Geo-enable your organization with MLOps

Pascal van Dalen
Chief Growth Officer
Versatile & easy-to-use software platform for geospatial machine learning

- Founded in 2016 in Switzerland
- Cloud-native & secure platform
- 100+ enterprise clients globally
80% of geospatial AI initiatives fail

We fix that by revolutionizing the way organizations approach the deployment and development of geospatial applications:

- giving our customers direct control for monitoring their physical assets, without middle men
- Turning cutting edge geospatial AI into a no-code easy to use platform
## Produce a scalable ML model in days, not months

### Timeframes

<table>
<thead>
<tr>
<th>Task</th>
<th>1 week</th>
<th>4 weeks</th>
<th>4 weeks</th>
<th>2 weeks</th>
<th>8 weeks</th>
<th>2 weeks</th>
<th>1 week</th>
<th>1 day</th>
<th>3 weeks</th>
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<tbody>
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<td>Organize data</td>
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<td>Train model</td>
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<td>Deploy to production</td>
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<td>Prod QA/QC</td>
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<td>Model maintenance</td>
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<td>Scaling to new type of objects</td>
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</tbody>
</table>

### Roles

- Data scientist
- GIS associate
- Annotator
- Software engineer
- Developer engineer
- Data scientist
- GIS associate

### Time Savings

- 95% time saved

### No Coding Skills Required + Easily Scalable from Single User to Team Collaboration
Scale your geospatial practice with a cloud-based MLOps platform

**Optical & multispectral imagery**

- **Formats:**
  - RGB
  - IR
  - SAR
  - DSM

- **Uploading:**
  - Direct upload
  - Cloud storage
  - WMS / XYZ server
  - Training data (GIS)

**ML models**

- **Training:**
  - Automatic model architecture
  - Annotations UI
  - Data curation & model analysis

- **Production:**
  - Fully automated deployment
  - QA/QC

**Data management**

- **Data preparation**
- **Data organisation & storage**
- **Collaborative data labelling & annotation**

**Result management**

- **Interactive web reports**
- **Change monitoring reports**

**Advanced tools**

- **GIS post-processing**

**Infrastructure**

- **Data encryption & confidentiality**
- **Cloud-based**
- **Automatic GPU scaling**

**API**

- **Custom dashboards**
- **ArcGIS, QGIS, Safe FME plug-ins**
- **Custom BI tools**

**Web UI**

- **API**

**Data management**

- **Data pre-processing**

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Enabling new use cases across industries

FORESTRY & CARBON MARKETS
- Tree inventory
- Seedling detection
- Survival assessment

AGRICULTURE & FARMING
- Crops, weed & livestock monitoring

FMCG
- Sustainable supply chain management
- ESG reporting

MINING
- Cracks & erosion, water bodies localisation
- Haul roads mapping
- Mines rehabilitation

CONSTRUCTION & CIVIL ENGINEERING
- Land assessment
- Infrastructure monitoring
- As-planned vs. as-built reporting

INSURANCE
- Insurance risk profiling

LINEAR INF.
- Integrity inspections

...AND MORE
Integrate Picterra with other GIS softwares or custom dashboards. Example: **Picterra ArcGIS integration**

- **Customer data**
  - EO imagery
  - Annotations (optional)

- **Build no code ML detectors**
  - Raster pre-processing
  - Annotation toolkit & automations
  - Custom detectors training & deployment
  - Real time team collaboration features
  - Model insights & data curation toolbox

- **ArcGIS Pro via Plug In**
  - Run detectors at scale using ArcGIS Pro interface

- **ArcGIS system**
Advanced tools

Streamlining and simplifying geospatial workflows with access to the most common GIS tools in just a few clicks directly in Picterra.
Faster ML production with Meta AI’s Segment Anything

Fastest annotation and training process in the industry to bring ML production to all of our user’s fingertips

- Our new AI magic wand powered by Meta AI’s Segment Anything Model (SAM) enables one-click annotation of land patterns or objects
- No installation of libraries or toolboxes required
Challenge
Biodiversity assessment of coffee plantation & transition to shade-grown coffee farming

Solution
Satellite imagery at 50 cm resolution
Multi-class model differentiating several classes of coffee (ie. adult / juvenile / post-processed), banana & other types of trees
Automation of critical site inspections for mine safety: water bodies mapping

Challenge
Detecting and mapping water bodies across the mining sites.

Solution
Input data: 5cm drone imagery
Running ML models to detect:
Three classes of water

- Water
- Water-sand
- Water-grass
Automation of site inspections for mine safety monitoring: 
**early detection of cracks & erosion**

**Challenge**
Monitoring of existing and identification of new cracks along geological features around the mining site for safety assessment and the risk of structural danger.

**Solution**
- **Input data:** 8cm drone imagery
- **Running ML models to detect:** cracks detector
Precise **land mapping for mine rehabilitation** planning & progress monitoring

**Challenge**
Accurate mapping & land classification across the mine site in preparation for rehabilitation (ie re-vegetation) planning & establishing digital data records of reference for reporting

**Solution**
**Input data:** 5cm drone imagery

**Running ML models to detect:** Land mapping and classification model incl. i.e.:
- Trees
- Water
- Sparse vegetation
- Thick vegetation
- Roads
Country-wide slurry tanks identification for ammonia pollution monitoring

Danish expert in farm management, providing the industry with the right technology, the latest knowledge, and the very best advisory service to improve farming.

Goal: automate the identification of covered and uncovered slurry tanks across 34,000 farms country-wide.

Input data: A WMS imagery server covering Denmark at 25 cm resolution

26,000 slurry tanks detected in a few hours

Successful estimation of ammonia pollution
Key takeaways

- Ready to use geospatial ML & auto scaling infrastructure
- No massive upfront investment in data science
- Quick ROI: drastic cost reduction & productivity gains
Thank you