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

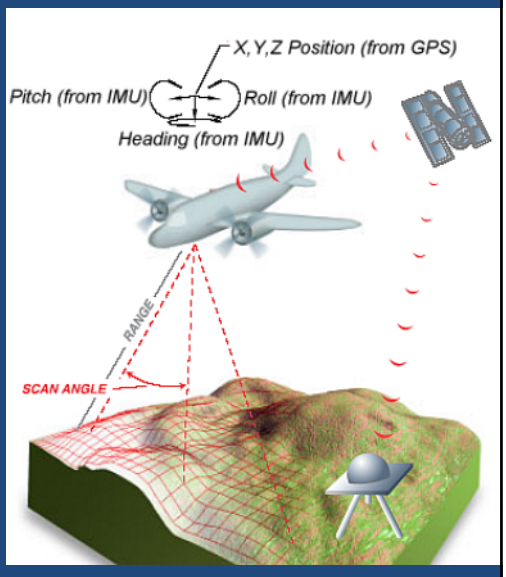
- Electronic total stations
- Digital terrain, airplane and satellite photogrametry
- GPS technology

  Static , Kinematic, TRK Kinematic, Continual RTK Kinematic, combinations
- LIDAR technology – revolution in data acquisition (Stationary, pseudo stationary, Mobile for work from land and air)

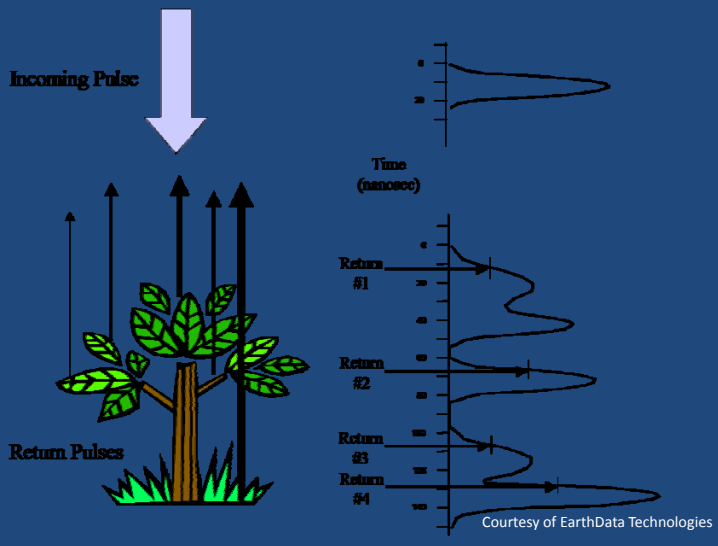
LIDAR Components

- **Three major components of a LIDAR system**

1. **GPS**
2. **Inertial Measurement Unit**
3. **Laser Range Finder**



Principe of work Laser Returns



Mobile Mapping & Laser Scanning

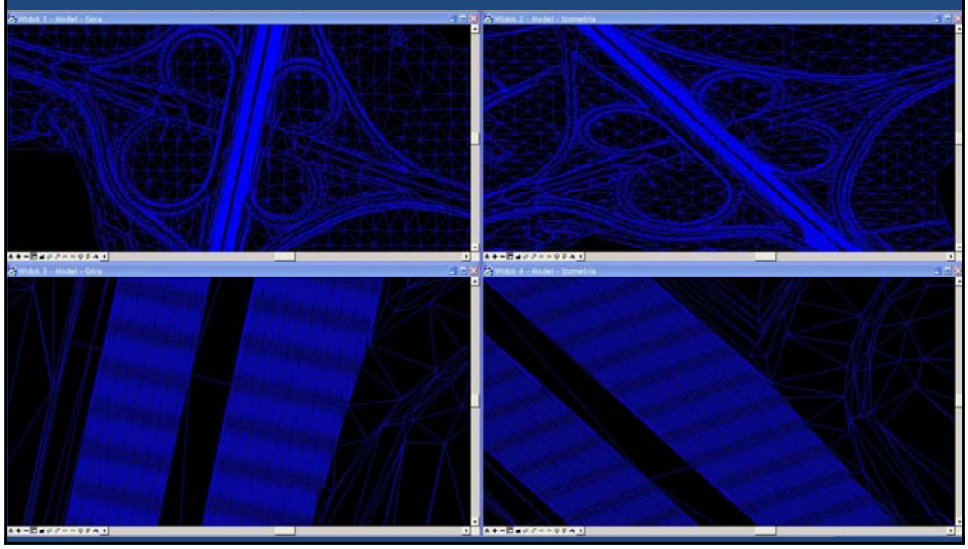
Mobile Mapping and Laser Scanning System products:

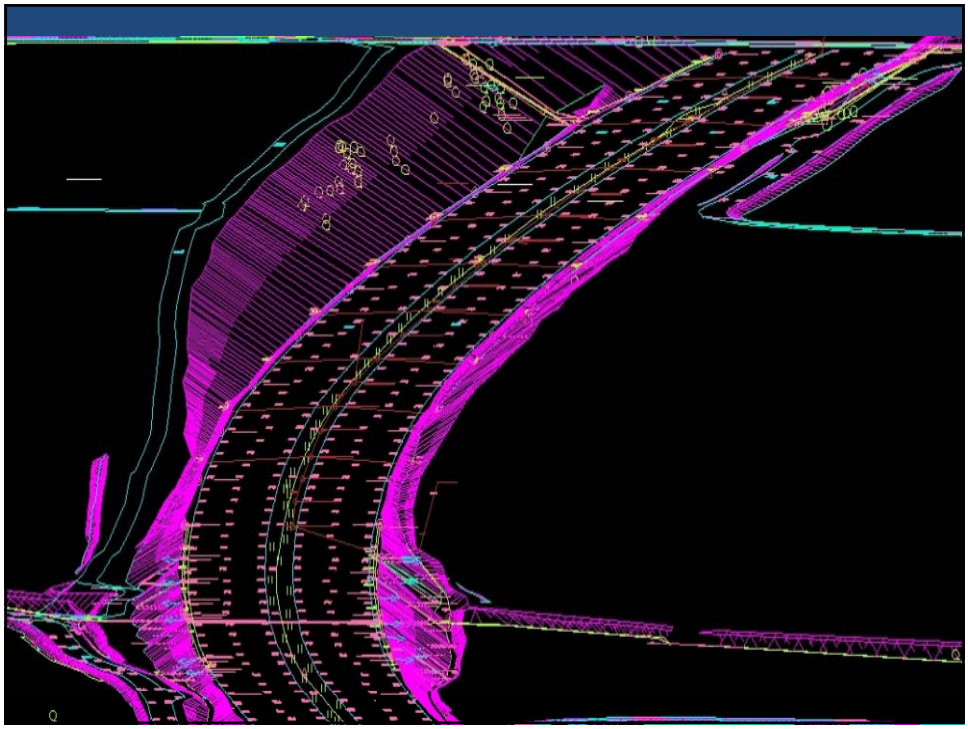
Georeferenced point cloud: XYZ I or XYZ RGB

Mobile Mapping & Laser Scanning

Mobile Mapping and Laser Scanning System products:

4. Profiles, Digital Terrain Models

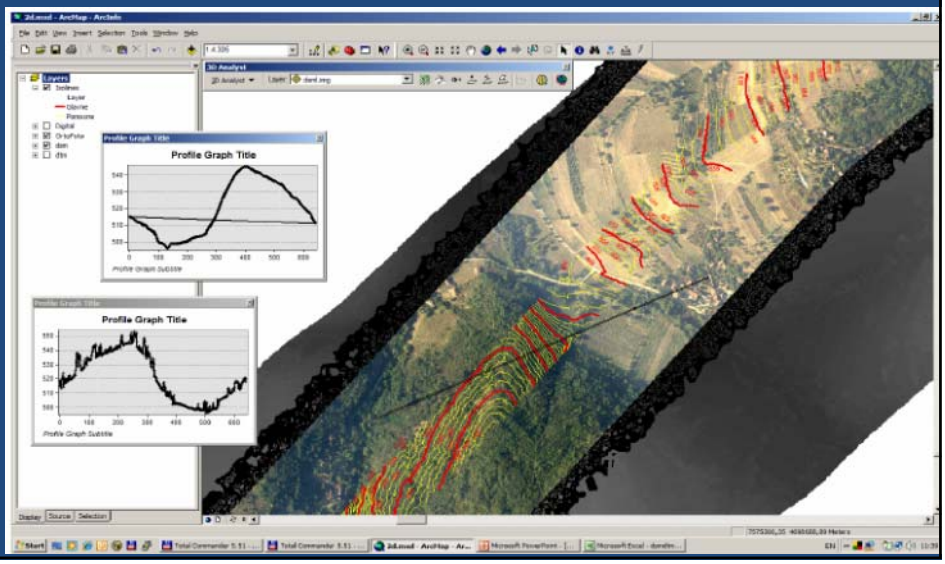




LIDAR applications in Serbia

- 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 + Photogrametry 3D model

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

Building reconstruction project