



Autonomous Mini-Drones for Civil Applications

When Machines Decide – Münchner Kreis – 12.11.2014
Jean-Christophe Zufferey, CEO & co-founder of senseFly

About senseFly

- Founded in 2009 as an EPFL spin-off
- Autonomous mapping drones for professionals:
 - Surveyors
 - Mine & quarry managers
 - Civil engineers
 - Land & forest managers
 - Farmers, crop consultants
 - Scientists (nature protection, wild-life, archeology)
 - Humanitarians
- Joined Parrot in mid-2012



senseFly today

- 80 employees
- 3'000 m² in the Lausanne area, Switzerland
- Producing ~100 drones/month
- Selling in more than 60 countries
- 80 distribution sites worldwide
- Ranked 15th in the 2014 TOP100 Swiss startup



Our products

- Mapping mini-drones for professionals
- Fully autonomous, ready to use, easy to transport and deploy
- High-res imager, automatic triggering
- Professional software to produce accurate 2D & 3D maps



Drones
eBee / Swinglet CAM

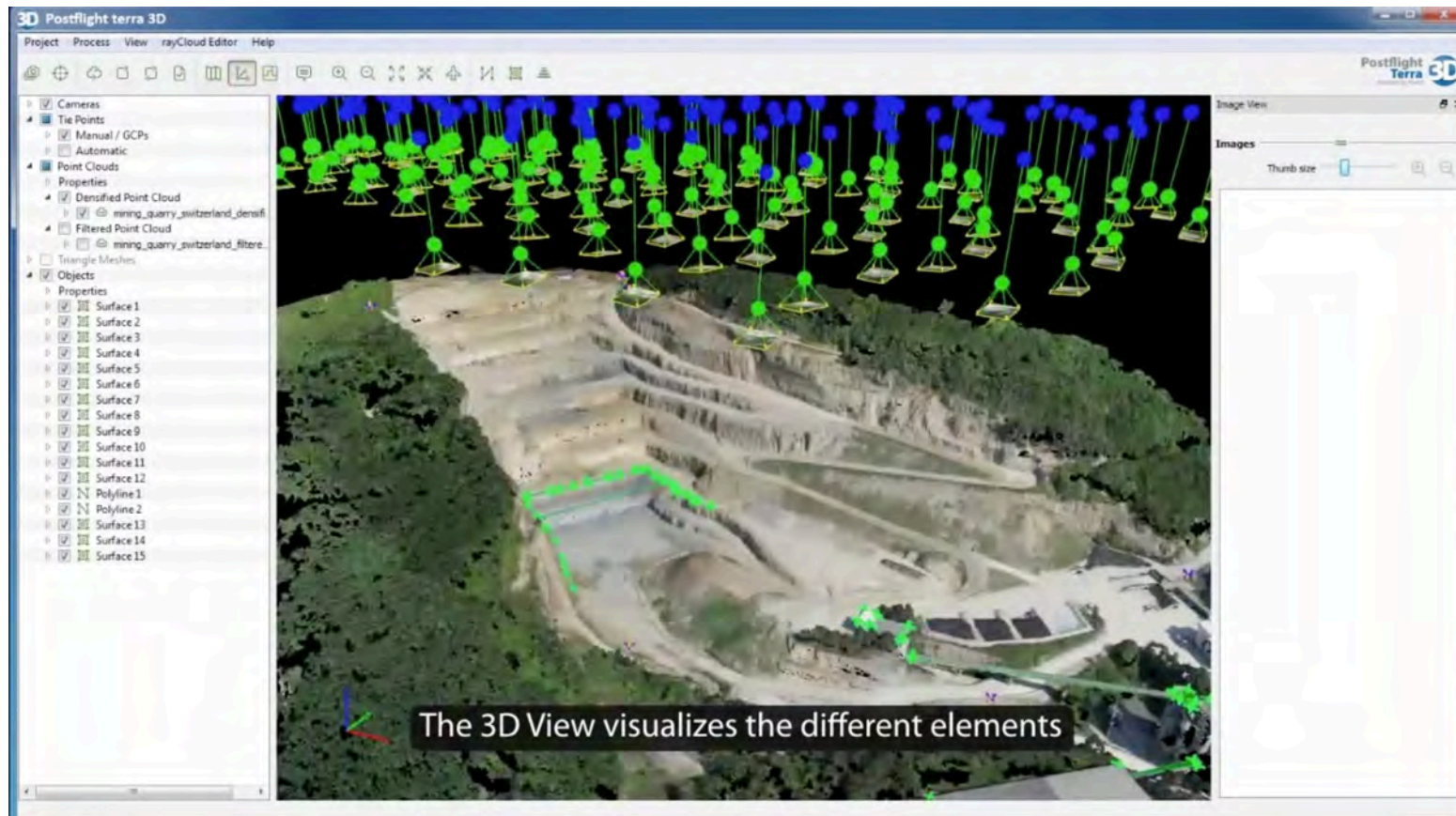


Flight planning software
eMotion



Image processing software
Postflight Terra

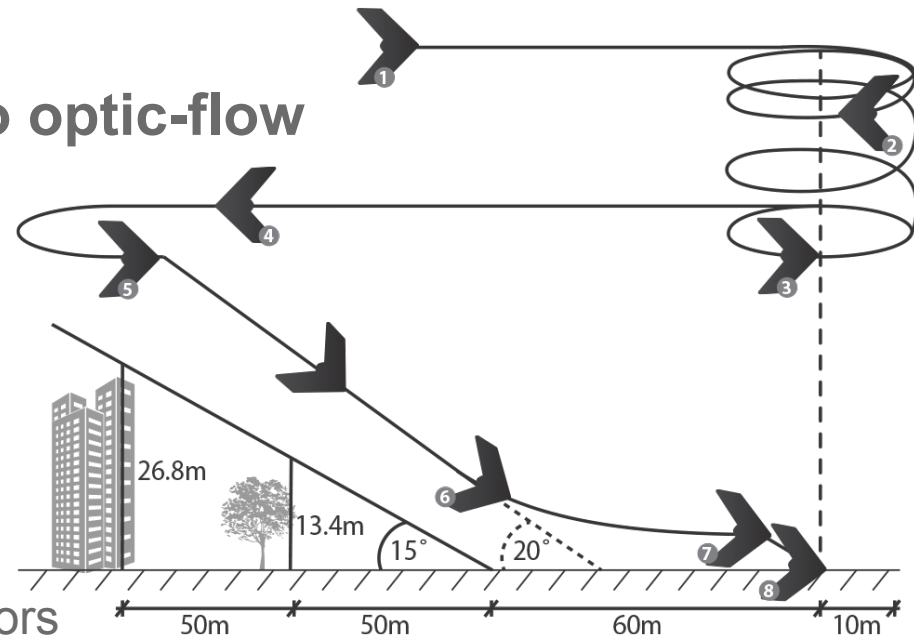
Extracting geographic information



<https://www.youtube.com/watch?v=bZLJkNfGVU>

A truly autonomous drone

- From take-off to landing
- Automatic 3D flight planning
- Ultra-precise landing thanks to optic-flow
- **Fail-safe**
 - 3D geo-fencing
 - Low or empty battery
 - Telemetry link loss
 - Strong wind
 - Ground avoidance
 - Handling of failing sensor or actuators



- **Aerobatic figures: roll, fast ascent, spinning descent**
- **Oblique imagery**
- **Multi-drone coordination**

Customer benefits

- **Quarry survey:** « The cost of the intervention is reduced while the results are more reliable than a standard survey. » MOSINI et CAVEZIEL SA
- **Road construction:** “The results totally fulfilled our client’s expectations in terms of quality. In terms of timely completion we surpassed greatly the expected duration and deadlines.” Gustavo, Dymaxion SAS
- **GIS:** « These new modes of acquisition, which are easy to master, autonomous and inexpensive, offer a genuine operational alternative to locally update our geographic databases. » Arcorama
- **Survey:** “The eBee has given me the best R.O.I. of any surveying tool I own” Prof. Tosa Ninkov Ph.D., owner, GeoGIS Consultants
- **Disaster management:** « The drone was the main factor in the success of our four missions. » UNITAR

New product: the eXom



<https://www.sensefly.com/exom>

Complementary mapping



3D modeling

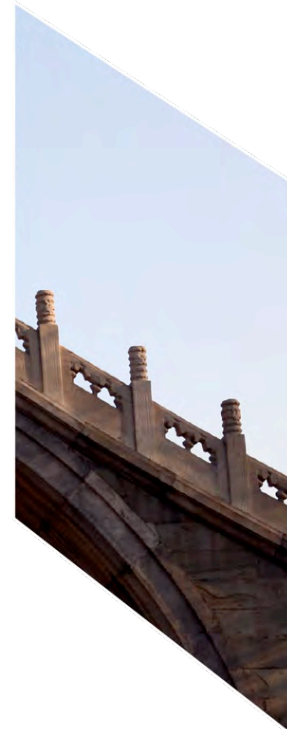


Inspection





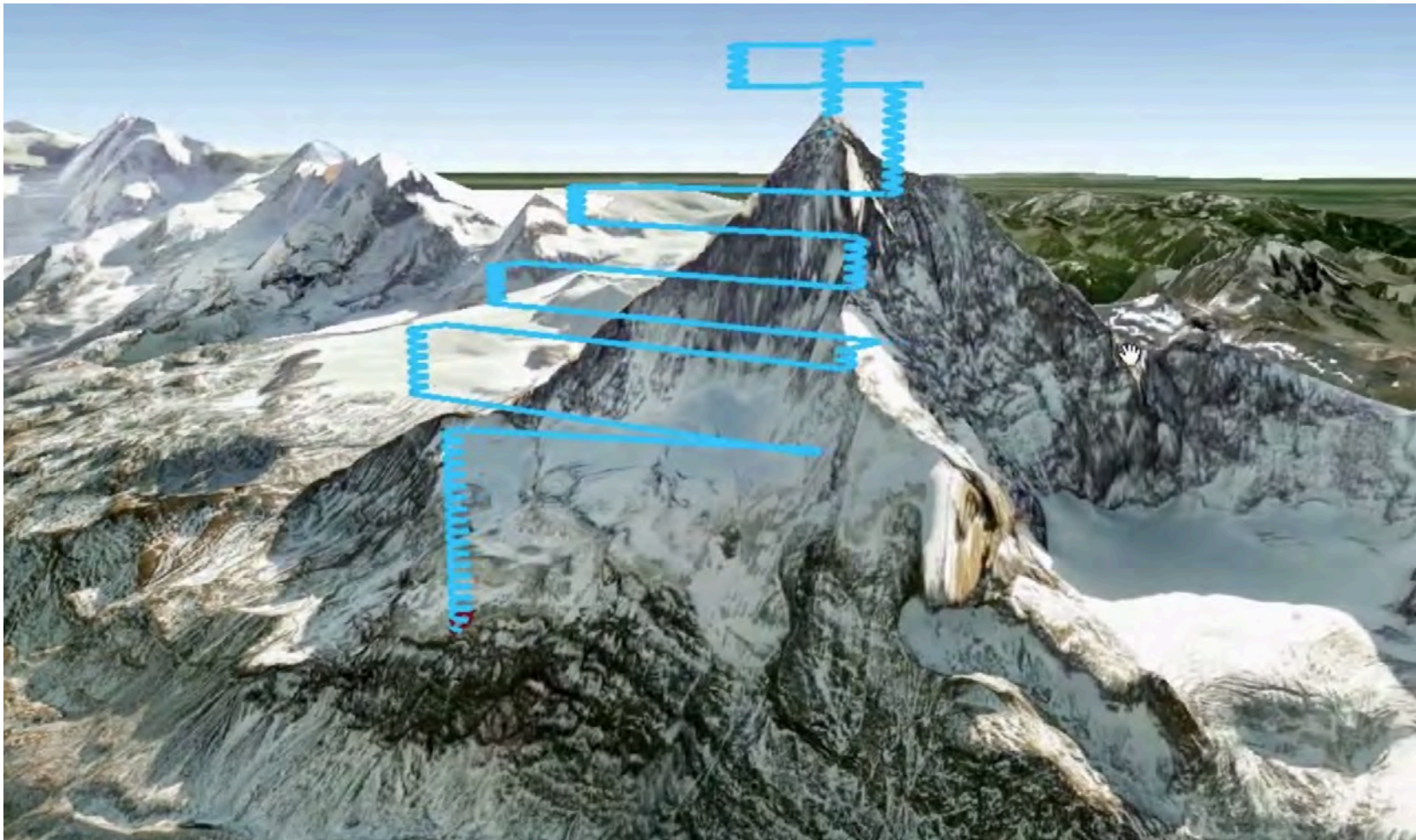
ScreenFly





<https://www.youtube.com/watch?v=SV9NuwzWCAg>

Mapping the impossible



<https://www.youtube.com/watch?v=NuZUSe87miY>



Thanks for your attention

www.sensefly.com