AFTER ACTION REVIEW

1. **Team/Project Name:** Team MX

2. **Project/Event Reviewed:** mXpress: Near Real Time Vehicle Routing

3. **Date of Review:** 2020-04-08

4. **When review was completed:**
   ☐ During Project
   ☒ After Project Completion

5. **Participants:**

Name
Ranil Fernando
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6. **Summary of Project:**

mXpress is a big data framework to efficiently route vehicles in congested cities. It utilizes Apache Spark and Apache Hadoop to create a hybrid model of traffic patterns using historical data combined with real time streaming data. A front end using leaflet and OSRM provides a responsive interface for user route generation and mapping. mXpress uses infrastructure sensors in the city of Toronto to gather data and create the most optimal route based on real world conditions. The technology behind the project is designed to be adaptable to a variety of use cases that require vehicle routing, including emergency services, ride sharing, food delivery, and transit networks.

7. **What went well and why?**

Successes	How to Ensure Success in the Future
User Interface Design	Due to the standardization of website map design in the industry the interface did not require as many iterations. Continue to embrace accepted designs and industry standards.
Technology Selection	The selected technologies did not provide us much trouble; this was due to the extremely thorough initial design phase. Continue with this strong technology vetting in the future
Performance	Most of the selected technologies were extremely efficient and highly scalable. This point relates to the technology selection above. The continued use of proven open sourced technologies is recommended.

8. **What can be improved and how?**

What can be improved	Recommendations
Traffic Model	The model currently only uses live speed data, it may be improved upon with other forms of data as well as the addition of machine learning with batch data
Geolocation	Determining the location of a user is currently not used as a starting point when calculating routes
Routing Autofill	The autofill suggestions for routing searches does not use your location as a point of reference, so suggestions may not be accurate
Search Function	There is currently no basic search functionality to navigate the map
OSRM Loader	This should be made into a separate application with networking
Infrastructure Providers	Investigate the possibility of adding support for external infrastructure deployment such as AWS. Current implementation is designed to run on bare metal or on a docker cluster but could use additional work to better facilitate services such as AWS.
Continuous Deployment	Implement a system that allows code changes to be automatically compiled, tested, and pushed.
Testing	There is currently a lack of proper testing across the board, this should be bolstered and considered a priority upgrade.
Kubernetes	Kubnernetes cluster support allows deployment to an infrastructure providers' Kubernetes engine. Kubernetes allows for the docker containers to be deployed and managed across clusters of servers and maintain uptime.
Mobile App Functionality	The mobile app is somewhat broken, there are multiple interface issues. These should be fixed ASAP. Consider this a priority suggestion.