EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT

NEW COURSE STARTING NEXT FALL

University of Split
Faculty of Civil Engineering,
Architecture and Geodesy

LIST LABS

esa

SF

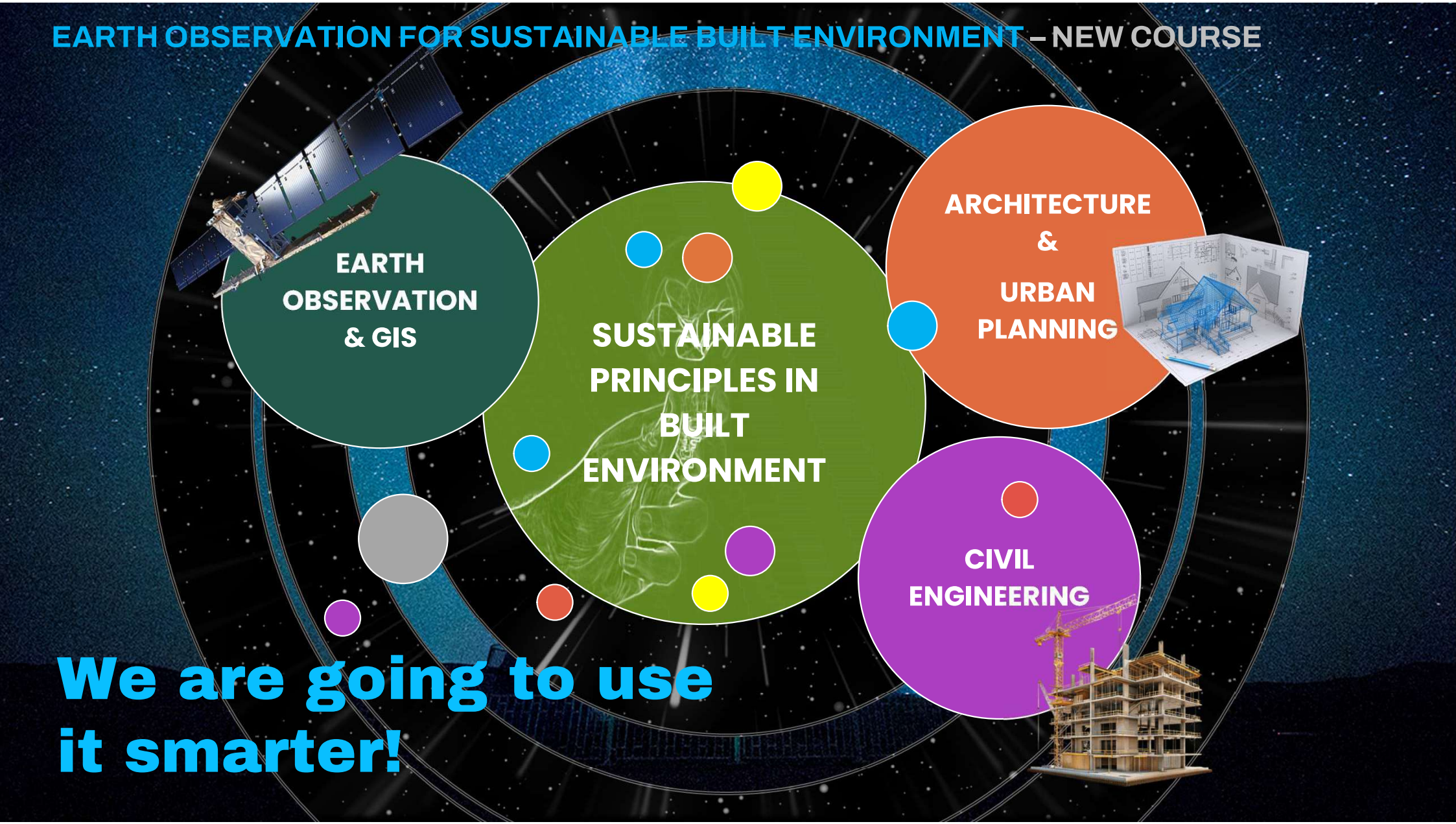
Is there any difference ?

Image: March 24, 2022. © 2024 Planet Labs PBC

REALITY

No. 1 application of EO technologies today is in war

EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

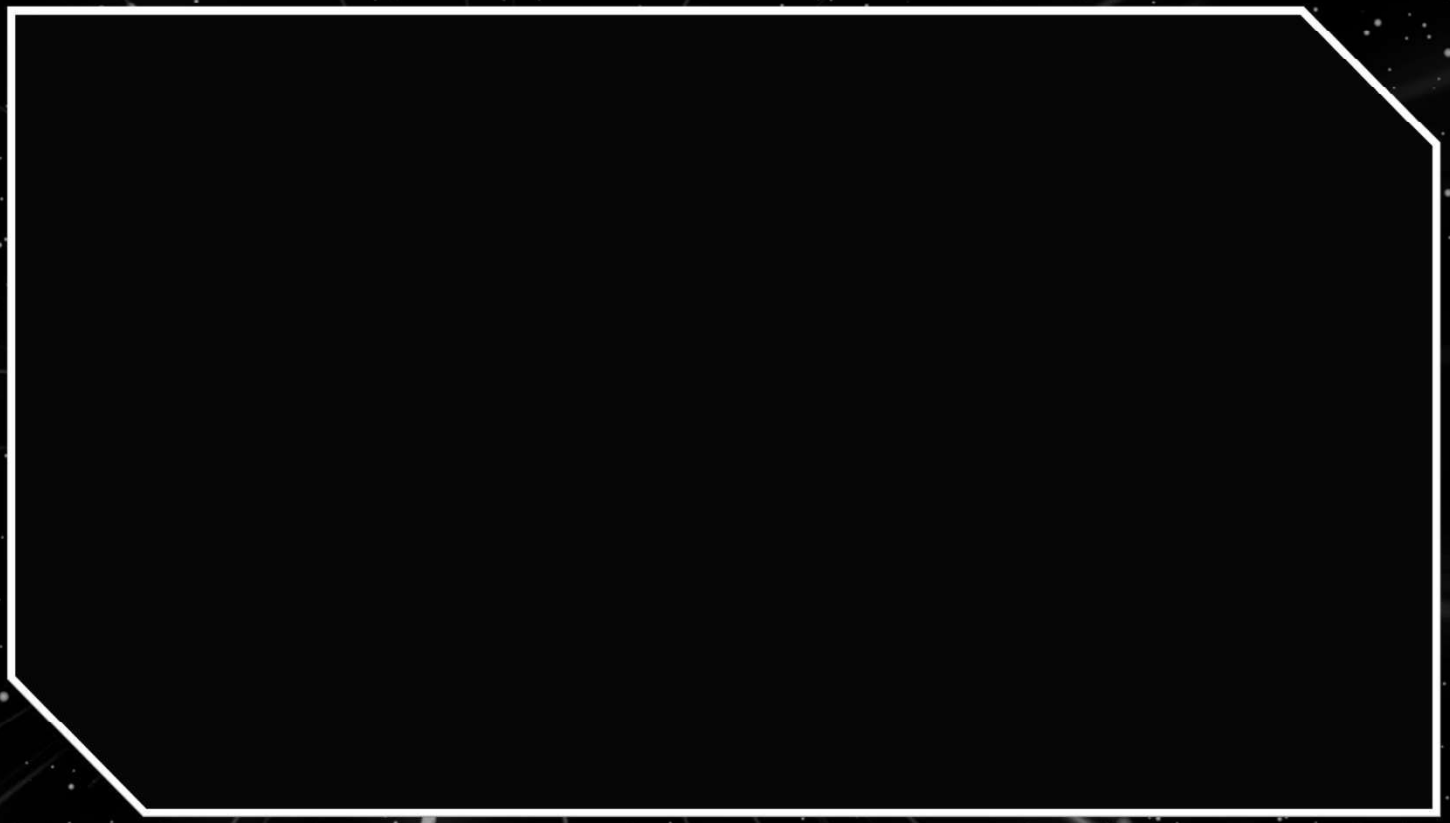


We are going to use it smarter!

EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

EARTH OBSERVATION

Use of remote sensing technologies to monitor our environment



COURSE IMPLEMENTATION TEAM

MARTINA BAUČIĆ
Project leader

LIST LABS

GEODESY AND GEOINFORMATICS

ARCHITECTURE AND URBAN PLANNING

CIVIL ENGINEERING

MIRKO BARADA
GIS engineer

ŽELJKO HEĆIMOVIĆ
Full professor

ANA GRGIĆ
Assist. professor

NIKOLINA ŽIVALJIĆ
Full professor

SAMANTA BAČIĆ
Assist. professor

HRVOJE BARTULOVIĆ
Assist. professor

IVAN BALIĆ
Assoc. professor

ANTONIO M. ŠPANIĆ
GIS/EO specialist

FRANE GILIĆ
Research Assist.

EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

LEARNING OUTCOMES

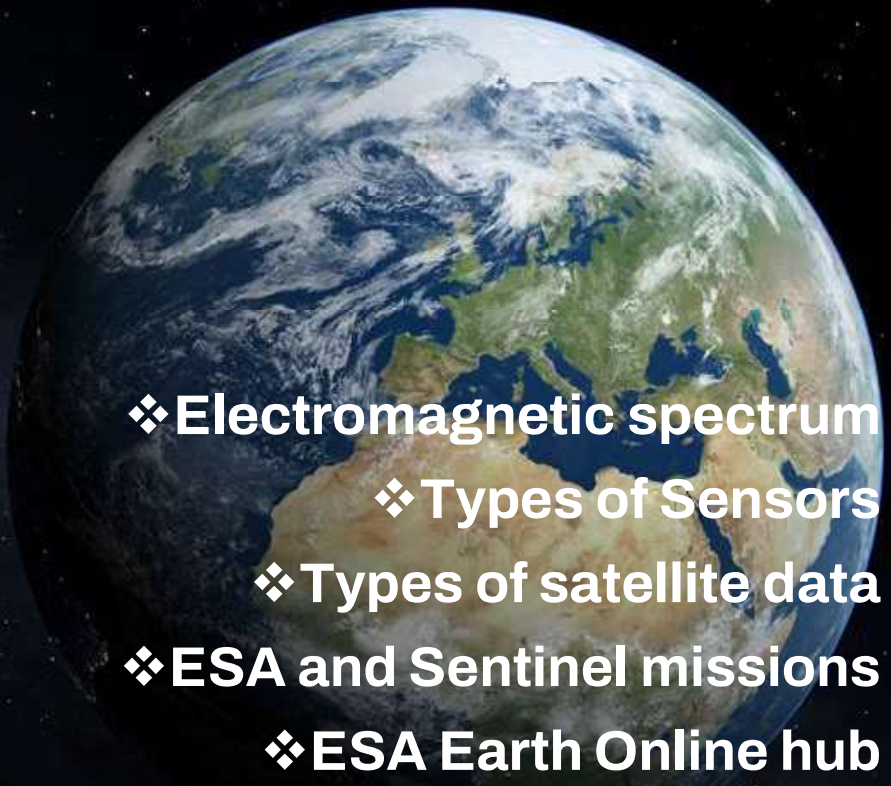
- *Explain basic principles of the built environment sustainability*
- *Implement advanced GIS/EO technologies to monitor and evaluate the built environment*
- *What-if scenario modelling (games/apps)*
- *Innovative GIS visualizations to inform the stakeholders*
- *Collaborative mapping and Web GIS skills*

OVERVIEW OF THE COURSE TOPICS

EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

'Don't tell me the sky's the limit when there are footprints on the moon'.

Paul Brandt, Canadian musician



- Electromagnetic spectrum
- Types of Sensors
- Types of satellite data
- ESA and Sentinel missions
- ESA Earth Online hub

1. INTRODUCTION TO EARTH OBSERVATION

2. PLANNING INCLUSIVE, RESILIENT AND SUSTAINABLE CITIES

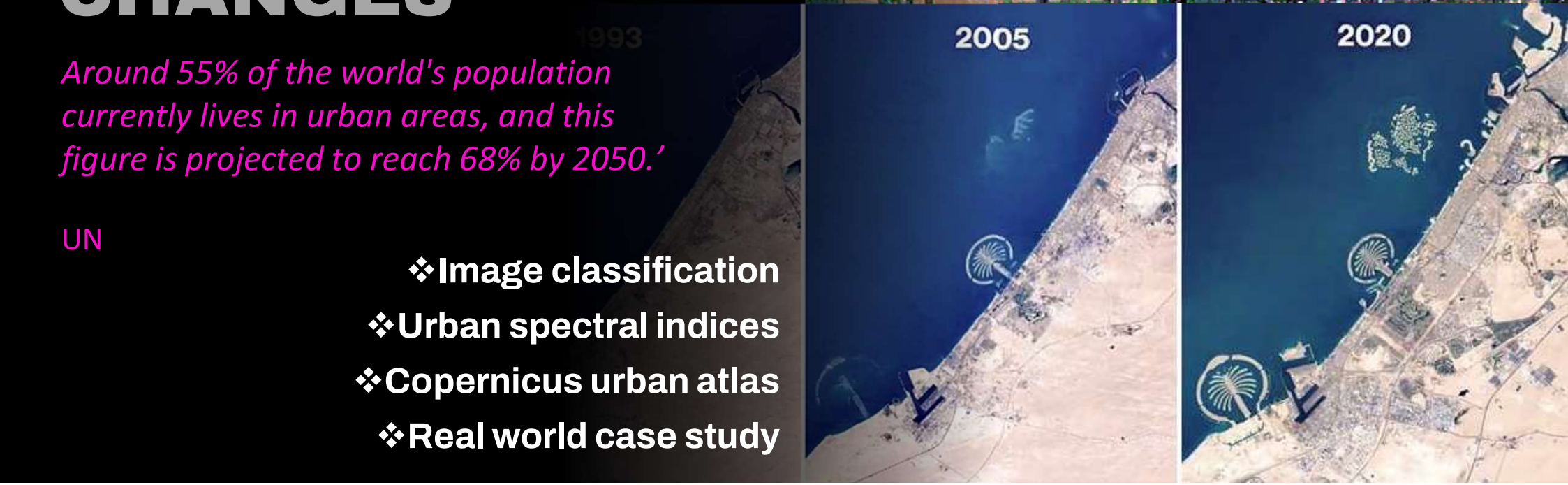
- What is Sustainable Built Environment (SBE) ?
- UN and EU declarations and agreements
- Examples of successful sustainable cities

EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

3. MONITORING URBANISATION AND LAND COVER CHANGES

Around 55% of the world's population currently lives in urban areas, and this figure is projected to reach 68% by 2050.'

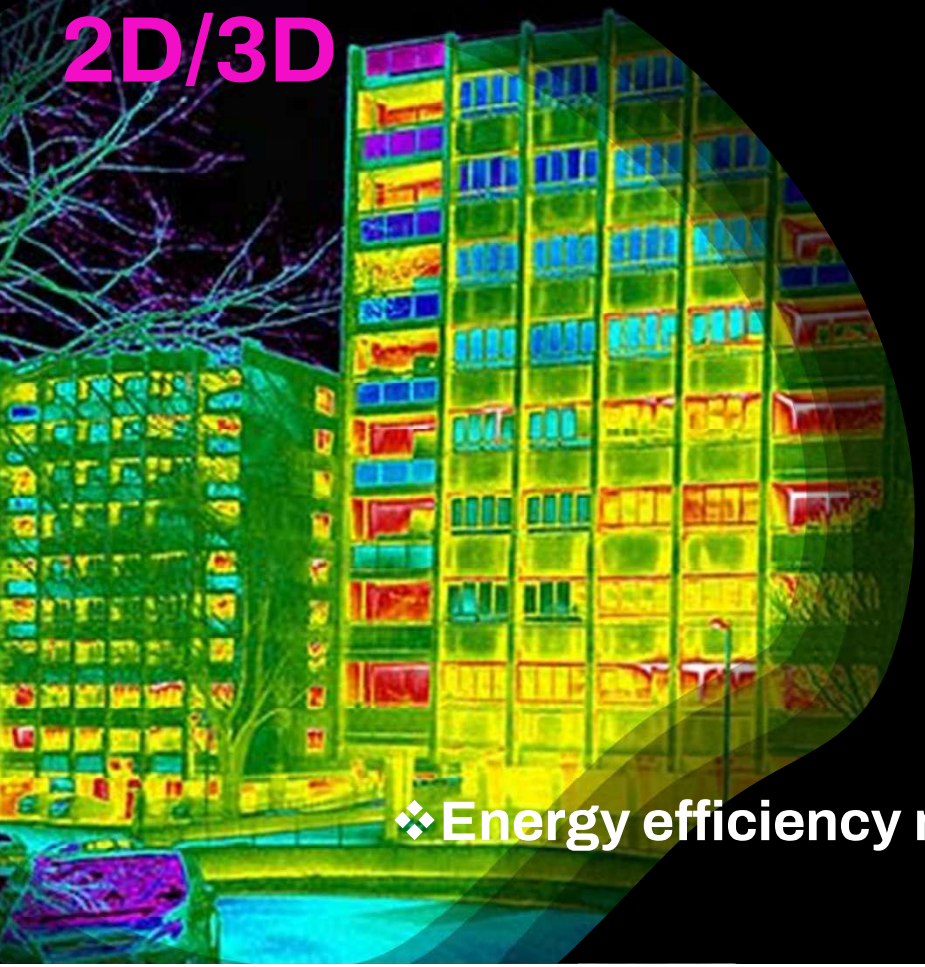
UN



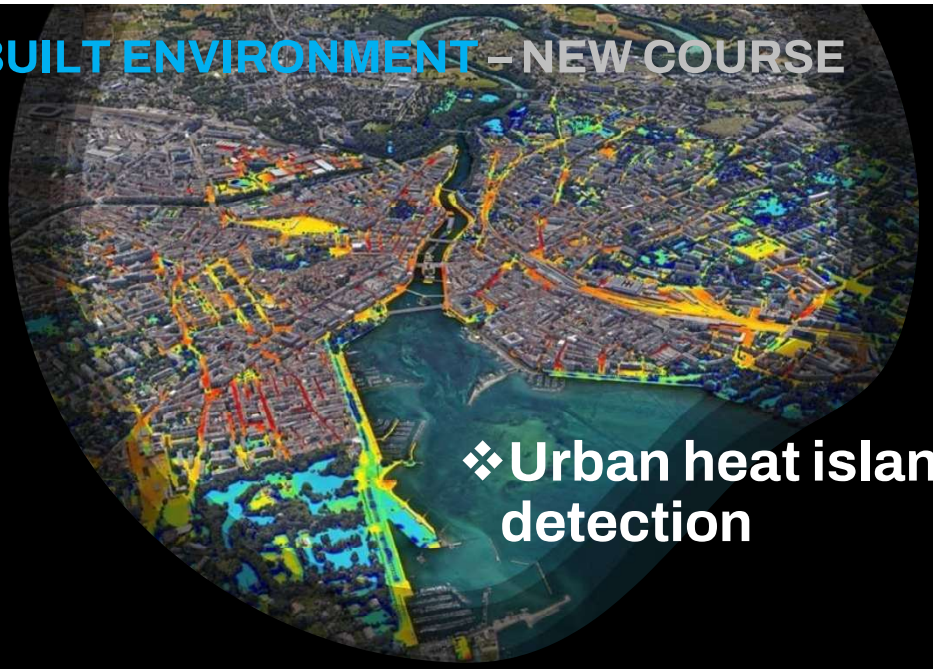
- Image classification
- Urban spectral indices
- Copernicus urban atlas
- Real world case study

EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

4. THERMAL IMAGING 2D/3D



❖Energy efficiency monitoring



❖Urban heat islands detection

'An object is frequently not seen from not knowing how to see it, rather than from any deficit in the organ of vision. '

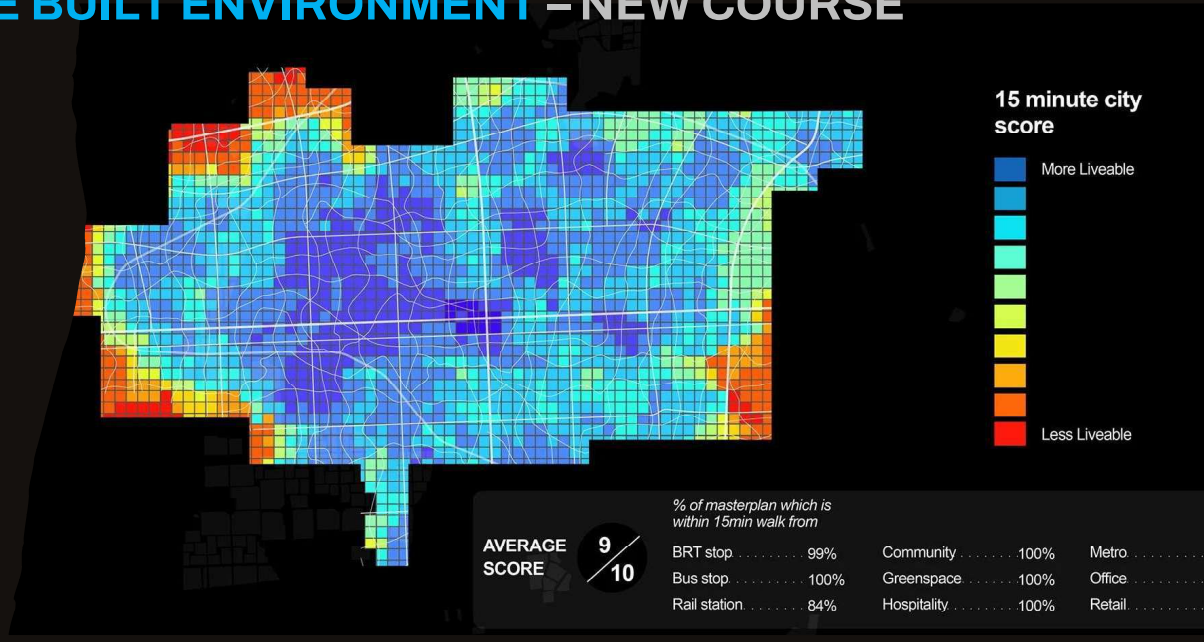
William Herschel

EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

5. GIS ANALYSES AND MODELLING

- *'The application of GIS is limited only by the imagination of those who use it'*

Jack Dangermond, ESRI

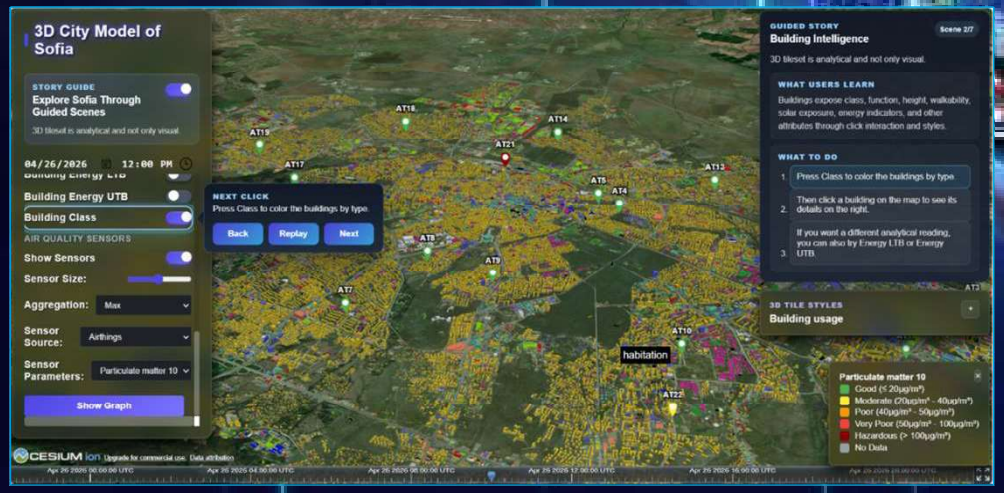


EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

- What are digital twins ?
- Smart city concept
- Inspiration from real world examples

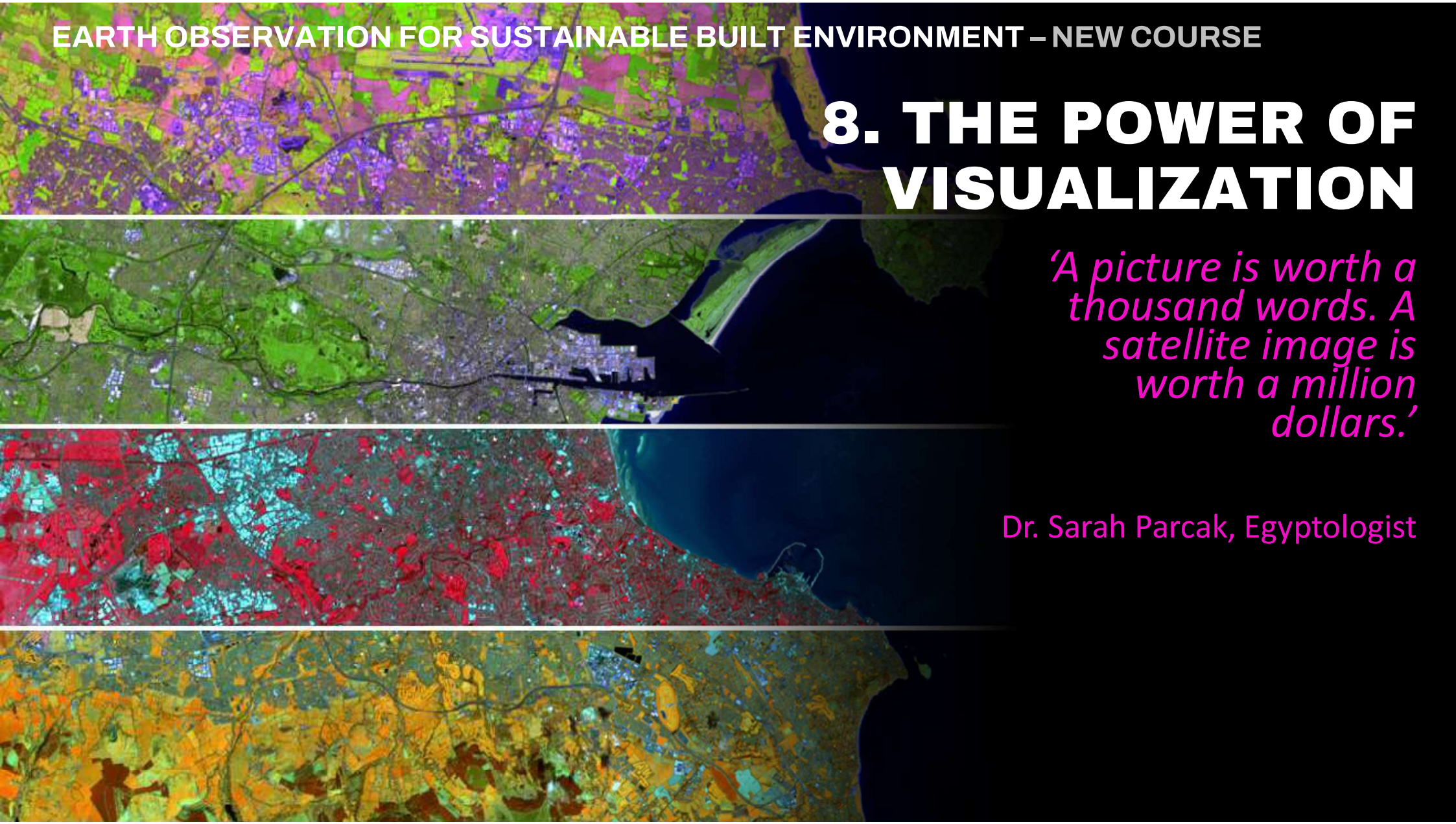
‘The best way to predict the future is to invent it.’

Alan Curtis Kay



6. DIGITAL CITY TWINS


EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE
7. REAL-TIME URBAN MONITORING
AIR QUALITY | TEMPERATURE
BUILDING INSPECTION
WATER QUALITY | FLOOD HAZARD WARNING
TRAFFIC & EMERGENCY
URBAN GREEN
IOT



8. THE POWER OF VISUALIZATION

'A picture is worth a thousand words. A satellite image is worth a million dollars.'

Dr. Sarah Parcak, Egyptologist

EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

10	+	10	+	10+30
LECTURES		**PRACTICALS**		**PROJECT WORK**
Theoretical knowledge in EO/SBE Total = 10 h		Online platforms and GIS exercises in laboratory Total = 10 h		Online platforms and GIS exercises in laboratory / + field work 10 h (guided) + 30 h (individual)

EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

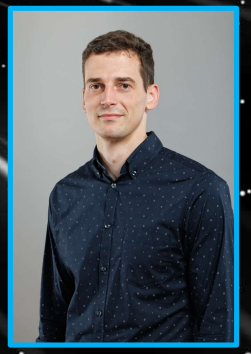
EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

COURSE TEACHERS









EARTH OBSERVATION FOR SUSTAINABLE BUILT ENVIRONMENT – NEW COURSE

Undergraduate Study of Geodesy and Geoinformatics
3 YEAR | 5 SEMESTER

Graduate Study of Civil Engineering
2 YEAR | 1 and 3 SEMESTER

Graduate Study of Architecture and Urban Planning
2 YEAR | 1 and 3 SEMESTER