Geoscape

Capturing Australia’s Built Environment for emergency modelling and management

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“There is no wealth like knowledge, and no poverty like ignorance.”

Buddha
“A picture is worth a thousand words”

Frederick R. Barnard
...and its true
...and its true buildings, trees, paving, roof types, pools, solar panels.
Introduce some trigonometry...

lengths
hights
slopes
areas
volumes
proximity
A compelling use-case:
Emergency modelling and management
Yawn!
Problem definition

Established that:
1. Images are great because you can get lots of information from them
2. There are lots of valuable use cases for the information
3. With more sophisticated techniques you can even extract 3D elements

However:
4. This information is extremely difficult to extract in an automated way
5. Without scale, the use cases are only partially satisfied.

Australia has some of the best geographic mapping data in the world BUT there is currently no analytical dataset for the data that I’ve described at the national level.
Unprecedented scale, continental coverage!

7,500,000 square kilometres
Let’s just imagine …

Extracted attribute features
• 2D roof polygon
• Roof area
• Roof pitch/complexity
• Ground level coordinates for roof vertices
• Number of roof vertices
• Ground level building centroid
• Maximum roof height
• Swimming pool indicator
• Roof material
• Solar panel indicator
• Residential land use indicator

Related Property Information
• Geocoded Address
• Cadastre boundary
• Property boundary
• Zoning

Landcover
• Impervious surfaces
  o Built up areas
  o Road and path
  o Bare Earth
  o Buildings
• Vegetation
  o Tree coverage
  o Grass coverage
  o Unspecified vegetation
• Water
• Unknown
• Unclassified

Digital Elevation Model (DEM)
• 30m National DEM

Vegetation Height
• Tree height

...for every single building in the country!
Well, there is no need to imagine any longer!

PSMA Australia is building **GEOSCAPE**.

This new product offering will utilise PSMA Australia’s strengths to provide an unprecedented level of detail for every property in Australia by providing essential information about what exists at an address.

- Identification of building structures
- Key building features
- Landcover
- Property information
- Alignment to key authoritative information
Data for Adelaide region in South Australia.

Part of a 16,000km² pilot to prove that the techniques can successfully and economically scale.
Extraordinary detail obtained from a combination of panchromatic and SWIR analysis from DigitalGlobe’s WorldView-3 satellite.
Building footprints with height, elevation and roof attributes:

- Roof area,
- complexity and
- roof materials classification

Also solar panels and swimming pool flags.
Land cover classification including:
- vegetation with tree heights,
- built-up areas,
- impervious surfaces,
- bare earth and
- water.
Sufficient detail for 3D visualisations
Unique methodology

- Close working partnership with DigitalGlobe
- A philosophy focused on the customer and a belief that a solution could be developed
- 12 months of iterative development between PSMA Australia and DigitalGlobe
- Close involvement from Australia’s insurance industry to ensure that Geoscape would be fit for purpose
- Ultimately a unique and proven methodology that delivers:
  - High, repeatable quality,
  - A rich set of geospatial data and attributes
  - Coverage and maintenance at scale
What is required to make this a reality?
Questions?
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