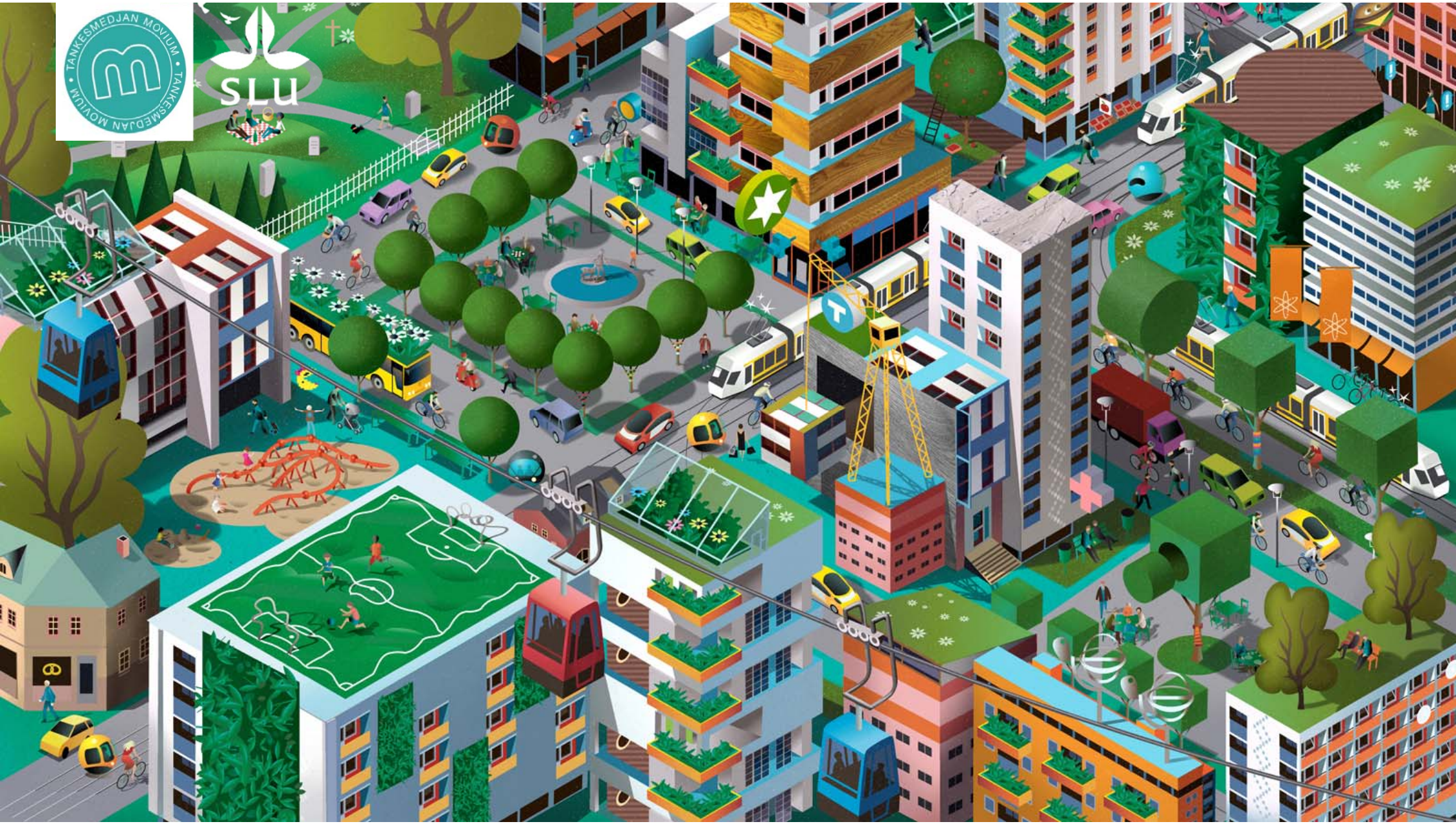
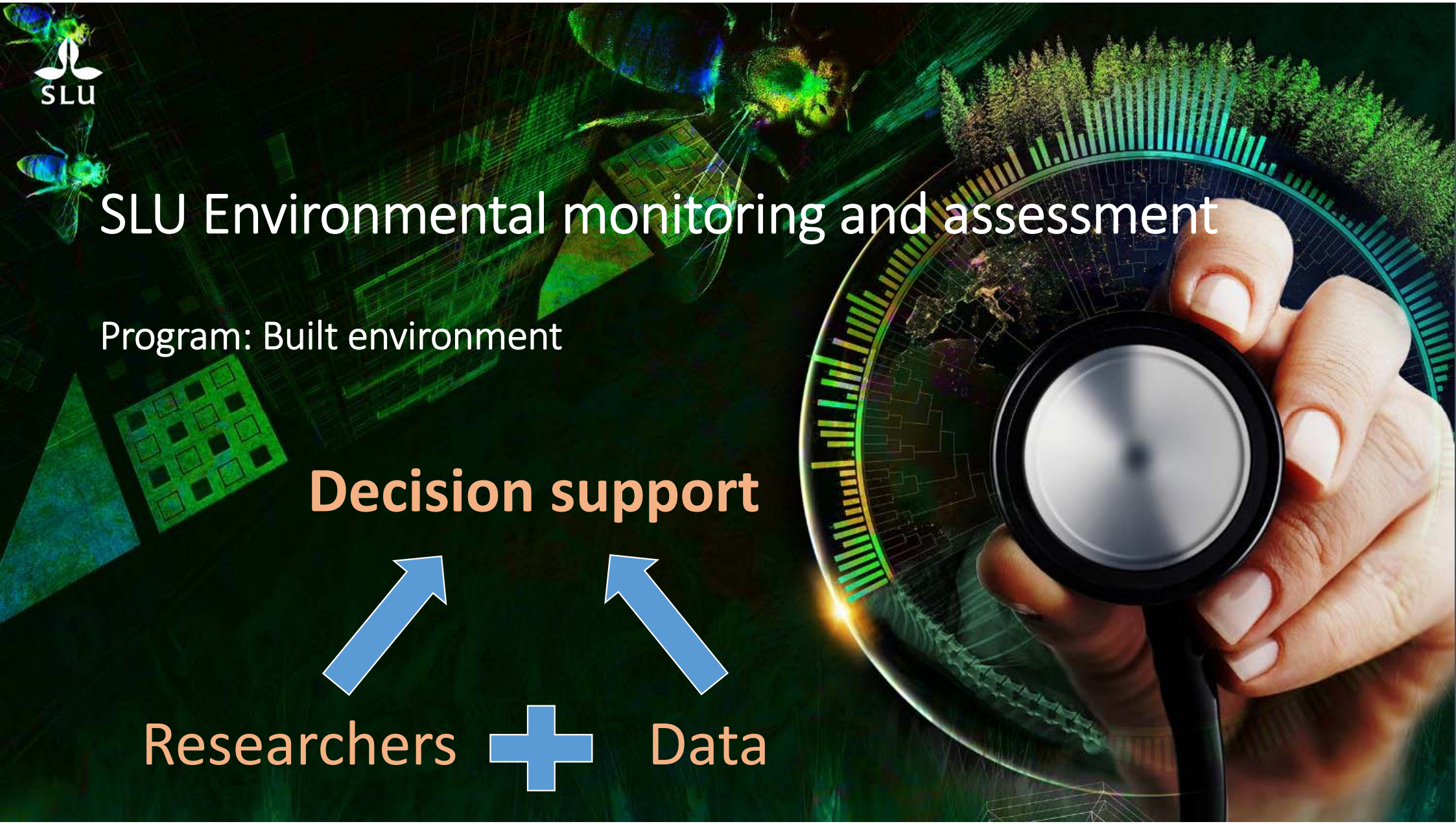
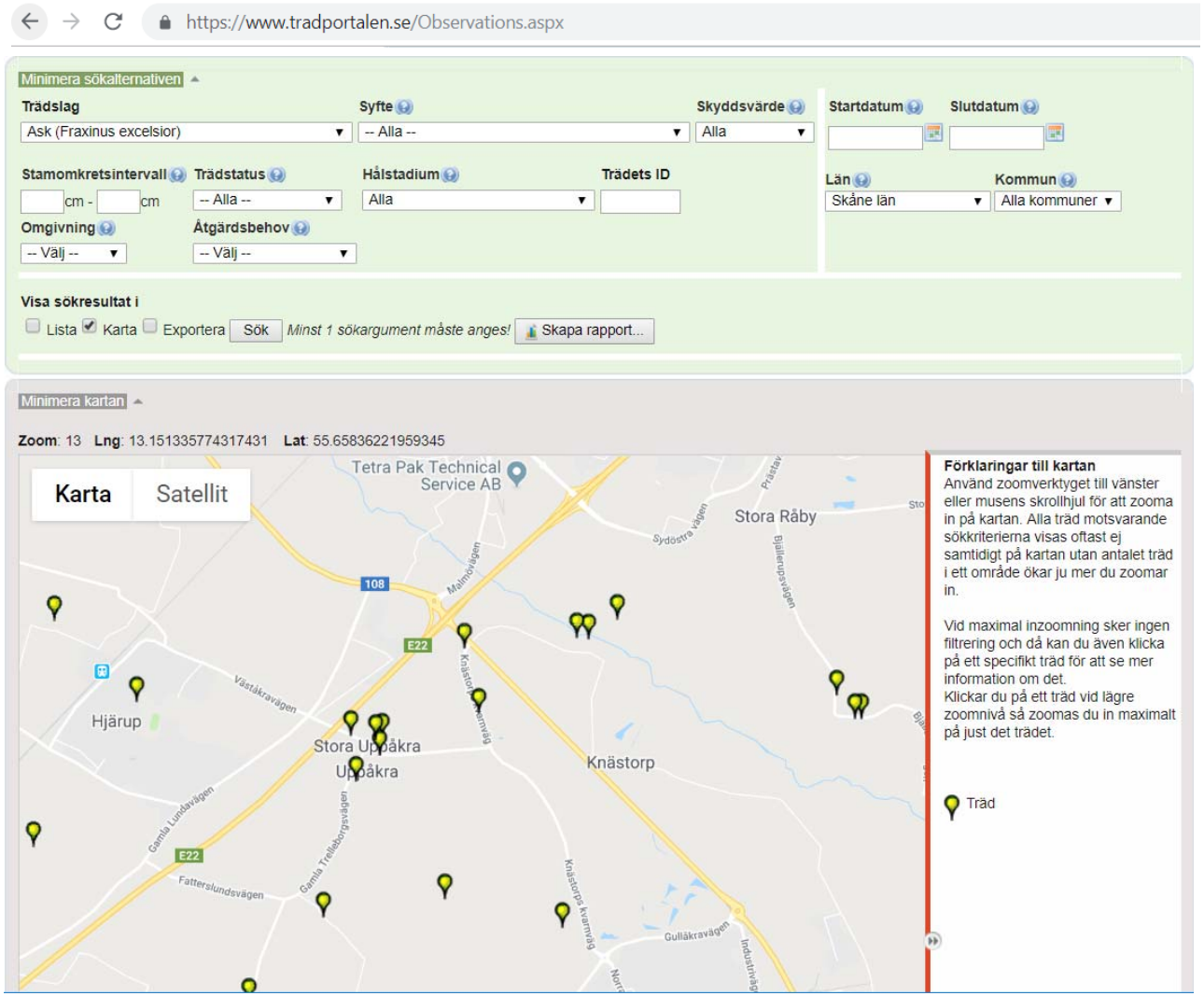

TANKESMEDJAN MOVIUM
TANKESMEDJAN MOVIUM
SLU


SLU
SLU Environmental monitoring and assessment
Program: Built environment
Decision support
Researchers
Data

# Mapping of new methods for inventory of Urban Green Spaces

- Crowdsourcing
- Computer vision

# Crowdsourcing in environmental monitoring




SLU Artdatabanken – 70 million reports

## Computer vision

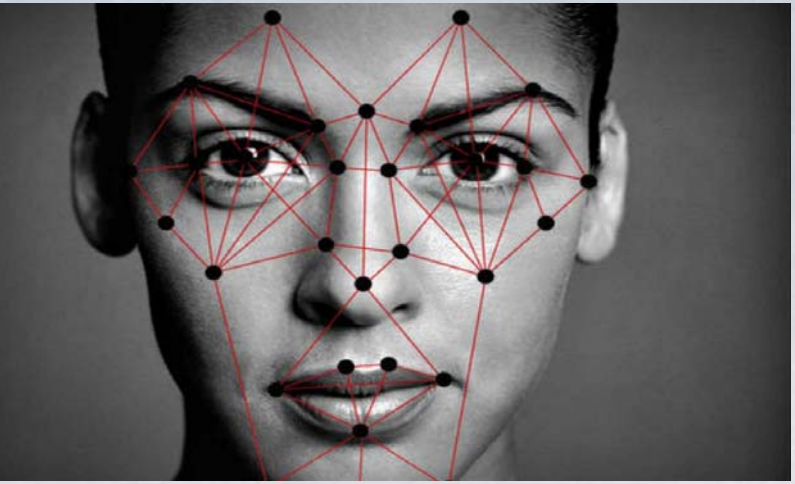
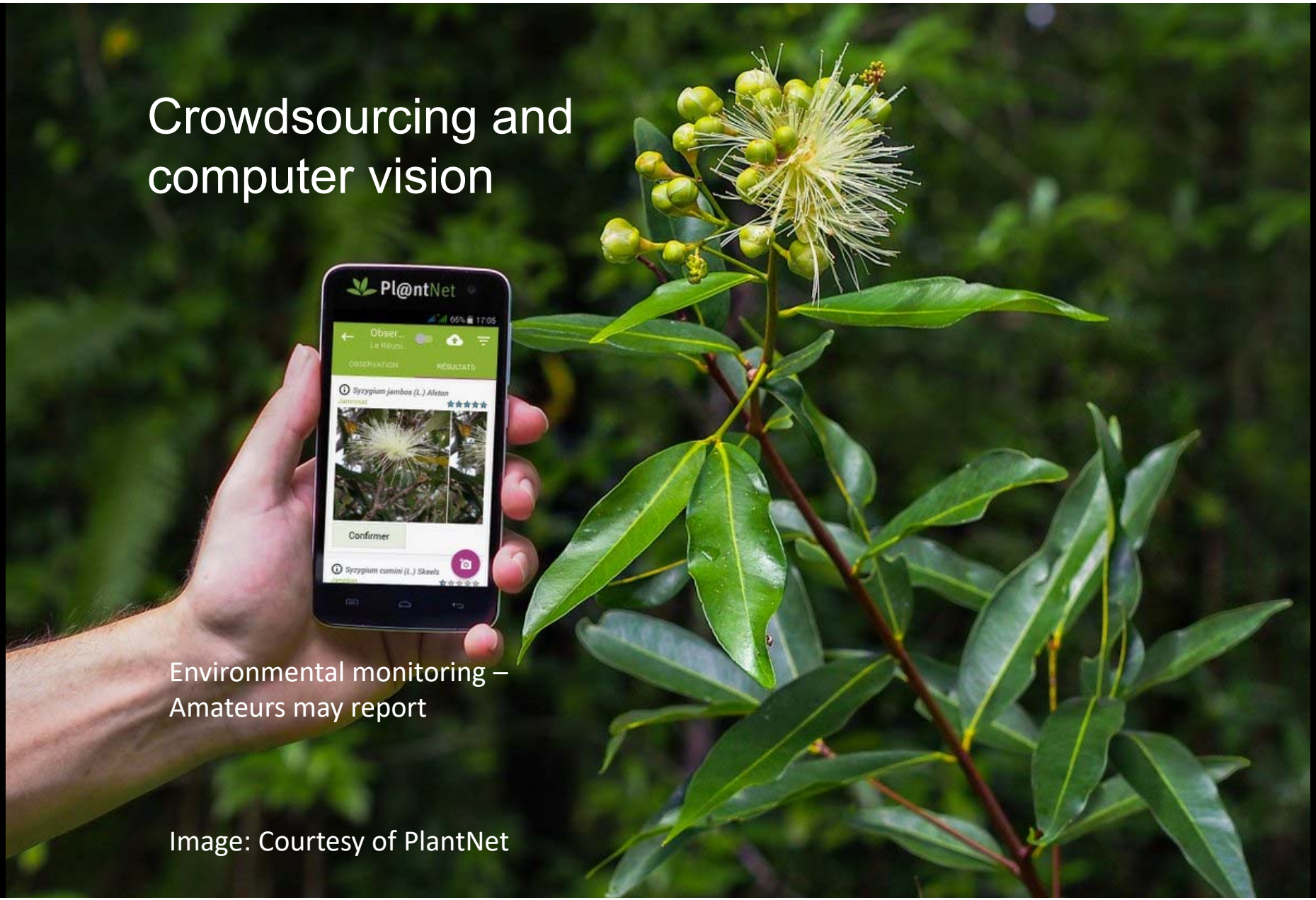




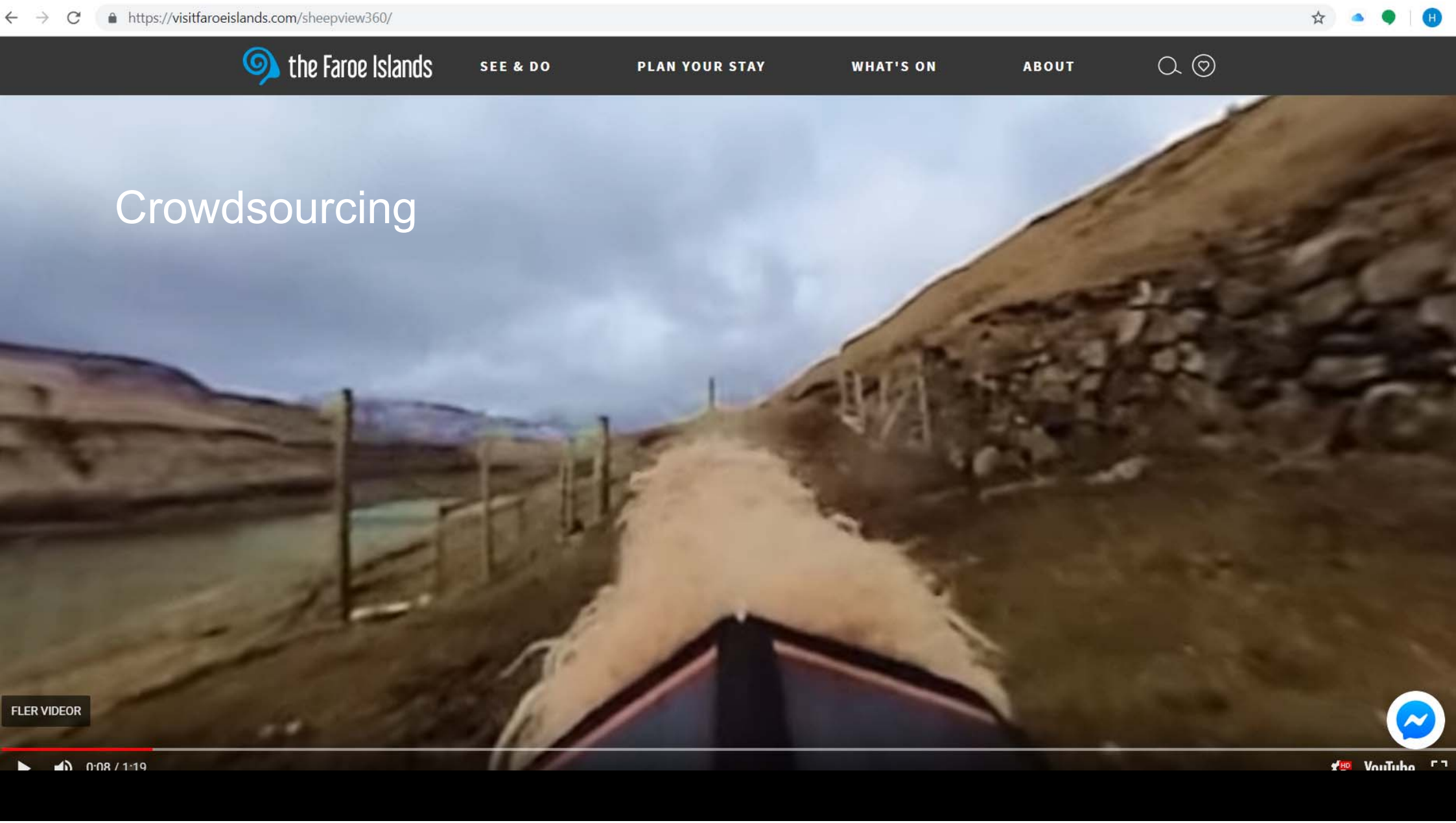

Image: Courtesy of medium.com

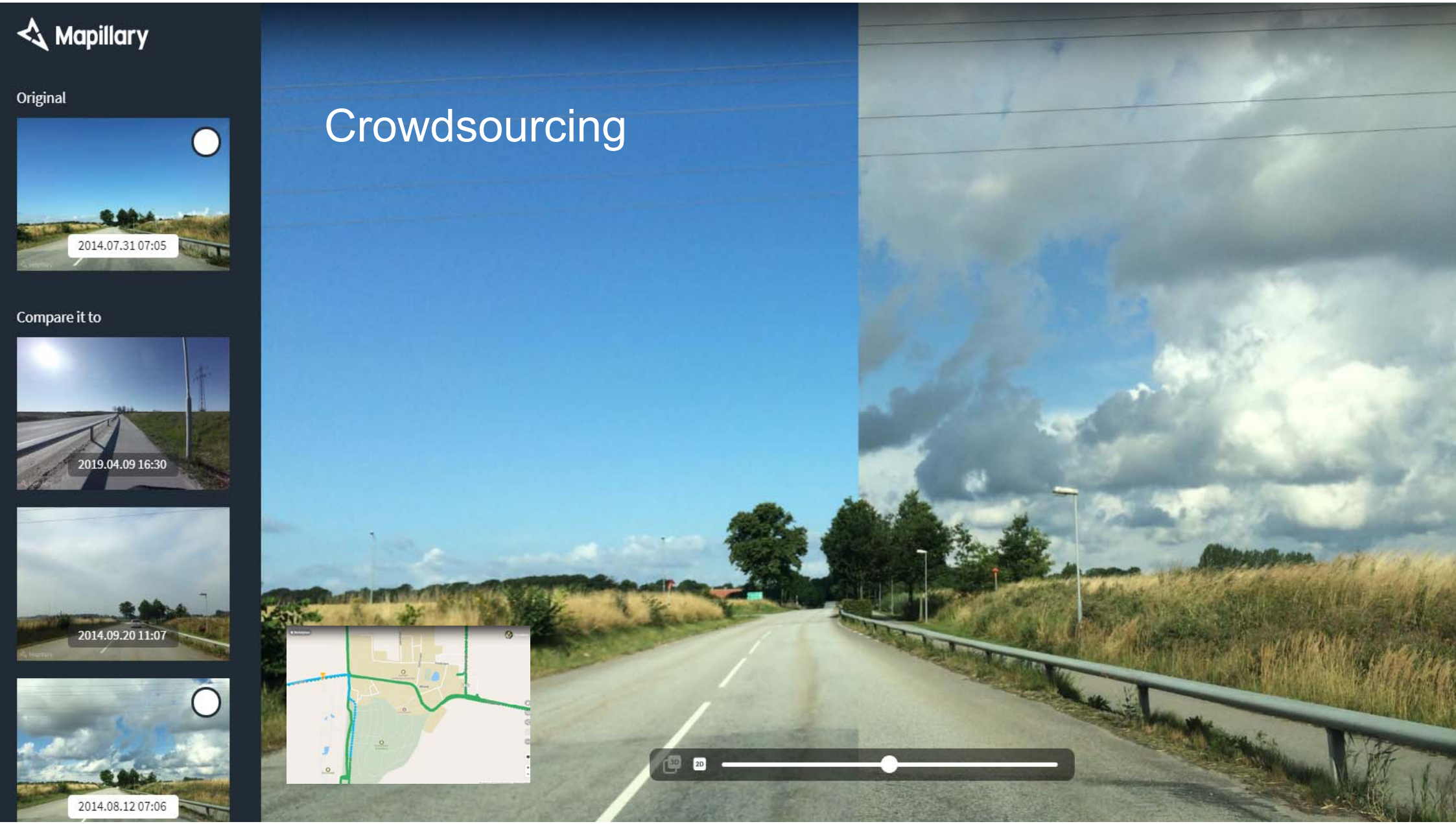
# Crowdsourcing and computer vision

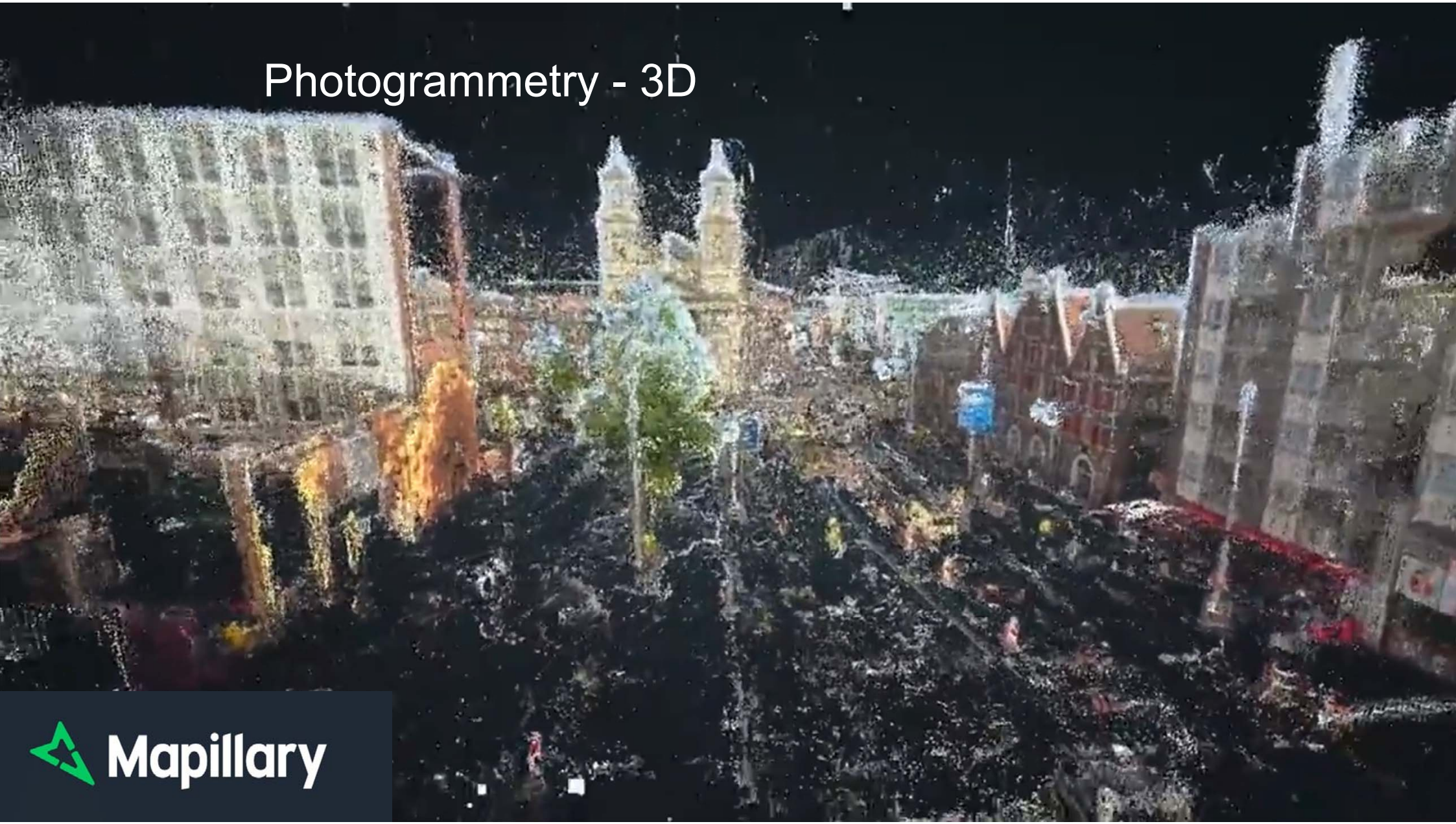


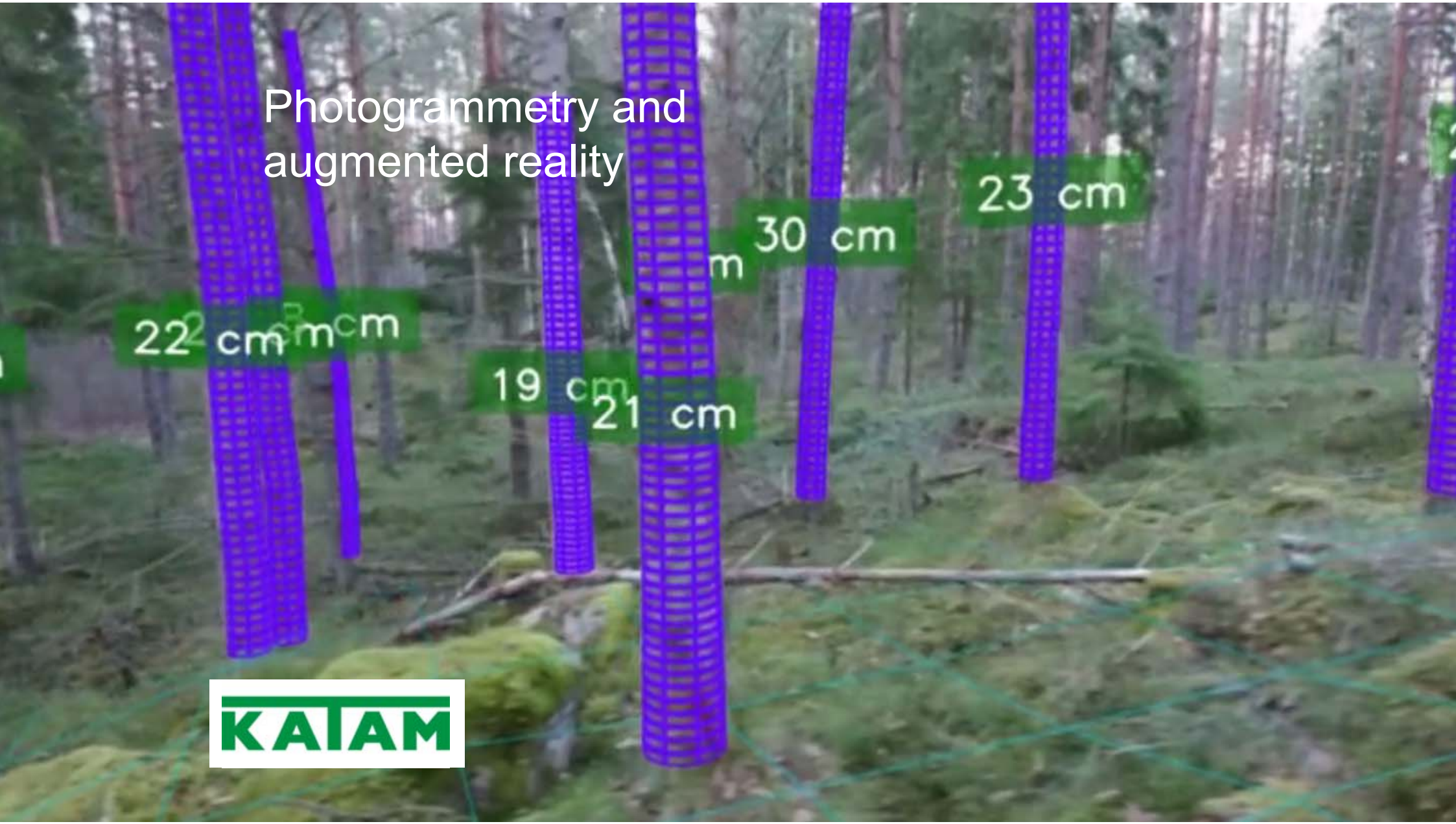

Environmental monitoring – Amateurs may report

Image: Courtesy of PlantNet


https://visitfaroeislands.com/sheepview360/
the Faroe Islands
SEE & DO
PLAN YOUR STAY
WHAT'S ON
ABOUT
Crowdsourcing
FLER VIDEOR
0:08 / 1:19


Mapillary
Original
2014.07.31 07:05
Compare it to
2019.04.09 16:30
2014.09.20 11:07
2014.08.12 07:06
Crowdsourcing
3D
2D

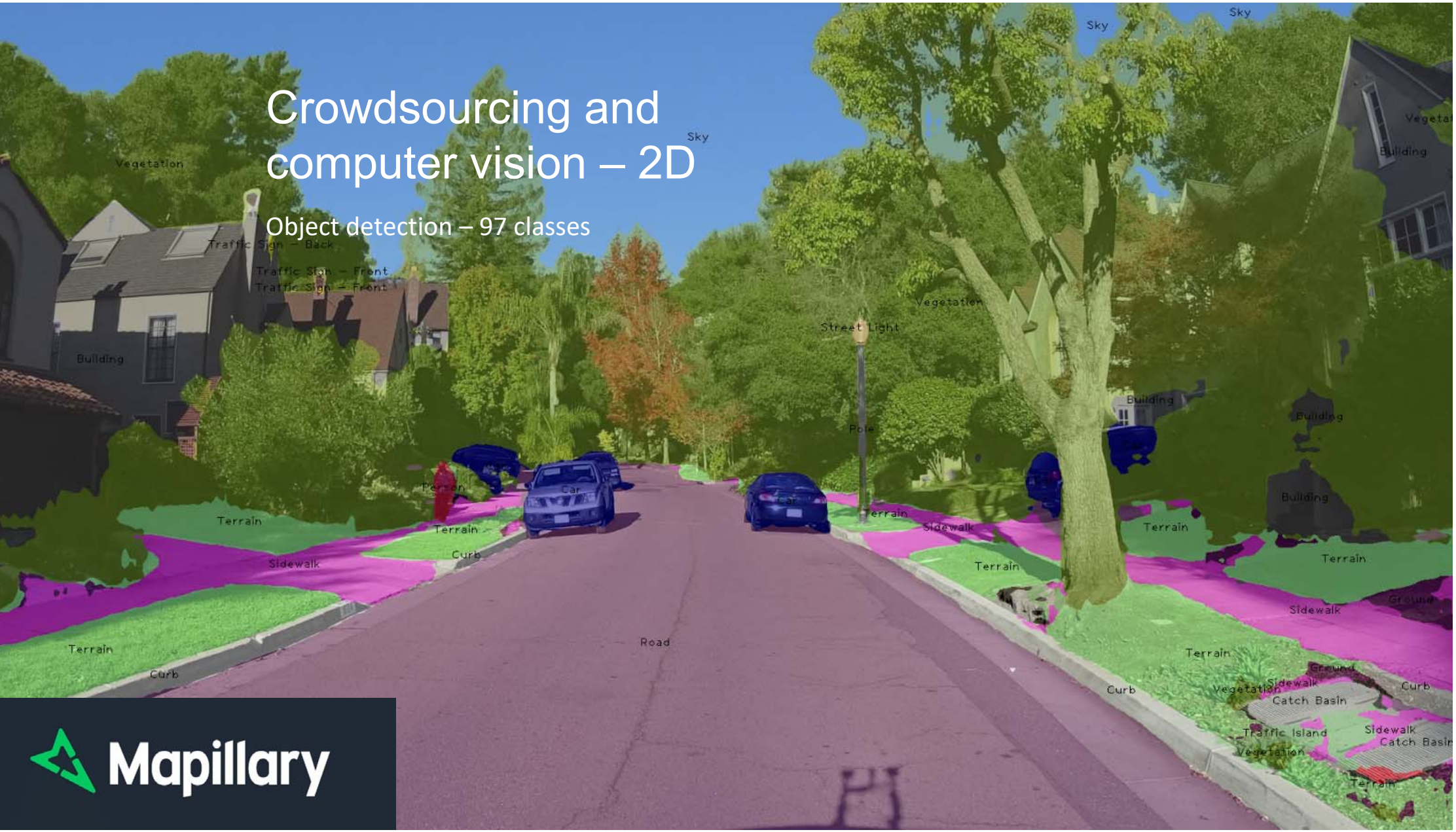

Photogrammetry - 3D
Mapillary


Photogrammetry and
augmented reality
23 cm
30 cm
19 cm
21 cm
KATAM

**Operative forest mapping with drones and artificiell intelligens**

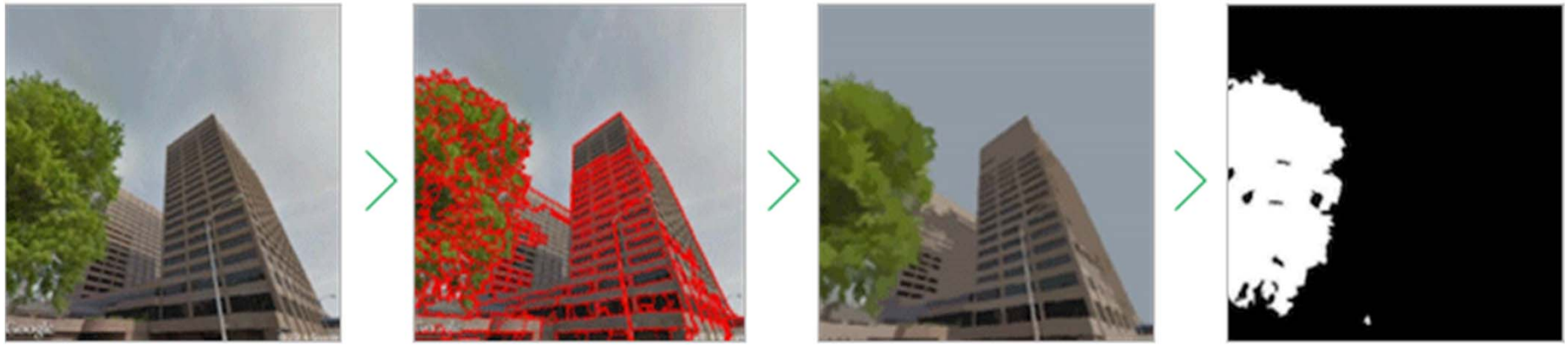
height, diameter, volume, species

Jonas Bohlin, SLU forest
Jörgen Wallerman, SLU forest


Crowdsourcing and computer vision – 2D
Object detection – 97 classes
Sky
Vegetation
Traffic Sign – Back
Traffic Sign – Front
Traffic Sign – Front
Building
Street Light
Pole
Car
Car
Terrain
Terrain
Curb
Sidewalk
Road
Terrain
Curb
Terrain
Sidewalk
Terrain
Building
Building
Building
Terrain
Terrain
Sidewalk
Terrain
Curb
Vegetation
Sidewalk
Catch Basin
Curb
Traffic Island
Vegetation
Sidewalk
Catch Basin
Terrain
Mapillary

Treepedia

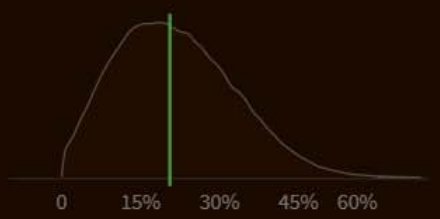
# Green View Index



MIT, World economic forum

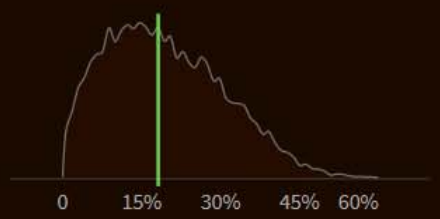
Treepedia Compare Cities Description

MIT | SENSEABLE CITY LAB :.::

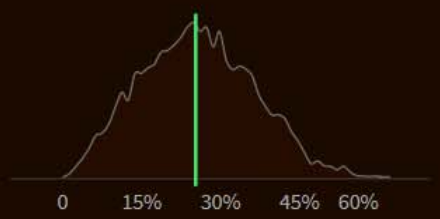

## Amsterdam

| | |
|---|---|
| Green View Index | 20.6% |
| Population Density | 4,908/km$^2$ |

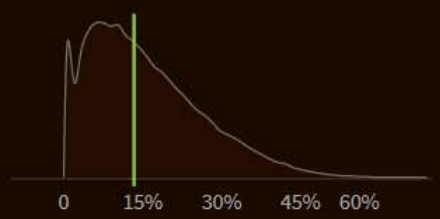

## Boston

| | |
|---|---|
| Green View Index | 18.2% |
| Population Density | 5,344/km$^2$ |


## Cambridge

| | |
|---|---|
| Green View Index | 25.3% |
| Population Density | 6,586/km$^2$ |


## Cape Town

| | |
|---|---|
| Green View Index | 13.4% |
| Population Density | 1,100/km$^2$ |


# London Tree Canopy Cover

Search the map to discover tree canopy cover across London.

**Search for a location:**

Location search

**Visit an area of interest:**

Select an area

**Adjust transparency**

Show/Hide Boroughs

Show/Hide Wards (2014)

Reset to all of London

**Tree canopy cover**

The data presented is a high resolution map of

curio

MAYOR OF LONDON

Farmer receives data through FMS

Vultus API deliver to FMS

Cloud processing, analysis and calibration

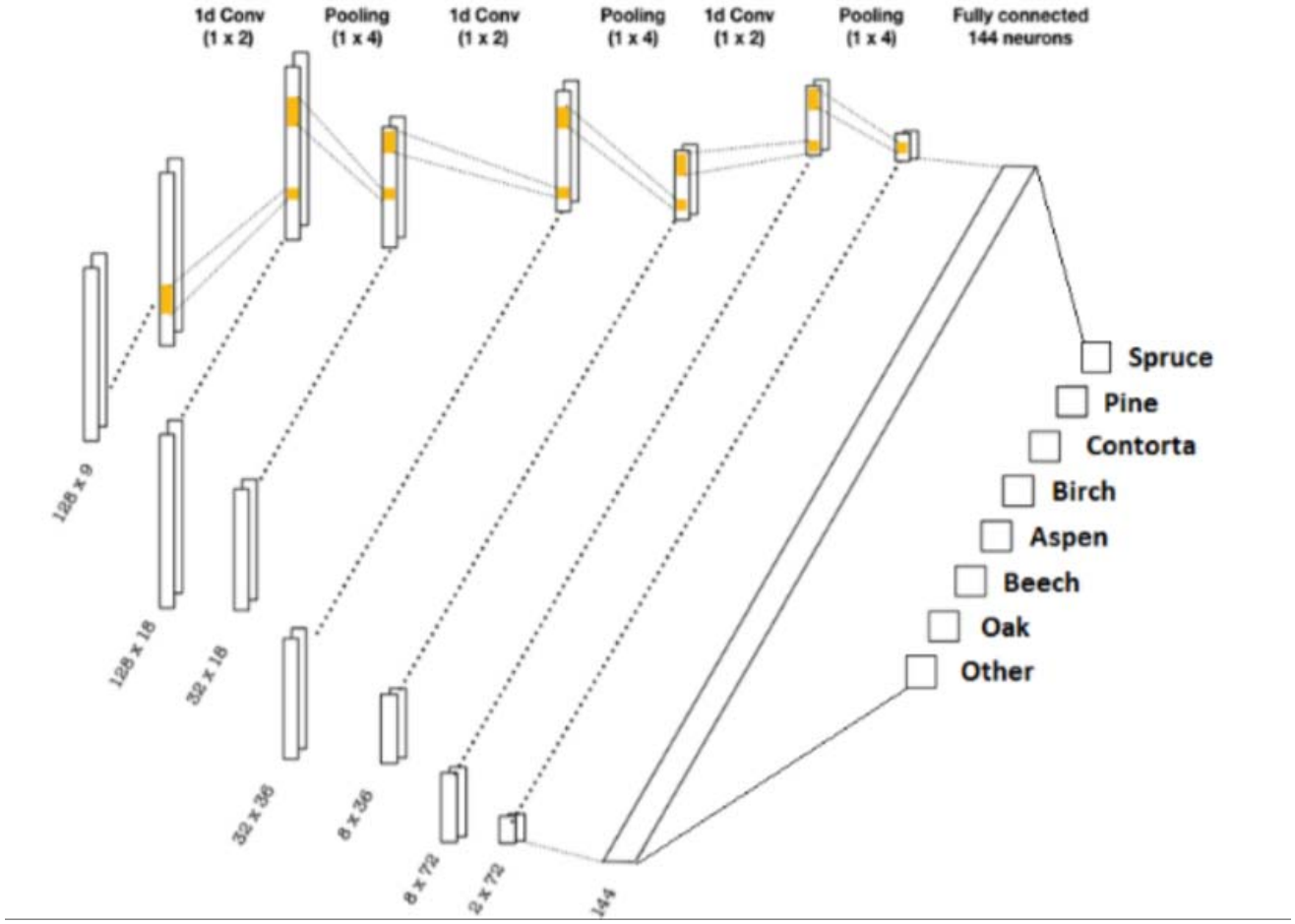
Variable Rate Technology

Spectral analysis

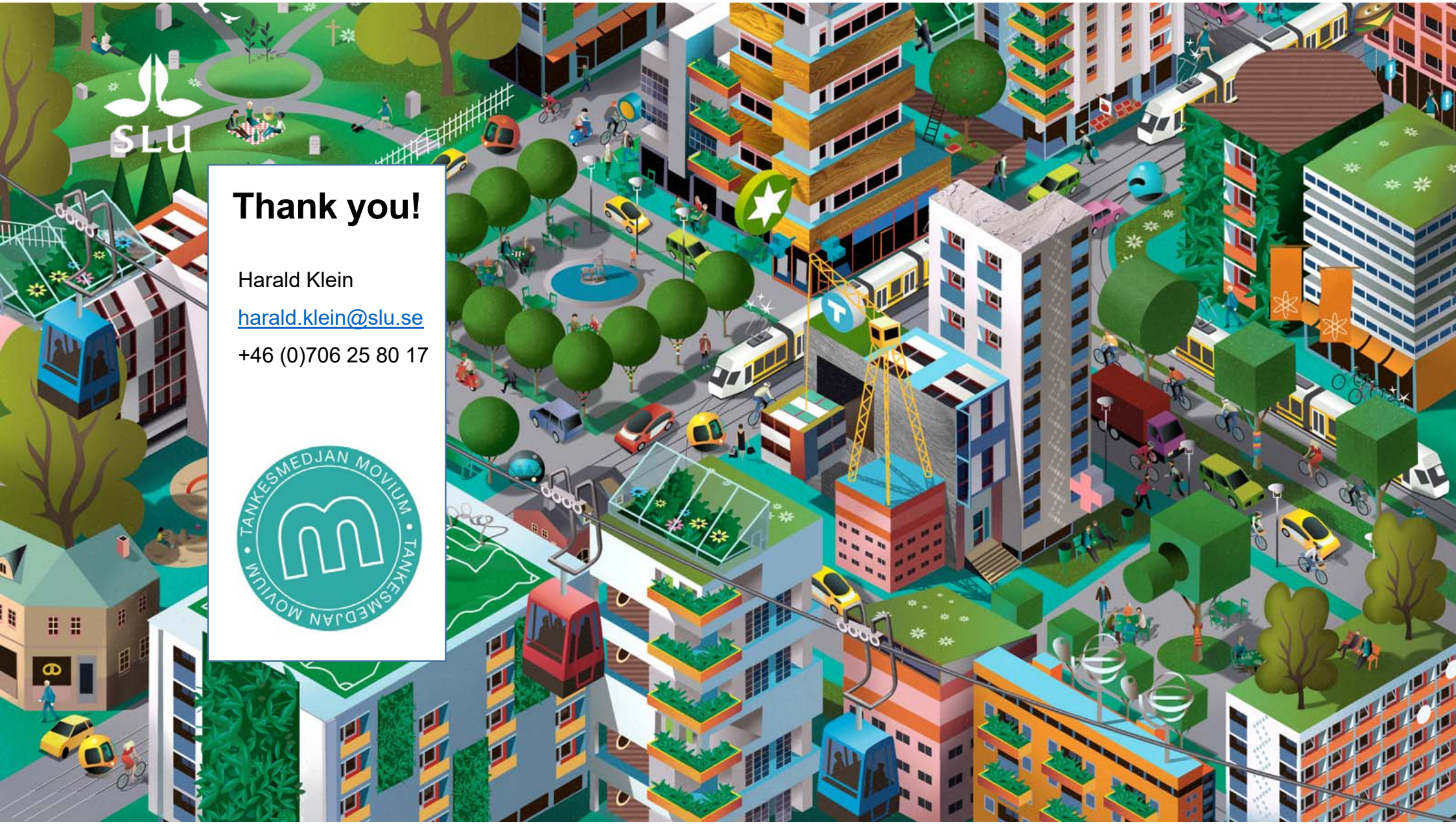
VULTUS

**Neural Networks for tree species classification using Sentinel-2, NFI and Google Earth Engine**

André Wästlund, SLU




Karta
Satellit
Skogshusvägen
Slottsvägen
Slottsvägen
Almarp Slott och Parker
Crowdsourced training data
(6%)
Oxbärssläk... (3%)
Skogsek (3%)
Buxbom (1%)
Bok (1%)
Bergek (1%)
Idegran (1%)
Jättetuja (1%)
Rododendr... (1%)
Other (82%)
Image: Courtesy of Curio
Google
Kartdata ©2019 Google Bilder ©2019 , DigitalGlobe, Lantmäteriet/Metri


SLU
Thank you!
Harald Klein
harald.klein@slu.se
+46 (0)706 25 80 17
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