



ProDrone

Delivering on the promise of UAV
inspections

Deck

05.07.2018

infrastructure inspection solutions

About ProDrone

Blade Inspections are a crucial component of wind park O&M

- Founded in 2015
 - 2 years of development
 - 1 year in commercial activity
 - Goal: Deliver a high quality, reliable, scalable and safe UAV inspection solution
- Opportunity
 - Preventive Maintenance
 - Aging infrastructure
 - Offshore market



Current UAV limitations

Current alternatives are not effective

Rope Access



UAV



Ground Camera



Cost



Downtime



Data robustness



Safety



And UAVs have critical bottlenecks

Current UAV limitations

Manual piloting is the key factor limiting UAV applicability

- 100% pilot skill dependent
- Very difficult operation
- Not scalable or repeatable

Monitoring discontinuities

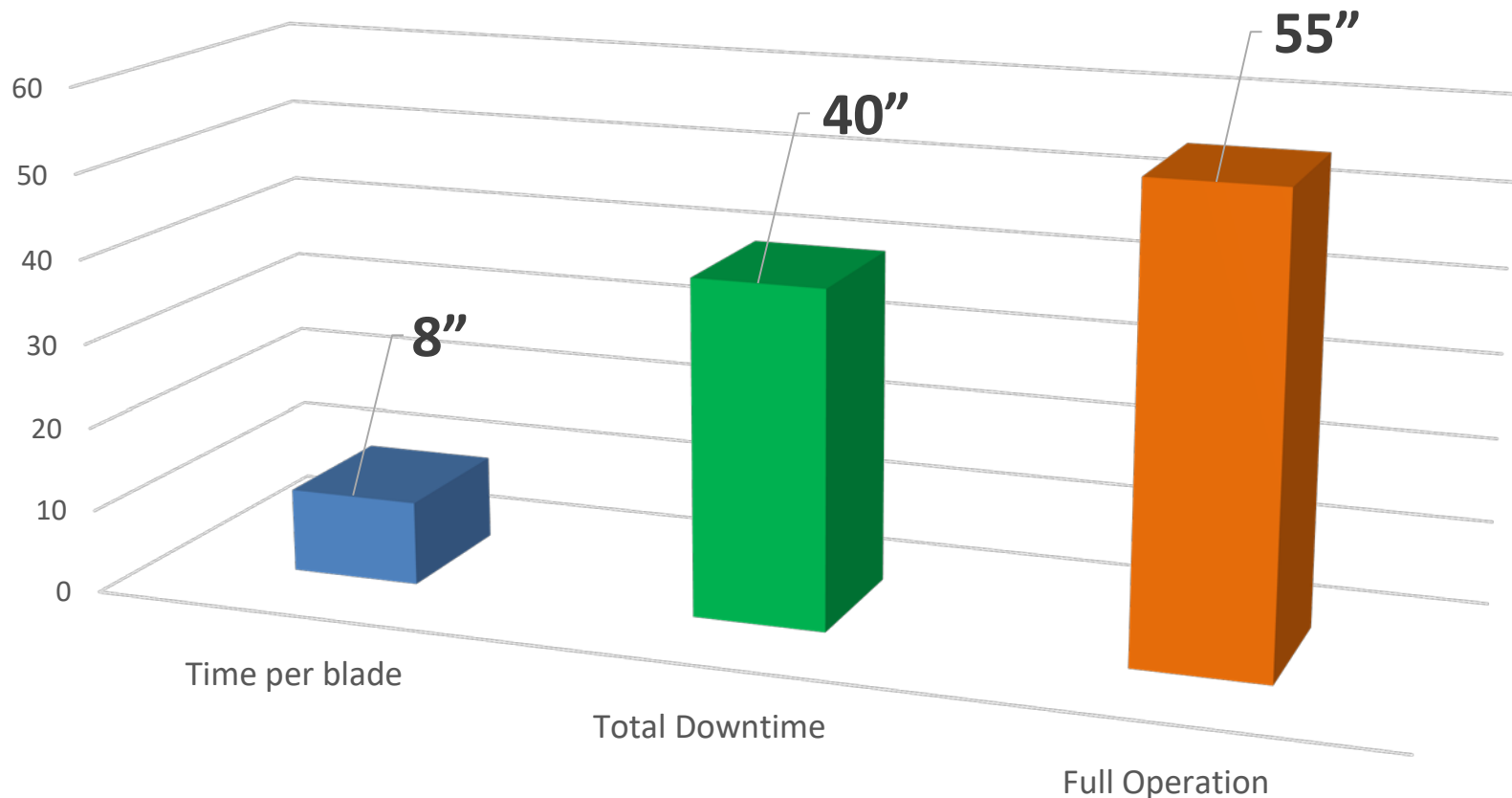
- All blade covered?
- Any redundancy in data?
- Focus/exposure?
- **HIGH UNCERTAINTY**



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Under 1 hour full turbine inspection

Operational duration (min)



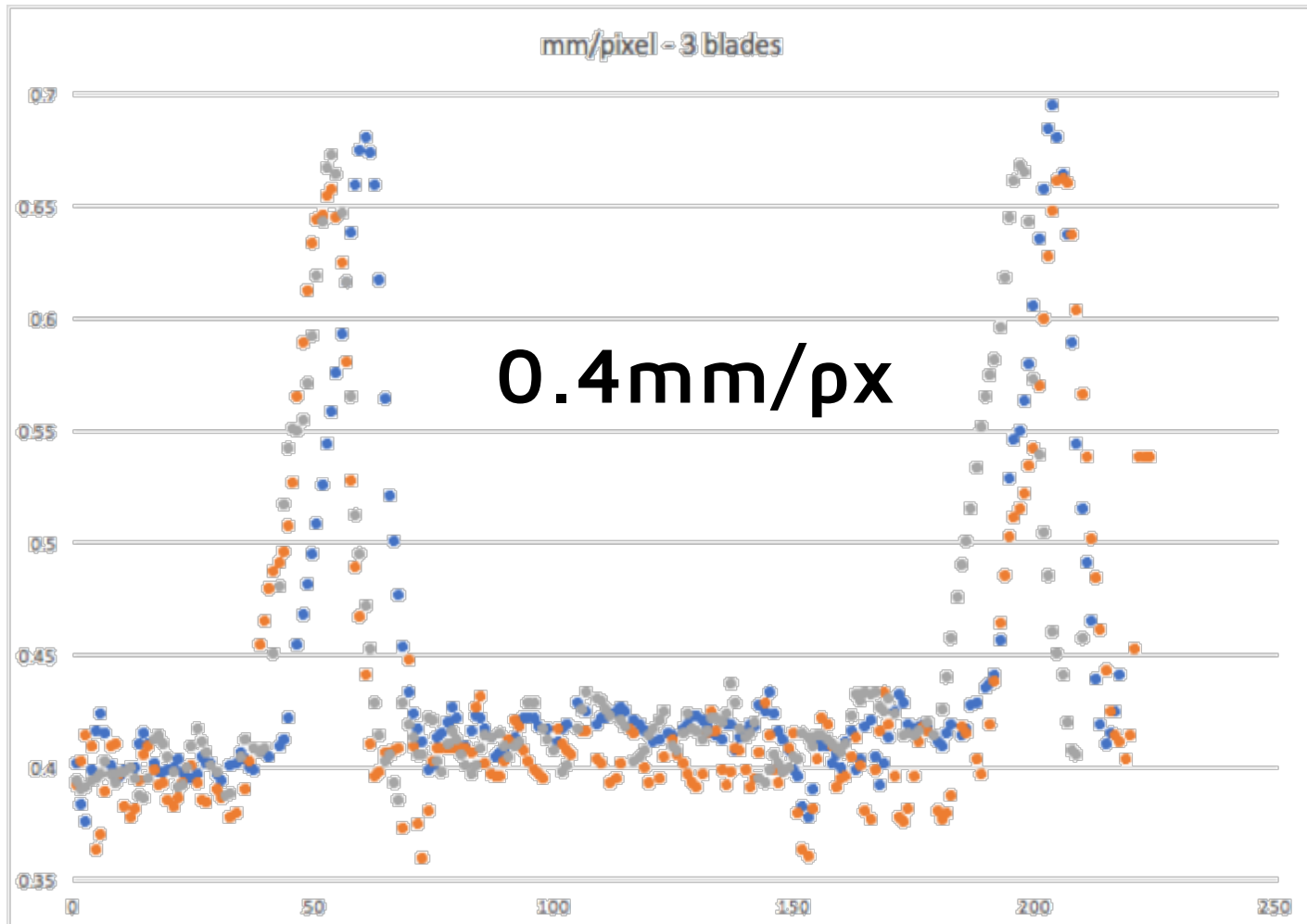
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Acquisition metrics – High Quality



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Acquisition metrics – Consistent high resolution



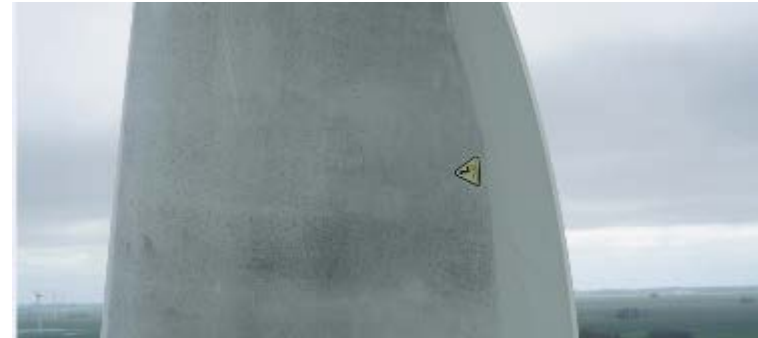
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Acquisition metrics - Consistency



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Acquisition metrics - Consistency



Acquisition metrics - Consistency



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Acquisition metrics – Pixels are not enough

High precision ruler for defect measurements



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Acquisition metrics – Pixels are not enough

Distance to Hub / Leading edge for damage localization



POI Report #20029

Distance to Hub: 41425 mm

Damage Severity:
0 / No issues

Damage Type: 26 / Others

Recommendation:
No Actions recommended

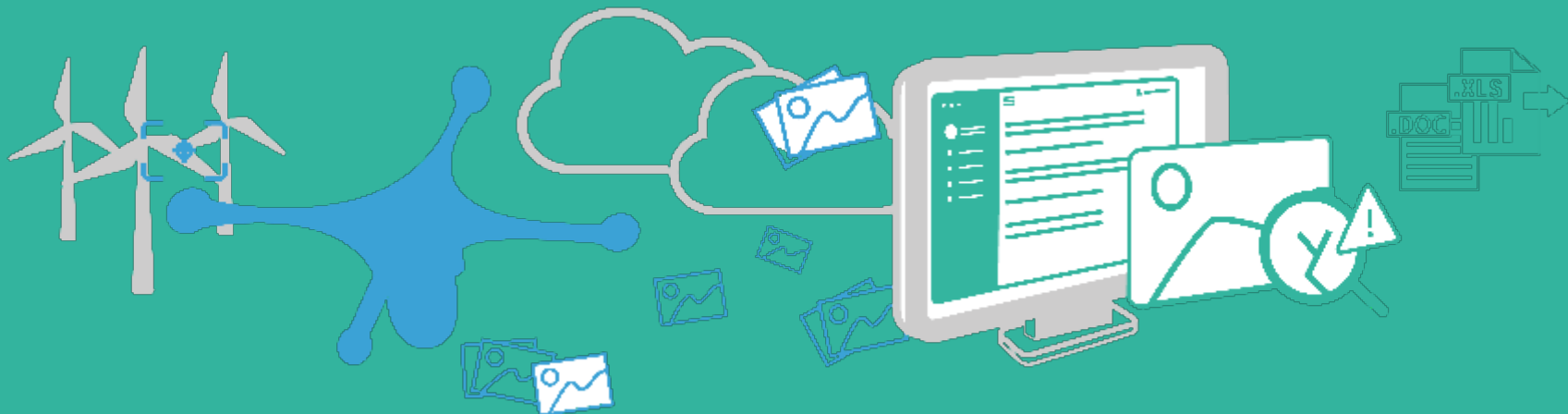
Observations:
Lightning receptor position. Only for records and check.

Height: 20 mm
Width: 20 mm
Side: Pressure Side
Area: 400 mm²

Close



bladeinsight



BladeInsight

Inspection data platform

- Several profiles
- API ready
- 60+ users
- Hosting 6 inspection entities
- 10+TB blade data



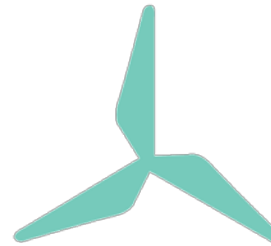
Pipeline



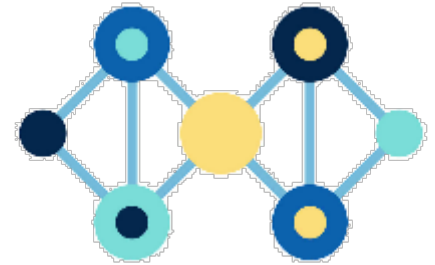
- Fly - HW
- Collect data
- Comms
- Logistics etc



- Upload
- Database
- Security
- Costs



- Display
- Profiles
- Reports

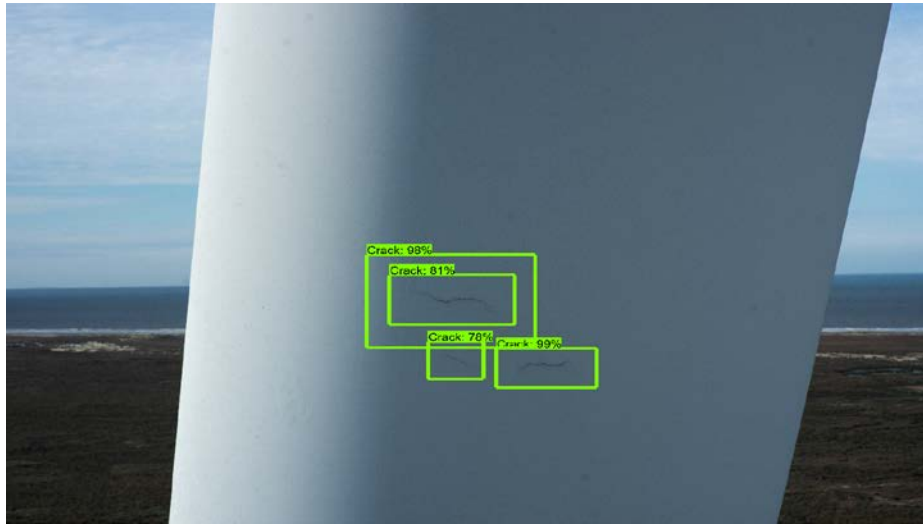


- Insights
- ML
- Pred. Maint.
- SAAS

AI – Machine learning



AI – Machine learning



Track record

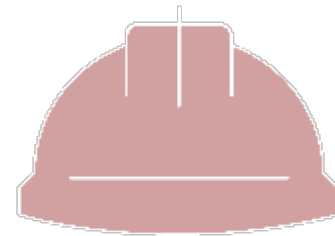
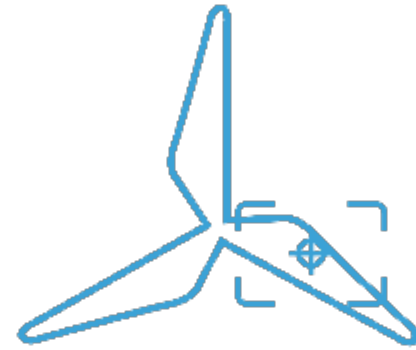


- 497 turbines
 - 2 payloads
 - 6 clients
 - ROI achieved



Track record

- 660 turbines
 - 1980 Blades
 - 598,906 pictures
- 704 reports
- 0 collisions or loss of equipment



Team



Tiago Ferreira
Head of Engineering



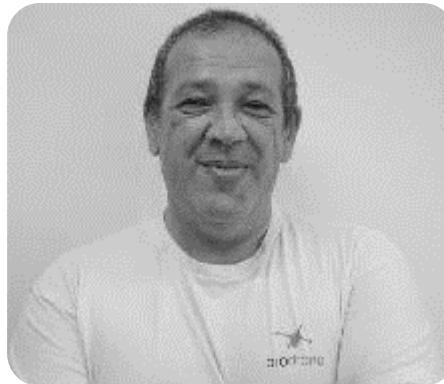
André Moura
Founder and CEO



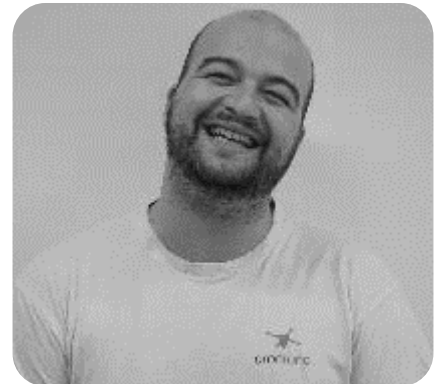
Illia Sheremet
Head of Robotics



José Marques
Head of Web Development



Luís Gonçalves
Head of Product



Arthur Soares
Head of Operations



THE SKY IS NOT THE LIMIT
IT'S OUR OFFICE

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