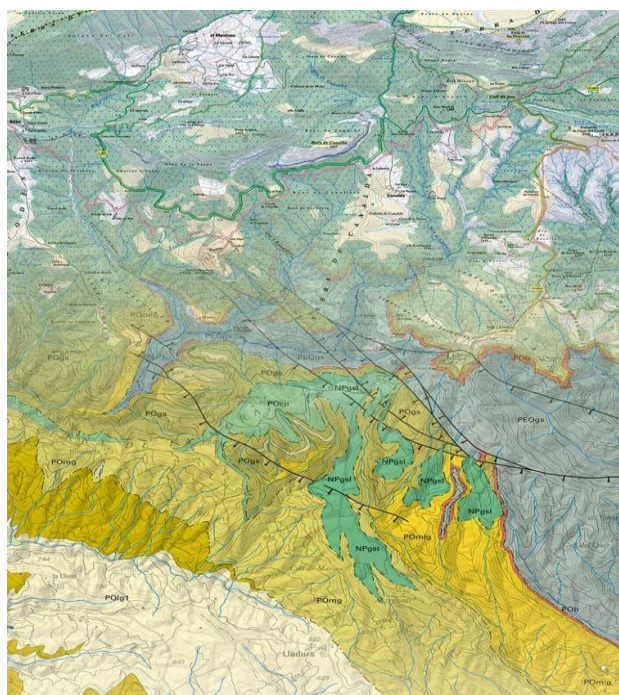




The ICGC experience with oblique camera systems

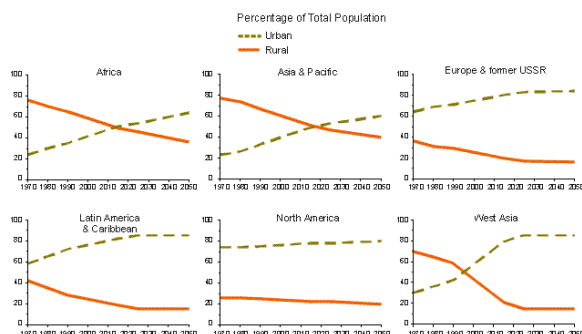
Belia Rodríguez Pereira
Geoprocessing Department



2

Why an oblique camera?

- City understanding and management will become a key point in the future



OBLIQUE AERIAL CAMERAS - sensors and data processing

Why an oblique camera?



Urban planning



Traffic/crowd management



Drone planning



Navigation



Green Cities

Environmental protection



Emergency services



Spatial marketing



Real Estate management



Augmented reality



Virtual reality

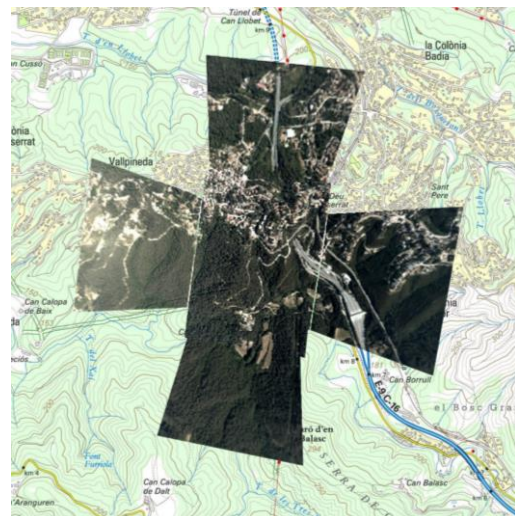


Computer game/movie

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About the RCD30 oblique

- Simultaneous capture of 5 images
- Off-nadir angle of 35°
- Image RGB + IR (Nadir camera)
- Medium format cameras
- 80 Mpixels per camera using Bayer filter



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Acquiring and producing

OBLIQUE AERIAL CAMERAS - sensors and data processing

ICGC: geoinformation from beginning to end

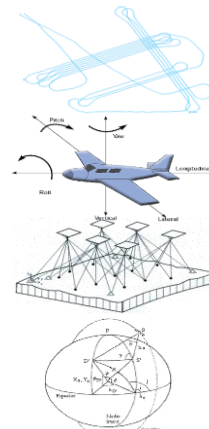
Platforms



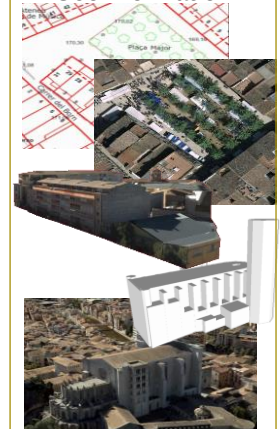
Sensors



Orientation



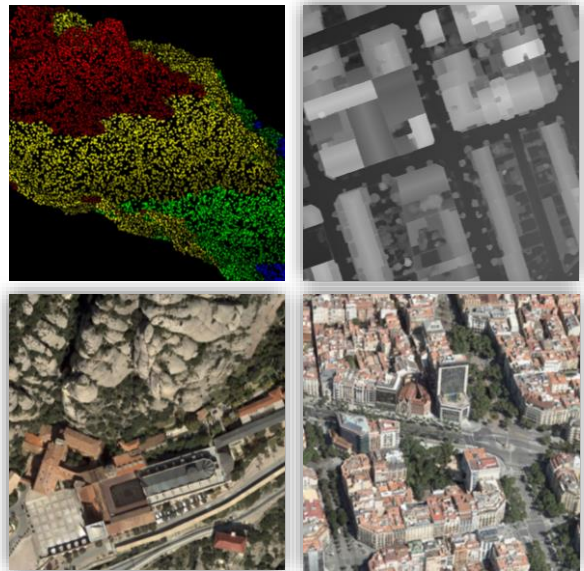
Geoinformation



OBLIQUE AERIAL CAMERAS - sensors and data processing

Products

- 3D point cloud
 - LAS, POD
- DSM
 - GEOTIFF, ASCII raster, XYZ
- Orthophoto
 - GEOTIFF
- 3D mesh
 - 3MX, OBJ, DAE, FBX, i3S, KML, Cesium 3D Tiles, LOD tree export

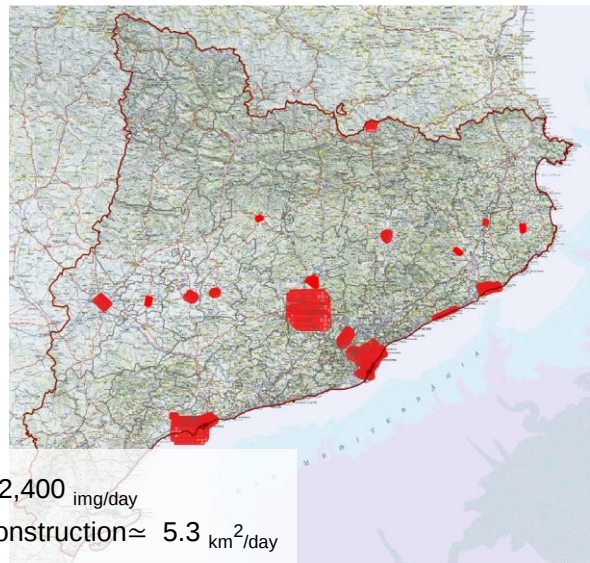


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Production

Production 2014 - 2017

Years	Images	km ²
2014-2017	146,595	390



≈10,000 img/day



AT ≈ 2,400 img/day

Reconstruction ≈ 5.3 km²/day

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Challenges overcome

- ❑ Flight planning.
- ❑ Large image block size.
- ❑ High volumes of data.
- ❑ GCPs measured with different accuracy due to image scale variation.
- ❑ Processing time.

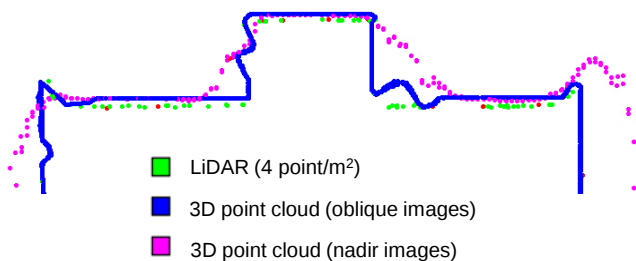
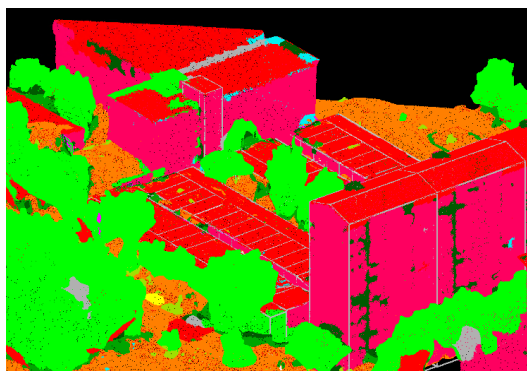


Applications



Solar potential

- 3D Point cloud for the roof planes segmentation

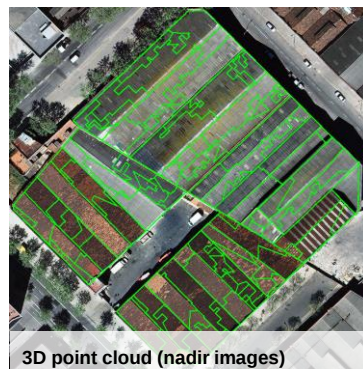
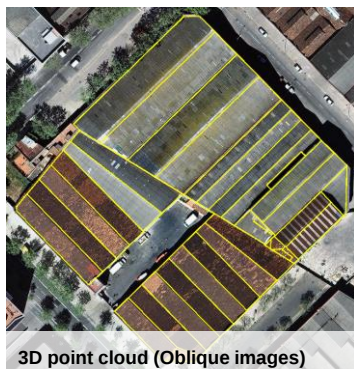


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Solar potential

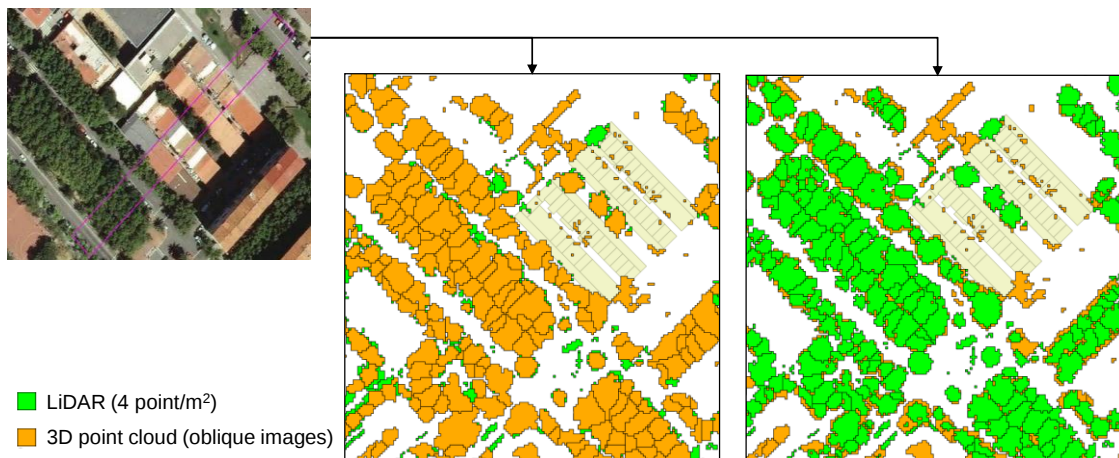
- 3D Point cloud for the roof planes segmentation



OBLIQUE AERIAL CAMERAS - sensors and data processing



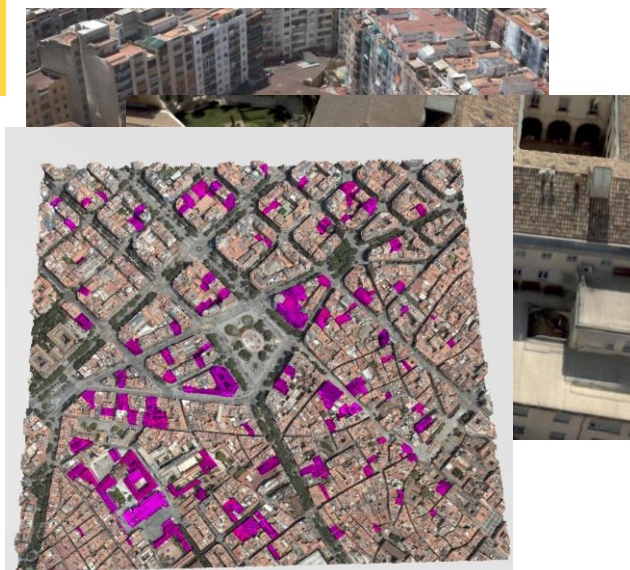
Urban green



OBLIQUE AERIAL CAMERAS - sensors and data processing

3D City Modeling

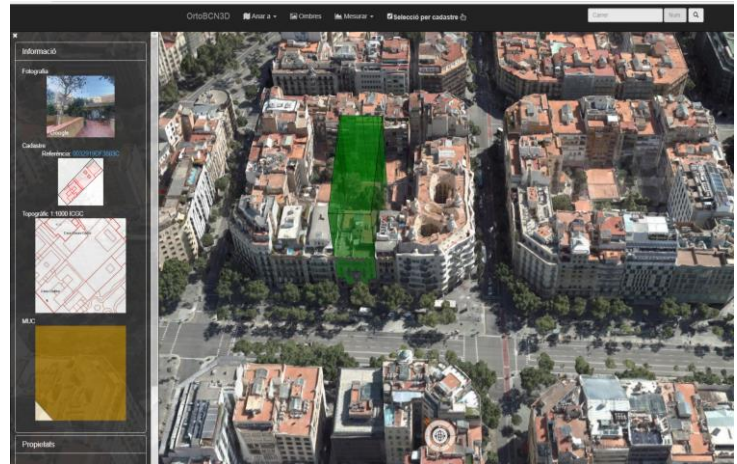
- Space management
- Energy assessment
- 3D cadastre



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3D City Modeling

- Shadow simulation
- Measuring
- Queries
- Addresses



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What's next?

Near future

- Oblique imagery advanced dissemination service
- Models from LiDAR + Oblique images
- Local updating
- Improving visualization



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Demands to developers

- 3D models:
 - 4-bands
 - Additional layers
- Radiometric and illumination changes impact on the result
- Interoperability and standardization of 3D mesh formats
- Semantic interpretation $\Longrightarrow$ Enrich the data

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Thank you!

**Institut Cartogràfic i Geològic
de Catalunya**

Parc de Montjuïc,
E-08038 Barcelona

41°22'12" N, 2°09'20" E (ETRS89)

www.icgc.cat

belia.rodriguez@icgc.cat

icgc@icgc.cat

twitter.com/ICGCat

facebook.com/ICGCat

Tel. (+34) 93 567 15 00

Fax (+34) 93 567 15 67



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