

Clear Roads – Plug & Play – Pilot Whitepaper

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Overview

The Clear Roads Plug & Play project was to design, deploy, and maintain both a test application and website portal to qualify and assist vendors of both AVL and Spreader Controller solutions with the implementation of the Clear Roads Plug & Play standard.

This document is intended to document the progress and results of the project and pilot test.

Project Summary

The project began in October 2017 and was deployed live at <https://portal.clearroads.org/> in mid-2018. After going live, Clear Roads members submitted several potential pilot organizations. These organizations were contacted for assistance in validating the program. Parsons updated the standard DPL to Revision 6 in April 2018 based on committee request to provide consistency and improved cross-standards compatibility to the Plug & Play standard. The pilot was launched on September 12th, 2018. The pilot has run for months with minimal feedback from vendors. At this point, only one has provided valid feedback and testing of the portal, test application, and protocol.

For members of the Clear Roads organization, all project documentation and submittals are available on the project SharePoint site: <https://parsons365.sharepoint.com/sites/clear-roads-plug-and-play/SitePages/Home.aspx>. Access can be made available via sending a request for access to iot.support@parsons.com.

Pilot Details

The pilot launched on September 12, 2018. An email was sent by Parsons staff informing the vendors of the pilot. Twenty-one separate vendor email addresses were contacted at 14 different organizations, all provided by the committee. A follow up email was sent by Parsons on October 12, 2018, in order to try and solicit additional responses. An additional email was distributed by Gabriel Guevara at FHWA to vendors on February 12, 2019, to try and engage additional community members. Over the pilot period, the organizations that signed up using the vendor portal are:

- Force America
- Muncie Power
- Cypress Solutions
- Bosch Rexroth

Bosch Rexroth is on the only organization to complete the vendor form submission and engage with Parsons staff with specific questions about the protocol, test application, and portal. Specifically, Jun Zhang and Chad Boughton were the two Bosch Rexroth developers that were engaged and involved in the testing and verification process.

AmeriTrak did request documents from the portal and committed to review the protocol and documentation after the completion of an existing project but has not signed up as a vendor at this time.

During the pilot testing with Bosch Rexroth, the following technical issues were found and resolved for the Test Application:

- Return data loop had required the same number of return strings as possible settings, which was an incorrect interpretation of the protocol. Resolved by recreating the iterator sequence and correctly returning only the return strings that were acceptable per the protocol documentation.
- Return was skipped when input string was incorrectly formatted. Resolved by reworking the response to handle more permutations of the input string, both correctly and incorrectly formatted and with both correct and incorrect data.

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Thirteen Clear Roads members have signed up for the portal and are classified as Members on the portal as of the time of this report.

Documentation

The user documentation is available on both the Clear Roads portal as well as on the project SharePoint site, primarily under the “Task 4 - Guides and Instructions” section, located here:

<https://parsons365.sharepoint.com/sites/clear-roads-plug-and-play/Shared%20Documents/Forms/AllItems.aspx?viewpath=%2Fsites%2Fclear-roads-plug-and-play%2FShared%20Documents%2FForms%2FAllItems%2Easpx&id=%2Fsites%2Fclear-roads-plug-and-play%2FShared%20Documents%2FTask%204%20-%20Guides%20and%20Instructions>.

Source Files and Executables

The source files are located on the SharePoint site here: <https://parsons365.sharepoint.com/sites/clear-roads-plug-and-play/SitePages/Home.aspx?RootFolder=%2Fsites%2Fclear-roads-plug-and-play%2FShared%20Documents%2FTask%202%20-%20Software%20Development%2FSource%20Files%20and%20Executables&FolderCTID=0x01200097D79C35561E014C89BBDD081D9E8360&View=%7BE329EA6B-805C-48EA-BA0D-1BC3BA44B4B8%7D>

The files are:

- Clear Roads Portal – Deployment: This file contains the executable deployment folder installed on the Clear Roads portal site.
- Clear Roads Portal – Source: This file contains all source files for the Clear Roads Portal project that were used to build the Deployment executables.
- Clear Roads Portal – SQL: This file contains the SQL scripts used to build the database for the project.
- Clear Roads Test Application – Setup: This contains the executable application that can be downloaded by vendors for testing from the portal.
- Clear Roads Test Application – Source: This contains the source code used to build the Test Application that is downloadable by vendors from the portal.

All design documents can be found under the root of “Task 2 – Software Development” folder. These include:

- Database Design
- Test Plan – Test Application
- Test Plan - Portal
- Design Document – Test Application
- Design Document – Portal

Conclusion

Although the pilot test had minimal participation, at least one external party was able to assist in testing and utilizing the Test Application for use with their development toolkits. This testing process uncovered two defects in the Test Application that were resolved.

Given the relative lack of participation in the pilot, it is Parsons current conclusion that additional pilot participation is, in all likelihood, not forthcoming until the Clear Roads Plug & Play standard is specified as part of a purchase requisition. At that point, vendors will be forced into engaging with the testing and verification process, potentially uncovering other issues. It would be our recommendation that, for early adopters, submission of certification

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documents not be part of the RFP submission process, but part of the promised deliverables for the RFP, and should be subject to financial withholding to enforce compliance.

In summary, Parsons recommends that Clear Roads create standard RFP language that members can use when they issue an RFP for winter maintenance equipment. It is Parsons belief that creating this 'requirement' will put vendors on notice that the Clear Road member organizations are dedicated to implementing the Plug and Play standard and, will hold their vendors accountable for compliance with this standard. A draft statement for potential inclusion into RFP's can be found below:

“Respondent must commit to adopting and complying with the Clear Roads Plug and Play specification. Include current validation certificate for proposed firmware version, or a statement of commitment to be fully compliant with this standard, including a schedule for full compliance. [Information on the standard can be found here: <https://portal.clearroads.org/>]”