

# ATHENS WORKSHOP



Workshop Joint FIG Commissions 3 and 8  
Athens – 13th and 14th December 2022



# Towards to the Digital Twin...

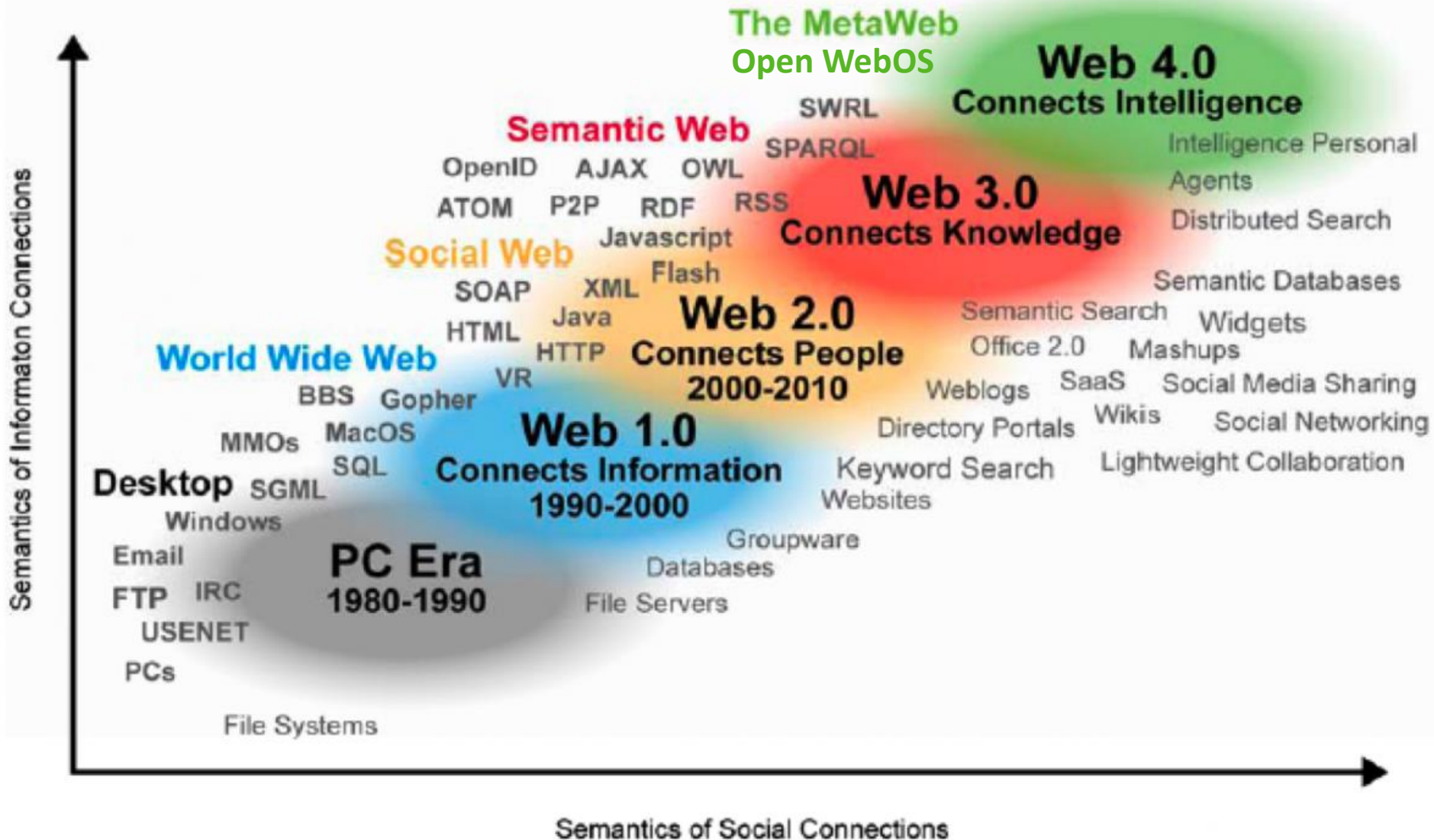
**Prof. Dr. Rahmi Nurhan ÇELİK**

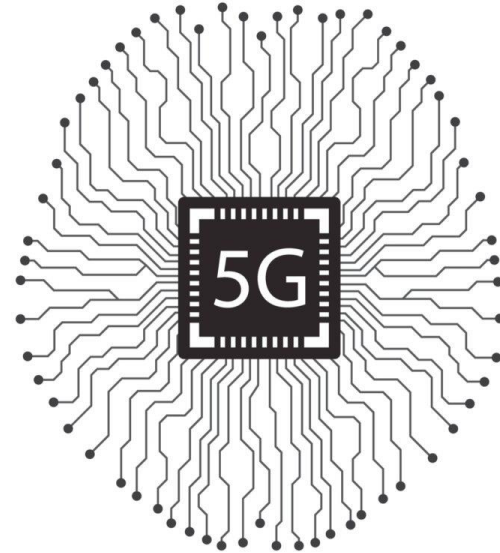
**13<sup>th</sup> December 2022**

**Workshop Joint FIG Commission 3 and 8 & EGOS /Athens**



# WEB Generations





Voice



Voice



Message



Voice



Message



Texting



Internet access



Video



Voice



Message



Texting



Internet access



Video 4K



Voice



Message



Texting



Internet access



Video 4K



AR  
Augmented Reality



VR  
Virtual Reality

1980s

1990

2003

2009

2020 ?



2.4 Kb/s



64 Kb/s



2 Mb/s



100 Mb/s



1 Gb/s







# Instruments and Technologies



Plumb



Optical Square



Steel Tape



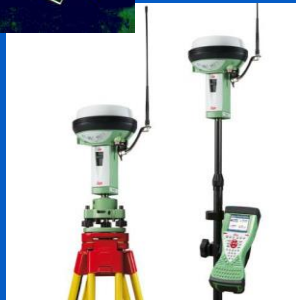
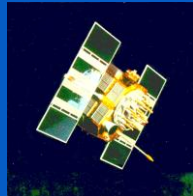
Level & Staff



Theodolite



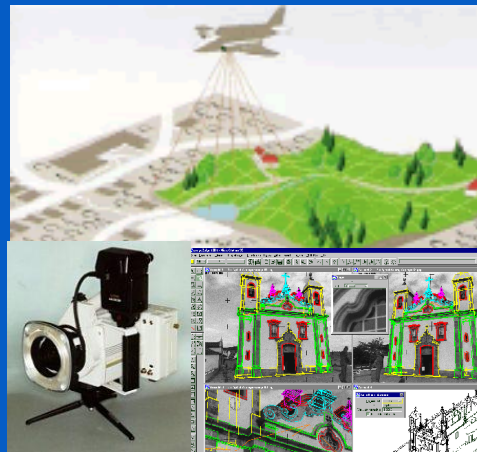
EDM+Theodolite



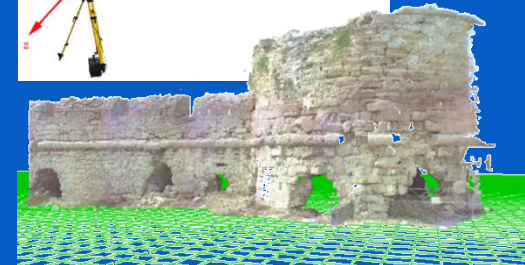
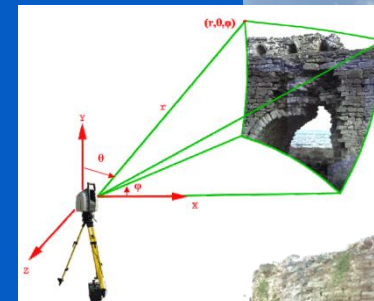
GNSS



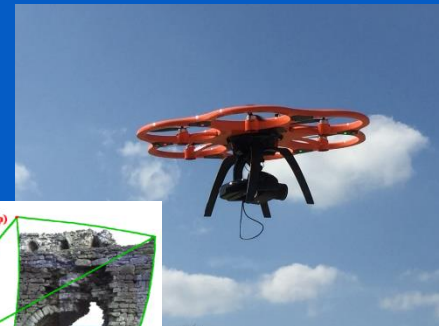
Total Station



Photogrammetry

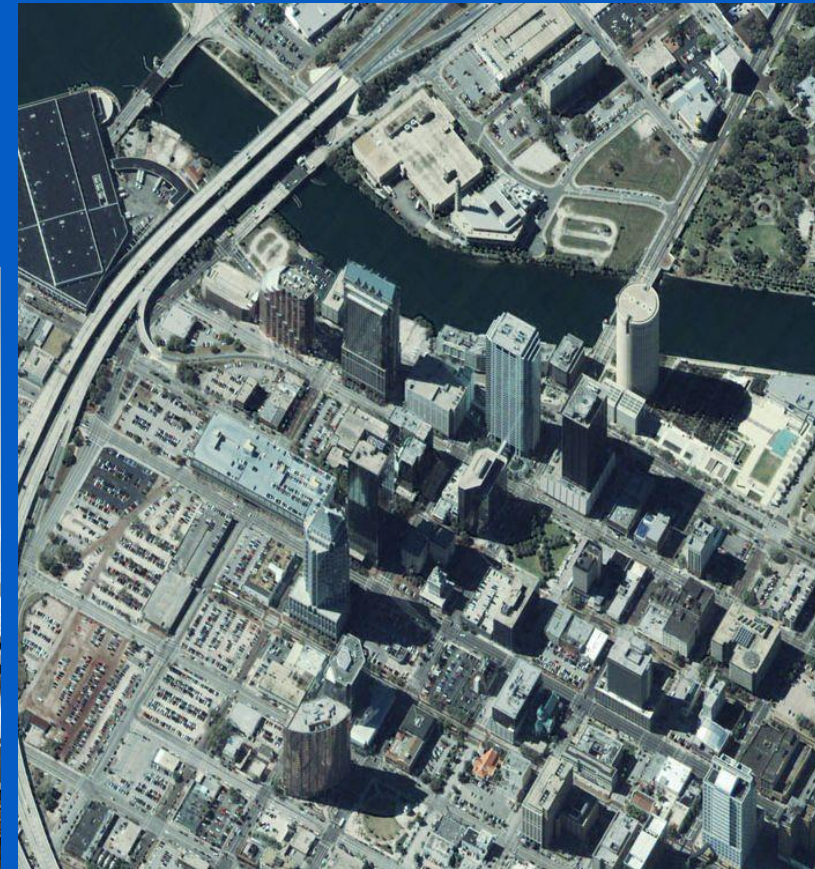
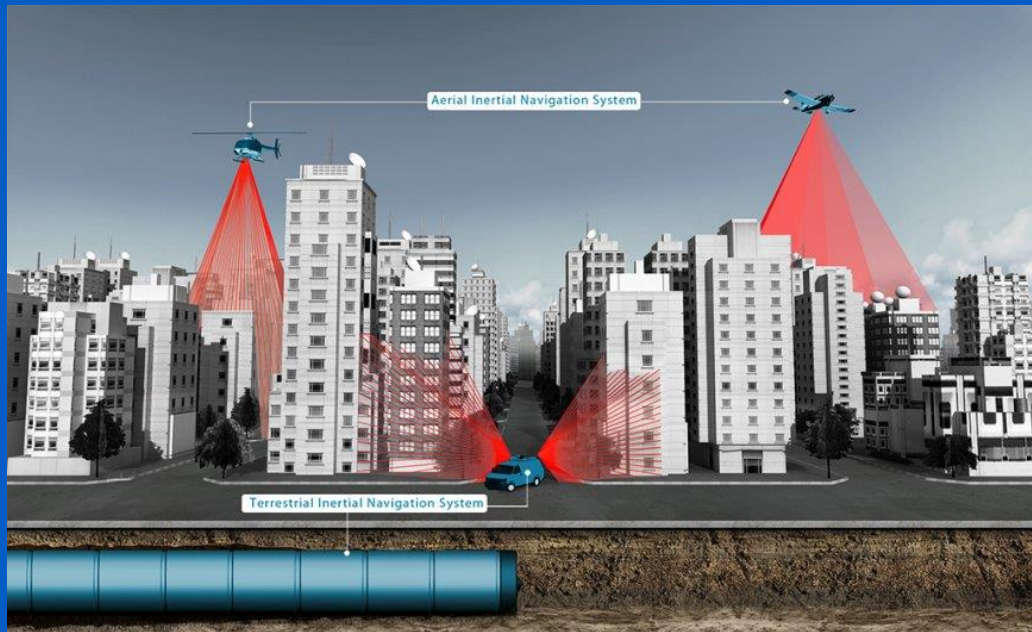


Laser Scanning



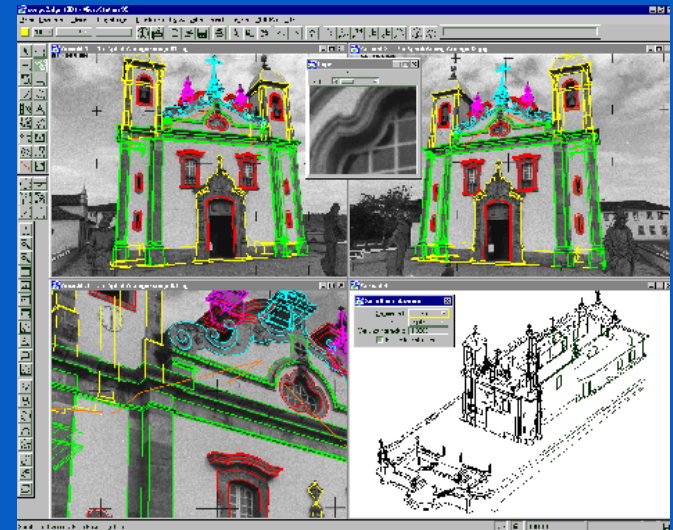
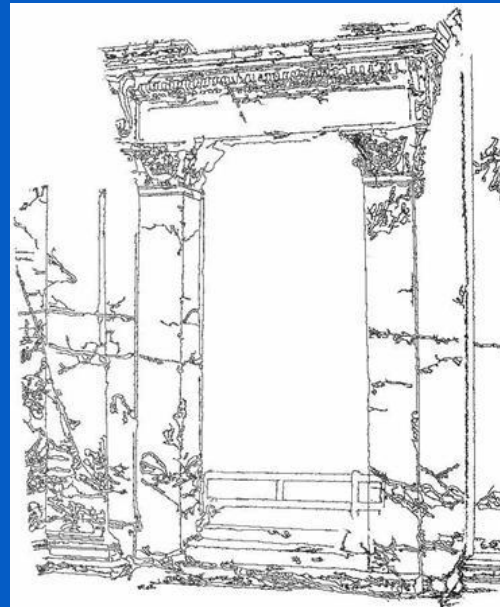
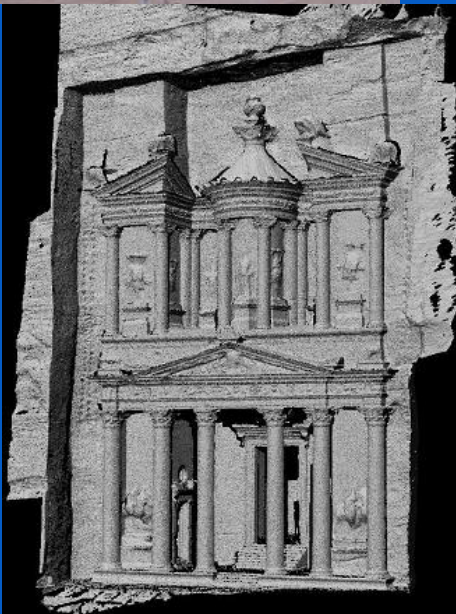
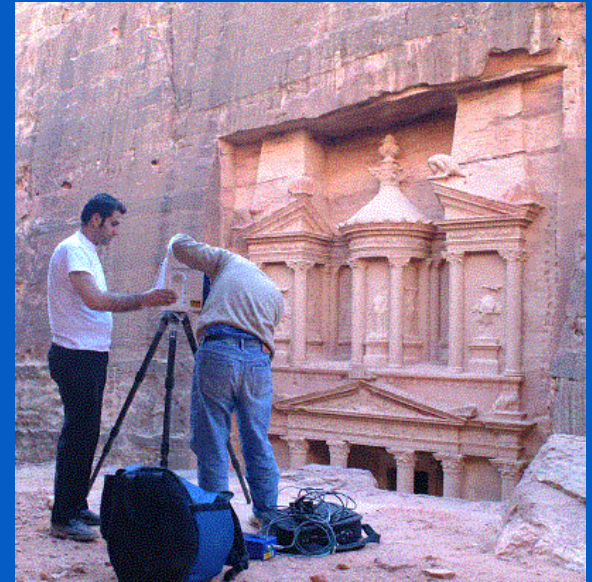
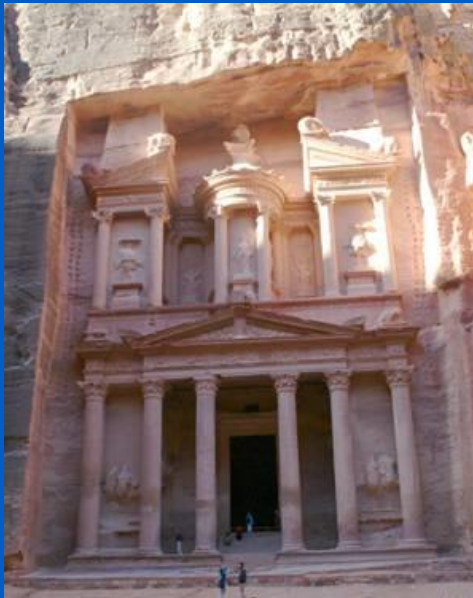
UAV







# Terrestrial – Close Range Photogrammetry





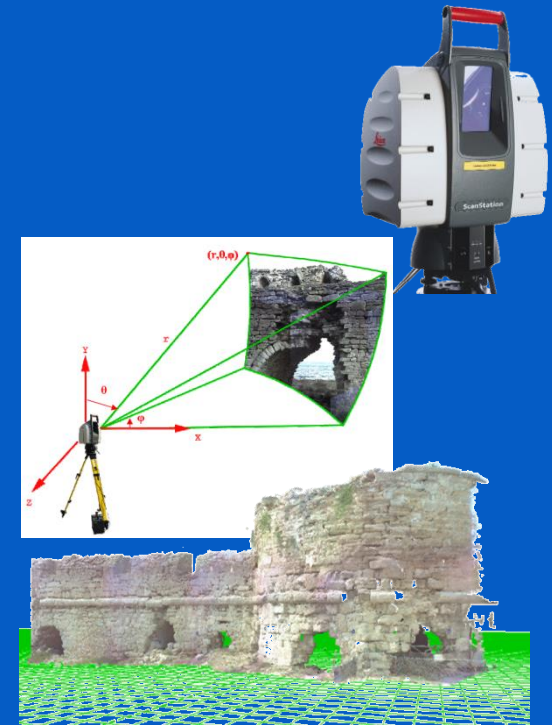
# Remote Sensing Images





# 3D Laser Scanning





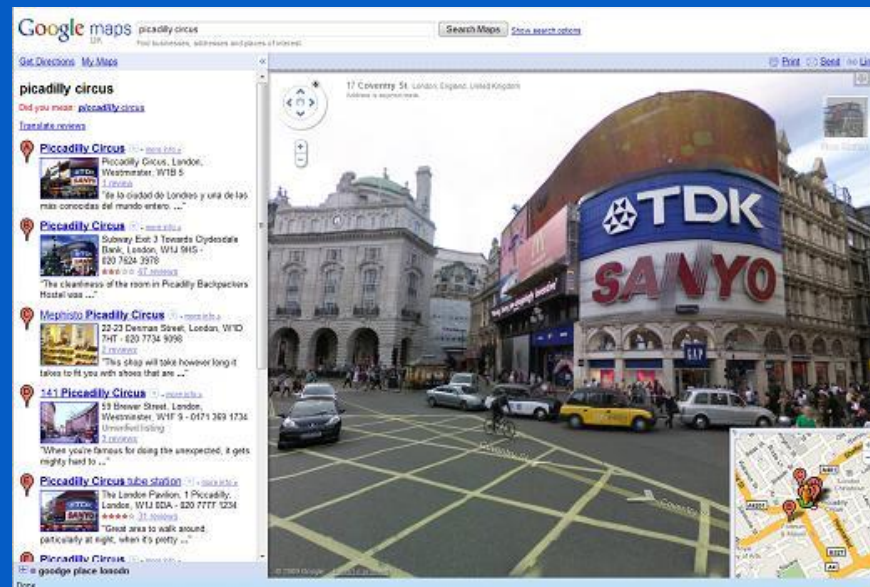
**Total Station + GPS/GNSS + Laser Scanner**





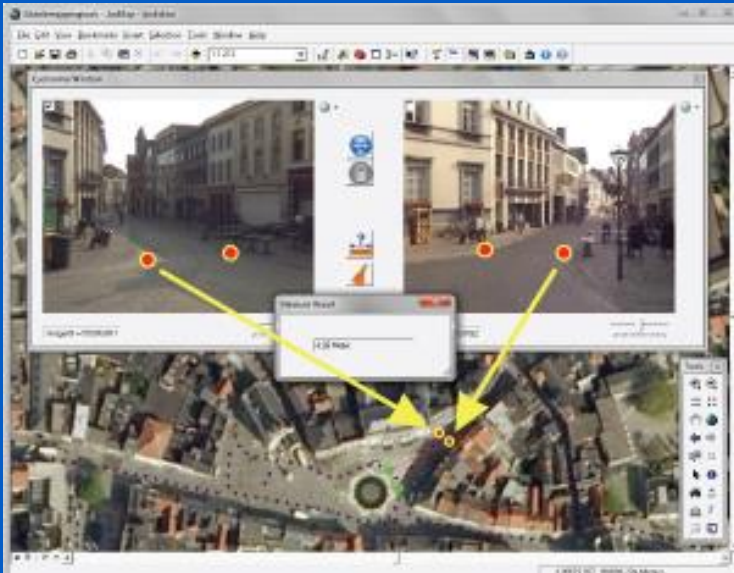


# Street View



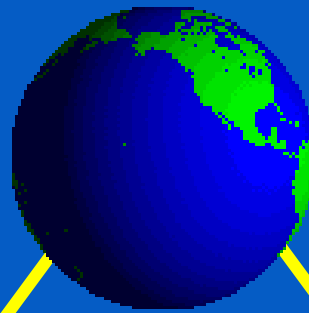


# Mobile Mapping









GIS/SIS

GIS/SIS

IoT

Specific/Expert GIS Applications

*Various resolutions  
GIS applications*

City GML + BIM

Urban Information System

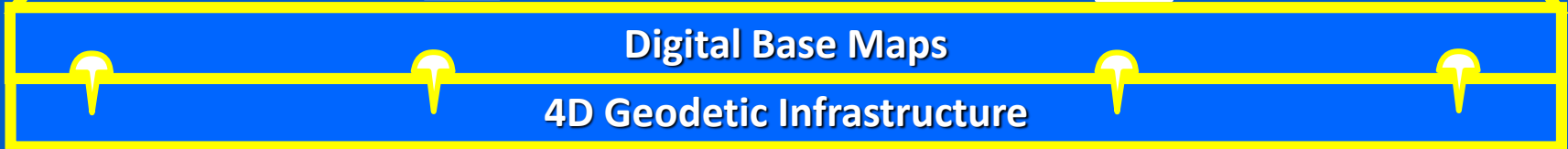
*urban life & improvement*

Land Information System

*cadastral infrastructure*

Digital Base Maps

4D Geodetic Infrastructure









# ATHENS WORKSHOP



Workshop Joint FIG Commissions 3 and 8  
Athens – 13th and 14th December 2022



# Towards to the Digital Twin...

**Prof. Dr. Rahmi Nurhan ÇELİK**

**celikn@itu.edu.tr**

**Workshop Joint FIG Commission 3 and 8 & EGOS /Athens**



**AGISEE**







**I wish you a Merry Xmas and a Happy New Year...**