



Lorenzo Martelletti

Pix4D

**Aerial Robotics and Social Good
Solutions**

@WeRobotics



Drone Mapping for Agriculture

June 1st, 2017

WeRobotics Global 2017

Lorenzo Martelletti

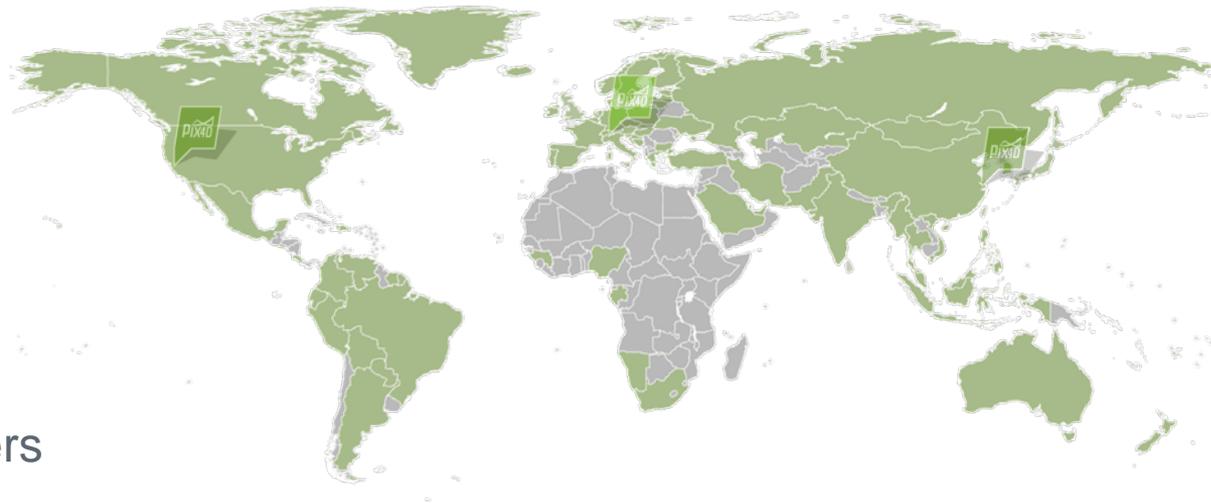
Sales & Marketing Director, Pix4D

OUTLINE

- Pix4D
- From drones to information, components vs solutions
- What can you really do with an Ag drone (use cases)
- Honestly, who is Drone Ag for?
- Suggestion for the Flying Labs

1. Pix4D Global

- Software company
- Founded 2011, Swiss
- 90+ employees
- 23 nationalities
- 26 languages
- Swiss HQ + 3 subs
- 10k+ monthly active users



SAN FRANCISCO
U.S.A



LAUSANNE
SWITZERLAND



BERLIN
GERMANY

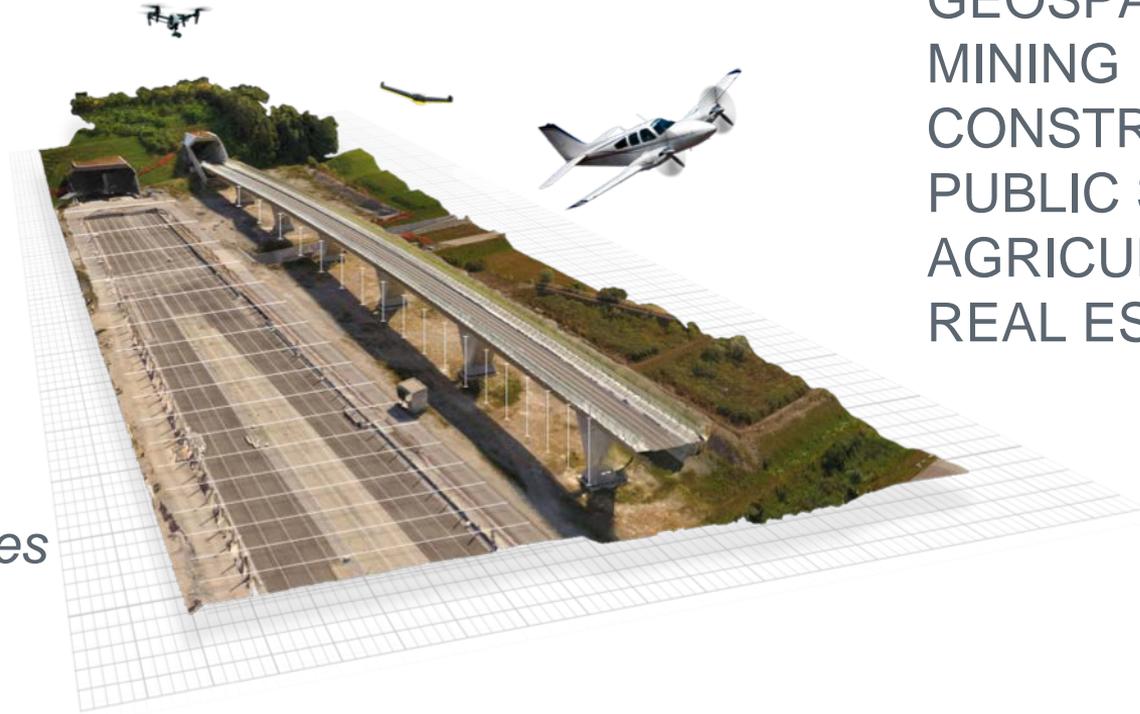


SHANGHAI
CHINA



MODERN PHOTOGRAMMETRY SOFTWARE

Generates
2D maps and 3D
models,
automatically,
purely from images

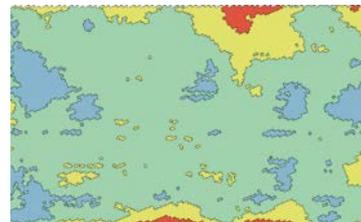
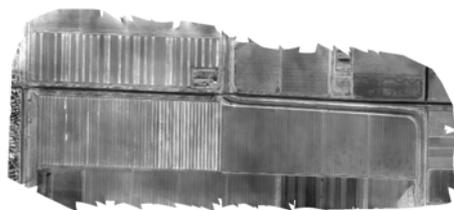
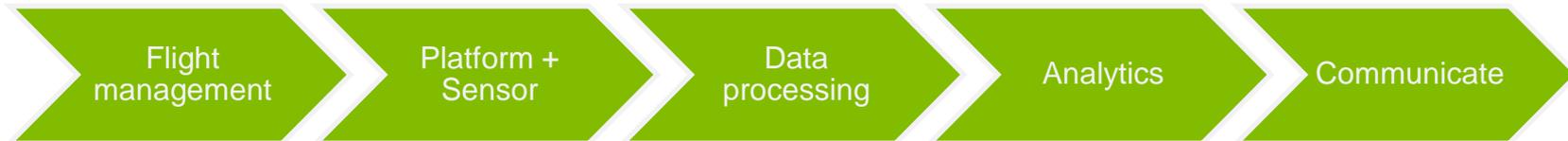


GEOSPATIAL
MINING
CONSTRUCTION
PUBLIC SAFETY
AGRICULTURE
REAL ESTATE

HYBRID DESKTOP + CLOUD SOLUTION, WORK EVERYWHERE



2. From Drones to Information



Drone Ag Market offering

Drones	Sensors	Software
senseFly	Parrot MicaSense	Desktop + Cloud Pix4D
Prosumer Parrot DJI	Senterra Slantrange	ESRI
	Prosumer MAPIR	Cloud Airinov MicaSense Precision Hawk DroneDeploy



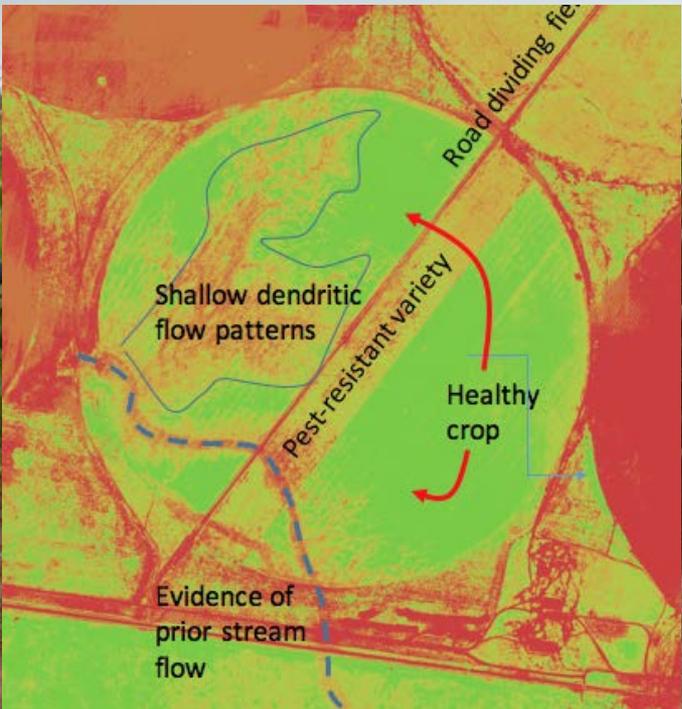
3. What can you really do with an Ag Drone

- Damage assessment (2D, Vis, Multispec)
- Early disease detection (2D, Vis, Multispec)
- Water stress assessment (Visual, Multispectral, Thermal)
- Soil analysis for seeding, percolation, erosion, compaction (Visual)
- Counting plants & seedlings for replanting (Visual)
- Crop vigor assessment (Multispectral) for optimization of inputs (water, fertilizer, pests)

Damage assessment, Corn, Argentina (Waldoair)



Damage assessment, Corn, Argentina (Waldoair)



K-optimization, Carrot, Netherlands (Agrifirm & Aurea Imaging)

Carrots are an important crop in Dutch agriculture, with net yields up to 100 t/ha and a high nutrient requirement, especially for potassium (K).

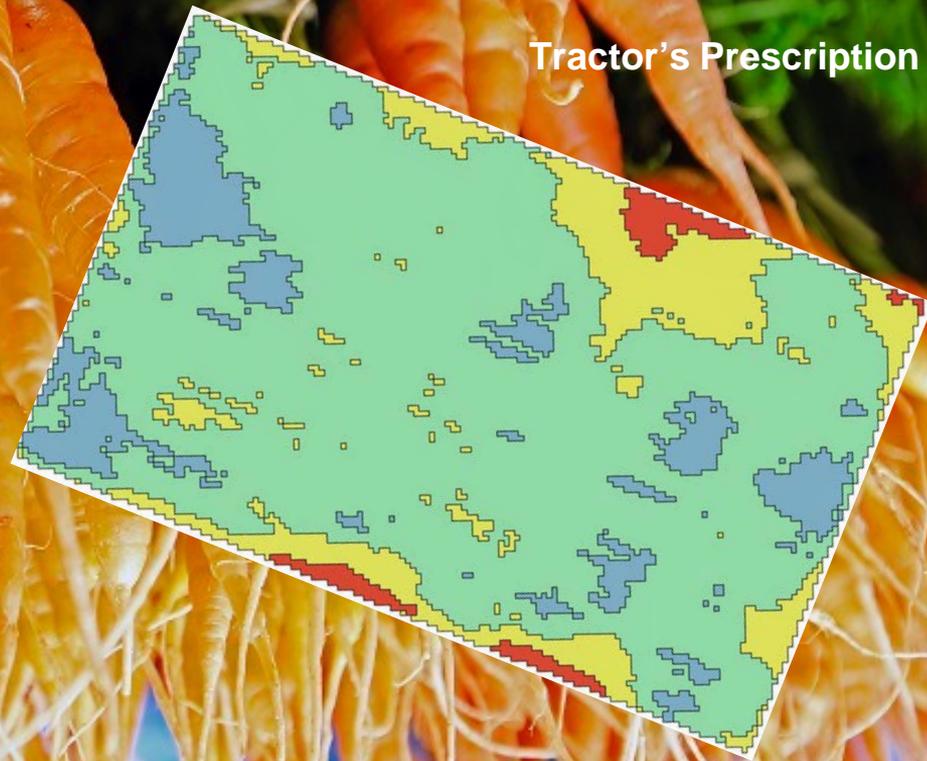
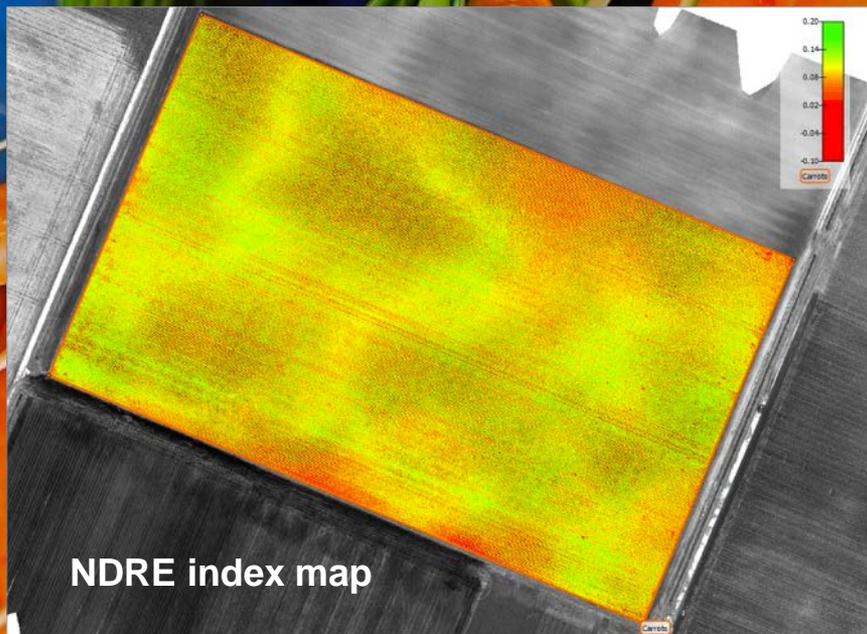
Farmer of organic carrots and agronomy firm Agrifirm asked Aurea Imaging to acquire multispectral imagery and assist in its analysis and interpretation.

The goal was to assess carrot plant health and quickly detect deficiencies or problem areas for improved cultivation.

Thanks to this project the grower found a K deficiency on his field that was still invisible to the naked eye.

K-optimization, Carrot, Netherlands (Agrifirm & Aurea Imaging)

Tractor's Prescription map



Seeding Rate Optimization, Corn

Soil analysis

Soil Organic Matter and Texture correlate with Orthomosaic color



Seeding Rate Optimization, Corn

Correlation of Soil Organic Matter and Texture
with Orthomosaic color

Corn St
High

4. Honestly, who is Drone Ag for?

- We are still delivering data, **not information**
- **Not for farmers** (despite the marketing)
- Double **complexity**: drones + novel high res remote sensing
- **Expert** Interpretation, Data Fusion & Correlation, Research is still needed
- **Need for accuracy** to support understanding, Pix4D focus

5. Suggestions for the Flying Labs (1/2)

Keep it simple: services for Ag Insurance inspection (a "low flying fruit")



Image credit: Colby AgTech

5. Suggestions for the Flying Labs (2/2)

Team up with Research: The Drone Agronomist

- Identify and team up with plant & agronomic research centers
- These are today the "buyers" of technology, the ones who need drones and sensors to craft solutions to agronomic problems
- Educate a generation of Drone Agronomists with knowledge of Robotics and Agronomy, these will serve ag cooperatives and farmers



Thank you!

pix4d.com/industry/agriculture

Feel free to reach out!
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