Quarterly Report – Public Page

Date of Report: *5th Quarterly Report – December 31, 2024*

Contract Number: *693JK32310007POTA*

Prepared for: *DOT-PHMSA*

Project Title: *An Integrated Knowledge Graph Model for Geohazard Monitoring Data*

Prepared by: *University of Wyoming*

Contact Information: *Dr. Minou Rabiei, mrabiei@uwyo.edu*

For quarterly period ending: *December 31, 2024*

1: Items Completed During this Quarterly Period:

- The ontology model for landslides is fully developed.

2: Items Not-Completed During this Quarterly Period:

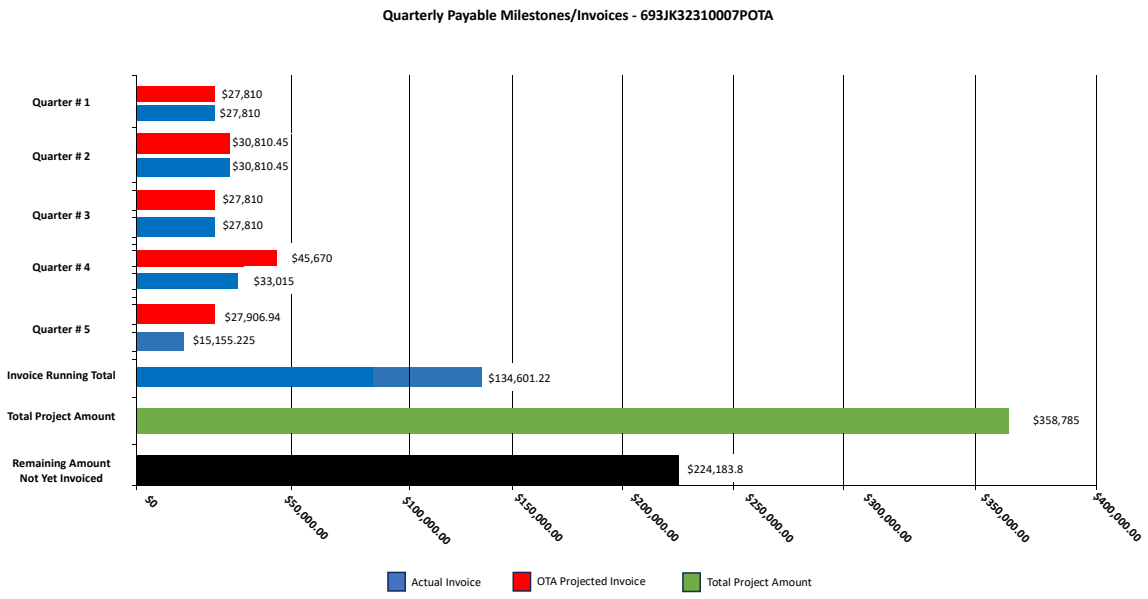
- Map the collected and standardized data into the defined ontology

  Justification: The mapping of the collected data into the ontology model is in progress but not completed yet due to the delay in developing the ontology model from the previous quarter. The mapping process involves aligning and organizing the data according to the structure and semantics outlined in the ontology model when building a knowledge graph. The ontology acts as the "blueprint" or schema for how entities, their relationships, and attributes are represented in the knowledge graph.

- Integrate data from various sources based on the determined mapping

  Justification: Because the mapping process is not complete yet, we have not been able to start task 17. With the completion of the ontology model and the mapping process in progress we should be able to complete this task by the end of Q6.

3: Project Financial Tracking During this Quarterly Period:



4: Project Technical Status

Design and develop ontology and semantic model - *Documentation on the designed and developed ontology model.*

Narrative: Our focus at this stage of the project is on Landslides and therefore the ontology model is developed based on landslides only. This model is built using the **Neo4j** graph database, which allows for efficient representation and querying of complex relationships and attributes. The ontology is designed to be scalable, enabling easy expansion to accommodate new data and additional risk factors as they are identified. The ultimate goal is to create a tool that will assist in landslide risk assessments and help guide decisions related to infrastructure planning, mitigation strategies, and environmental protection.