

### 3.2.2

## Validation of aerial LiDAR products for transportation applications

### Presenter

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The Alaska Department of Transportation and Public Facilities (ADOT&PF) Northern Region has been investigating alternative solutions to efficiently generate survey grade mapping data in support of engineering and design work. Topographic data was needed principally for the design of highway improvements in areas where road conditions are subject to frost heaving, and maintenance and improvements are often needed.

The use of aerial LiDAR towards surface modeling and feature extraction using LiDARGrammetry has been in use for more than a decade. However, due to concerns that the mapping products might not meet survey requirements, ADOT&PF proposed to validate the aerial LiDAR products using a comprehensive and systematic process with the aid of extensive survey control and cross section profiles collected on the ground. The project resulted in enabling ADOT&PF to utilize LiDAR data for topographic mapping in addition to application of this technology in other transportation applications. During the course of the project, high density LiDAR data collection and processing was performed along with LiDARGrammetry to extract planimetric features from the LiDAR data. Subsequently, LiDAR derived mass points and breaklines acquired from LiDARGrammetry were used to create TIN files for use in ADOT&PF'S CAD environment. The TIN was subsequently used to produce two-foot interval topographic contours. During the TIN generation process, the existing as-built highway centerline and profile data along with the cross-section data collected by field surveys were incorporated. The comparison of field survey control data against TINs generated from LiDAR has successfully validated the accuracy of the LiDAR derived products. LiDAR offers ADOT&PF a cost- effective method to acquire and produce high quality mapping in remote, challenging areas while meeting rigorous engineering standards.

This presentation will provide a discussion on the validation of aerial LiDAR data for transportation applications.

### **Bio(s):**

Dr.Srinivasan "Srini" Dharmapuri has over 26 years of extensive, wide-ranging experience within the Geospatial industry; most notably with LiDAR, Photogrammetry, and GIS. He has worked in both the private and public sectors, as well as internationally.