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Building a Precise Surface Data for Slope Hazard Map

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According to a report of the IPCC 2012, Korea has suffered tremendous damage to property and human lives due to various weather phenomena (extreme rainfall, typhoon, drought, cold wave, etc.) in all fields such as agriculture, traffic, disaster prevention, forests and health. As the concentration of heavy rain increases, disaster and damages such as landslides, debris flow, flood are increasing. Therefore, it is necessary to prepare measures for minimizing landslide damage. Need to improve maintenance technology to reduce human and property damage. If a landslide or debris flow occurs on the periphery of the national road, human and property damage of the road user may occur. Therefore, research for evaluating the risk and vulnerability more accurately is needed. In particular, after landslides or debris flow have occurred, human-based surveys cannot quickly obtain high-precision topographical information to assess risk and stability. Therefore, it is necessary to construct terrain information to quickly recognize landslides, debris flow, and expected collapsed areas by scientific approach.
A technology for evaluating disaster vulnerability using precision spatial information data (terrain, location information, Inventory) is needed. Therefore, the digital mapping technique was used to construct accurate ground data and to derive ground surface characteristic information based on this.
We selected test area, and build LiDAR, UAV, thermal image, ShapeMetrix database. and we comparing and analyzing the established topographic information and existing topographic data. We constructed of geotechnical, hydrological, surface features, topographic elements, and rainfall data for test area. and establishment of terrestrial-based disaster risk and flood risk map of test area. We did stability analysis based on rainfall and ground characteristics and probabilistic basis analysis of the risk of landslide and debris flow around the road. and produced a flood hazard map and calculate the damage range. We did slope stabilization analysis based on kinematics and stochastic based slope stability analysis using data extracted from ground LiDAR.