# Better Monitoring of Rail Network Performance using RailState

# What is RailState?

- RailState is a Massachusetts-based company which uses innovative camera technology and advanced Artificial Intelligence methods to collect and monitor railway network performance in near real-time

- Autonomous, non-intrusive camera and sensor technology located on private property off the railways' rights of way
  - Camera snaps pictures of each train passing by, car by car, day or night. An image panorama of the entire train is stitched together
  - AI technology reads, recognizes, and classifies each train and car
  - Train data are transmitted wirelessly to Cloud
  - TC also commissioned the capture of Dangerous Goods placards and associated UN numbers
  - Future enhancement will add container counts and identifiers.

Typical Installation



Day or Night Operation



Unique Train Panorama created each time a train passes by
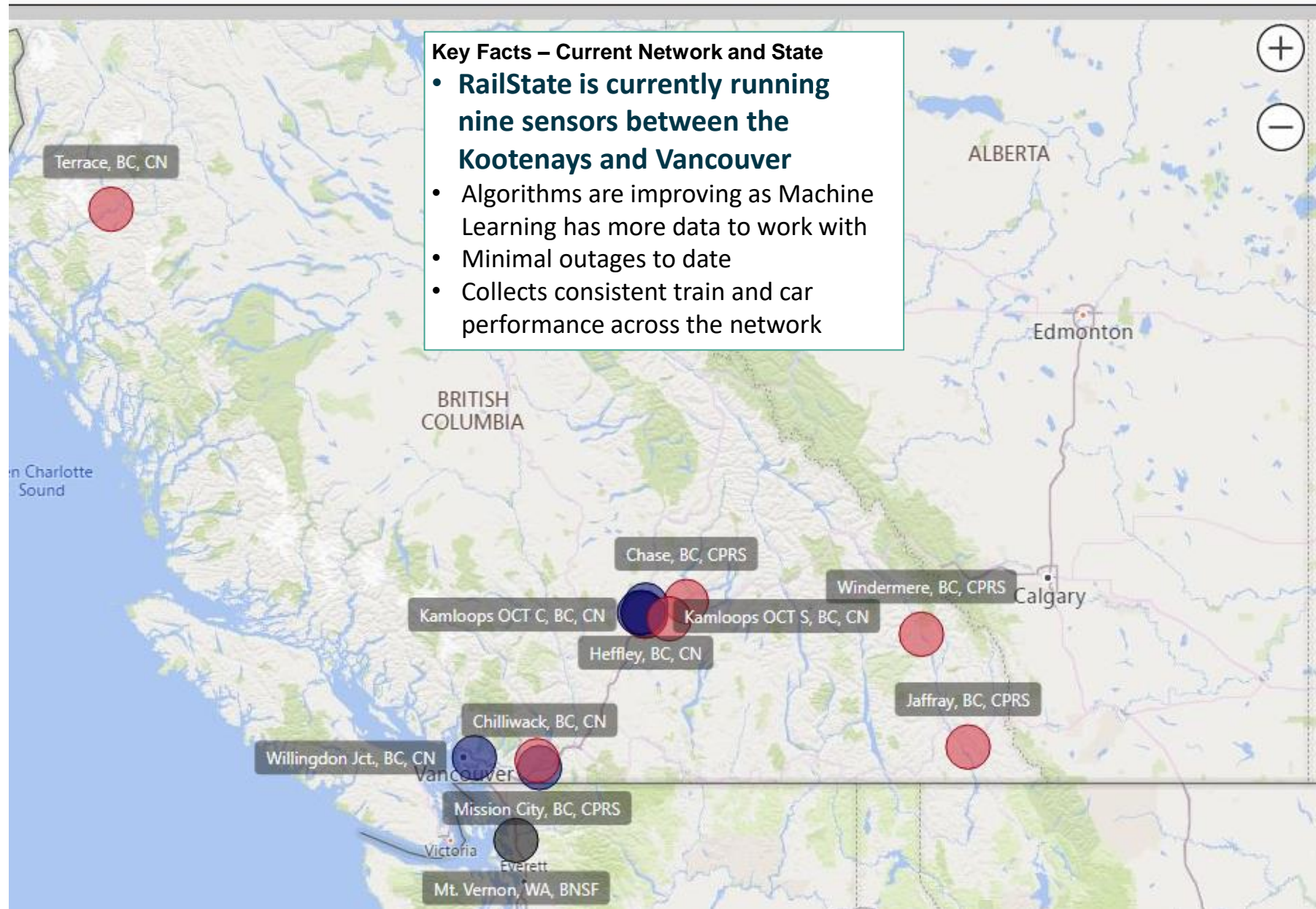
# What You Get with RailState

RailState provides a wide range of timely information on rail network performance

- **Activity** (number of trains and cars per day in each direction) moving along corridors of interest (i.e. to port, to border and/or within the province)
- **Train performance** along key corridors
  - Train Length (in cars)
  - Train Speed
  - Train consist
- **Traffic Composition** (train and car types)
  - Grain units versus Coal units versus Intermodal versus Manifest)
- Incidence of **Dangerous Goods** on the network (Car types and Placards)
- Ability to monitor network performance over time and space
- Shareable with the public on the Hub
  - Other users, including **provinces** and **shippers** could acquire a microdata feed of RailState data to benchmark against their own experience

# Today's Network

**Key Facts – Current Network and State**
- **RailState is currently running nine sensors between the Kootenays and Vancouver**
- Algorithms are improving as Machine Learning has more data to work with
- Minimal outages to date
- Collects consistent train and car performance across the network

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# Next Steps – Expansion of the RailState Network across Canada

- We currently propose adding up to 100 new sensors across the country over the next couple of years.
  - Would cover all major traffic corridors and border crossings
- Minimal construction required – the cameras are light and the pole they sit on is easily installed. An electrician can do the installation. Can be installed in any season.
- RailState has refined their site selection criteria to make sure a good site is selected to observe the rail line and are working on a Cellular network version of the camera to make it more flexible to place the device