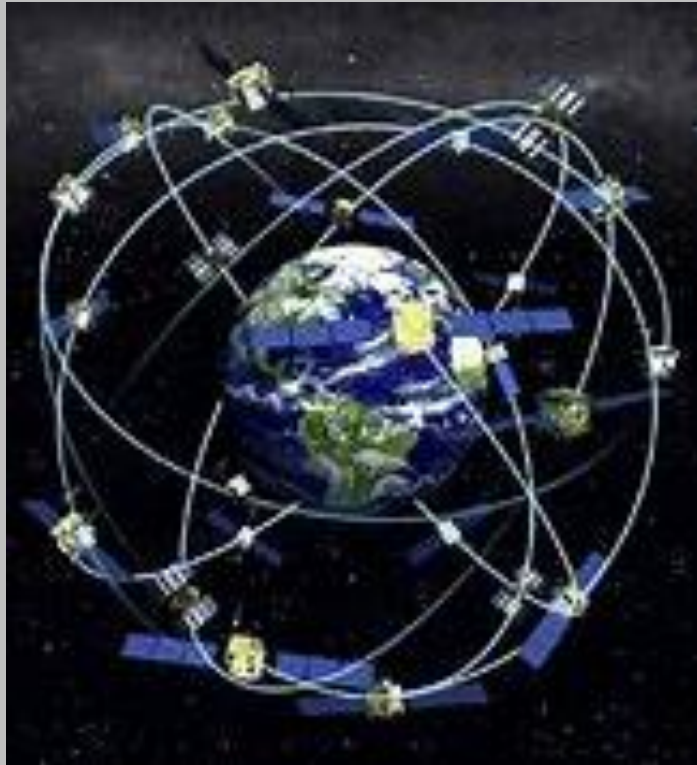# Erasmus – Allterra, Geotools

Diana Mizerová
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Adam Šutek
Richard Hruška

GPS systems

1973-founding of GPS

Zoom on title of a book

Utilization: -developed firstly for military
                        -later open for civilian

Systems of GPS:
 China -Beidou (system GPS)
 Europe - Galileo
 America - GPS
 Russian - Glonas
 Beidou, Gps, Glonas, Galileo = GNSS

- **Accuracy on the cadastre:**

-land = deviation 5-10 cm

-forest = deviation 0.5 meters

-building = deviation 1 cm is too much

- Presentation of the device GNSS RTK rover STONEX S9 III
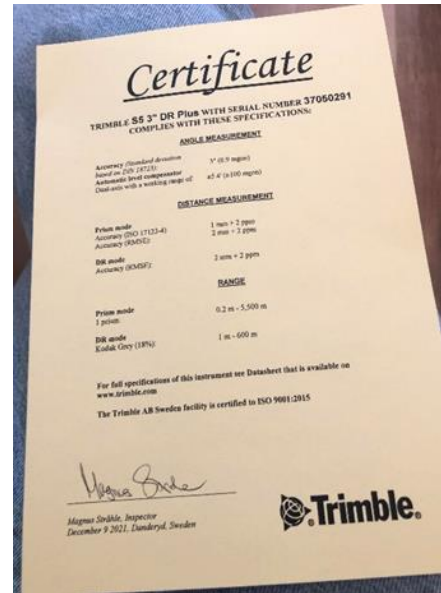
Seafloor - hydroskope

- Presentation of the American company Seafloor

- Deals with measuring the seafloor

- **Use of hydrodrones:**

- measurement of the water bottom

- measurement of sediments on the bottom

- It can recognize a ship in the vicinity and on the basis of this redirect the path

- To the depth it goes at a speed of 1500 meters per second
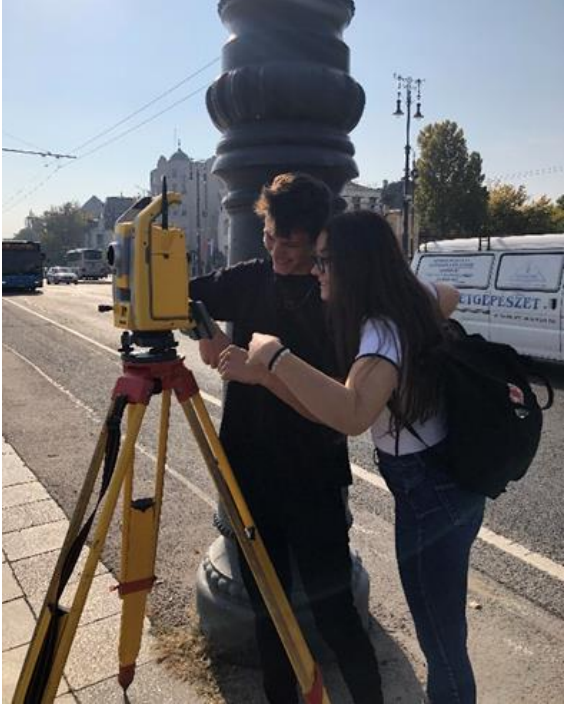
Robotic total station

- It is used to measure horizontal and vertical angles and distances

- **Robotic** – bluetooth connection to the controller

- **Difference between teodolite and total station:**
  Teodolite: measures only the angle
  Total station: measures angle and distance

- Prism pole is required for use

- Every geodetic instrument must have a certificate (calibration)

Measuring in exterior

- Measuring with GPS reciever and with Total station on Millennium square of heros

- **Measurement procedure:**
  - focusing on 4 main points (A, B, C, D)

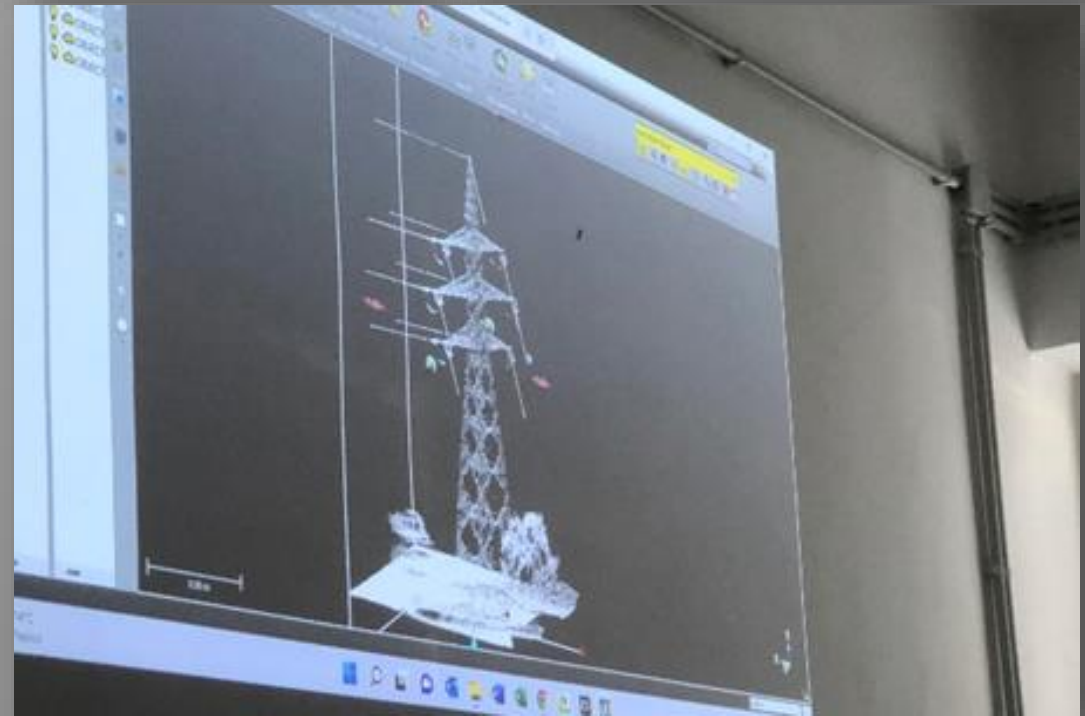- - measuring points around the entire perimeter of the square (140 points)
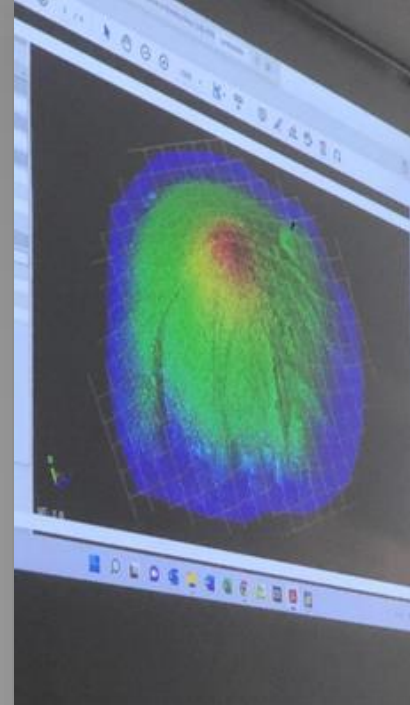
- Entering values from measurements with a GPS receiver into the Total station (Y, X, altitude)
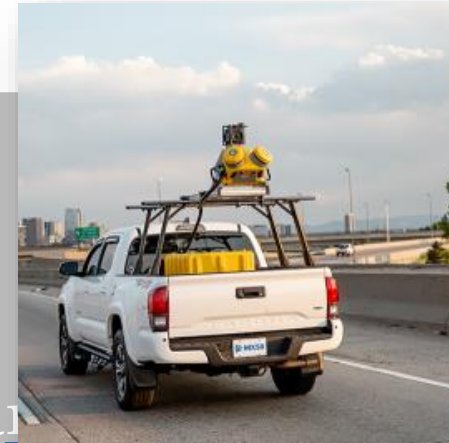
Scanner

- It is able to measure 600 000 points per second, from which a model is subsequently created

- Sample of scanners:
  -Trimble X7
  -Trimble MX50
  -Stonex XH120 SLAM

- -indoor and outdoor use

- -panoramic photo function

- -the option of selecting a specific object

- -the possibility of measuring even at night (without panoramic photo)

Trimble MX50:

-mobile mapping system

-use: road mapping

-when measuring ,the device is placed on the roof of the car
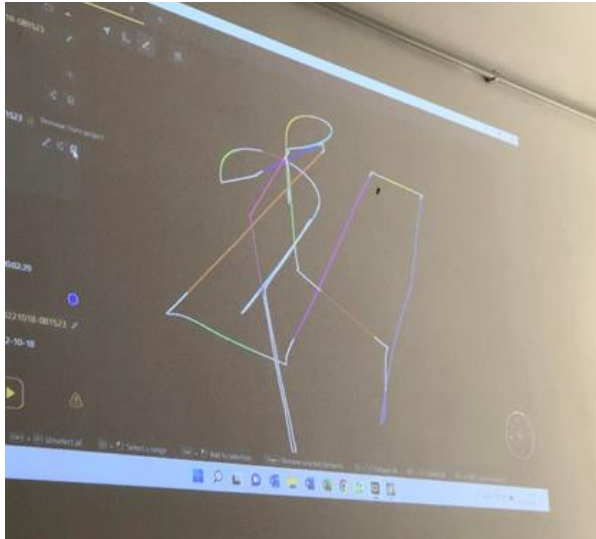

Trimble X7:

-determination of pile volume (when quarrying stone)
- measurement time = 3 minutes
-measurement of high voltage line

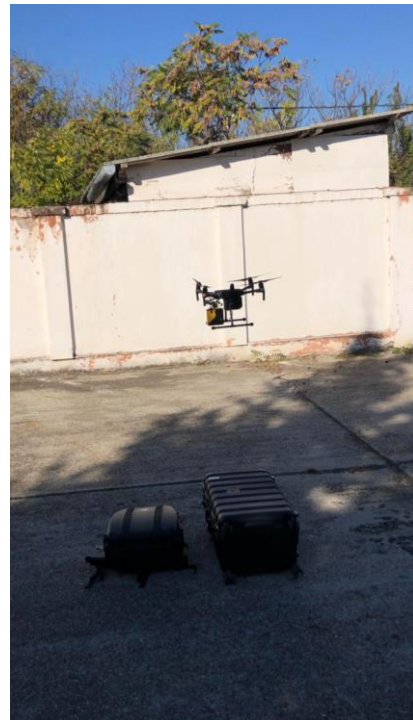

Stonex XH120 SLAM:

-the possibility of measuring up to 120 meters

-scanning of apartments

Drones

- **Use**: geodetic targeting, mapping, military applications
- **Creating a new project:**
  -selecting the measured area
  -setting the flying height: 40 meters
  -setting other necessary values

- **Trinity F90+:**
  -max. duration : 90 minutes
  -optimal speed: 17 meters per second
  -accuracy 1,29 cm
  -240 000 points per second

- **YellowCann Mapper:**
  -speed 10 meters per second
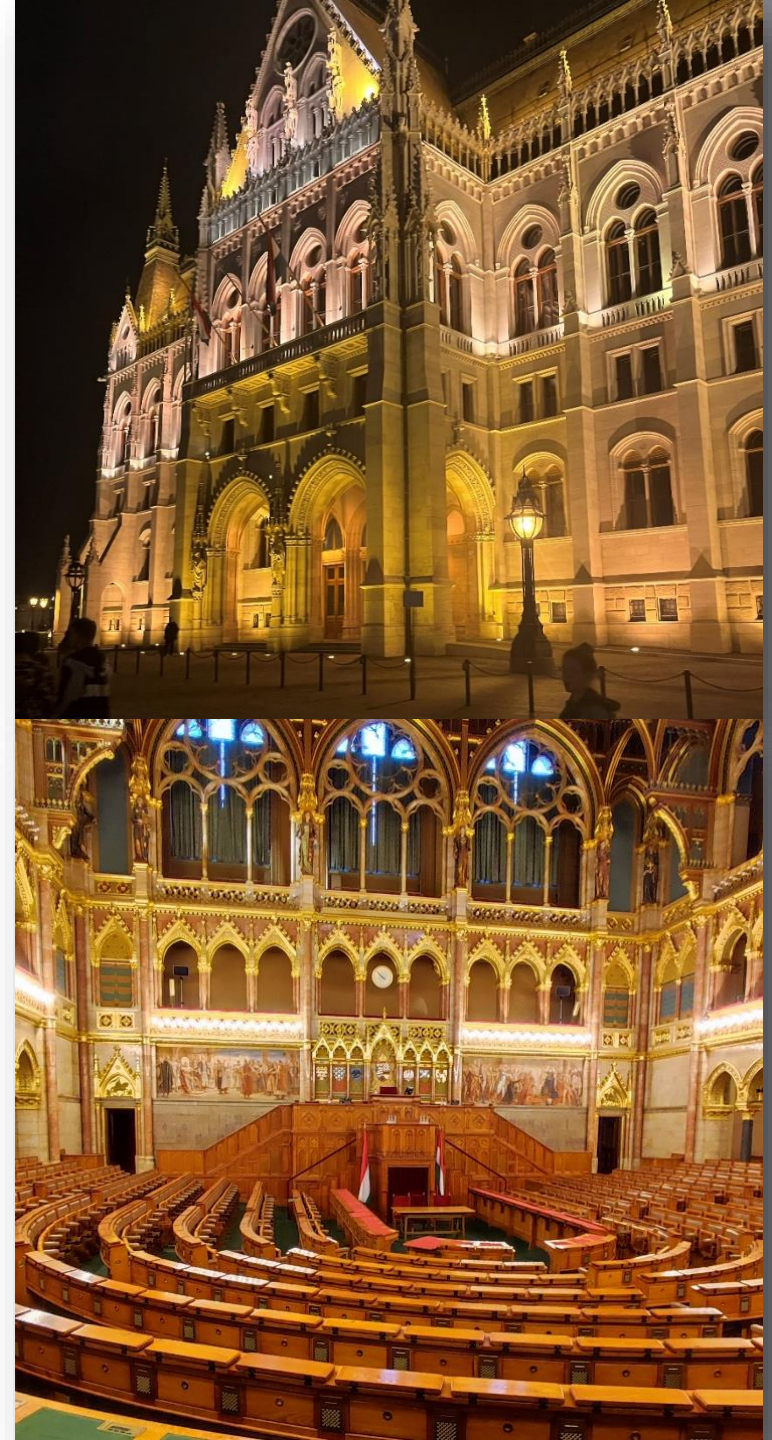 -max. duration 90 minutes
  -accuracy 3 cm

Óbudai - Sziget

- **Devices:**
  - Gps receiver
  - Total station
  - Scanner

- **Measurement:**
  - we mark the points that we will aim with the GPS receiver
  - using the measured values, the total station determines its current position (free station)
  - targeting the same points with the robotic total station

- Placement of 6 targets and their focus (there must be no obstacles in the way). These points will be used during scanning as point clouds (moving the scanner).
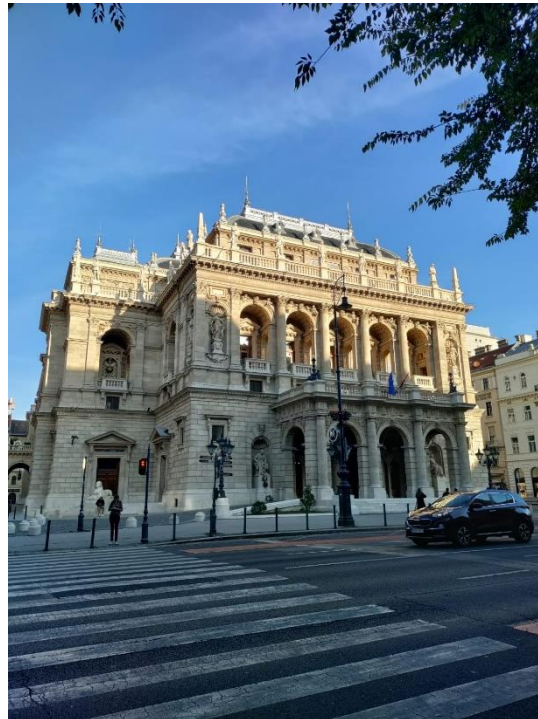
Országház

- **Országház** is buildiinig of Hungarian Parliament.

- It is one of the national symbols of Hungar Crown Jewels

Hungarian State Opera House, Budapest

- The building of the Hungarian State Opera specializes in operas and ballet.

- Opened to the public in 1884

ZOO Budapest

- The Budapest Zoological and Botanical Garden is the oldest zoological park in Hungary and one of the oldest in the world

Hospital in the rock

- It used to be a hospital and nuclear bunker

- Located in the caves of Buda Castle

- Now a museum

Matthias Church

- Roman Catholic temple located on the square of the Holy Trinity

Liberty Statue Budapest

- **Monument** on Gellért Hill

- The memory of those who sacrificed their lives for the independence, freedom and prosperity of Hungary

Singing fountain

- Located on Margaret Island

- One of the biggest fountain in Europe

- Water show accompanied by well-known classical songs

Photos from work

Group photos

Thank you for your attention