Application of laser scanning technology for civil engineering projects in Serbia

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PRODUCTION DTM AND MAPS AS BASE OF CIVIL ENGINEERING DESIGN

• Phase 1: Data acquisition
  - existing data
  - updating existing data
  - new acquisition
• Numerical processing and maps and 3D model production
• Criteria for choosing data acquisition methodology: Accuracy and time
Multi Sensor Data Acquisition

- Electronic total stations
- Digital terrain, airplane and satellite photogrametry
- GPS technology
  Static, Kinematic, TRK Kinematic, Continual RTK Kinematic, combinations
- LIDAR technology – revolution in data acquisition (Stationary, pseudo stationary, Mobile for work from land and air)

LIDAR Components

• Three major components of a LIDAR system
  1. GPS
  2. Inertial Measurement Unit
  3. Laser Range Finder
Principle of work Laser Returns

Mobile Mapping & Laser Scanning

Mobile Mapping and Laser Scanning System products:
Georeferenced point cloud: XYZ I or XYZ RGB
Mobile Mapping & Laser Scanning

Mobile Mapping and Laser Scanning System products:
4. Profiles, Digital Terrain Models
LIDAR applications in Serbia

- Reconstruction of historical monuments and structure
- Reconstruction of existing structures (Buildings, Churches, Synagogue, ....)
- Geometry control during construction and producing design of constructed structures
- Deformation measurements of civil engineering structures (roof of sport hall...)
- Corridor mapping projects
- Other applications
Corridor Mapping

Historical monuments and structures
Church – LIDAR + Photogrammetry
3D model

3D model of the church at Medun (near Podgorica) generated from the data from laser scanning and digital photogrammetry.

Building reconstruction project

FIG Congress 2010
Facing the Challenges – Building the Capacity
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