LRV Data Collection Project

Rail Operations Analysis

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Project Overview

- Light Rail Vehicles generate a massive amount of insightful data
- Currently it is time consuming and manual to access this data on a regular basis
- Third-party providers offer solutions to connect easily to our trains data
- Faster and more complete access to data can open up new capabilities to improve our operation's service reliability

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Current State

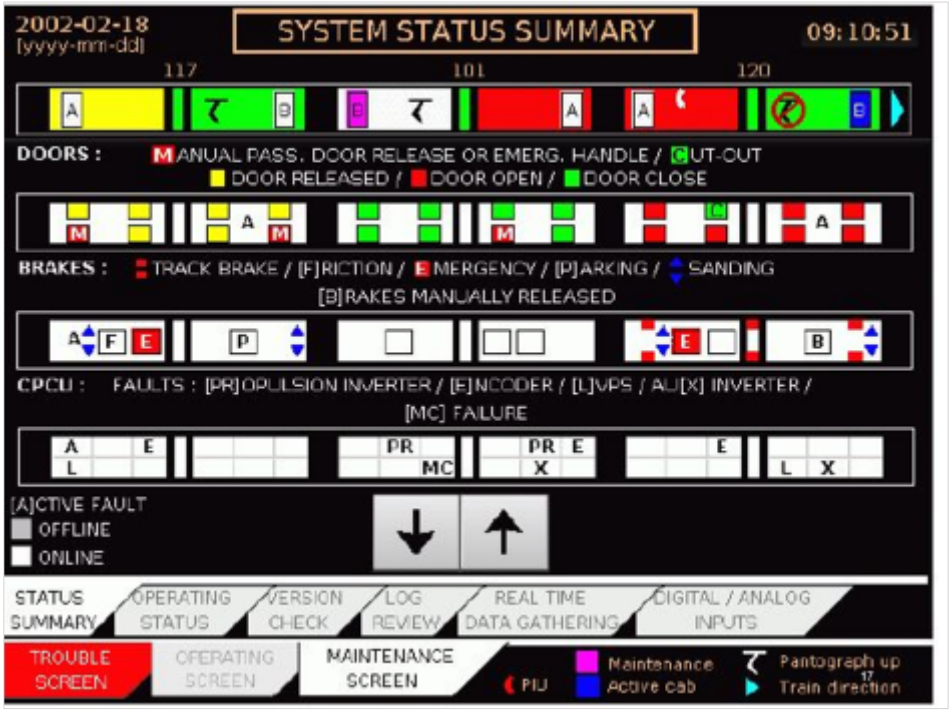
Failure OCCURS → SPECIAL SITUATION REPORT (SSR) LOGGED IN TRANSIT MASTER → DATA DOWNLOAD FROM ONBOARD EVENT RECORDER

10-Aug-18	904605	LRV127	LRV115	LRV104	Late	9	MALL OF AMERICA STATION	3 (7121), 10 (7117)	EQ - EQUIPMENT DELAY	Block 3 Operator reported a System Fault in the middle car, LRV115. It states "PRO-DYN". Shop states this is a propulsion dynamic brake fault. The train was pulled off the line at Franklin. It also developed a speed restriction on it's northbound trip. The replacement train was delayed 9 minutes at Franklin due to the train swap and the train behind, the block 10, was delayed 7 minutes.	67230	Hendreee
4:41:00 pm			**LRV115**				MT1					

Data Captured by Onboard Vehicle System:

Train systems displayed:

- Time, including date (down to the second)
- Car Master Controller Braking Commands
- Emergency Brake - Loop
- Brakes Released
- Track Brake Trainline
- Brake Pipe Pressure
- Car Brake Cylinder Pressure
- Traction Motor Torque
- Master Controller Propulsion Commands
- Speed Sensor Input
- Direction of Actual Movement
- All Doors Closed and Locked Trainline
- Doors Locked Summary Trainline



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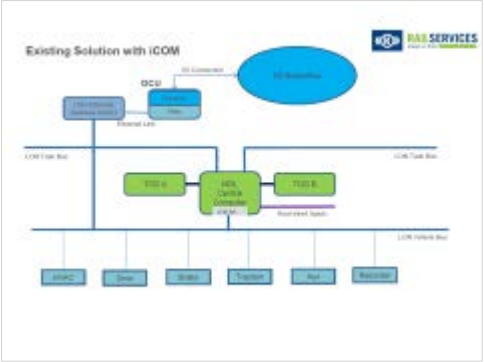
Desired Features

- Live data
- Web interface suitable for multiple groups/users
- Canned reports and ad-hoc query capability
- Stability and length of availability



Current Evaluation

- iCOM Monitoring System
  - Knorr-Bremse- brake parts supplier for LRVs
- Entered into one year Proof of Concept trial Fall 2017
- Equipment provided at zero cost
- Installed by Metro Transit technicians

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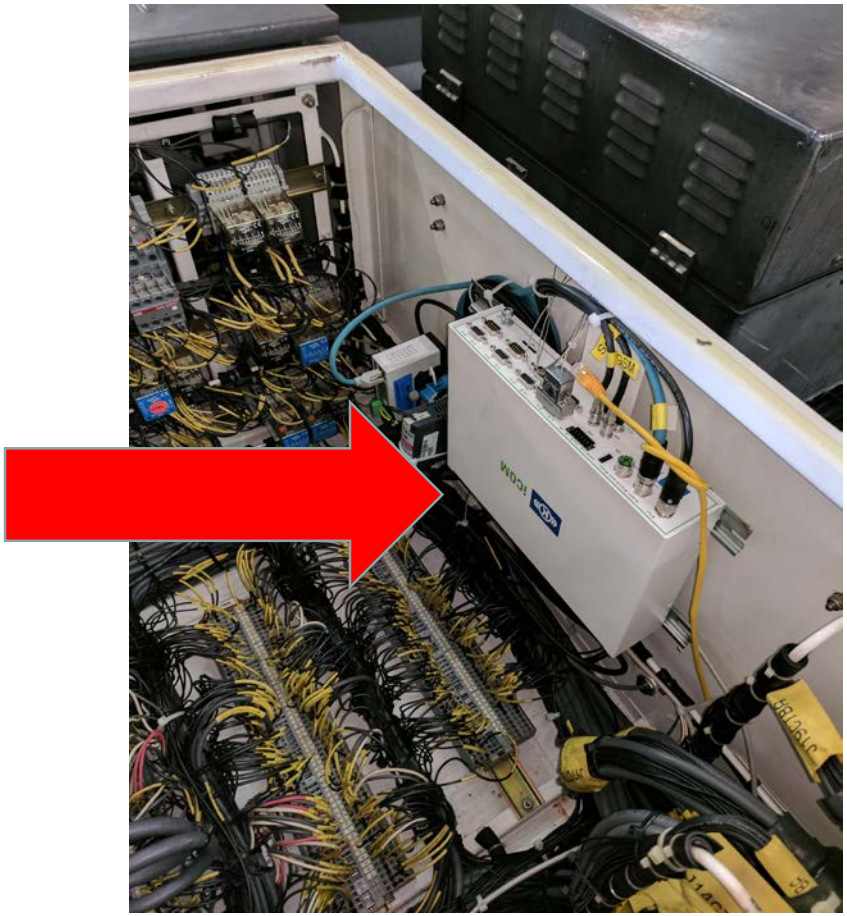
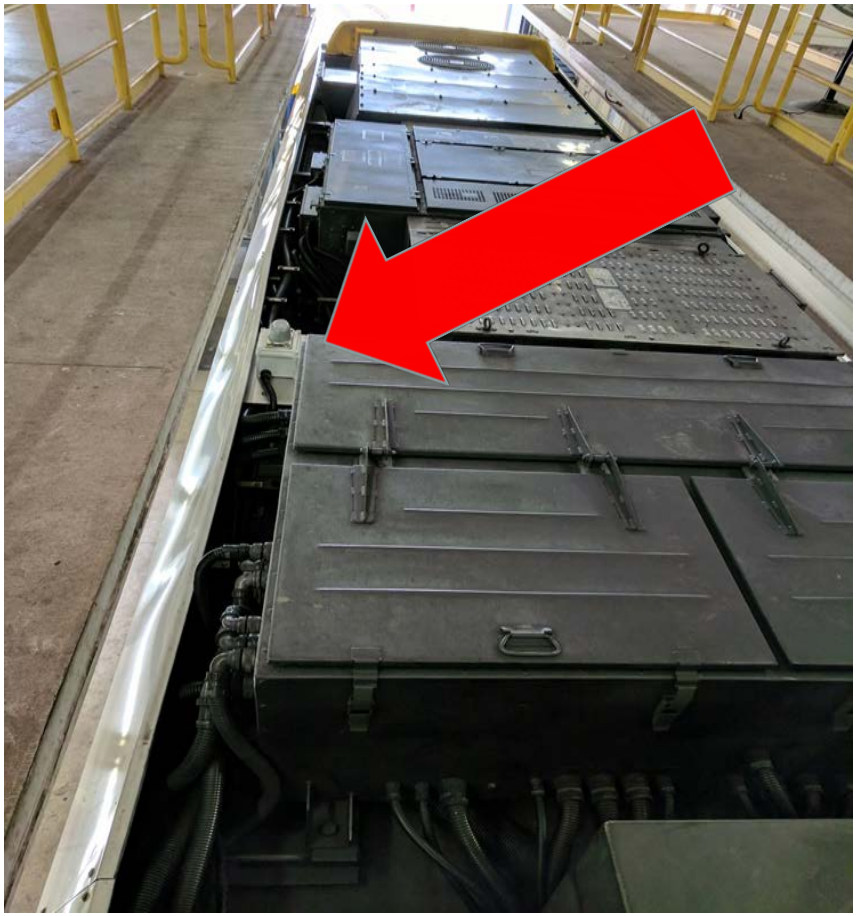
iCOM Hardware Install





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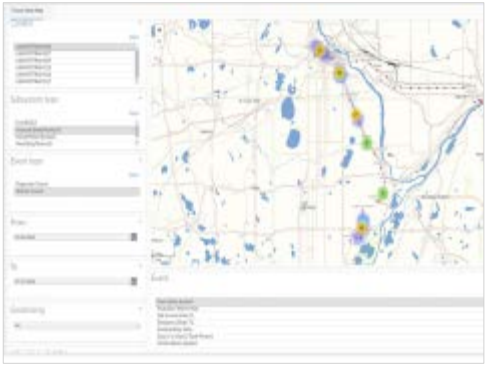
Software Examples

Ad Hoc Reporting

Geo Located Fault Reporting



Live Vehicle Status

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Future Use for Data

- Enhance communication between RCC and LRV Maintenance
- Refine preventative maintenance schedules
- Enhance reporting on Federal Transit Agency National Transit Database metrics
- Compare train data against the rail control (SCADA) system
- Passenger door-holds/emergency door pulls and service reliability
- Much more…

Questions?

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