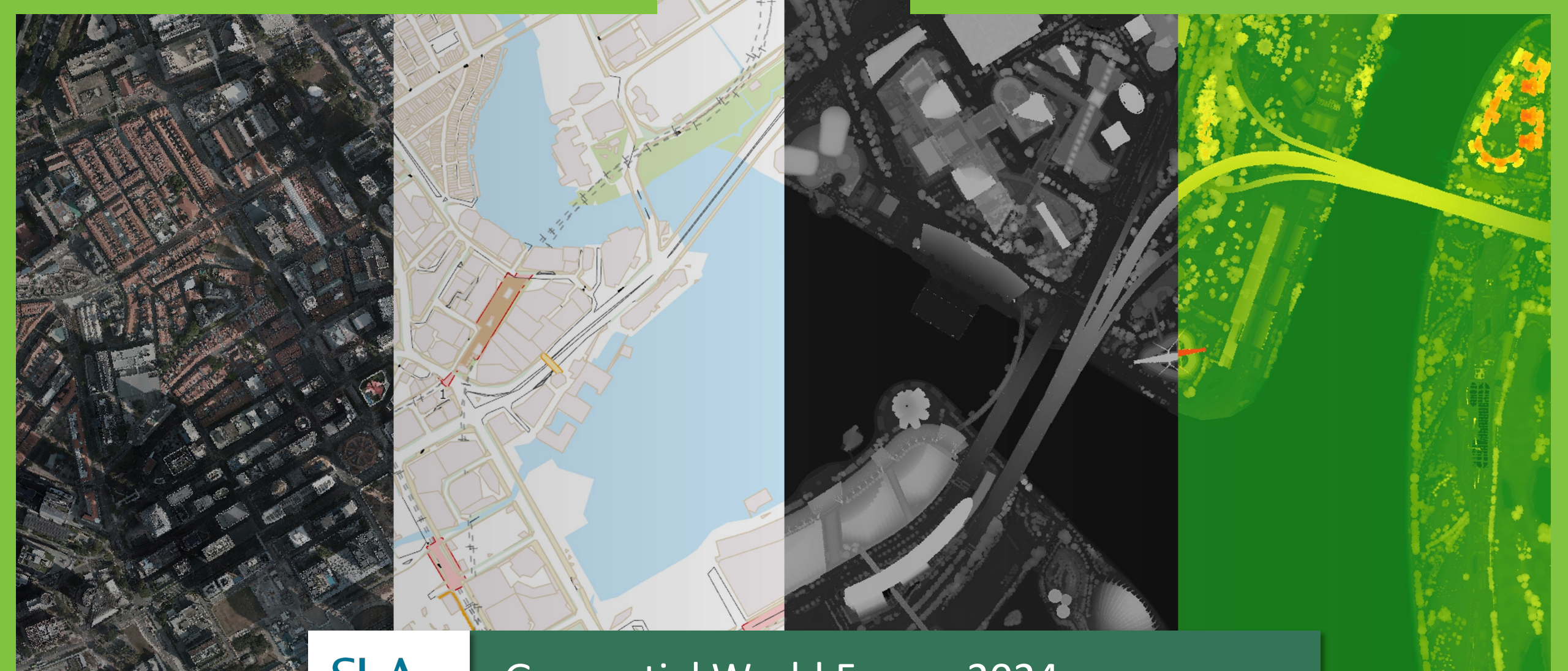GWF

GEOSPATIAL WORLD FORUM

CLICK TO KNOW MORE

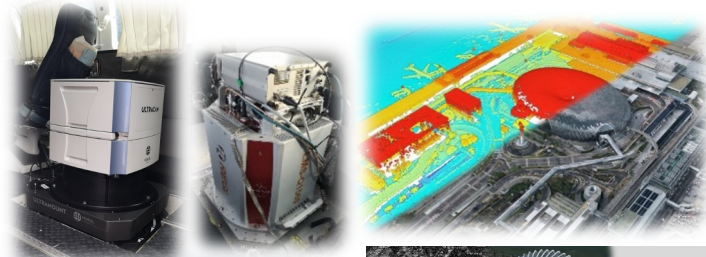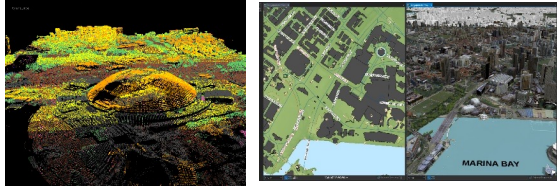**Geospatial World Forum 2024**

Session 4: Earth Observation as a Service for National Mapping

15 May 2024

SLA
SINGAPORE
LAND AUTHORITY
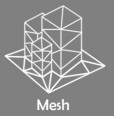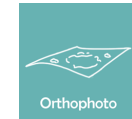
LIMITED LAND • UNLIMITED SPACE

National 3D Mapping Programme

Commence 1st National Mapping Data Capturing

Commence 2nd National Mapping Data Capturing

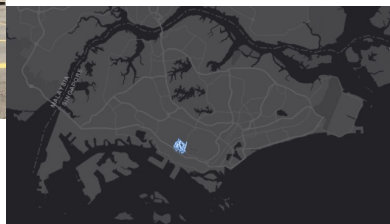Commence 3rd National Mapping Data Capturing

Point Cloud

Imagery

DTM

Building Model

DSM

Orthophoto

Mesh

Apr 2014

Covid-19

Feb 2019

Mar 2024

Jun 2015

Commence 1st Mobile Mapping

Aug 2017

Year 1 Mobile Mapping Maintenance

Year 2 Mobile Mapping Maintenance

Completion of Mobile Mapping Maintenance

- Supporting agencies for their application
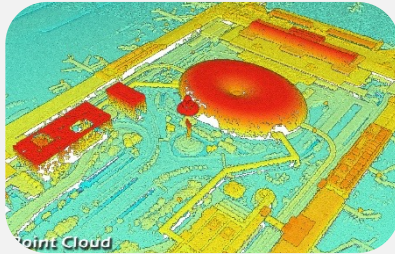- Prepare for Mobile Mapping Tender with committed agency

SLA
Singapore Land Authority

Deep capabilities in mapping and geospatial development
National Geospatial & Mapping Agency – Aerial Mapping
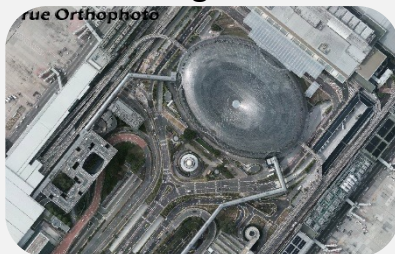
AERIAL MAPPING 3D DATA

Point Cloud

Reality Mesh

Building Model

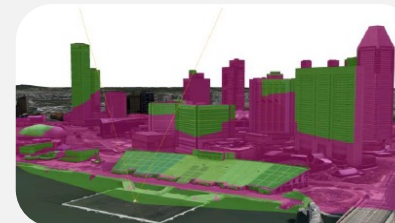Colour Infrared

True Orthophoto
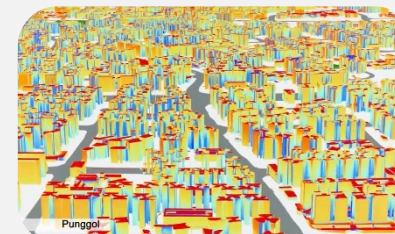
DSM

USE CASES

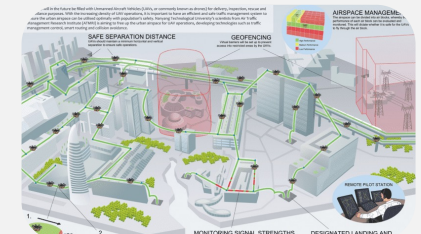Coastal Protection

Urban Planning

Emergency Response Preparations

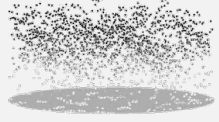Aerodrome Terrain & Obstacles

Solar Potential

Traffic Management

Deep capabilities in mapping and geospatial development
National Geospatial & Mapping Agency – Mobile Mapping

MOBILE MAPPING METHODOLOGY & DATA

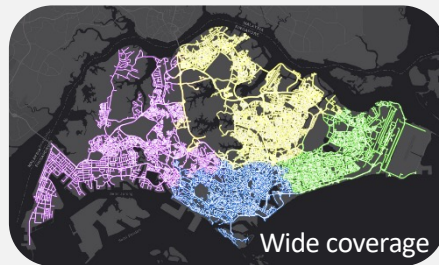600 Billion Points

Point Cloud

3 Million Panoramic Images

360° panoramic image

5,500 km Public Street

Wide coverage

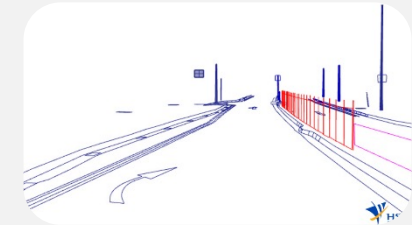### USE CASES

Tree Asset Management

Forensic Reconstruction

Driverless Vehicle Testing

Site Planning

Measurement
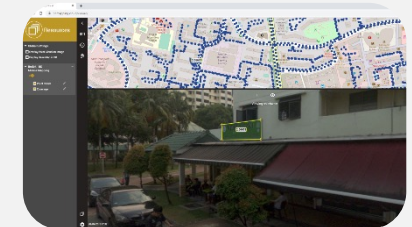
Regulation

Adopted Technologies

Space-based

Aerial systems

Unmanned Aerial Vehicle

Examples:

- Remote Sensing
- Photogrammetry
- Laser Scanning
- GPS/GNSS
- Total Station
- Ground Penetrating Radar
- Multibeam Echosounder
- ...

Mobile Mapping Systems

Ground based Systems

Subsurface

Hydrography

SLA
SINGAPORE
LAND AUTHORITY

Mapping from Space

Landcover

Aerial Mapping
(Mar 2019)

- Water
- Building
- Open Area
- Grassland
- Forest
- Road
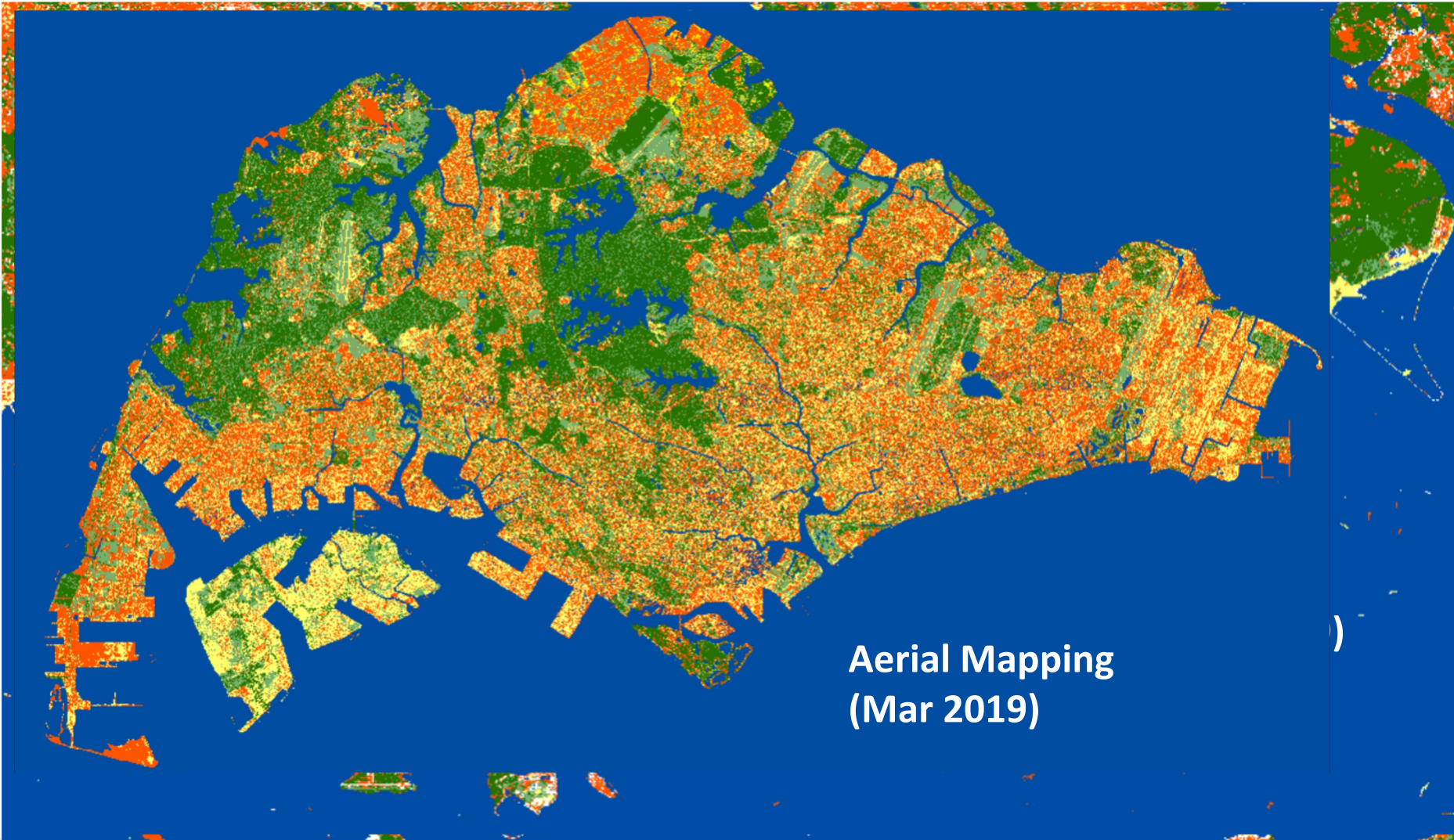
Mapping from Space

Coastline

Mapping from Space

Map Updates

4 Apr 2019

23 Mar 2022

Monitoring Singapore

Change Detection
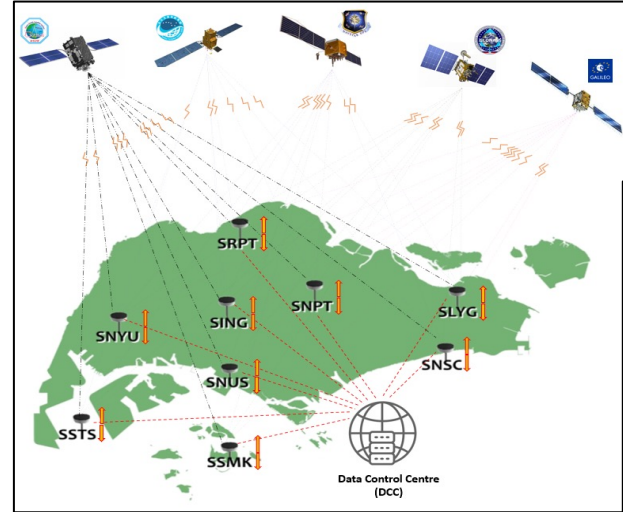
SMU buildings & Cathedral of the Good Shepherd

Pleaides – Aug 2022
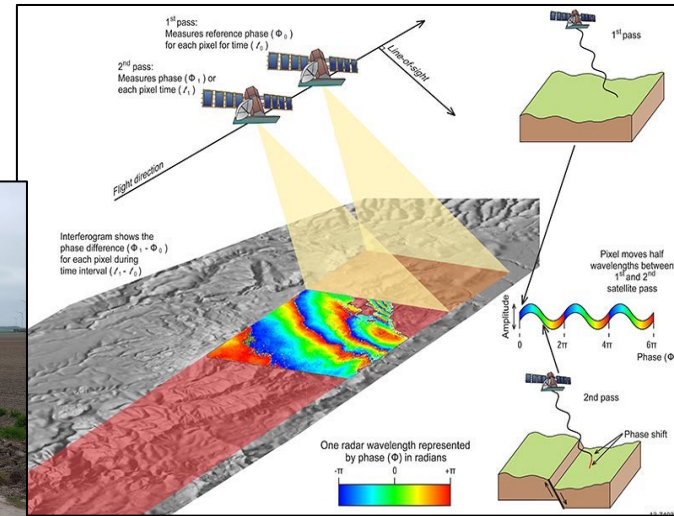

Aerial Mapping – Mar 2019

Monitoring Singapore

Vertical Land Motion

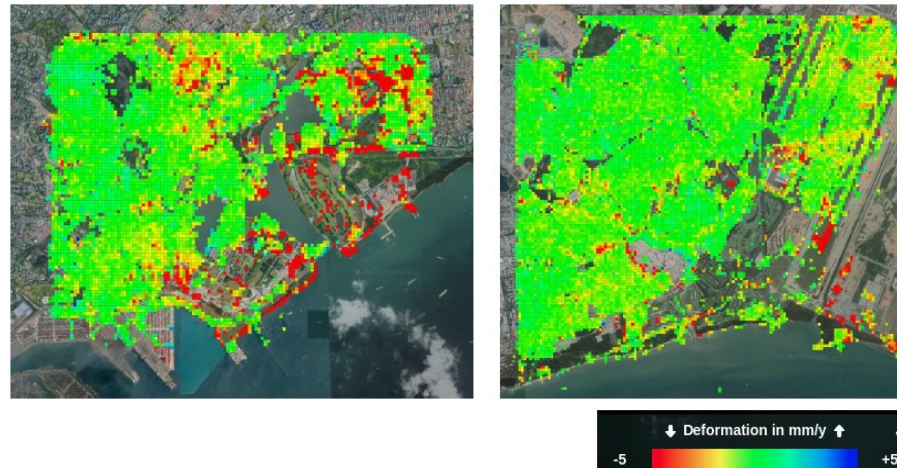Singapore Satellite Positioning Reference Network

Interferometric Synthetic Aperture Radar

Patent # 2019103.21,
June 2017, Patent
Cooperation Treaty (PCT)

Geodetic Instrumentation

Actionable information that enables informed decision making for **climate change adaption** and **mitigation**.

Nationwide VLM information product, absolute, referenced and validated

↓ Deformation in mm/y ↑

-5   +5

© SkyGeo

Leveraging AI for Mapping

Before & After Mask

- Protect privacy-related information
- Auto labelling function to replace labour intensive labelling works
- Achieve 99% face and license plate detection

- Trained ML model used to detect **static objects** such as solar panel, swimming pool, fire hydrant, tree species and manhole cover

THANK YOU