

OBU Installation & Testing

Ongoing Initiatives and Lessons Learned



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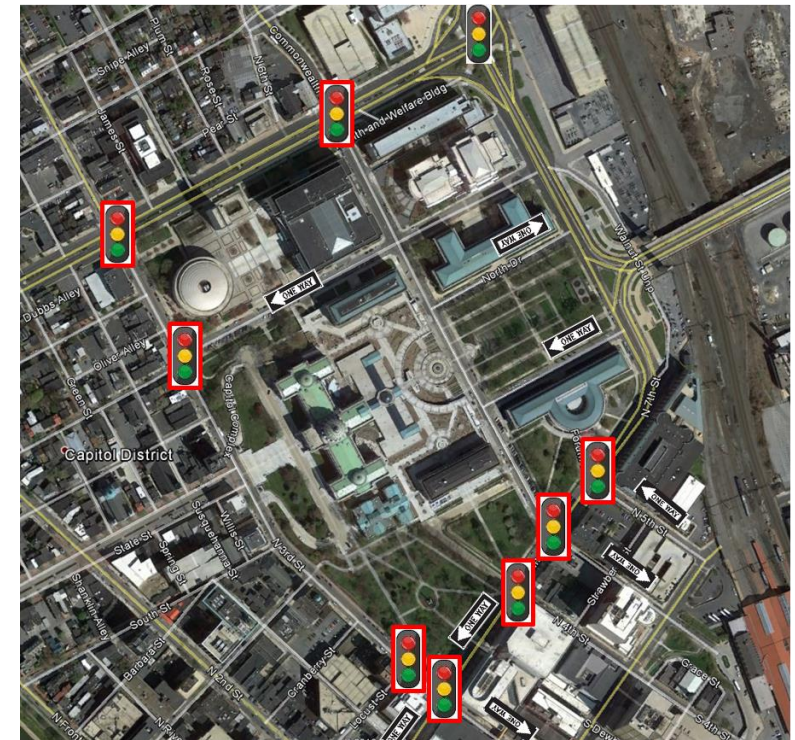
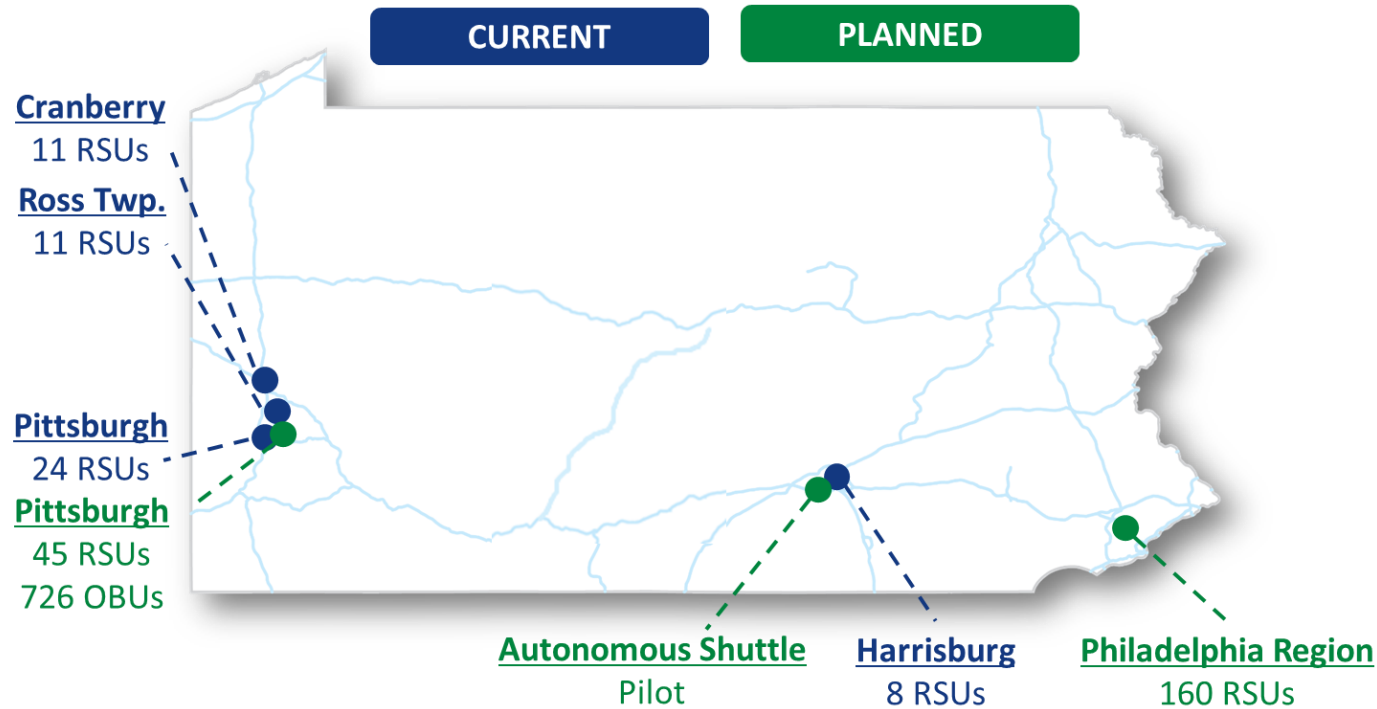
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Objective

- Equip a PennDOT fleet vehicle with an Onboard Unit (OBU) to communicate with existing and planned connected infrastructure.





- 2018 Nissan Rogue
 - Benefits: Truck space to store equipment and easier to run antenna out the hatch.
- ConnexUS Locomate Roadstar OBU
 - Benefits: dual antennas, Sirius XM capabilities, same RSU manufactures, SPaT application
- Misc.
 - Android tablet (Bluetooth connectivity with OBU)
 - Power invertor

- **Challenges:**
 - Unlike RSUs, US DOT has never developed specifications for OBU.
 - Not an approved product.
- **Approach**
 - Purchase Order through existing IT contract
 - Low volume
 - Low cost (<\$2,000 per unit)
 - Used specifications from other states and cut sheets
- **Going Forward**
 - Develop specification
 - Standardize procurement



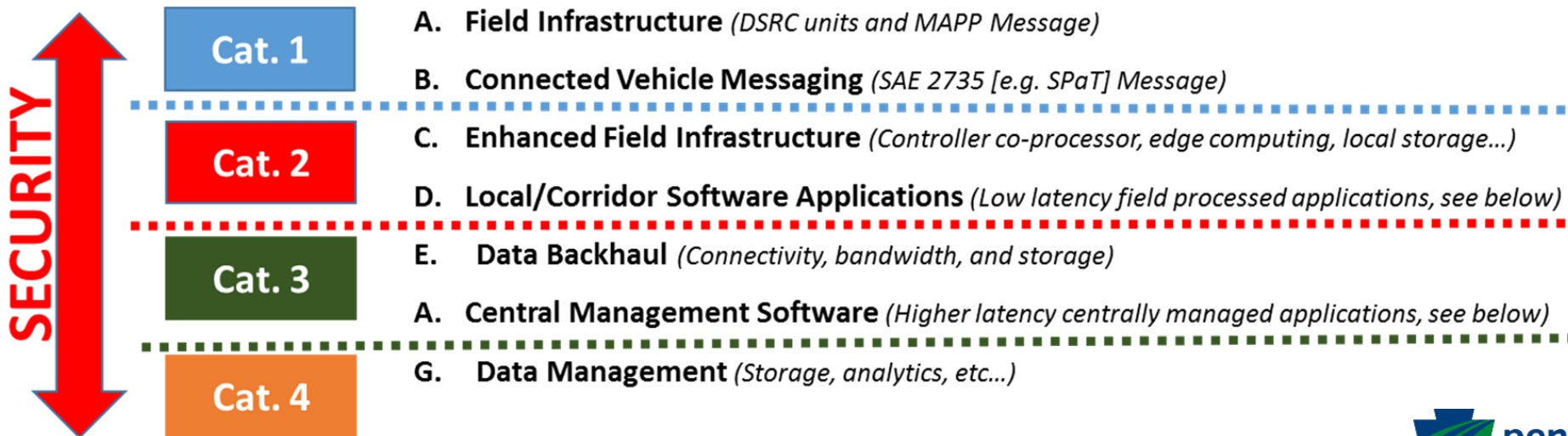
Initial test was a failure – no communications due to different firmware versions

- OBU
 - Brand new device still required firmware upgrade
 - Lack of documentation, even from the vendor.
- Interoperability
 - Even though RSU and OBU were the same, they did not communicate
 - Cohda OBU received messages, but could only data log

Next Steps

- Update RSUs
 - Firmware
 - J2756 2016 standard
 - Map messages
 - Possibly controller firmware
- Permanently equip the vehicle
- Expand beyond SPAT
 - Other application
 - XM connectivity

Categories of Connectivity



Connected Fleet Challenge



This initiative challenges infrastructure owner/operators (IOOs) that have responded to the SPaT Challenge to equip at least one light-duty vehicle and at least one heavy-duty vehicle with a 5.9 GHz DSRC On-Board Unit (OBU) by 2021. These OBUs should be capable of broadcasting the Basic Safety Message (BSM) to Roadside Units (RSUs), and of receiving the SPaT, MAP, and other data messages that are being broadcast from RSUs.

QUESTIONS?

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