Geo Data Science Technology
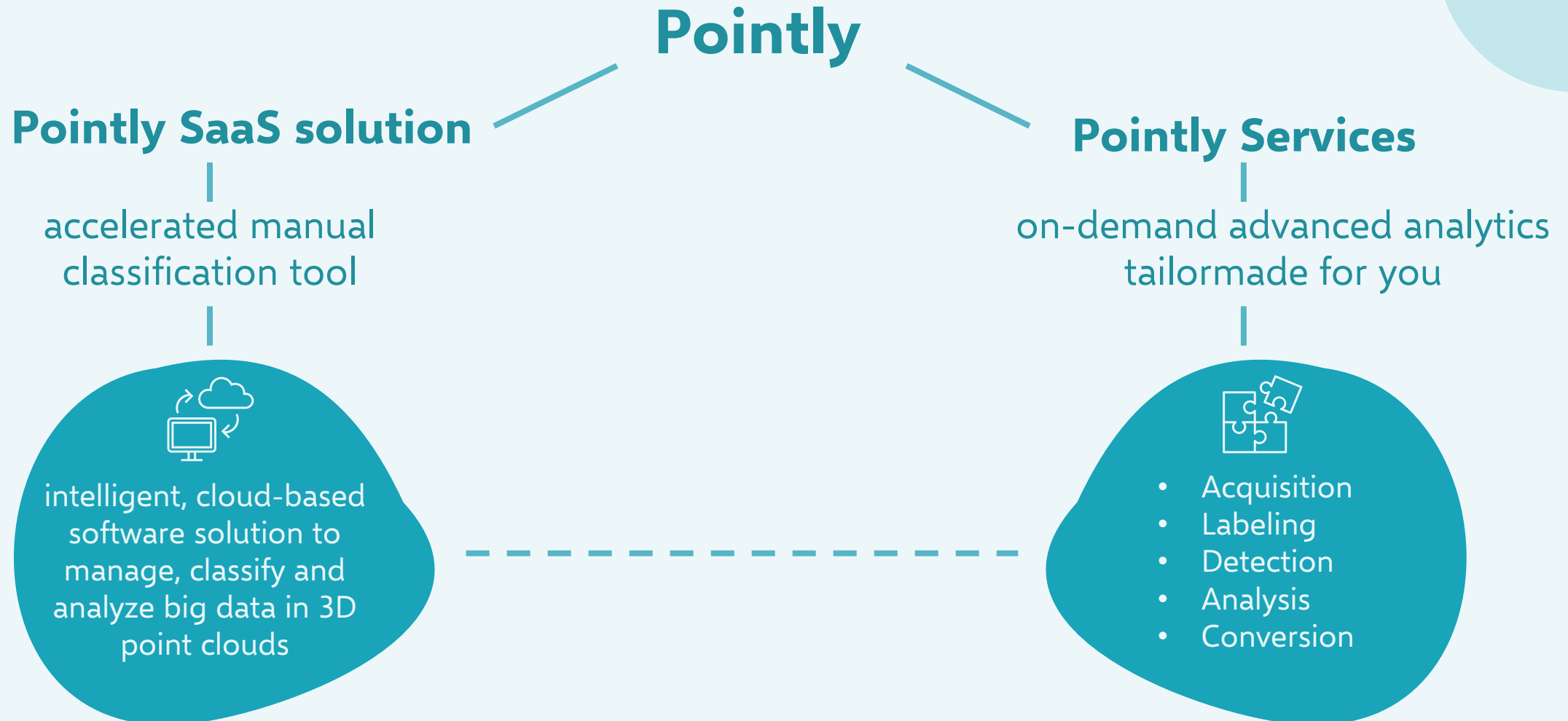## Made in Germany by Supper & Supper GmbH

supper&supper

Pointly is a SaaS product of Supper & Supper GmbH.

The company is one of the leading full-service data science service providers in Germany and develops customized solutions in the areas of machine learning, artificial intelligence, process optimization and digital transformation.

Check out www.supperundsupper.com & www.pointly.ai for more information.

POINTLY

What is Pointly?

SaaS solution & Services

Pointly

Pointly SaaS solution

accelerated manual
classification tool

intelligent, cloud-based
software solution to
manage, classify and
analyze big data in 3D
point clouds

Pointly Services

on-demand advanced analytics
tailormade for you

- Acquisition
- Labeling
- Detection
- Analysis
- Conversion

POINTLY

Pointly (SaaS)

- Overview
- Key features
- Pointly's interface
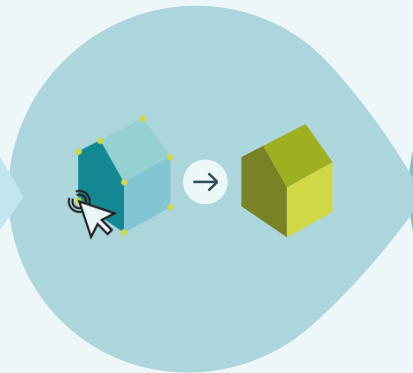- Roadmap

POINTLY

Pointly SaaS

Point out what matters

Pointly is an intelligent, cloud-based software solution to manage, classify & analyse
3D point clouds of all types.

Visualization

Easily visualize complex scans in Pointly's viewer

Classification

Accelerate classification trough smart labelling

Information

Extract information from 3D point clouds fast and precise

Insights

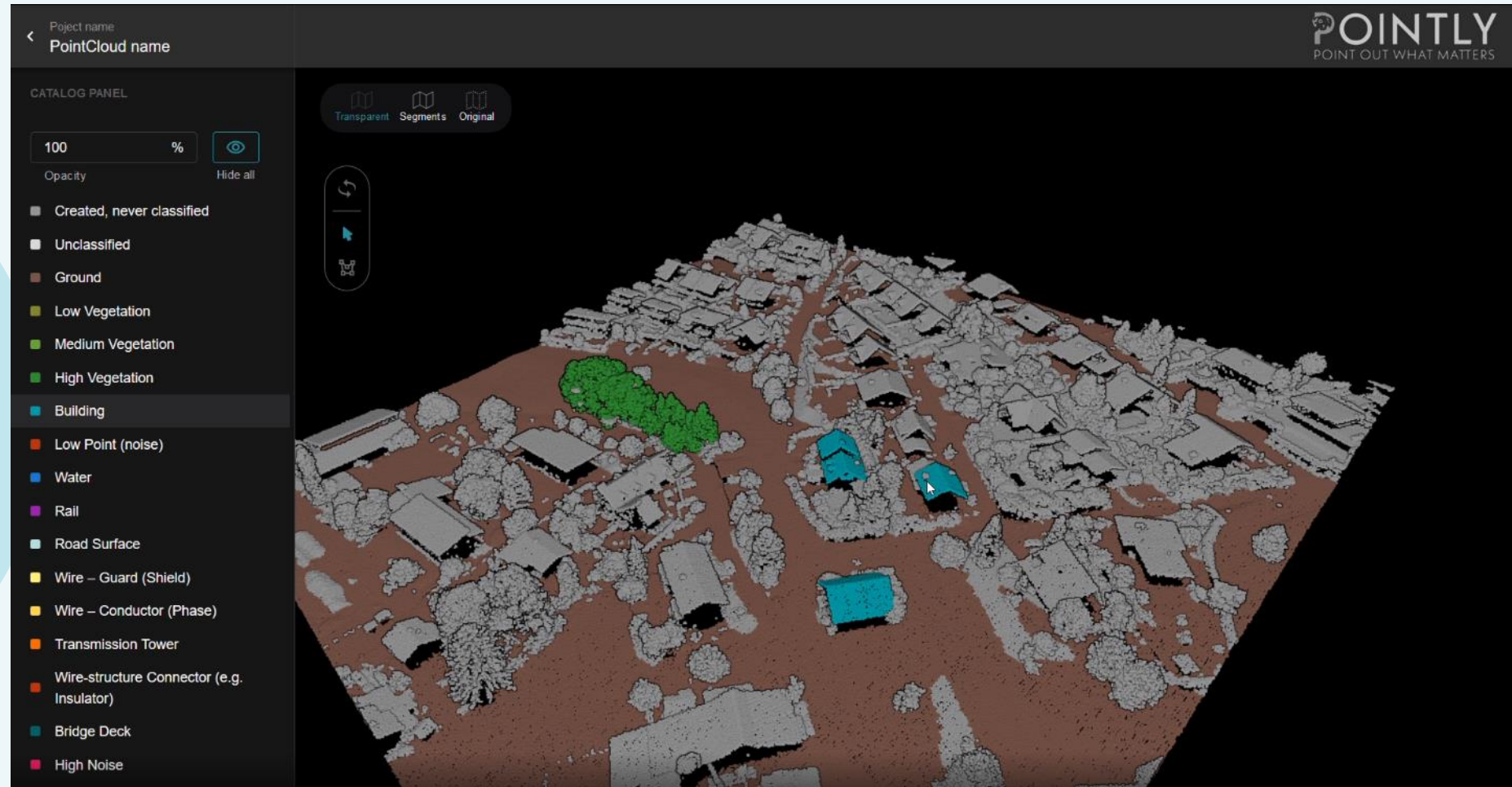Use gained insights as a basis for decision-making

Pointly SaaS

Next level 3D object classification

Innovative AI techniques enable convenient classification and segmentation of data points and objects within point clouds -

faster and more precise than ever before.
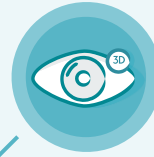
Pointly SaaS

Key features

AI-assisted labelling
Pointly will process your point clouds and make it as easy as never before to label even the last point with the correct class.

Smooth 3D visualization
Through browser-based and state-of-the-art visualization engines you can work with point clouds of up to billions of points in an uncompromising way.

User-friendly interface
Simple navigation, no nested menus, an intuitive toolbox – it will feel like you always worked with Pointly.

Custom Label Catalogs
You can create unlimited custom classes to classify your point clouds.

Process large data & point clouds
Through parallelized and scalable processing, Pointly easily manages even large amounts of data.
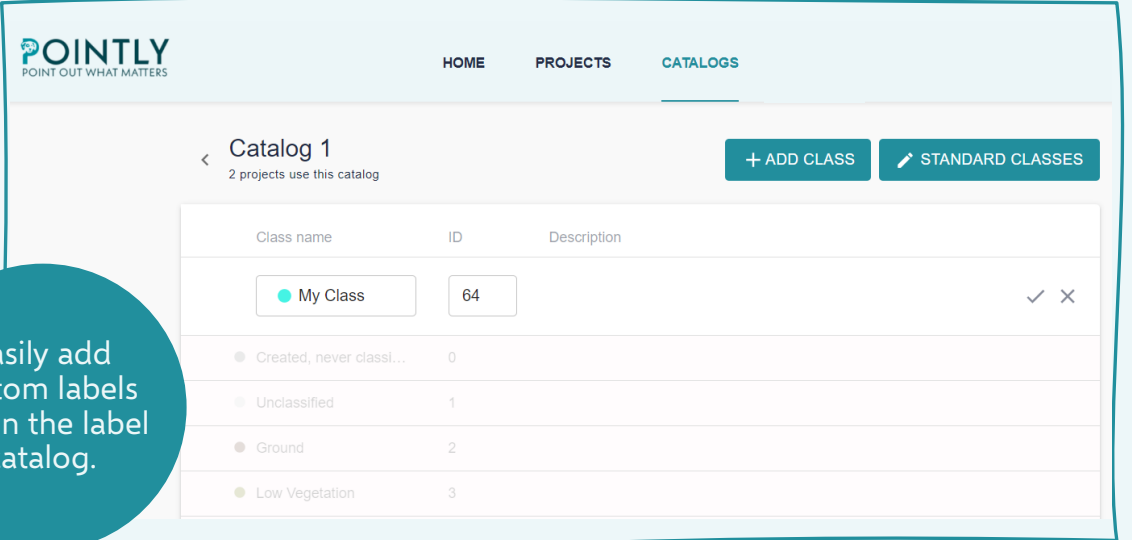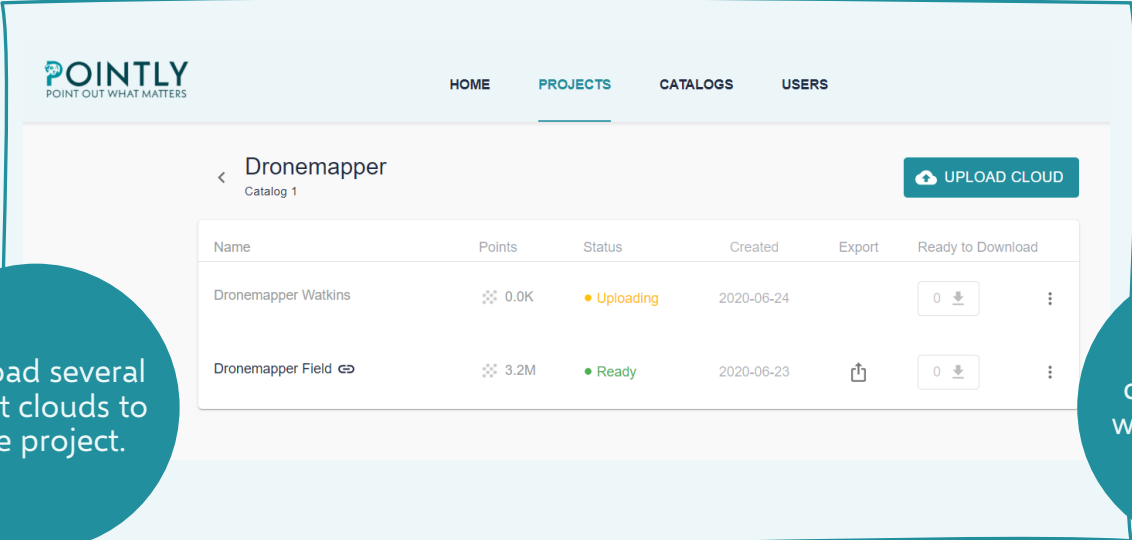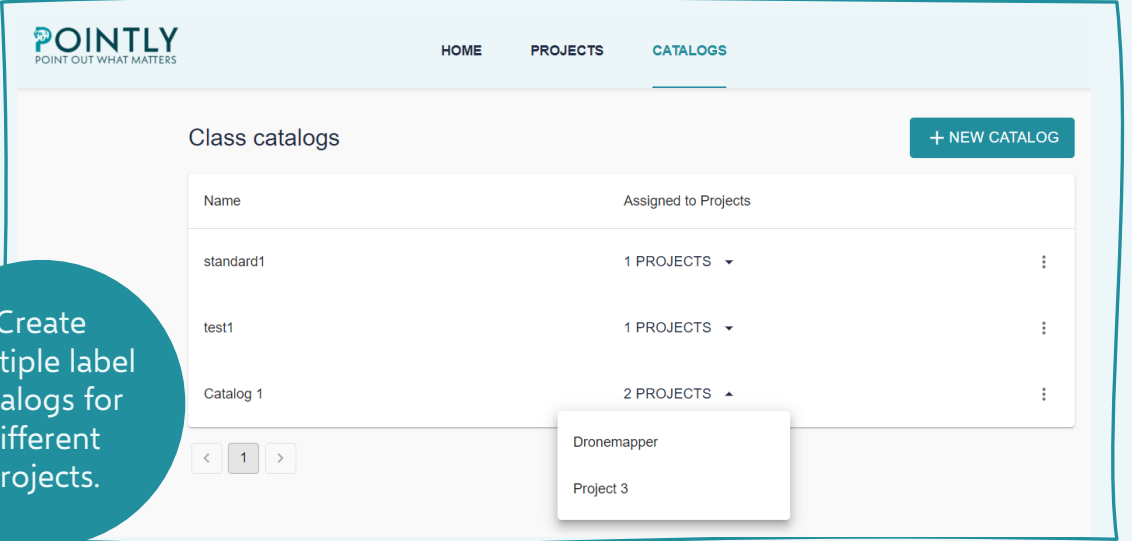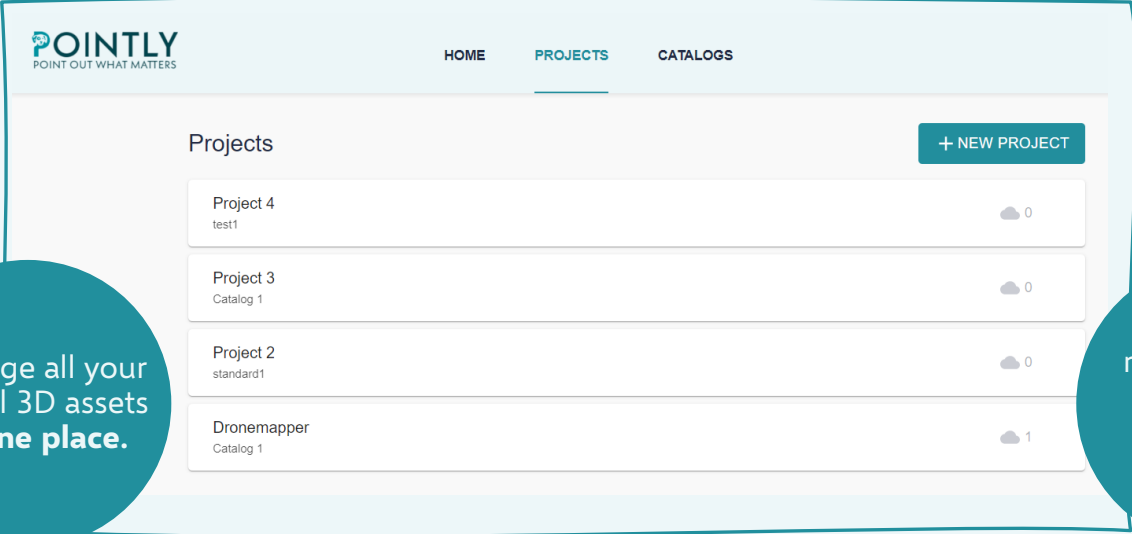
Leverage the power of the cloud
Sign up and get started – It's that simple!
Point out what matters right out of the box.

POINTLY

7

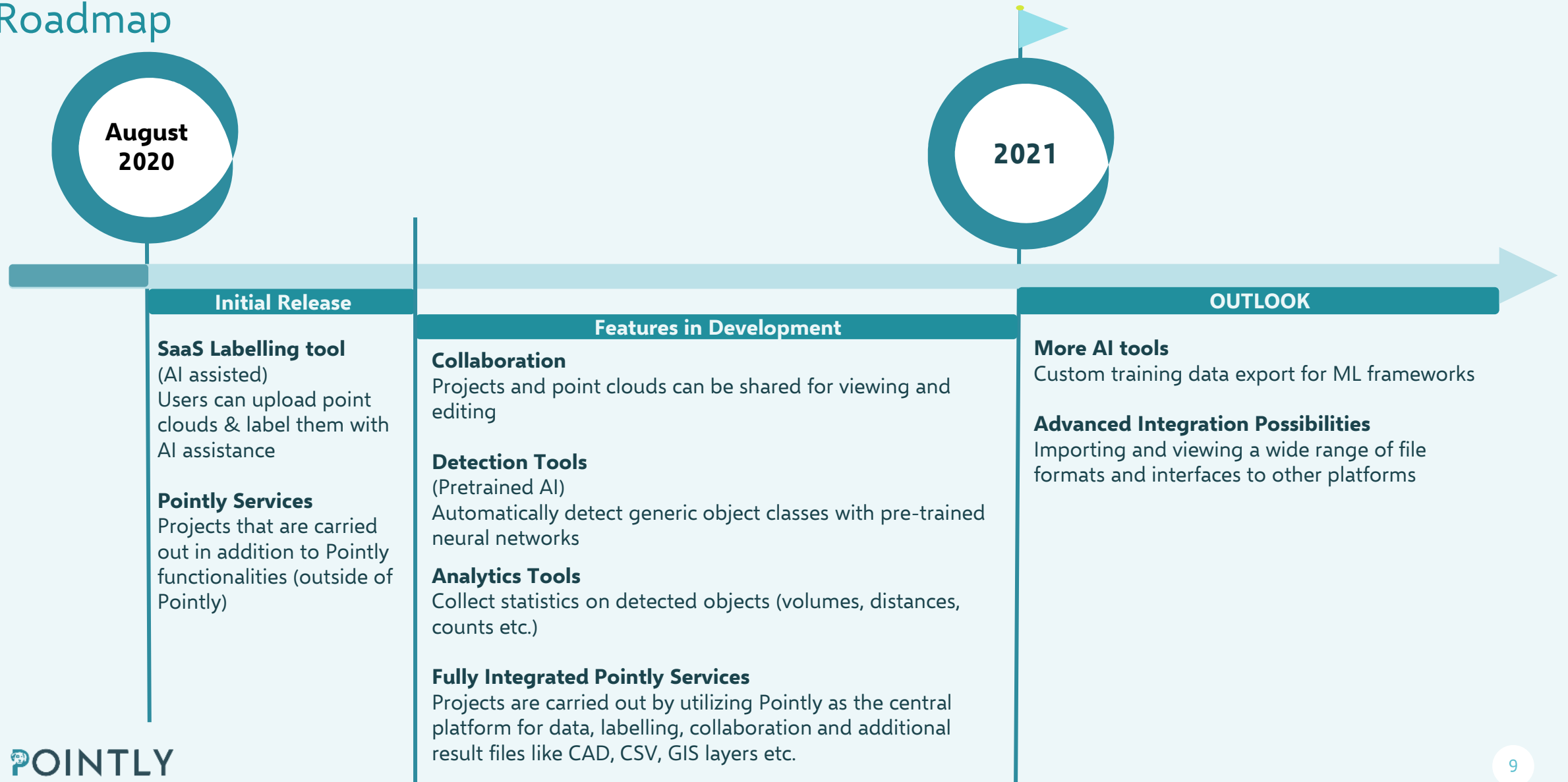# Pointly's interface

Manage all your digital 3D assets **in one place.**

Create multiple label catalogs for different projects.

Upload several point clouds to one project.

Easily add custom labels within the label catalog.

Pointly SaaS
Roadmap

August 2020

2021

Initial Release

SaaS Labelling tool
(AI assisted)
Users can upload point clouds & label them with AI assistance

Pointly Services
Projects that are carried out in addition to Pointly functionalities (outside of Pointly)

Features in Development

Collaboration
Projects and point clouds can be shared for viewing and editing

Detection Tools
(Pretrained AI)
Automatically detect generic object classes with pre-trained neural networks

Analytics Tools
Collect statistics on detected objects (volumes, distances, counts etc.)

Fully Integrated Pointly Services
Projects are carried out by utilizing Pointly as the central platform for data, labelling, collaboration and additional result files like CAD, CSV, GIS layers etc.

OUTLOOK

More AI tools
Custom training data export for ML frameworks

Advanced Integration Possibilities
Importing and viewing a wide range of file formats and interfaces to other platforms

POINTLY

Pointly Services

- Overview
- Acquisition
- Labeling
- Detection
- Analysis
- Conversion
- Use Cases

POINTLY

Pointly Services

What are Pointly Services?

Pointly Services are on-demand advanced analytics tailormade for you.

Pointly Services directly integrate with your manually classified point clouds on Pointly. This allows you to use them as training data for automated classification.

Pointly Services provide you an overview of what is possible with the technology developed by Supper & Supper. Services can be combined into powerful data pipelines and can be tailored to fit your individual use-case.

If you have a custom use-case in mind reach out to us for a tailored solution that fits your needs.

POINTLY

Pointly Services Overview

Acquisition

- Point Cloud Generation
- Photogrammetry processing
- Post-Processing

Labeling

- Labeling Service Provider

Detection

- Automatic Point Cloud Classification
- Automatic Instance Segmentation

Analysis

- Aggregate Analysis
- Per-Object Analysis

Conversion

- Raster data
- Vector data
- CAD data
- Tabular data
- Other (e.g. pdf reports)

POINTLY

Pointly Services 1 & 2
Acquisition & Labeling

① Acquisition Services

In cooperation with our Partner Network we offer data acquisition as the first step in an end-to-end pipeline

- **Point Cloud Generation**

Order LiDAR and imagery-based scans of your physical assets anywhere in the world and process the data directly through Pointly's intelligent labeling tools and services.

- **Photogrammetry Processing**

Do you use drone images to capture your assets and would like to turn them into point clouds?
In cooperation with our drone flight and photogrammetry partner we can offer you a fast point cloud generation pipeline.

- **Post-Processing**

Do you have already point clouds but would like to improve their data quality?
With our cloud powered processing pipelines we offer denoising, registration, and filtering for large amounts of point cloud data.

② Labeling Services

Do you need large amounts of point cloud data manually classified but would prefer to hire someone for the job?

In collaboration with our Labeling Service Provider, we provide access to a scalable and professional workforce that allows you to flexibly order labeling tasks.

Since the work will be done with Pointly's intelligent selection tools, you will see results much faster!

POINTLY

Pointly Service 3
Detection

⚡ Detection Services

- **Automatic Point Cloud Classification**

Do you need your point clouds to be enriched with point classification information?
Pointly Services gives you access to unsupervised and supervised classification algorithms, including the most recent 3D neural networks.

If you already started manually classifying your point clouds with Pointly's intelligent selection tools, you can leverage this as training data for our supervised classifiers.
This allows you to detect any custom object that can be labeled in your data.
A classified point cloud will allow you to filter for specific object classes and conduct further analyses.
If your use-case requires identifying single instances of an object class (e.g. trees or roofs) then our Automatic Instance Segmentation Service further increases the value of your data.

- **Automatic Instance Segmentation**

Instance segmentation builds on top of our AI-based classifiers to identify single instances of an object class. Rather then knowing which points belong to the "Tree" Class, you can then count and filter for individual trees and other objects. This allows you to conduct much more powerful analyses and disaggregate information on a per-object level.
Do you want to know more about what untapped information can be extracted from your point clouds? Have a look at our analysis services.
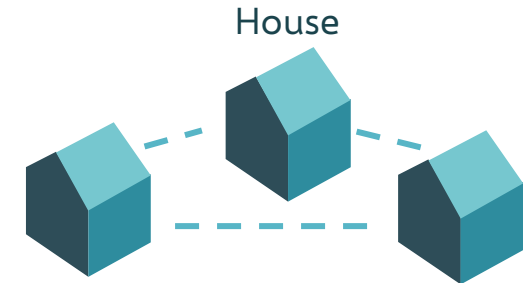
House

Every point that is a member of the "House" class can only be filtered with all other members of that class

House 1   House 2   House 3

Every single instance can be addressed individually. You can list all houses and pick them individually rather than all or none.

POINTLY

Pointly Service 4

Analysis

Analysis Services

Our analysis Services can be combined with our Conversion Services depending on what output format you would like to receive the analysis in.
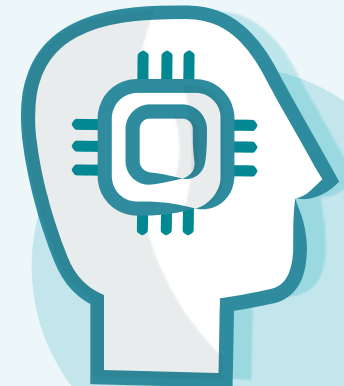
- **Aggregate Analysis**

Building on our Automatic Point Cloud Classification Service you can quickly summarize and filter the information contained in your point clouds. This includes especially surface coverage and surface properties such as:

- Elevation (Ground and/or Surface)
- Height above Ground
- Footprints of Object Classes

- **Per-Object Analysis**

Building on our Automatic Instance Segmentation Service it becomes possible to extract information from your point clouds at the level of single objects. This includes for example:

- Position
- Shape
- Length/Width/Height
- Area
- Volume
- Smallest Bounding Box
- Object type

Pointly Service 5
Conversion

Conversion Services

Point clouds are only the start in an advanced 3D analysis pipeline. The outputs of our powerful detection services, whether aggregate or per object can be further refined into other data formats that tie right in with existing workflows. That is why we offer the following conversion services:

Raster data

Surface properties such as elevation or type can be represented best as raster data, that is formats such as GeoTiff, GeoJson and more. This also includes aggregate statistics from our Analysis Services.

Vector data

Individual object footprints or positions are best represented as shape layers which you can then use in any GIS software. These formats also allow storing additional features from our Analysis Services as per-object attributes.

CAD data

Being able to detect individual instances of object classes down to single building components, we are happy to offer you automatic conversion services from point cloud data into CAD formats such as BIM models.

Tabular data

Do you prefer a straightforward summary of the objects in your point clouds? Based on our Instance Segmentation Service we can provide you with a detailed table of all individual objects, their types and any required additional attributes such as volume.

Other

Do you prefer pdf reports, an interactive dashboard or integration into a website? Contact us for custom inquiries and we make sure to get the valuable information from your point clouds to where it is needed.
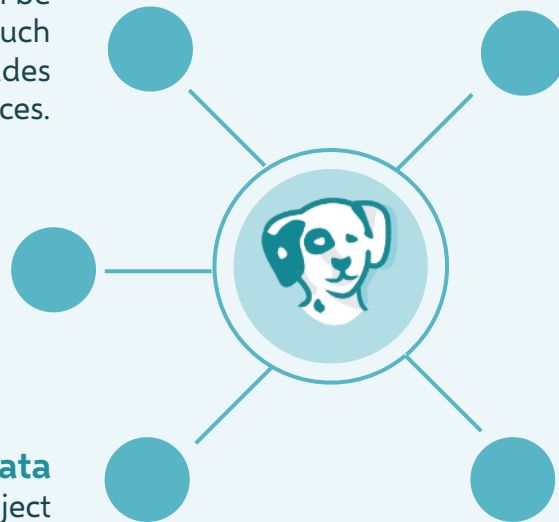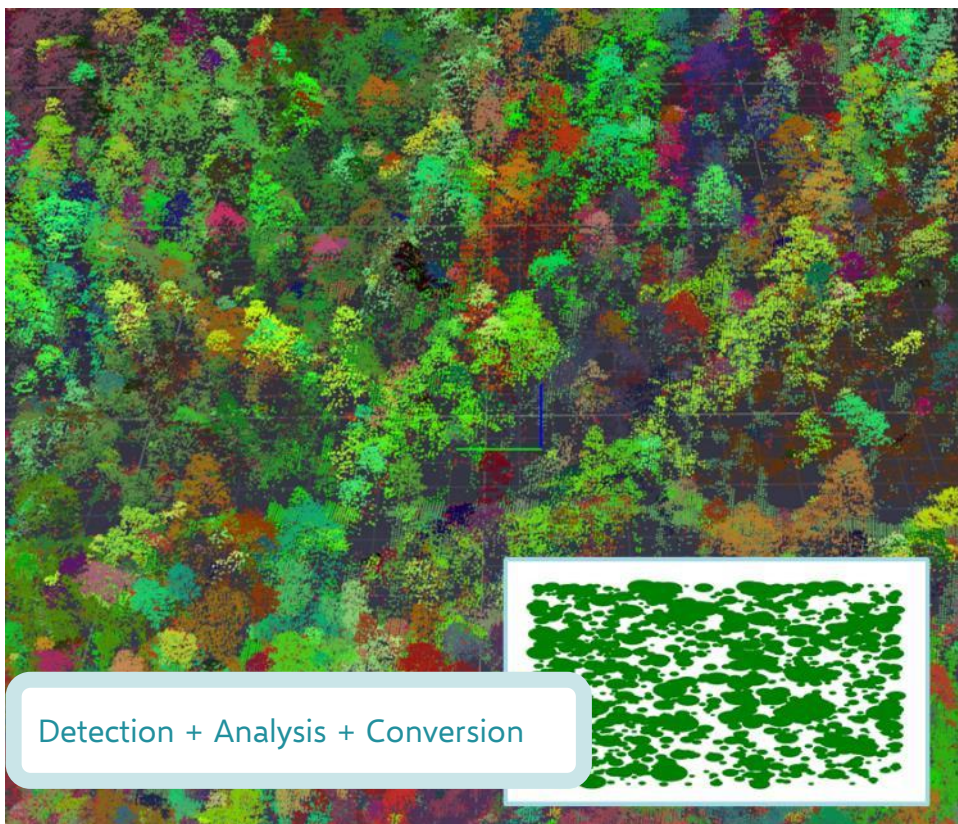
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Use Cases (Pointly Services)

- Tree Inventory

- Road Sign & Lamp Post Inventory

- Road Mapping

- Building Modeling with Roof & Wall Surface Analysis

- Change Detection in Gravel pits

POINTLY

Use Cases

Tree Inventory

Detection + Analysis + Conversion

This Use Case is for you, if you:
- Have high-resolution aerial LiDAR
- Need a map layer with e.g. the position of points for each individual tree stump, including a polygon for approximate crown extent
- Want to have the height of each tree as an attribute in the map layer.

Our Approach:
We use our pretrained 3D network to classify all trees and proceed then with instance segmentation. Stump position points and height is determined for each tree segment. The crown extent is determined through 2D projection. We convert to .shp for both points and polygons (2 shapefiles), both enriched with height attributes.

What you get:
2 Map layers (stump position points, crown extent polygons), each with height attributes

Use Cases

Road Sign & Lamp Post Inventory

Detection + Analysis + Conversion

This Use Case is for you, if you:
- Have high resolution vehicle LiDAR
- Have 360° Images
- Need a map layer with position points for each individual road sign and lamp post
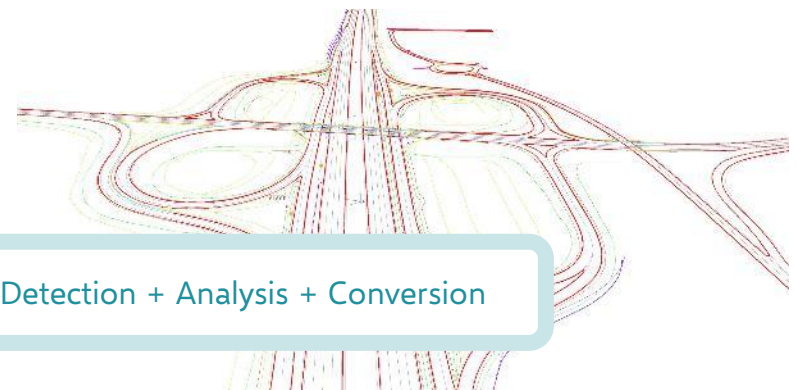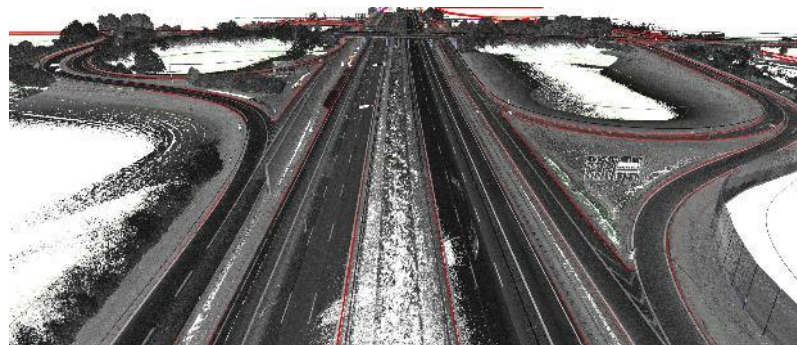
Our Approach:
We use our pretrained 3D network to classify all signs and lamps and then proceed with instance segmentation. Positions of road signs and lamp posts are recorded. Those positions are used to query 360° images and classify the sign type from images.

What you get:
You will get a map layer with sign and lamp post positions and sign type.

Use Cases

Road Mapping

Detection + Analysis + Conversion

This Use Case is for you, if you:
- Have high resolution vehicle LiDAR
- Have 360° Images
- Need a map layer with outlines for road surface including curb stones and sidewalks

Our Approach:
We use our pretrained 3D network to detect curbs and break lines in LiDAR Scans. In addition we use our pretrained image network to classify different surface categories, like road or sidewalk. Furthermore, information is joined into vectors for roads, curbs, and sidewalks.
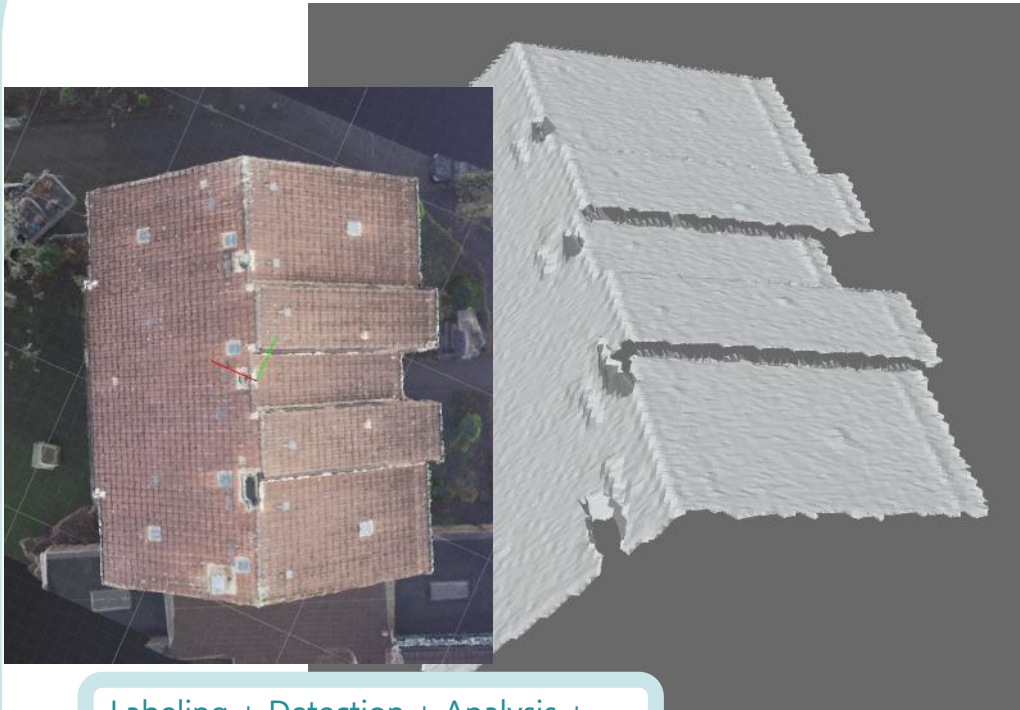
What you get:
Map layer with road, curb, and sidewalk areas

Use Cases
Building Modeling with Roof & Wall Surface Analysis

Labeling + Detection + Analysis + Conversion

This Use Case is for you, if you:
- Have photogrammetric point clouds of buildings
- Want to have BIM Model with additional information on roof and wall surface

Our Approach:
We take your order for the labeling of buildings, separated by walls and roofs and forward it to our labeling service provider.
Afterwards we will classify all walls and roofs as well as conduct an instance segmentation for all components.
We approximate all detected shapes with geometric primitives, described in cad format. This allows calculating and summing areas.

What you get:
CAD file with building model in LOD2 (building shape and roof shape) with added area attributes for roofs and walls

POINTLY

Use Cases

Change Detection in Gravel Pits

Acquisition + Detection + Analysis + Conversion

This Use Case is for you, if you:
- Want to detect changes in elevation (e.g. erosion, mining, digging)
- Need to regularly update data in consistent manner
- Need a heatmap where most significant changes occurred in the last period

Our Approach:
We order and schedule regular drone flights of your site through our partner network. Then we accurately detect the ground in point clouds and compare it with previous scan. In addition, we also detect other movable objects to exclude false detections.

What you get:
Export of significant changes as raster heatmap together with report for specific sites of interest