**Data description**

Four types of data will be obtained, processed and analyzed in this project: 1) GIS data of MDOT SHA Geotechnical Assets for identifying the highway cut-slope locations and properties in Maryland; 2) geological data from USGS and MGS for analyzing and mapping weak/risk geologic strata of landslides; 3) Geotechnical and slope design data for analyzing cut-slope instability/landslide risk, including stream gage stations and flow data, pavement materials and design at selected sites; 4) weather (precipitation) data at selected cut-slope locations for analyzing and forecasting triggering of cut-slope landslide; and 5) Images acquired, including photos, LiDAR, and satellite images. The data will be stored and managed in distributed servers across MSU. The data engine offers organization, visualization and analytics.

**Data format and metadata standards**

While integrating data extracted from various entities, the raw data will first be converted to mySQL database file for cleansing, fusion and processing. The data in mySQL are further imported into ArcGIS for visualization. The PIs and research assistants will code algorithms using ANSI C++ that is compatible for any platform. The output data will mainly be system performance metrics. The aggregated data, without any personally identifiable information, can be provided in the standard .cvs format or GIS formats to any interested party via the web application up to approval of MDOT SHA.

**Policies for access and sharing**

Throughout the duration of the proposed work, the PIs will in a timely manner communicate any significant findings with the scientific community in accordance with USDOT and MDOT policy through journal publications, national and international conference presentations, and seminars. The reported results will be made available to the research community, where possible and permitted and upon request and under approval of MDOT SHA.

When sharing the data, the PIs commit to protect privacy, confidentiality, and security. If the research and discoveries found during the project might be secured with intellectual property, the PI will work with our respective Technological Transfer Offices to protect potential proprietary data. In addition, the PIs will not post to any publicly available site any raw data that are not permitted to share, especially under data usage agreement with private sector.

**Policies for re-use, redistribution, derivatives**

Data derived from this project shall be retained for at least one year. The tool developed in this project will be open source and shared along with research results to research community through the web designed for this project. The data in this project may contain private or confidential information which needs approval for access.

**Plans for archiving and preservation**

Any used data will reside on PCs and workstations belonging to the PIs’ university. All data will be periodically and systematically backed up either onto multiple external hard drives, or a centralized backup cloud through the university, to ensure full data recovery in the event of equipment failure.