

GEO ENTAR

MASOVNO PRIKUPLJANJE PODATAKA

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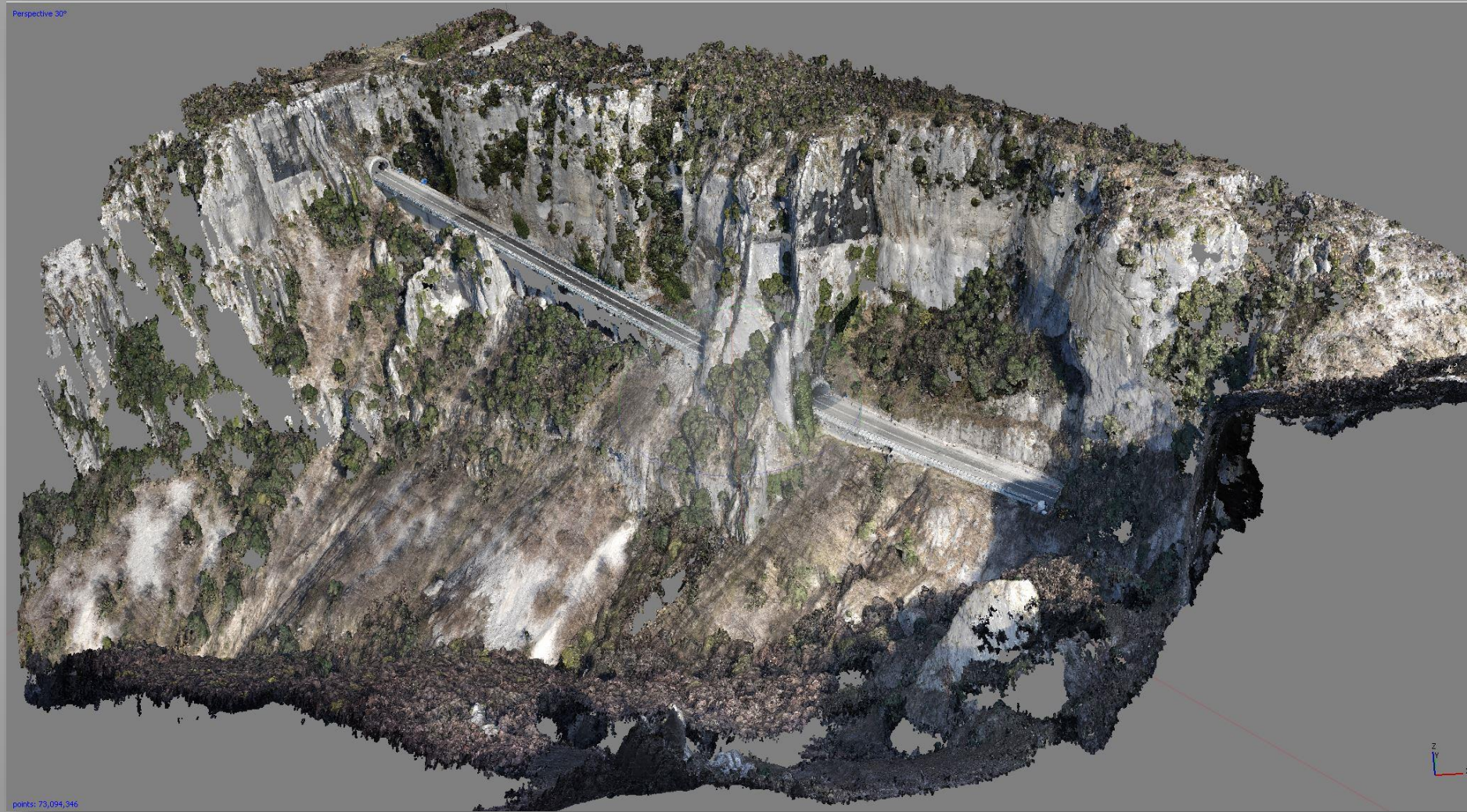
SADRŽAJ

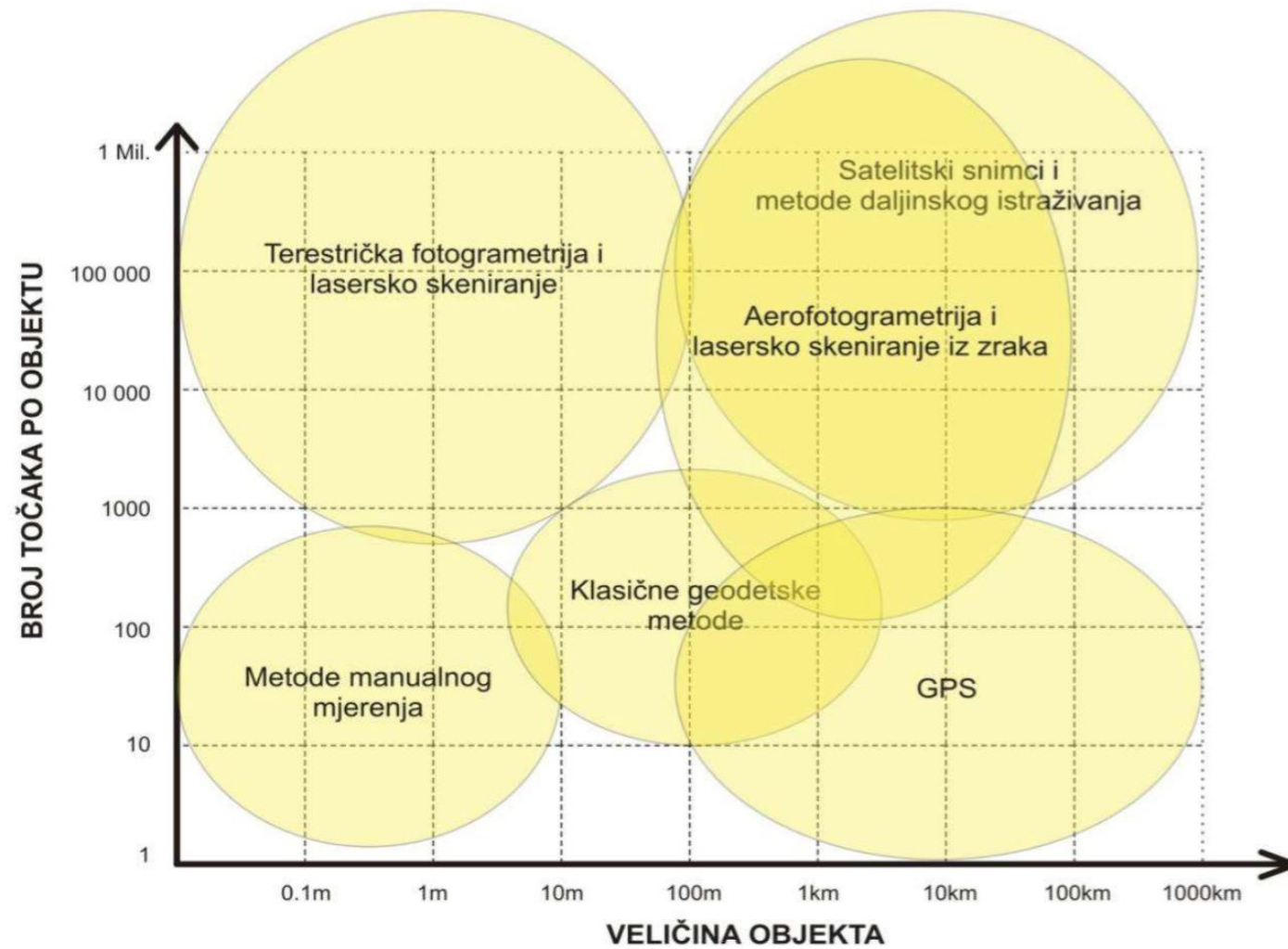
- **Zašto masovno prikupljanje podataka?**
- **Tehnologije za masovno prikupljanje podataka**
 - Laserski skeneri
 - Bespilotne letjelice
 - Mobilni sustavi
- **Oblak točaka – što dalje?**
- **Zaključak**

ZAŠTO MASOVNO PRIKUPLJATI PODATKE?

- Brzina i efikasnost
- Količina podataka
- Ažurnost podataka
- Razne aplikacije i iskoristivost

➤ oblak točaka Učke – teško dostupan teren





TEHNOLOGIJE ZA MASOVNO PRIKUPLJANJE PODATAKA



Laserski skeneri



Bespilotne letjelice



Mobilni sustavi

LASERSKI SKENERI



Fazni

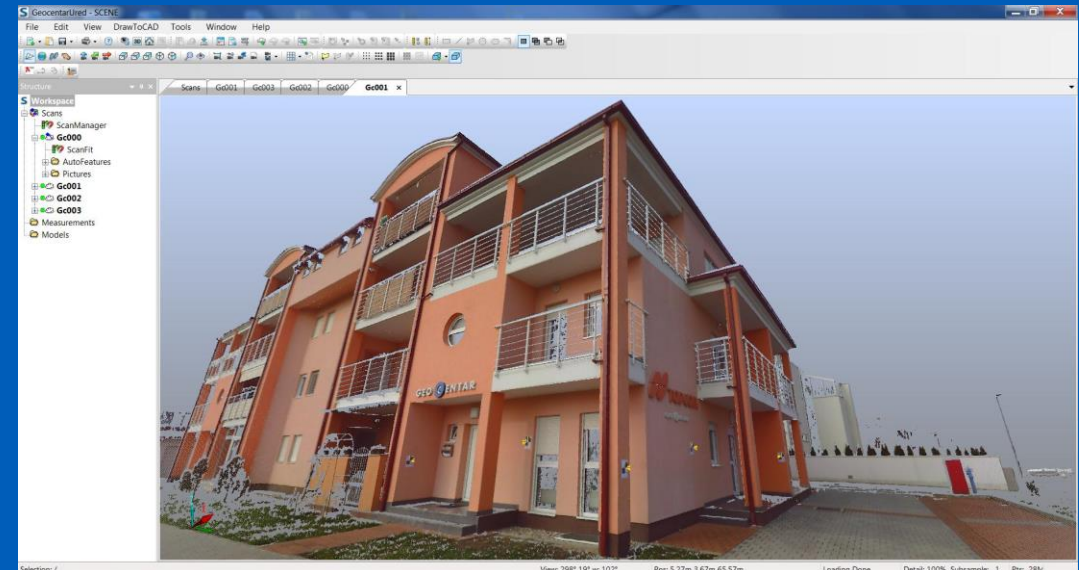
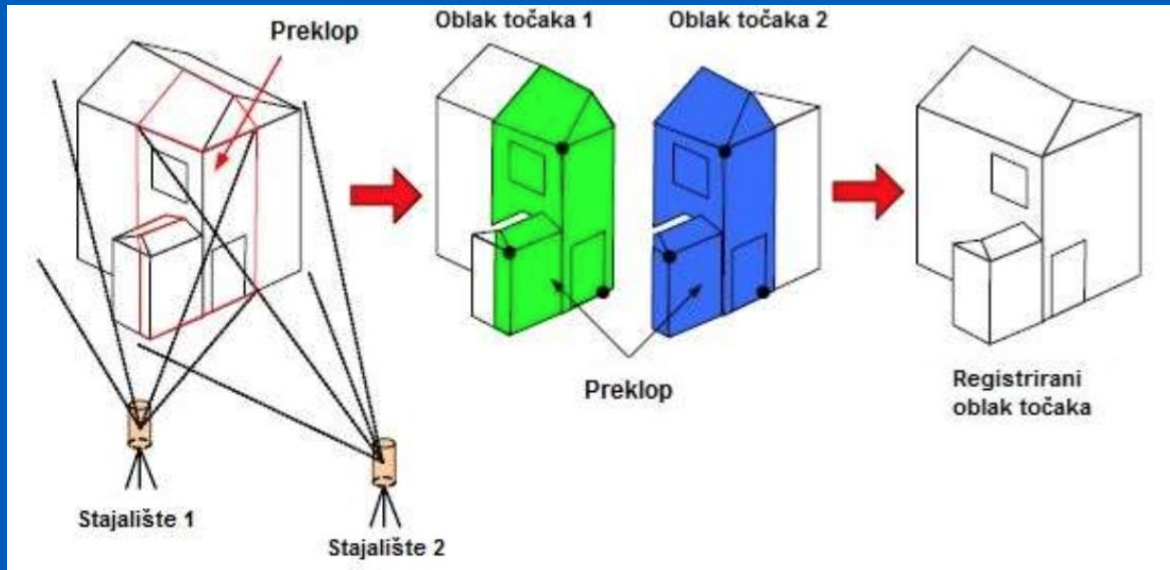


Pulsni



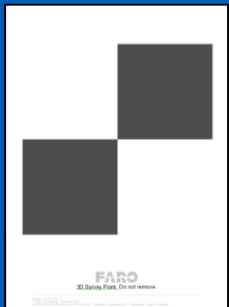
Triangulacijski

Registracija oblaka točkaka



Georeferenciranje oblaka točaka

- **Indirektno** – korištenje kontrolnih točaka
- **Direktno** – princip totalne stanice



Kontrolne točke (značke
i sfere)

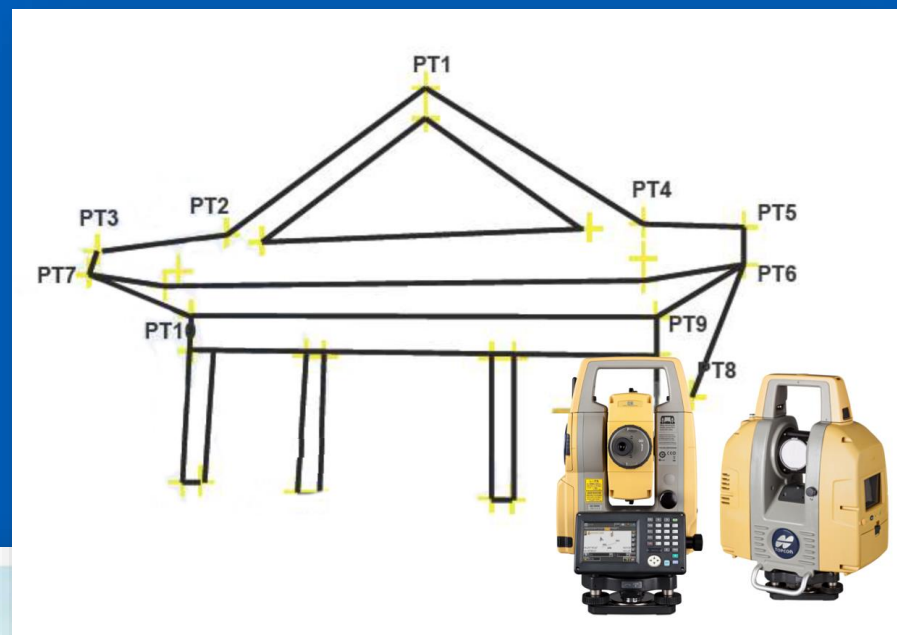


Mjerne stanice



GPS uređaji

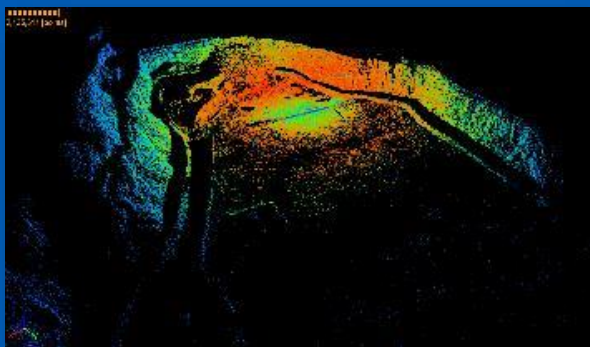
Zašto skenirati?



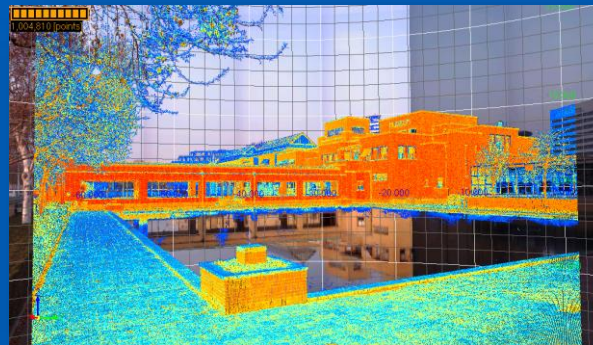
Zašto skenirati?



Aplikacije



Mjerenje



BIM

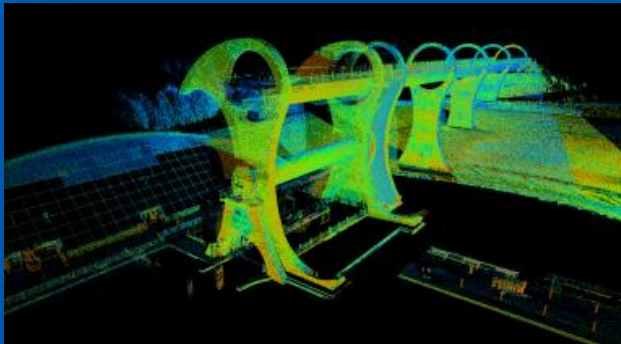


Restauracija



Arhitektura

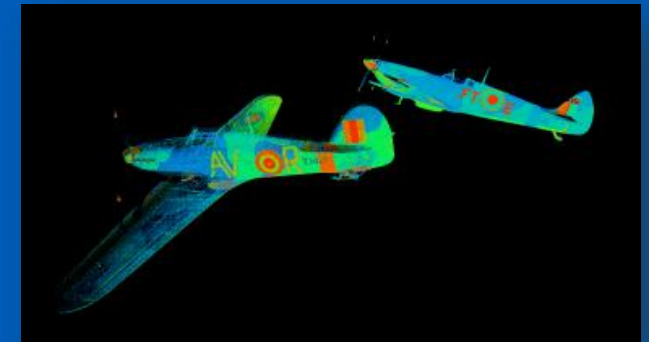
Aplikacije



Inženjerstvo



Forenzika



Industrija

BESPILOTNE LETJELICE

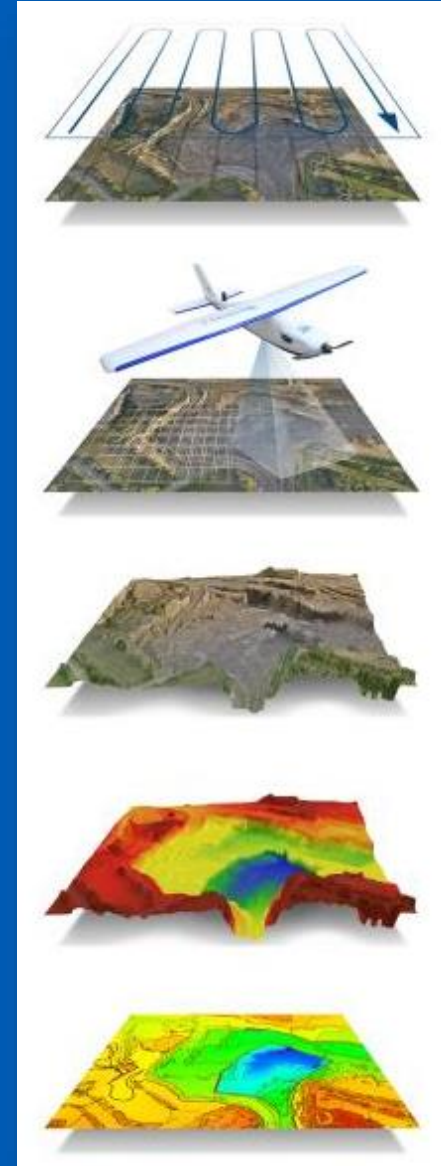
FARO

- Fiksna krila
- Multi rotor



Koncept rada

- Fotogrametrija / Lidar
- Orijentacijske točke / RTK sustavi
- Oblak točaka
- Digitalni model terena i DOF / 3D model
- Analiza i iskorištavanje podataka

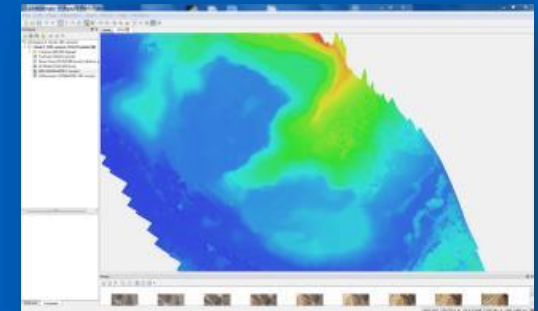
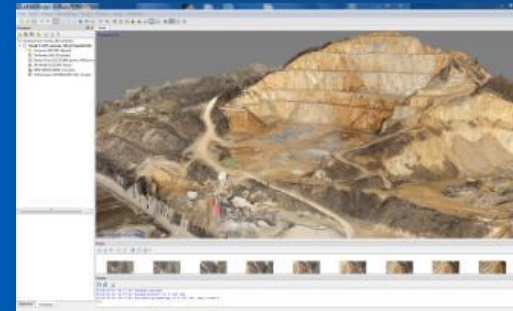
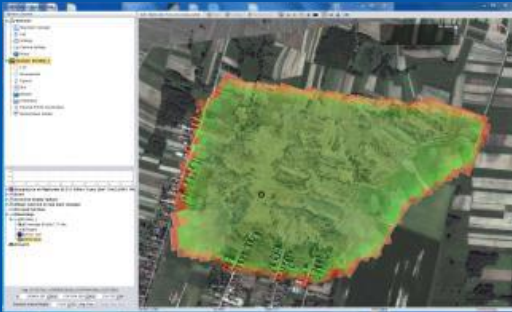


Orijentacijske točke vs RTK sustavi

- Utrošeno vrijeme
- Cijena
- Točnost
- Aplikacija



Od fotografija do 3D prikaza terena



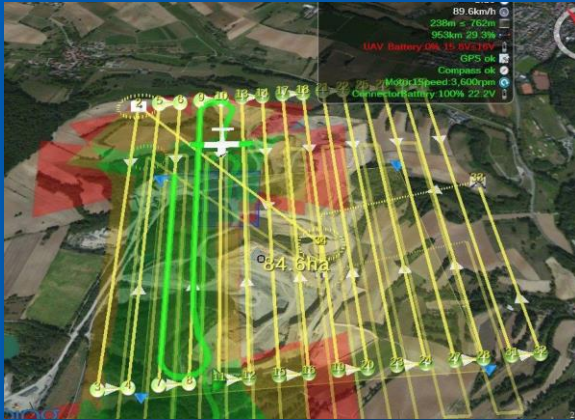
Planiranje leta

Prikupljanje podataka s UAV-om

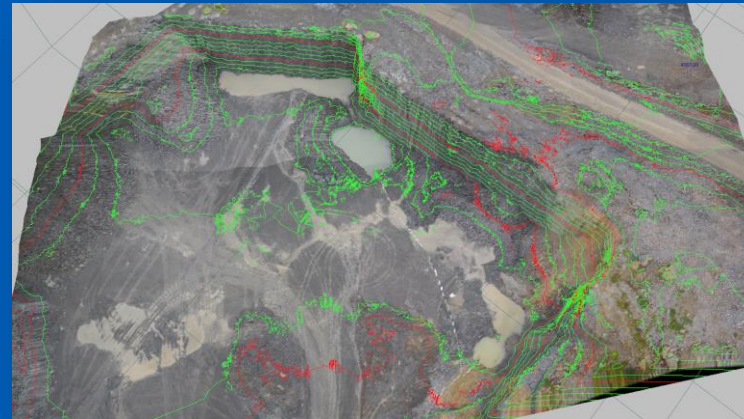
Ortofoto i DMT

Analiza rezultata

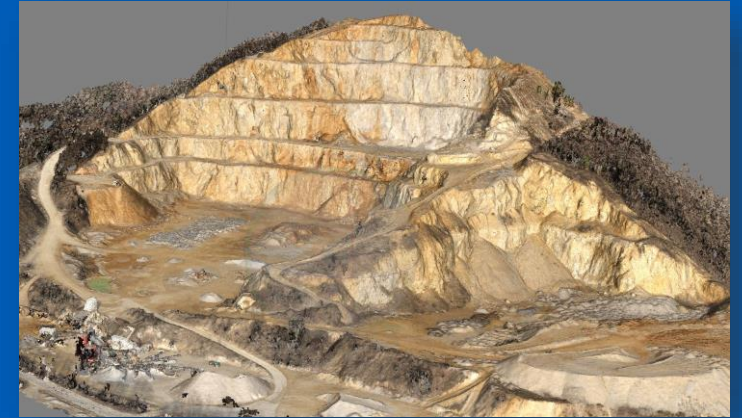
Aplikacije



Geodetski prikaz
terena



Projektiranje



Nadzor eksploatacije
materijala

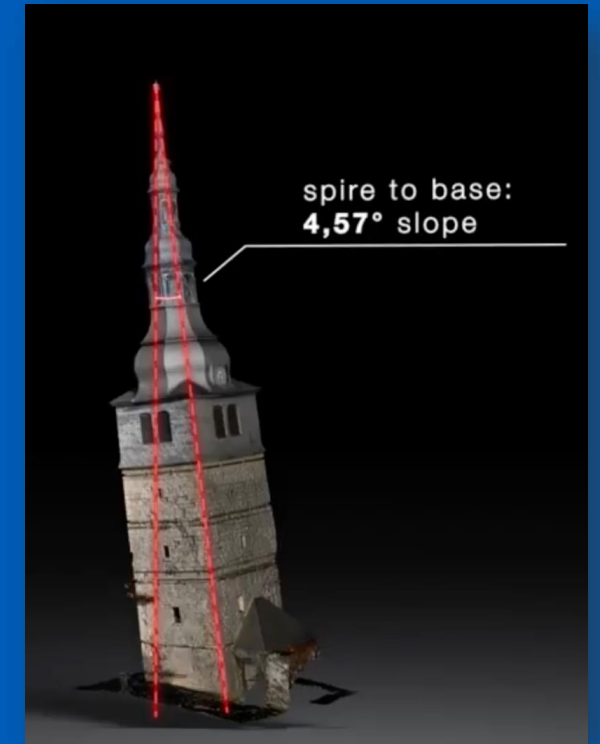
Aplikacije



3D modeliranje



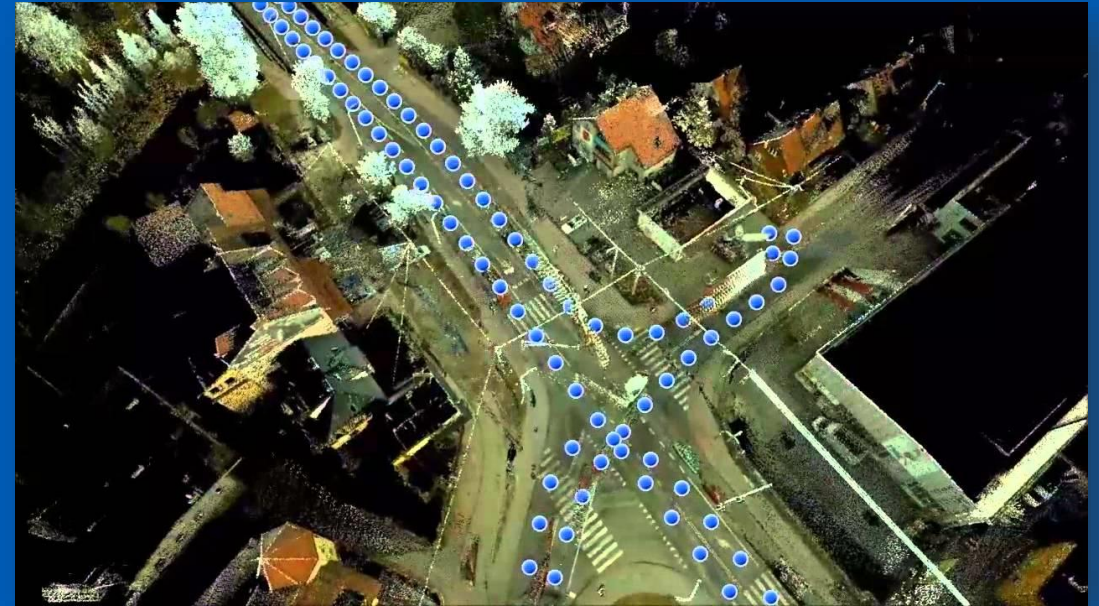
Nadzor i inspekcija



Praćenje pomaka i deformacija

MOBILNI SUSTAVI

- Mobilnost
- Senzori – GNSS, skener, kamera, inercijalni sustav, odometar...
- Visoka točnost, velika brzina, velika količina podataka



Snimanje

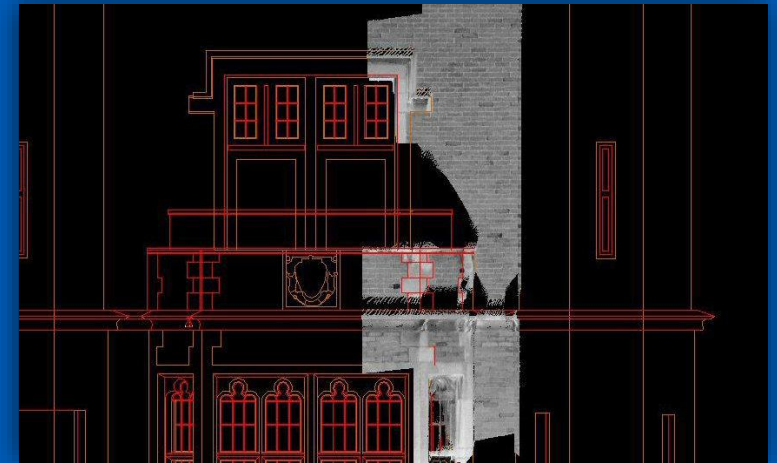
Obrada

Odabir

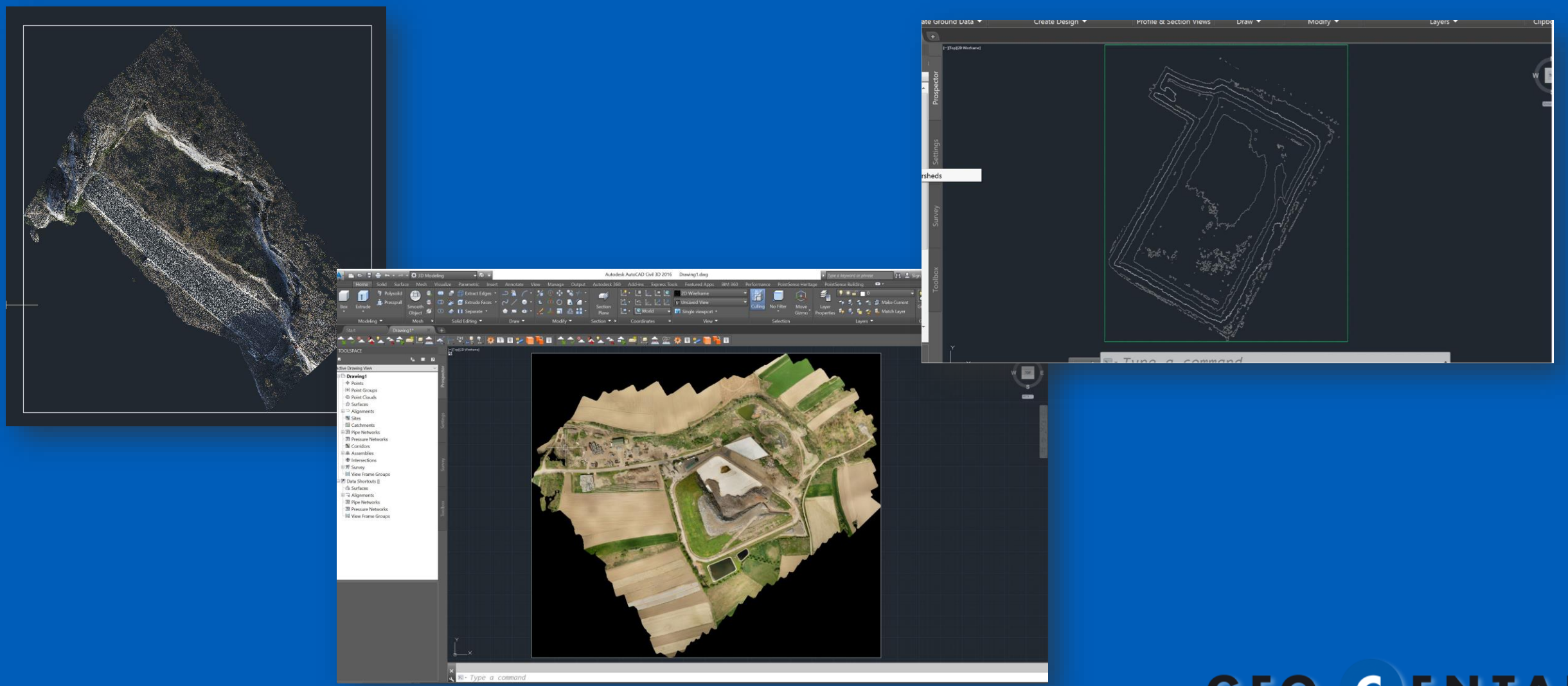
Isporuka

Oblak točkaka – što dalje?

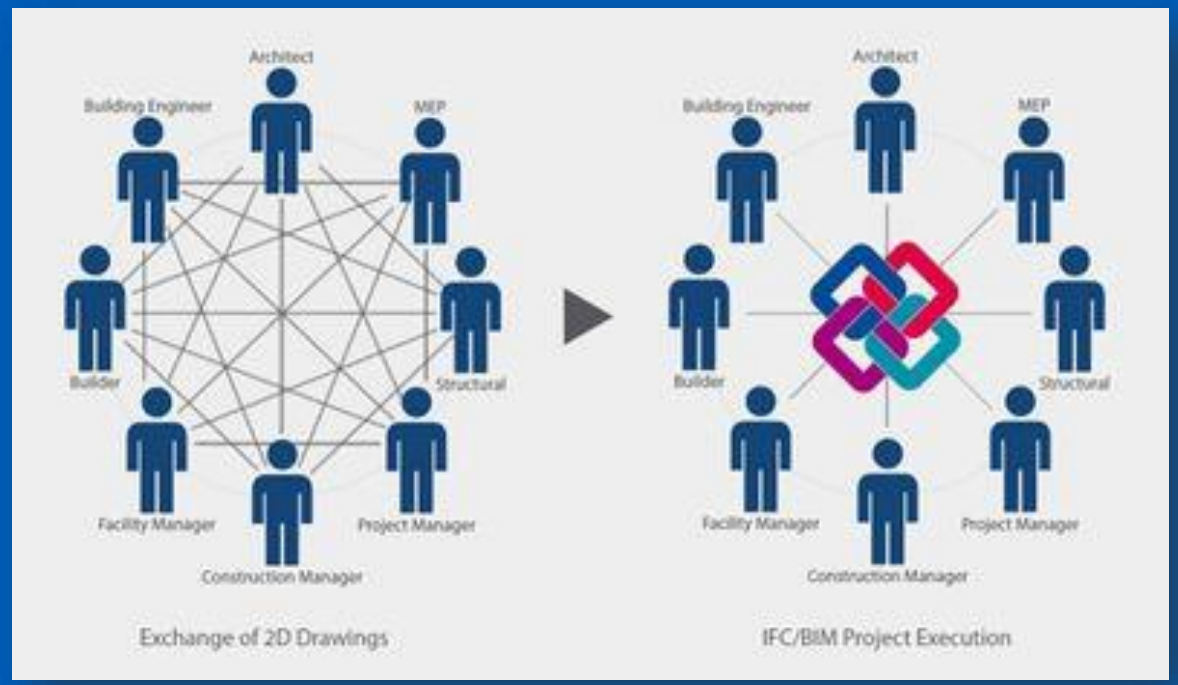
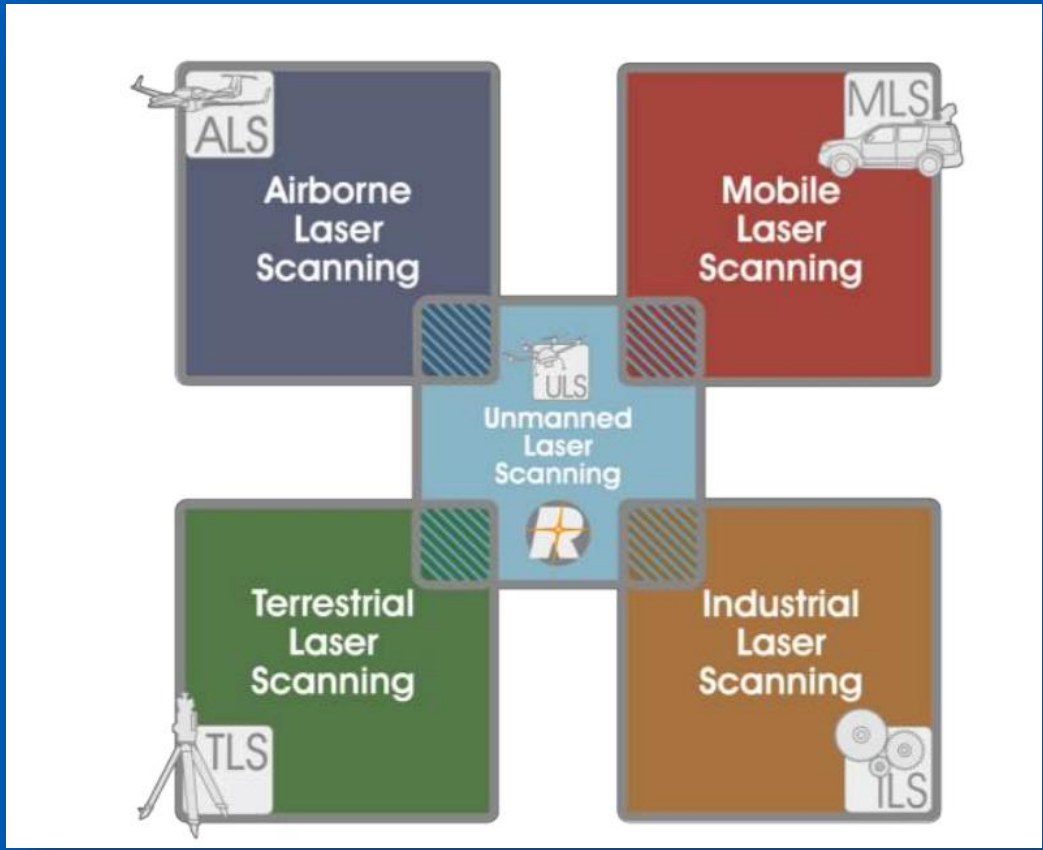
- “Teren u uredu”
- Zahtjevna obrada – računala
- Različiti softveri i plug-in – ovisno o aplikaciji
- Stručna radna snaga



Oblak točkaka – što dalje?



Budućnost?



Zaključak

- Velika brzina prikupljanja podataka
- Velika količina podataka
- Velik broj aplikacija
- Ažuran i točan podatak
- Mogućnost kombiniranja s tradicionalnim metodama izmjere
- Velika količina znanja (softver i hardver)
- Cijena
- Prilagodba novim tehnologijama (ulaganje)

HVALA NA PAŽNJI!

