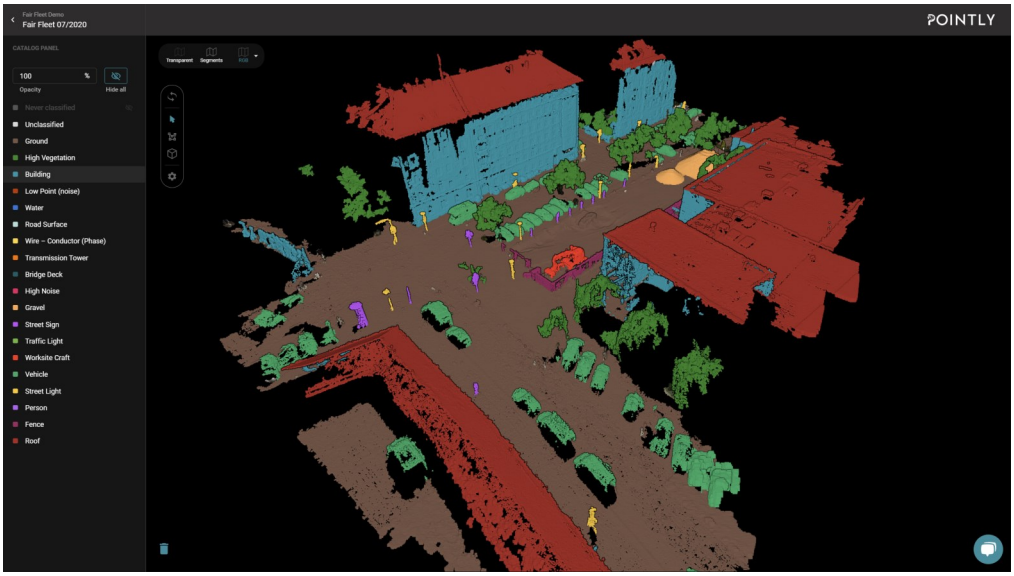
POINTLY - POINT CLOUD ANALYSIS FROM A SINGLE SOURCE

Classification platform for point clouds and individual 3D AI services

Most data, from financial transactions and social media posts to weather records and satellite imagery, has a spatial component. Many real-world problems are based on a specific geographical context. Supper & Supper's Geo AI combines the potential of the location and spatial connections to create cutting-edge AI solutions. For this purpose, customized AI solutions are developed from the latest developments in the fields of neural networks and machine learning. This includes tasks such as automatic image recognition and segmentation of e.g., drone or satellite imagery, space-time analysis, and predictions based on geo-referenced sensor data, such as object recognition and segmentation of 3D point clouds.

From one of these solutions, Supper & Supper has now spawned a spin-off called Pointly – and with that turned a technical idea into a successful startup. Pointly specializes in 3D point cloud solutions and provides a classification platform for point clouds for fast and user -friendly training data generation (see picture on the right), which has the same name as the startup.



Pointly Viewer in dem man seine Punktwolken klassifizieren kann (Screenshot www.pointly.ai)

Complementing the classification platform, Pointly offers services around 3D point cloud analysis. Here, customers can get customized solutions with full support, from proof of concept to highly scalable applications. In addition, they can benefit from the long-standing expertise of the Supper & Supper data scientists team, as the two companies are in close contact.

The idea for Pointly was born at a geo trade fair when Stefanie Supper (founder and CEO of Supper & Supper and Pointly) saw the many impressive point clouds that companies were presenting at their booths. Since her company, Supper & Supper, had already implemented a wide variety of AI use cases for 2D data, the thought occurred to her, "Can't AI be applied to 3D data as well?".

She discussed this idea with her Supper & Supper team shortly thereafter, and they determined the following:

Point clouds require analysis to provide valuable information about contained objects and spatial properties. Advances in neural network architectures make it possible to process 3D data directly, allowing the analytical capabilities of Deep Learning to be combined with the information richness of 3D point clouds. However, commercially viable deployments of these analytic capabilities require very large datasets of classified objects, called training data.

Classification gives each point in the point cloud a "meaning"; one assigns a corresponding object class to the points within the point cloud. This data can then be used to train the AI models, which is why it is called training data.

However, there was a problem for the team to tackle Deep Learning use cases for point clouds – until now, no suitable tool existed to create training data. Supper & Supper had to act themselves, and so Pointly was developed to significantly speed up the labor-intensive process of point cloud classification.

With Pointly, intelligent pre-segmentation and other labeling tools allow complex point clouds to be quickly labeled for user-defined objects, reducing the cost and time required to manually select points. Users from different application fields and industries can upload large amounts of 3D data (up to 150-million-point clouds) to the cloud-based Pointly to manually classify the objects contained in the point clouds in an efficient and user-friendly way. All point cloud types can be used (whether LiDAR, sonar, photogrammetric, or other imagery) and different point information (RGB, IR, intensity, etc.) can also be included.

In addition to manual classification tools, the platform will soon offer automated classification functions and options to train custom neural networks.

Promotion of the development of Pointly's classification methods by BMWi

The development of Pointly's classification method was funded by the German Federal Ministry for Economic Affairs and Energy (BMWi) as part of the "ZIM" (Zentrales Innovationsprogramm Mittelstand) funding program for a single R&D project from the GeoFab network. GeoFab was founded by various industrial companies and the University of Potsdam and is managed by ATeNe GmbH. The goal of the network is to increase productivity and efficiency through the application and integration of geodata in manufacturing processes.

We are very grateful to be a part of the GeoFab network and a special thanks goes to ATeNe GmbH and Anjali Ann D'Souza (Project/Network Manager). We were actively supported in all funding applications. For Ms. D`Souza, the network means:

"Very different industries and users meet similar challenges in their processes. The GeoFab network is a successful experiment in developing and implementing solutions for process optimization together with a wide variety of players. Through the network, experiences and perspectives could be exchanged and ideas, as well as results, could be expanded and reused. When many search together, more can be found."

Key elements of the professional deployment of the SaaS Pointly

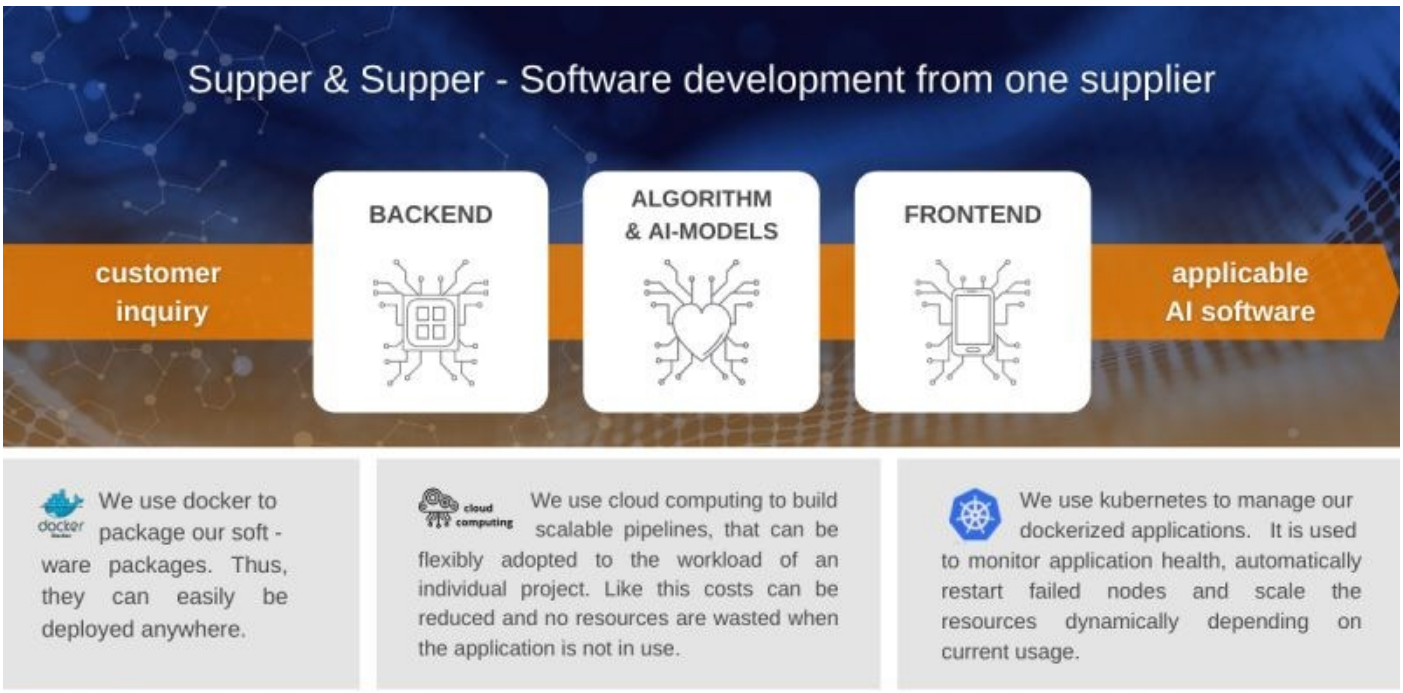
For a professional deployment, Supper & Supper also focuses on the scalability of the application. In the following sections, you'll learn how the company ensures this for Pointly:

Supper & Supper relies on scalable resources of the Azure Cloud environment to deploy Pointly. For the compute-intensive processes, it sets up a Kubernetes cluster (AKS), which is the most widely used system for orchestrating Docker container swarms. Docker containers, in turn, are a prominent technology for isolating system environments. A container swarm in a Kubernetes cluster can thus dynamically distribute the total compute load across multiple host systems (nodes) and serve any number of end-users by flexibly adjusting the swarm size.

Another advantage of Pointly`s container-based infrastructure is its stability and suitability for microservice architectures. Pointly`s core functions were developed as microservices, which means that functional components of the platform are deployed in separate containers. This minimizes dependencies between components, greatly reducing error-proneness. Microservices communicate via standardized interfaces, which reduces development and documentation efforts, and if a microservice fails due to an error, other services can continue to be used.

Pointly enables flexible updating, testing, and rolling out of functions without having to accept service downtime. Updates to individual microservices can be tested first. If errors occur, Pointly users can be flexibly redirected to the previous version. New functions, such as analysis and detection functions, can be integrated into the swarm as additional microservices in the future. No existing functions will be affected or reworked in the process.

All these functions will be bundled in a single cloud service and thus made available to end-users. This allows them to use Pointly 24/7, from anywhere, and without any additional hardware investment.



Do you have questions about the funding, the Services of Supper & Supper or Pointly? Then simply send us an email to: info@supperundsupper.com or directly to Ramona Oriold (Sales & Marketing) ramona.oriold@supperundsupper.com