senseFly
a Parrot company

Products & Applications

eXom
senseFly

The inspection and close mapping drone

eBee
senseFly

The professional mapping drone

eBee RTK
senseFly

The survey-grade mapping drone

eBee
senseFly

The precision agriculture drone

swinglet CAM
senseFly

The professional GIS drone

Filling the gap between delivery time & resolution

Satellite

Delivery time: weeks
Typical resolution: 50 cm/pixel

Manned aircraft

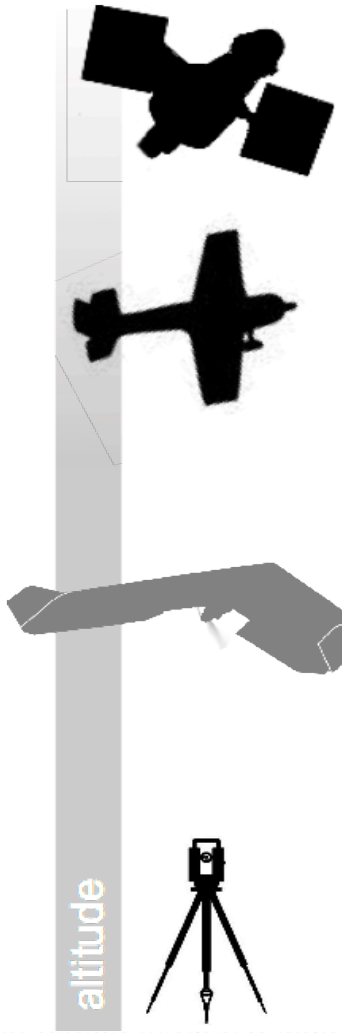
Delivery time: weeks to months
Typical resolution: 10-30 cm/pixel

Mini-UAV

Delivery time: immediate
Typical resolution: 5-15 cm/pixel

Terrestrial means

Delivery time: depending on qualified worker availability



Mapping Applications

A wide range of sensors to cover many applications

Standard RGB

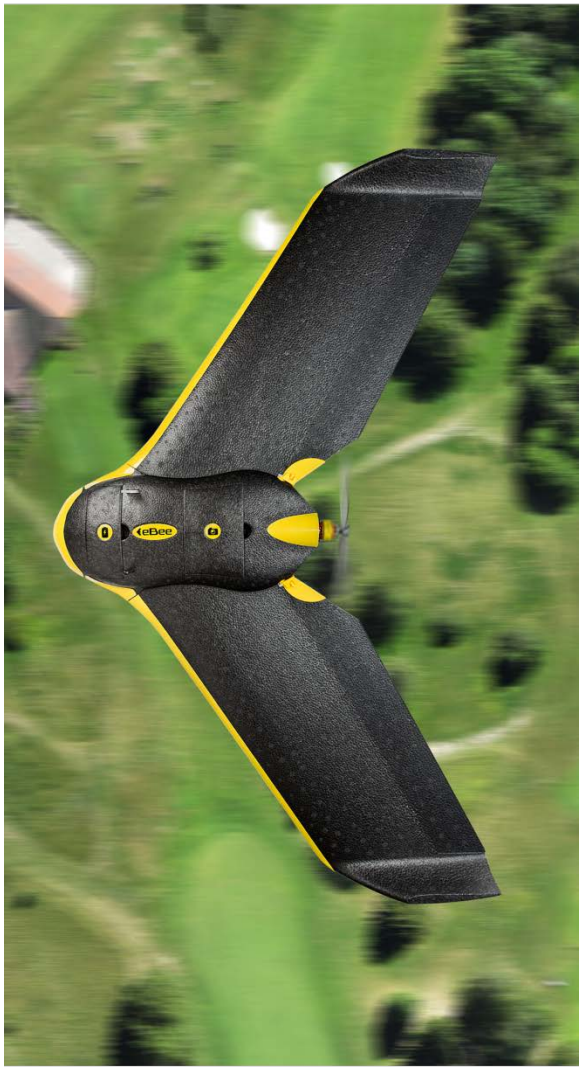
18MP

High-end RGB

12MP, raw, shutter priority

Near-infrared

12MP, near infrared



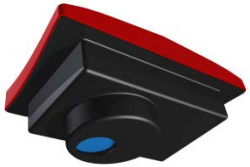
Red-edge

12MP, red-edge

Multispectral

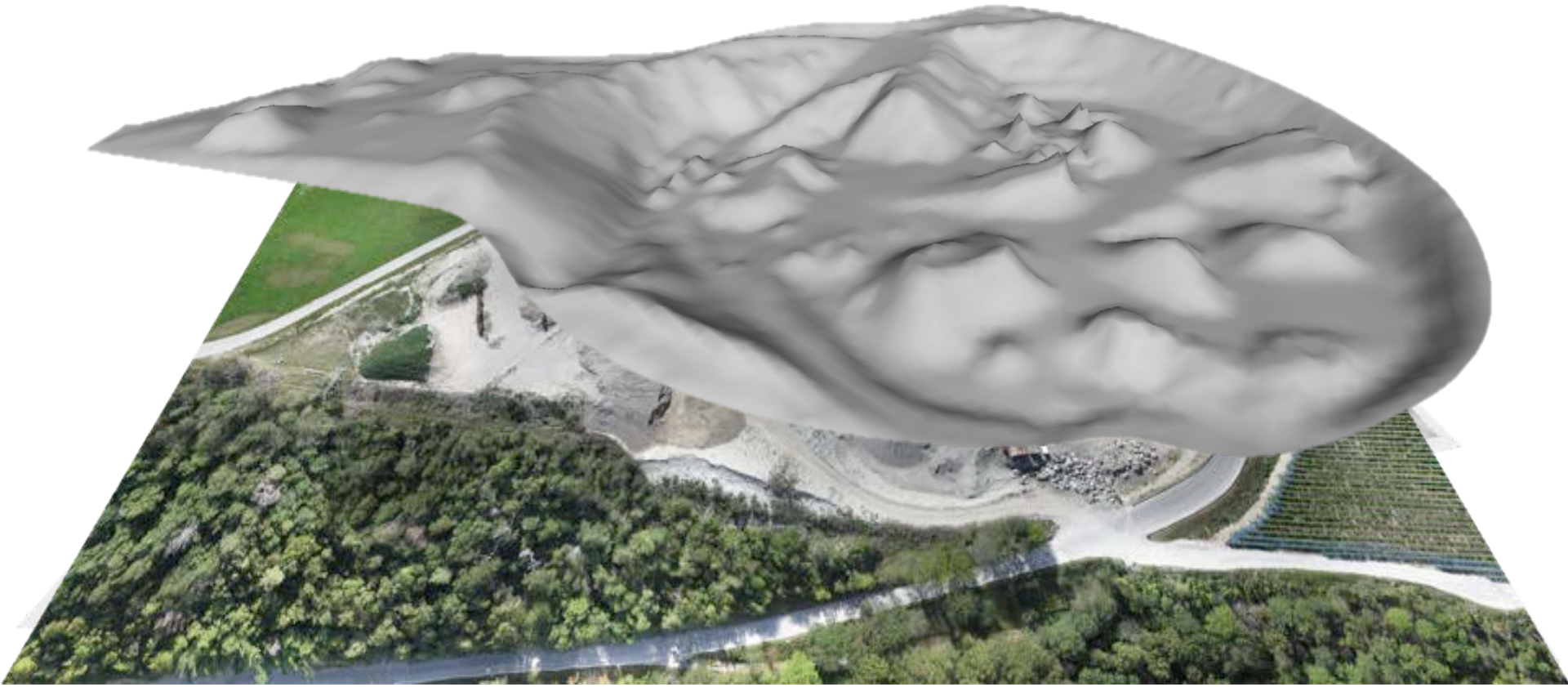
4 bands including NIR & RE

ThermoMAP



IR camera

Generation of 2D (orthomosaics) and 3D data (Pointclouds, DSM, contour lines) with an accuracy up to 1 inch



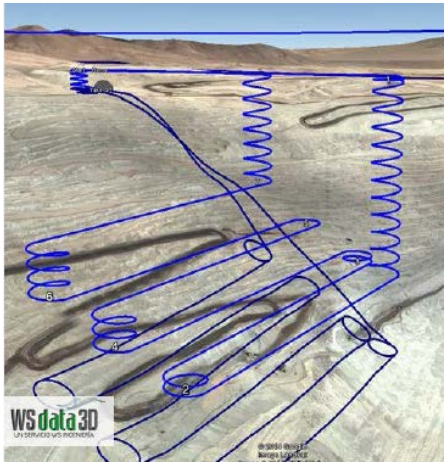
Applications: Survey & Mining

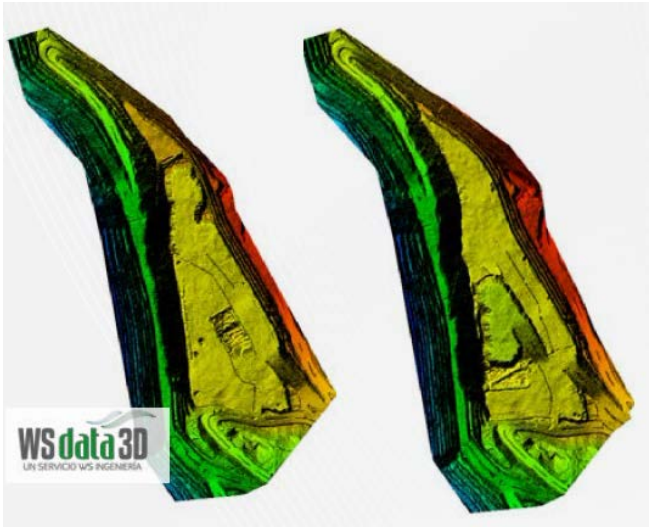
Calculating volume extraction in Chile

- One of world's largest open pits
- 3 km across, total depth 1,000 m
- 100,000 tons per day
- Lidar data collection problematic:
  - Security risk (cliff top locations)
  - Blind spot due to topography
- 10 GCPs set
- 6 x 30-min eBee flights
- 3D DTM created
- Volume measured
- Repeated 4 weeks later

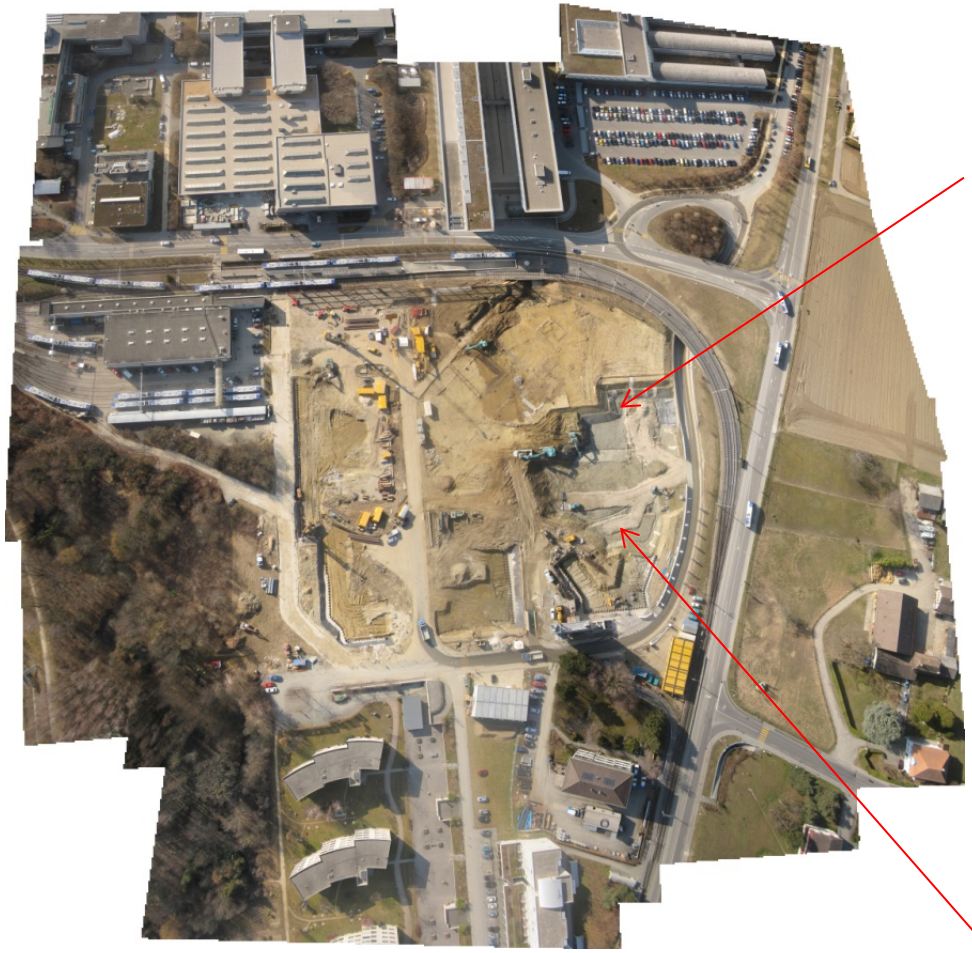
"Our two-man team completed each of its mapping sessions in a single day, compared to seven using lidar"

Eric Romersa, WSdata3D co-founder





Applications: Construction

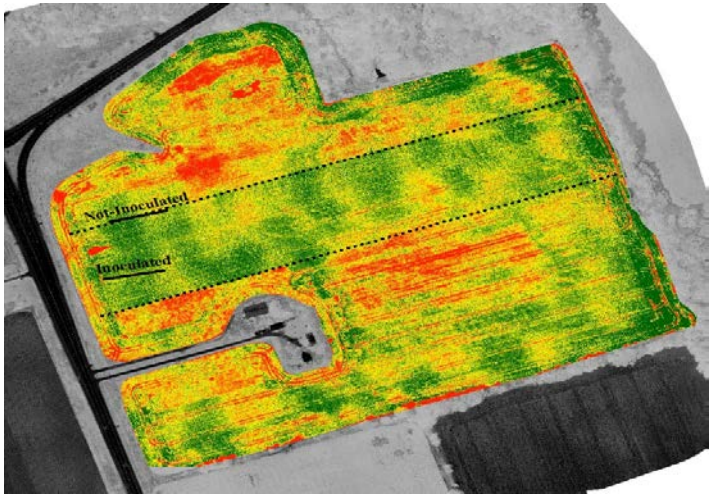


Flight at **100 m** and stitch of 50 images

Applications: Precision agriculture

Range of beneficial applications

- Water and nitrogen management
- Drainage tiles analysis
- Insurance claims
- Yield prediction



Applications: GIS & Conservation

Hawaii

Damage assessment following a volcano eruption on the Big Island

Race for Water project

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Inspection & Close Mapping

eXom: the next generation quadrirotor

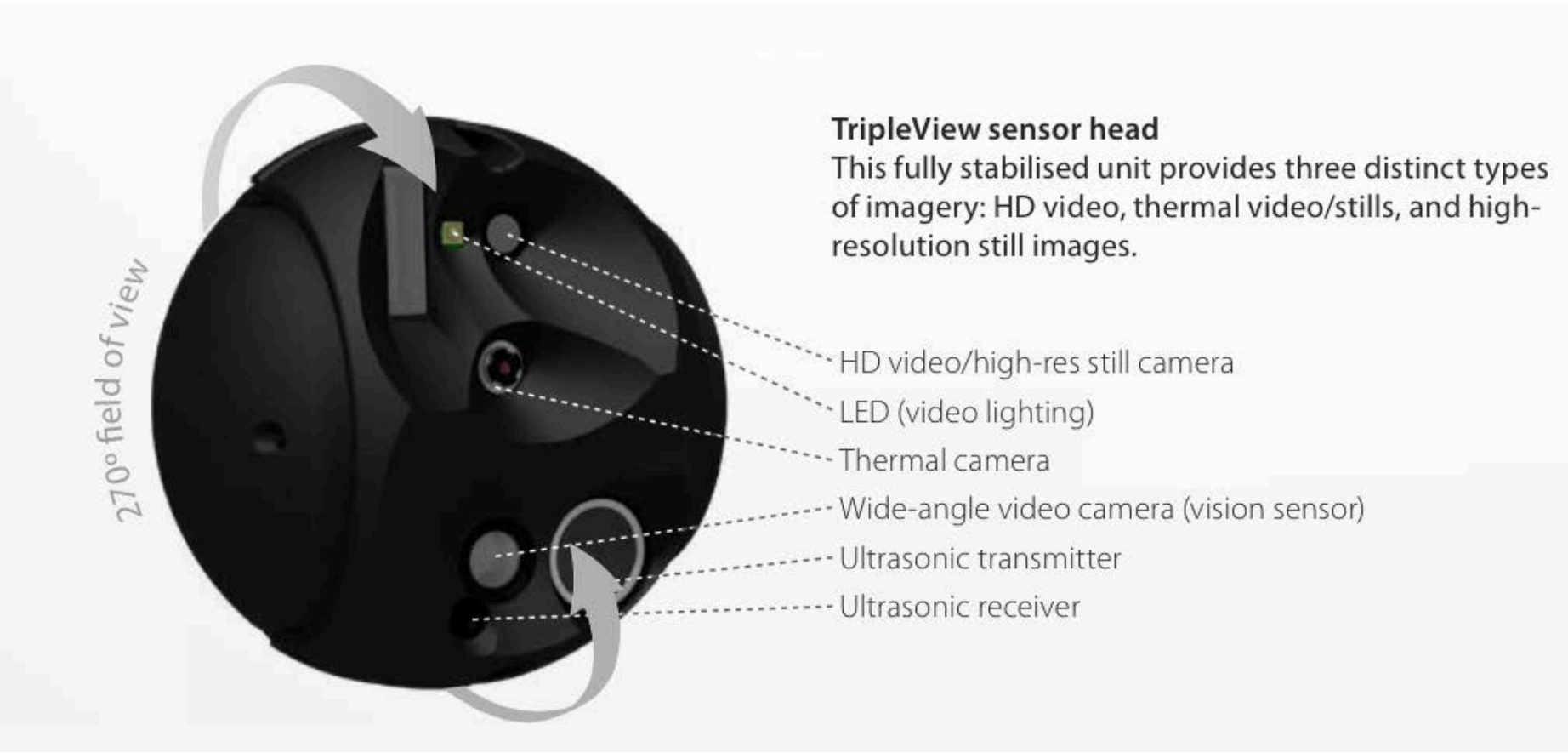
Fully integrated sensors and drone brain

TripleView stabilized head with 180° tilt

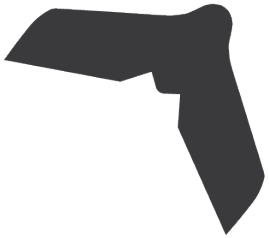
ScreenFly with 360° situational awareness

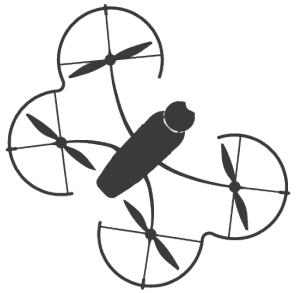
Safe & robust mechanical design

Triple view camera



Fixed-wing vs. rotorcraft





coverage	large areas	small areas
takeoff & landing	sectors	spot
object resolution	cm/px	mm/px
oblique imagery	0° to -50°	+90° to -90°
3D mapping of infrastructure	difficult	much easier
close-up inspection	not adapted	well adapted

Complementary mapping

3D Modelling

Inspection

Civil engineering structure

- **Bridges**
  - Concrete
  - Masonry
  - Steel
- **Dams**
- **Cooling towers**
- **Broadcasting tower**




Civil engineering structure

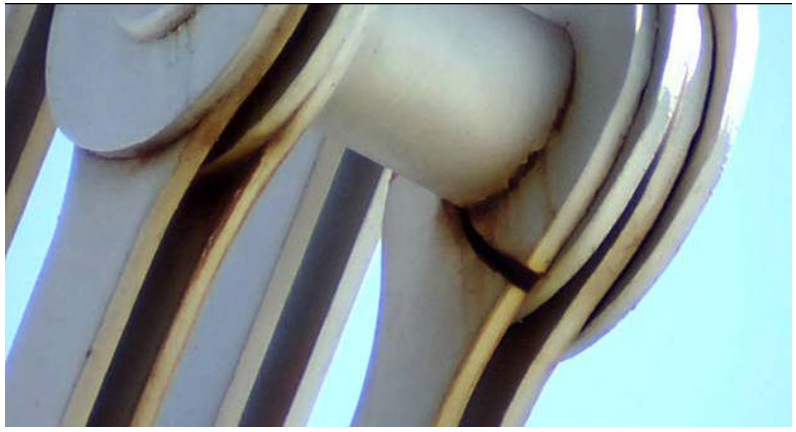
Main defects to detect

Concrete

- Small cracks
- Fracture
- Spalling
- Humidity
- Deflection

Steel

- Rusting
- Scaling of the paint
- Deflection
- Disassembly



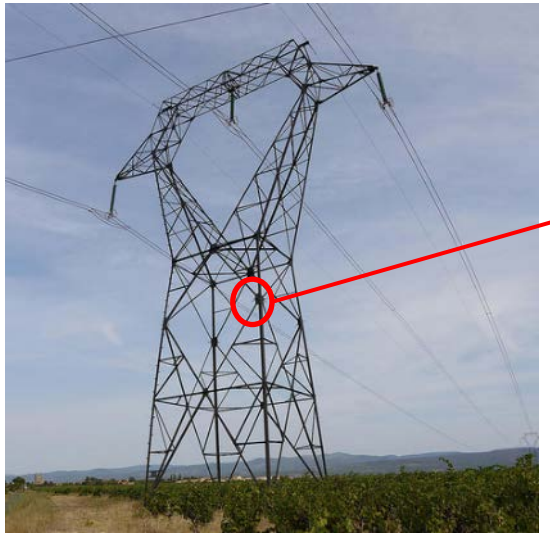
Industrial structure

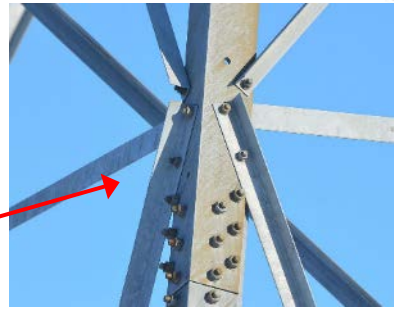
- Chimney
- Industrial equipment (inside and outside)
- Building
- Tanks
- Penstock
- Wind turbine

Network surveillance

- **Electrical**
- Power lines
- Electrical towers

- **Gas and oil network**
- Surveillance of the pipes and aerial crossing





Comparison with other techniques

- It is cheaper than traditional inspection techniques, faster and cause less disturbance to the exploitation

- Easy and fast to implement

  - Cost
    Traffic management : 2 500 USD/ day
    Access mean : 3 500 USD / day