A Geoinformatics Approach to LiDAR / ALSM Data Distribution, Interpolation, and Analysis

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III. OVERVIEW
• Using GEON cyberinfrastructure we have developed an internet-based LiDAR processing workflow that utilizes spatial database, GIS and web service technology to dist x, input, interpolation, and analyze visual LiDAR data.
• Features:
  - Spatial and attribute based queries on raw LiDAR point cloud data.
  - Spline and IDW interpolation to Digital Elevation Model (DEM).
  - User control over interpolation parameters.
  - Slope, aspect, and profile curvature (peaks) derived products.
  - Download of products in TIF (with world file), ASCII and ESRI Arc ASCII (Arc Grid) formats.
  - Visualization of data products via web browser window or in 3D via Folding Maps' viewer/Viewer and our own OpenL, L-based tools.

GRASS GIS WEB SERVICE / SERVLET:
• Using Java Servlet architecture we have built a LiDAR processing workflow that utilizes GRASS GIS services across the internet. Servlet components are shown in green at right.
• Based on parameters selected / input by the user at the web front end a parameter file is passed off to a PERL script that executes calls to GRASS. These core components of the tool are shown in purple at right.
• The products produced by the green part back to the Java Servlet where a download page is built and an email is sent to the user to inform them that their products are ready for download.
• In order to foster GEON-based LiDAR processing tool into the comprehensive GEON LiDAR workflow discussed above, we have also created a servlet-to-servlet connection (servlet) that accepts requests via XML.

PERFORMANCE:
[Graphs and data showing performance metrics for various LiDAR processing tasks are included.]

REFERENCES: