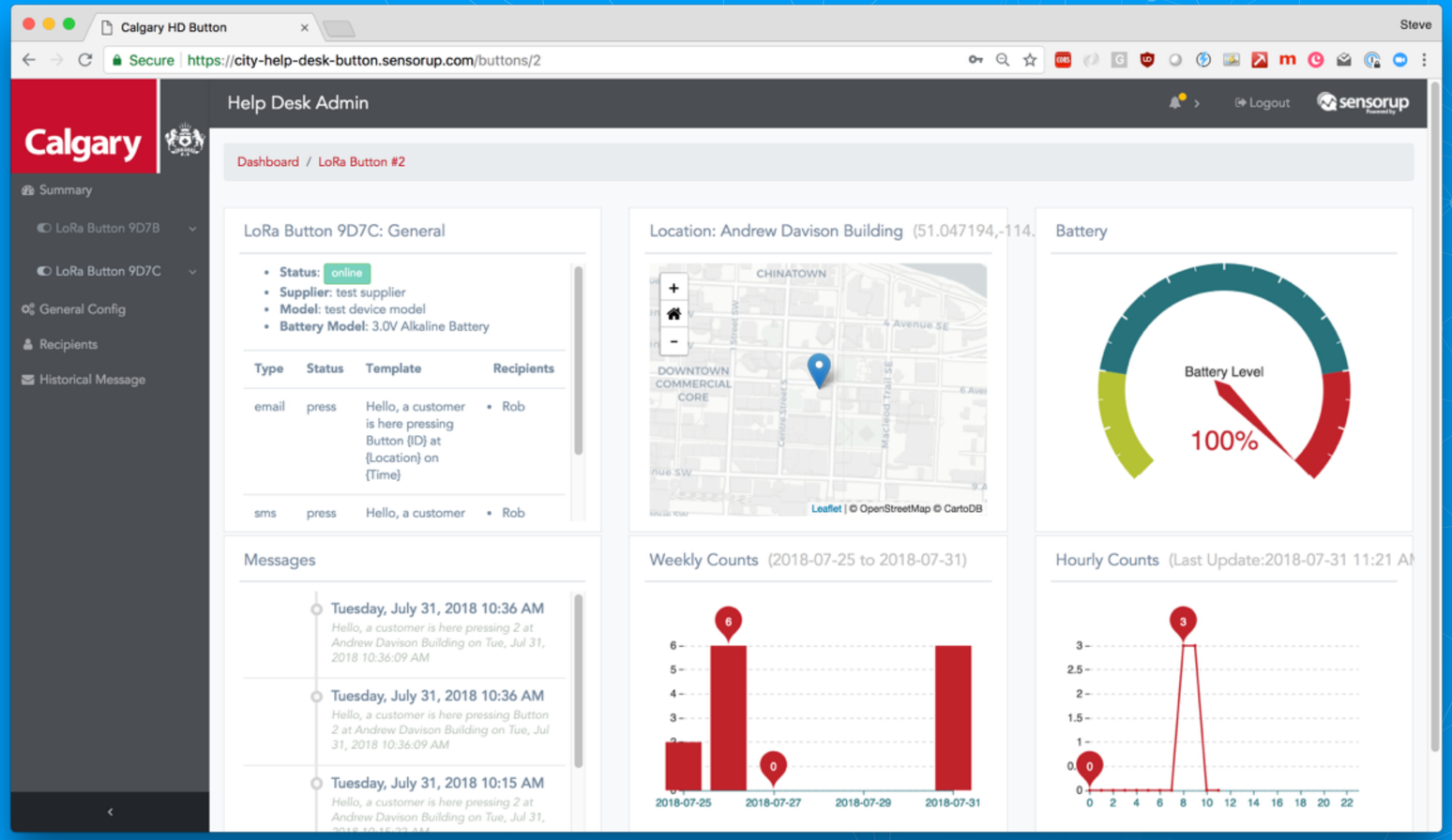
Connected Dashcams

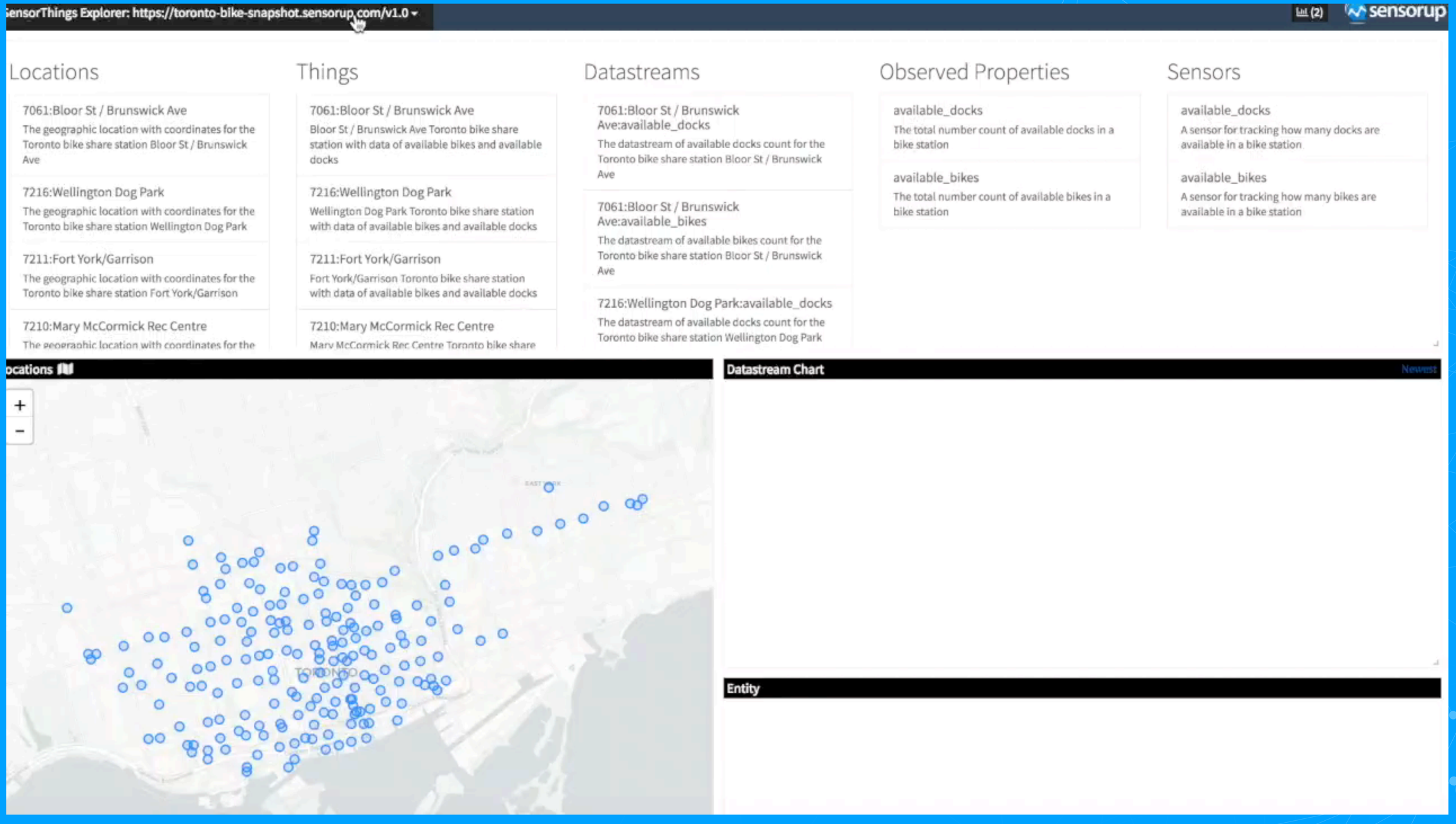
Connected Intersections



LoRAWAN and SensorThings API

LoRAWan Buttons as Sensors



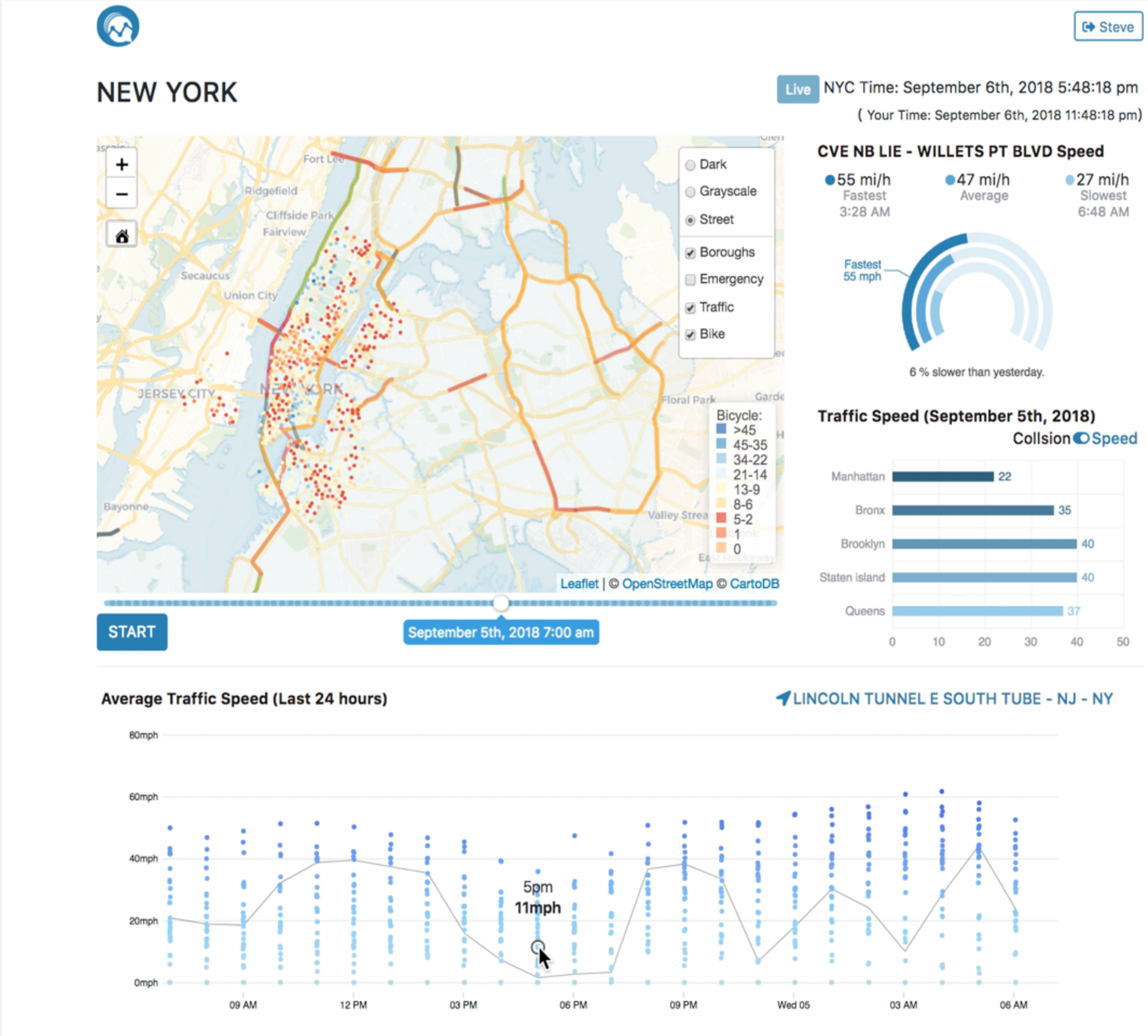


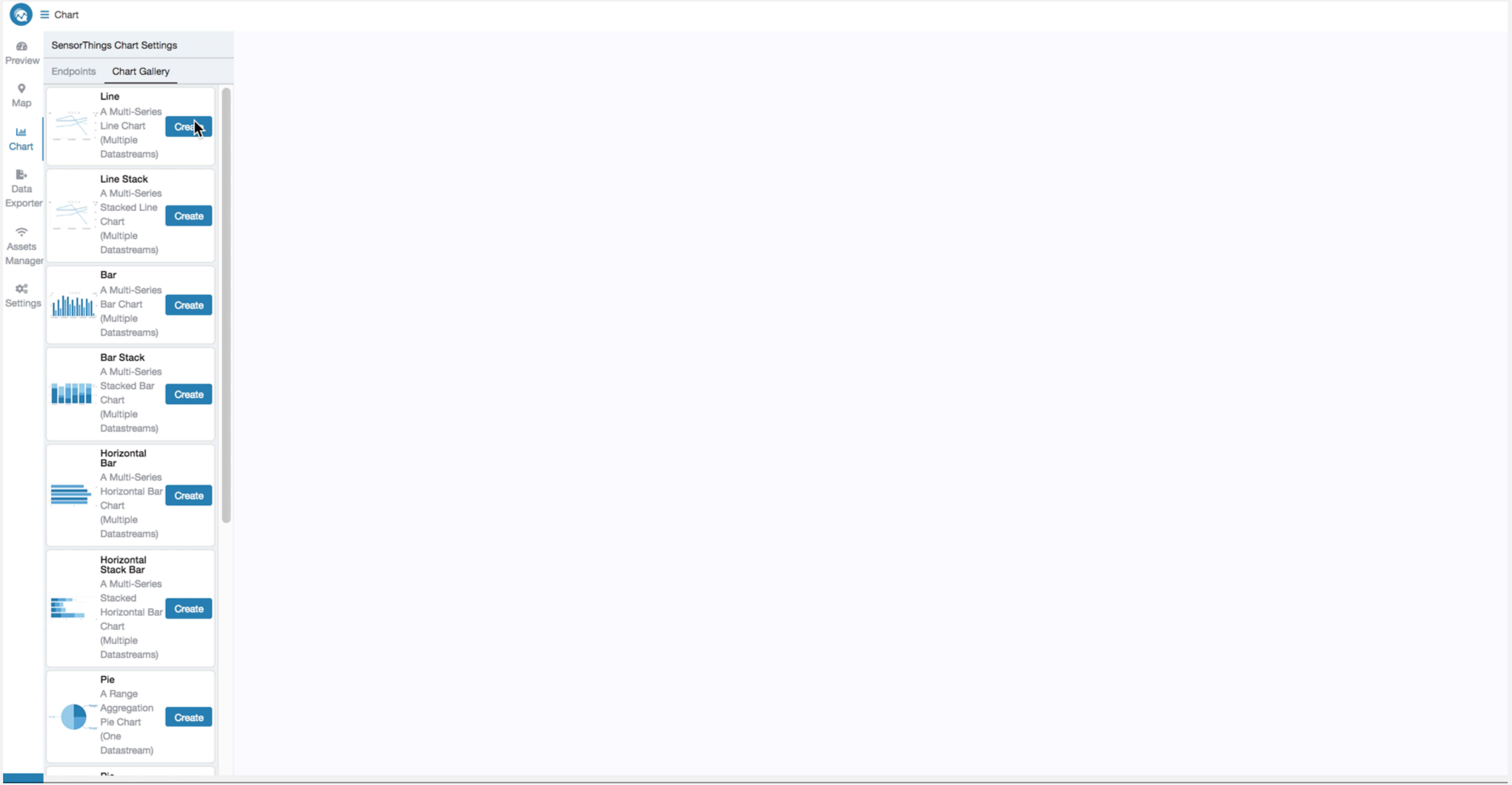
Asset Performance Management

- Real-time / History
  - Traffic
  - Inventory (Bikes)
  - Incidents

Start to Finish

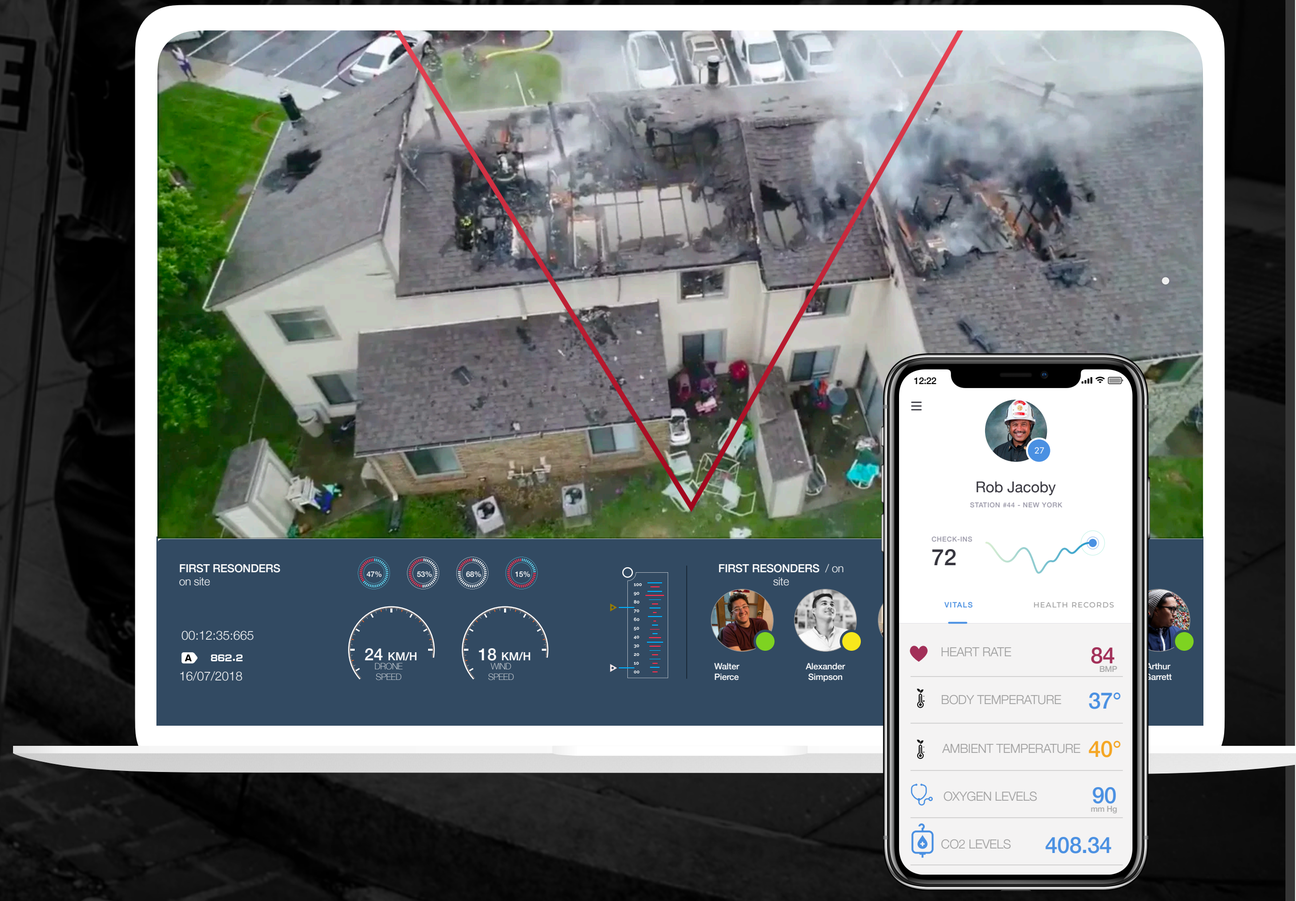
- 2 weeks





When lives are on the line, every second counts

IoT-enabled Common Operating Picture for Situational Awareness



Jet Propulsion Laboratory
California Institute of Technology

sensorup

Monetize IoT Data while Optimizing Operational Efficiencies and Safety

Transforming business model by service-enabling physical assets (things)

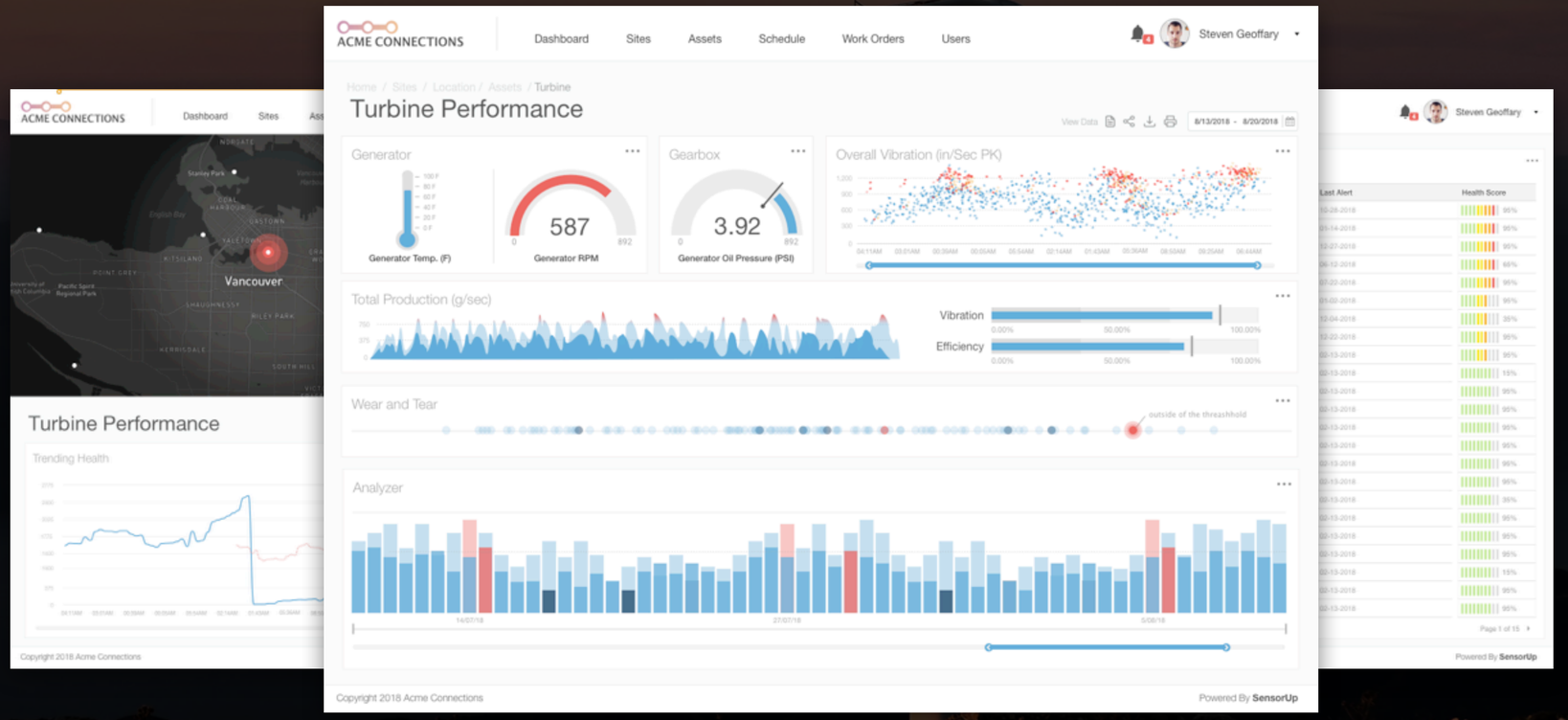
A major North America logistics company using SensorUp to transform their business model by service-enable the locations, trajectories, and statuses of their mobile and stationary assets.

Reduce Unnecessary Site Visits

SensorUp Asset Performance Management IoT can reduce at least 20% unnecessary site visits

20%

Reduction in Unnecessary Site Visits



SensorThings Summit 2019

Part of OGC Technical Committee Fall 2019

September 2019
Banff, Canada

pending on OGC approval

Questions for the Audience

- How do we communicate the complicated value proposition of (geospatial) IoT interoperability to the rest of the world who only have 30 seconds attention span?
- What are the value propositions that can ONLY be delivered by interoperable IoT systems?

OGC®
Making location count.

sensorup

Put Your IoT Data on the Map