Copernicus Masters 2021

ROOFTOP

RoofTop Project

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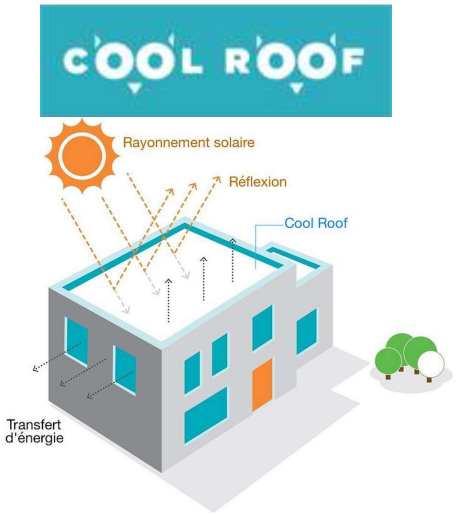
MS Mechanics and Aeronautics (ISAE-ENSMA 2018)

MS Space (Politecnico di Milano 2020)

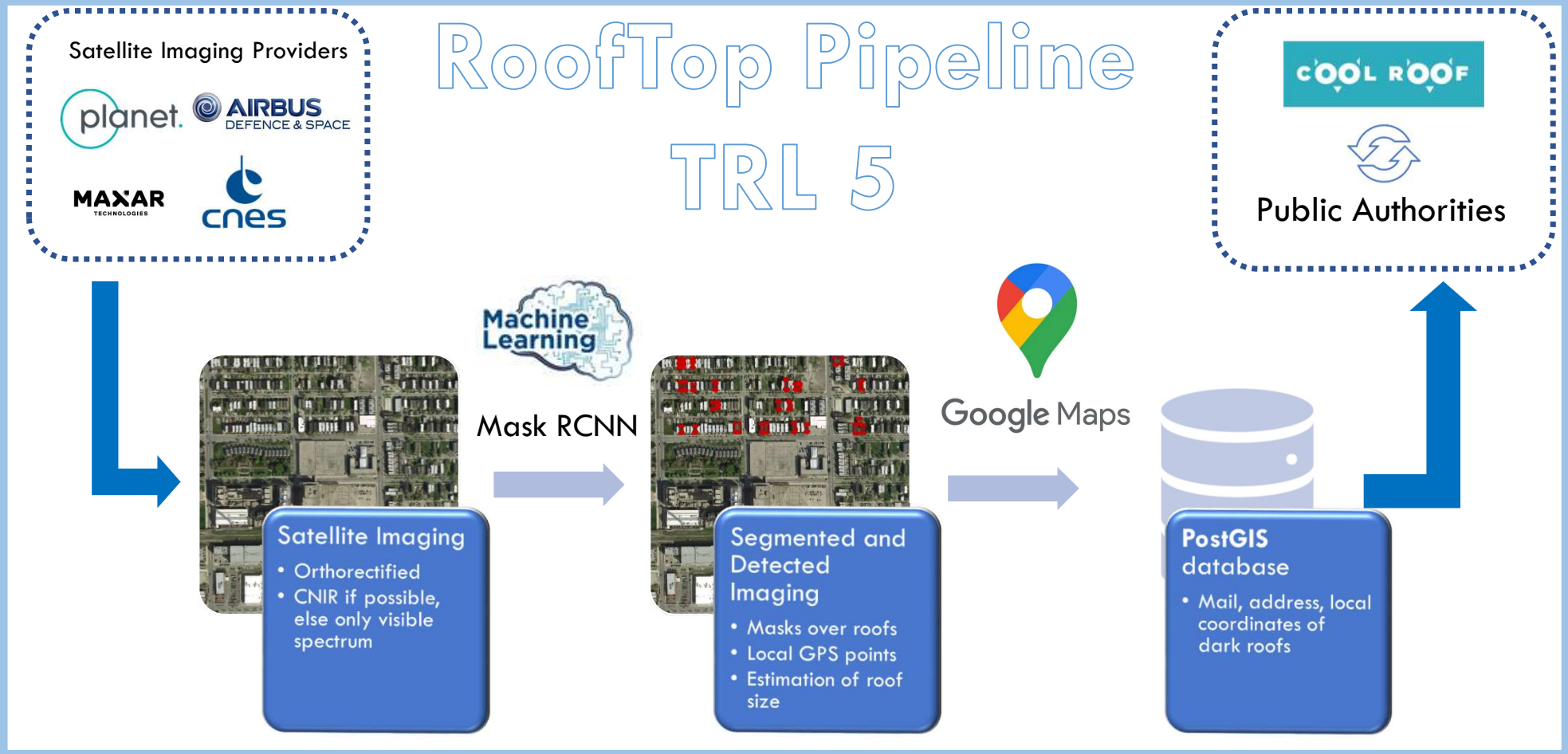
Issue at stake

- The most urging threat to world population : **Heatwaves (Canada – North America – Greece 2021)**
- Even more intense in urban area with **Heat Island** phenomenon



- **Dark roofs** : most of solar rays absorbed instead of being reflected
- **CoolRoof french startup** solution : white-paint dark roof material to increase roof albedo and cool down both atmosphere and building
- **Satellite imaging to help locate these dark roofs and foster the painting process**

Product


Satellite Imaging Providers
planet.
AIRBUS DEFENCE & SPACE
MAXAR TECHNOLOGIES
cnes
RoofTop Pipeline
TRL 5
COOL ROOF
Public Authorities
Machine Learning
Mask RCNN
Google Maps
Satellite Imaging
• Orthorectified
• CNIR if possible, else only visible spectrum
Segmented and Detected Imaging
• Masks over roofs
• Local GPS points
• Estimation of roof size
PostGIS database
• Mail, address, local coordinates of dark roofs

In action

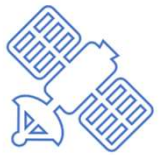
"Depending on the setting, **cool roofs can help keep indoor temperatures lower by 2C to 5C** as compared to traditional roofs," says Anjali Jaiswal, of the US-based Natural Resources Defence Council [1]

New York City has painted about 7 million square feet of tar rooftops white to lower temperatures. NASA

In 2009, researchers at the Lawrence Berkeley National Laboratory in the US estimated that some **24 gigatonnes of carbon dioxide emissions per year could be offset if the world's cities adopted cool roofs** [2]

Quick Recap

ROOFTOP



• An effective pipeline to locate precisely dark roofs on satellite imagery

• An efficient tool to fight against heat island

• A tool to be easily integrated into the decision-makers process

• Built upon reliable and production-proven technological bricks (Mask RCNN TRL 9)