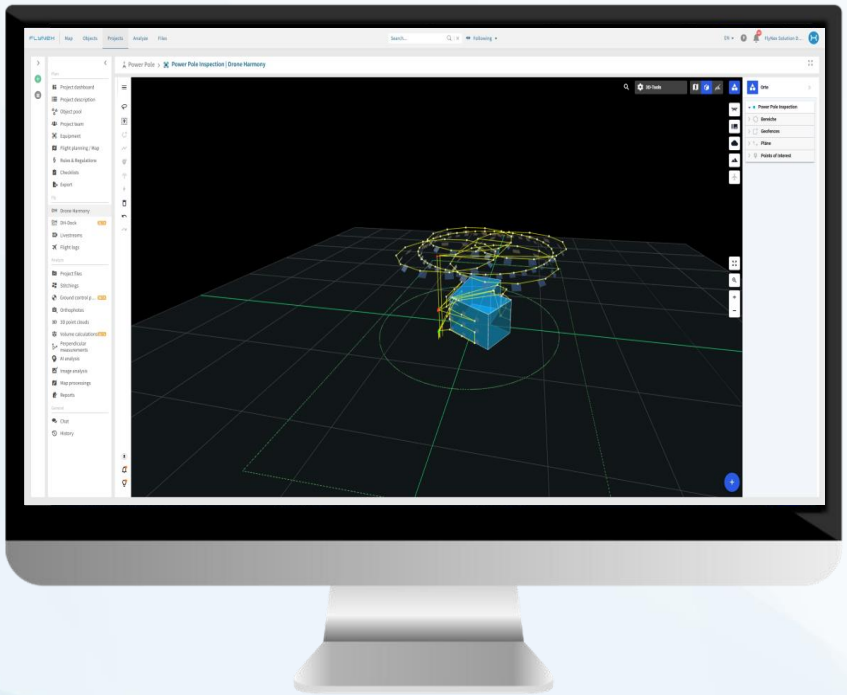
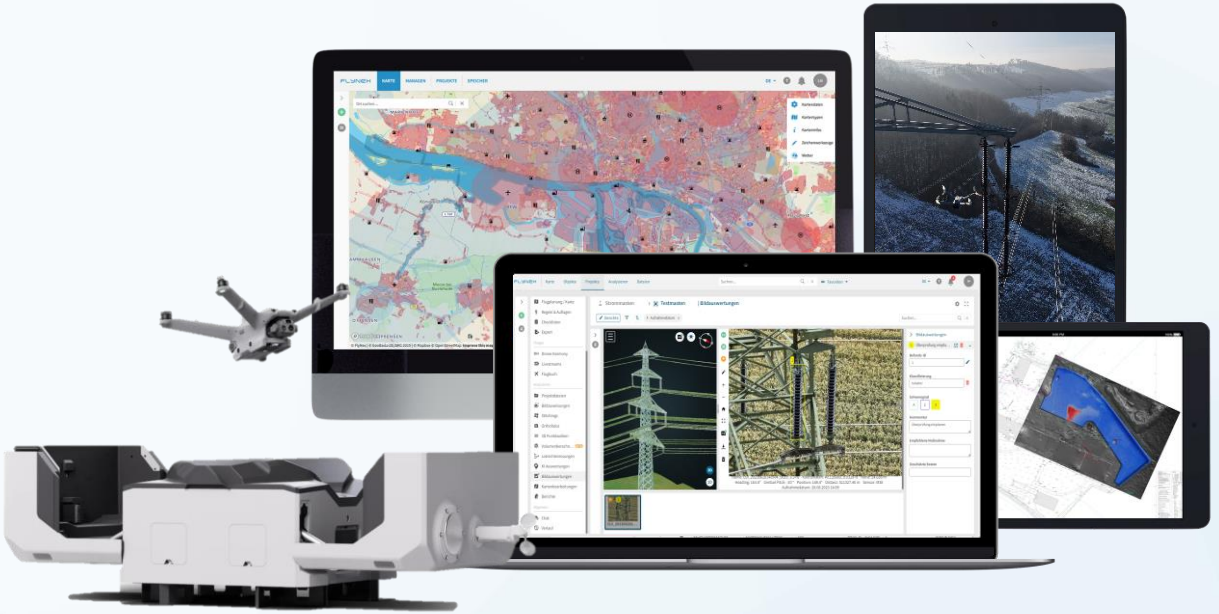
FLYNEX

Automated power line inspections with DJI Dock 2 integration





CHALLENGES OF MANUAL POWER LINE INSPECTIONS

High Safety Risks – Traditional inspections require personnel to climb pylons or use helicopters, exposing them to dangerous working conditions, extreme weather, and electrical hazards.

Time-Consuming & Costly – Manual inspections demand extensive planning, skilled workforce deployment, and costly equipment, increasing operational expenses and downtime.

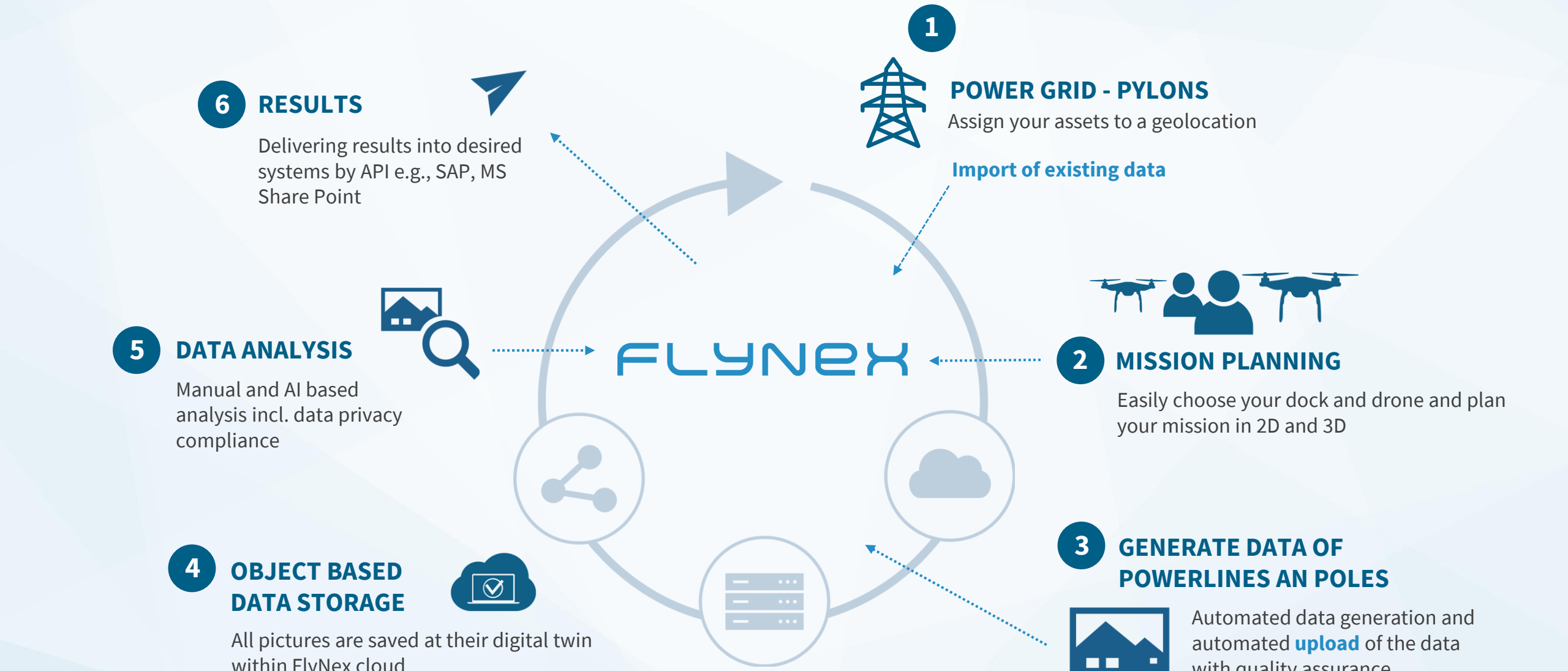
Inconsistent Data Quality – Variability in image capture and human assessment leads to discrepancies in inspections, making it difficult to compare historical data and detect long-term trends.

Delayed Issue Detection – Damage, wear, or environmental impacts (e.g., bird nests, corrosion) may go unnoticed for extended periods, increasing the risk of power outages and costly repairs.

Limitations of Manual Drone Inspections – While drones offer a safer alternative, manual operation is still labour-intensive, prone to human error, and requires trained pilots for every flight.

Inefficient Data Management – Manually collected data often lacks standardized formatting and seamless integration into existing digital workflows, making analysis and reporting cumbersome.

FLYNEX ENTERPRISE –POWER LINE INSPECTION PROCESS

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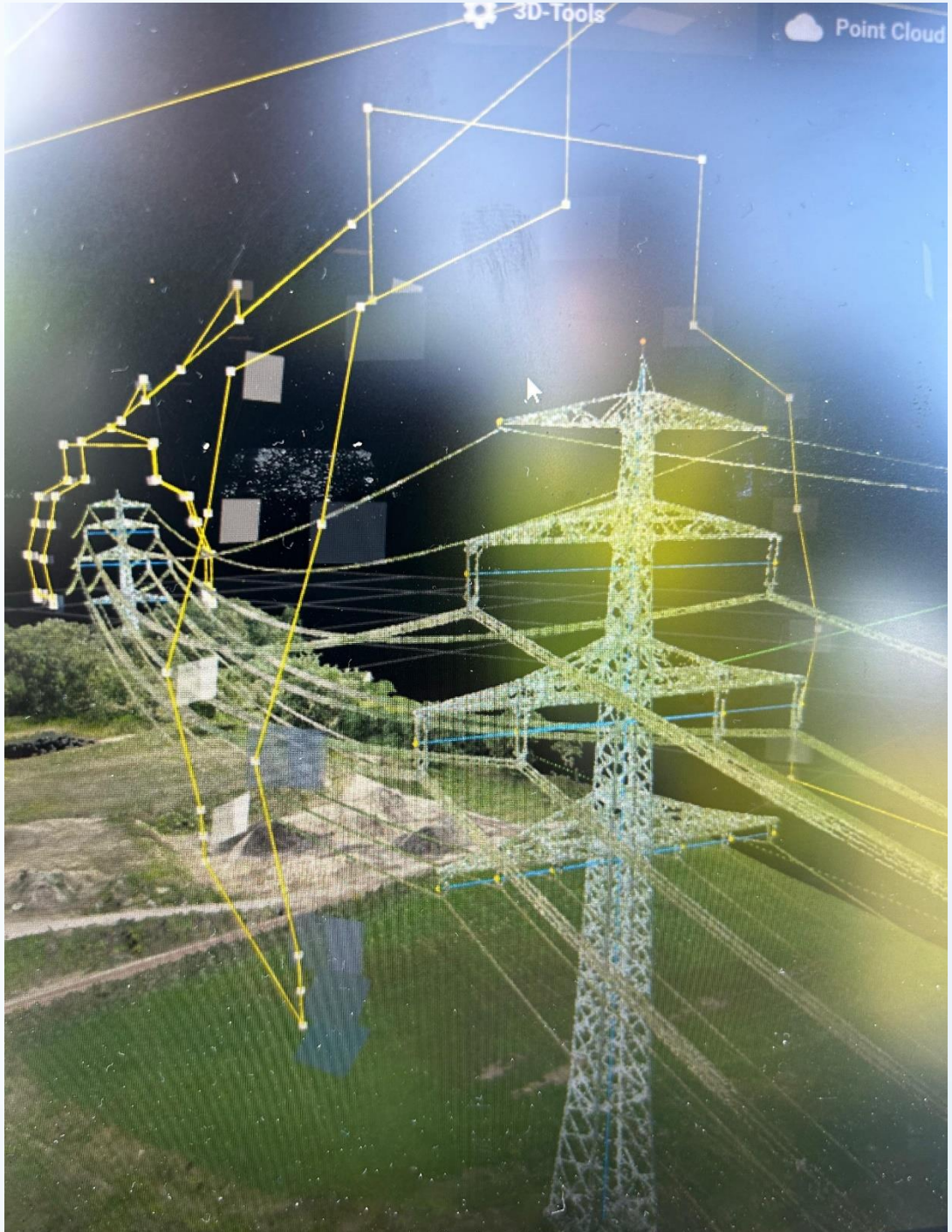

3D-Tools
Point Cloud

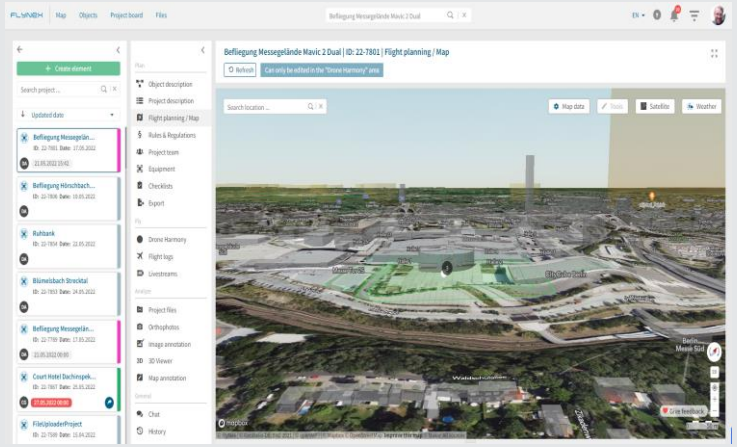
FLYNEX

MOST ADVANCED INDUSTRY COMPLIANT CONNECTED SOLUTION

The corporate platform **to inspect and find damages at scale** for thousands of infrastructure assets.

1 PLATFORM

- digital asset map based project planning
- holds all assets for data management and control
- Multi-tenant for data management and collaboration
- **fully compliant operation planning***

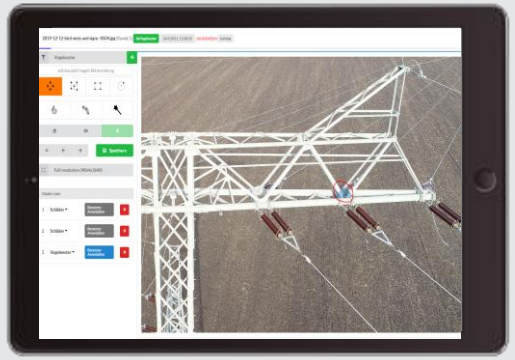


2 DATA COLLECTION

- permanently onsite based drone for continuouss data capturing
- utilization of an industry leading plattform
- **automated data capturing and transfer**

3 AI SUPPORTED ANALYTICS

- Delivery of remote information and results
- mapping , 3D visuals, digital twins
- Domain structure and unlimited workflows
- **AI damage detection**



Enterprise compliance and norm requirements* ISO 9001 / ISO14001 / ISO/IEC25000 / ISO 21384-3:2019 / DIN 5452-6:2020-08 /DIN 5452-2:2019-10 / DIN SPEC 5452-5:2021-11

Data Management & System Integration

Object-Based Data Storage – Raw data is securely stored within the FlyNex Cloud.

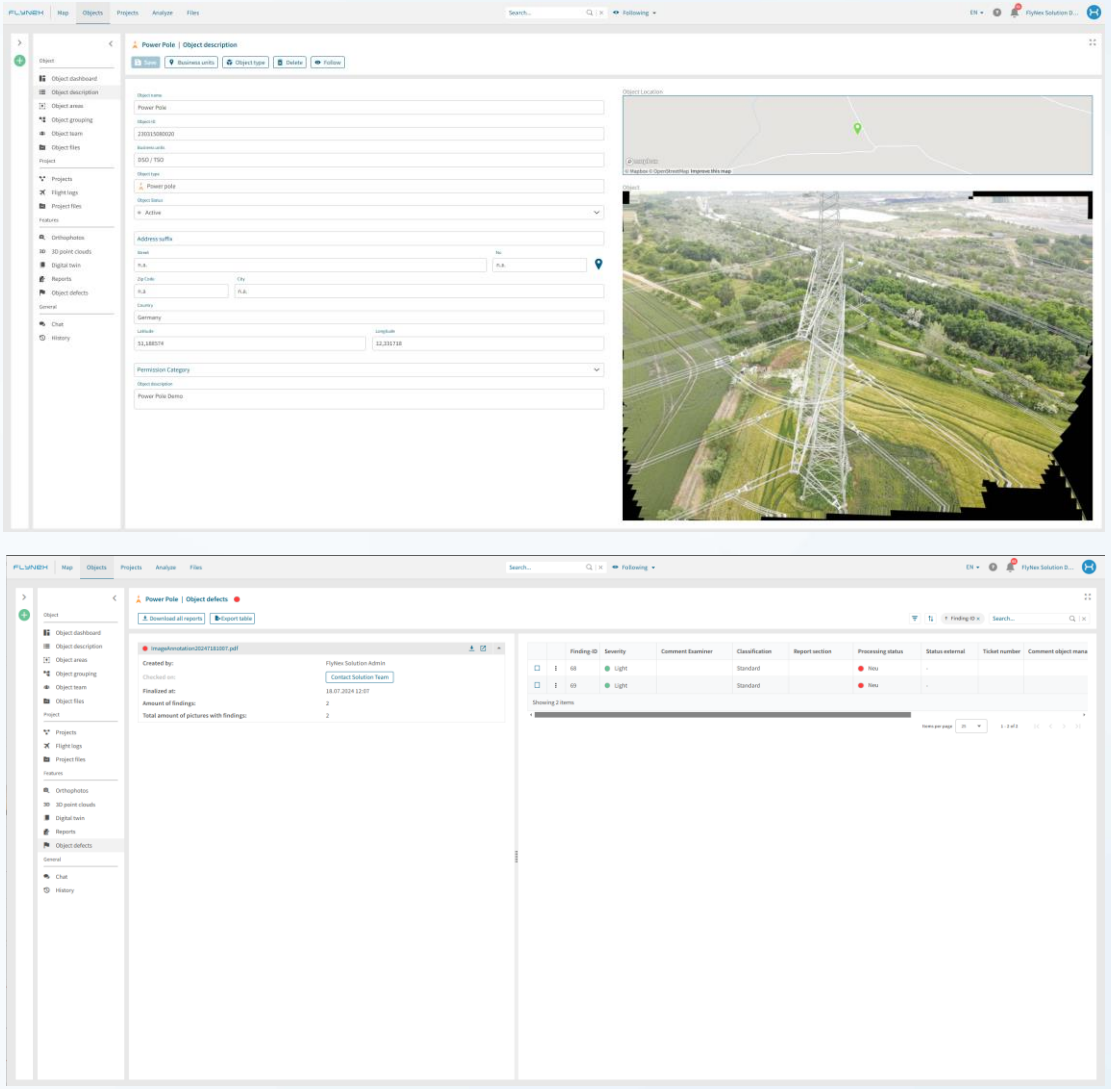
Role & Access Control – Internal rights management ensures regulated data access.

Seamless System Integration – Interfaces for automated data exchange with existing platforms like SAP or Microsoft.

High-Level Data Security – Compliance with strict German and European data protection standards.

Flexible Deployment Options – Full system operation possible on proprietary infrastructure.

Comprehensive Object Documentation – Detailed metadata storage, including location, structural attributes, and maintenance history.



Digital Object– FlyNex Cloud

FLIGHT PLANNING & RESTRICTIONS MANAGEMENT

Smart Dispatching – Efficient deployment planning of pilots and drones.

Special Permit Handling – Seamless entry and management of required authorizations.

Digital Grid Representation – A comprehensive digital twin of the power network.

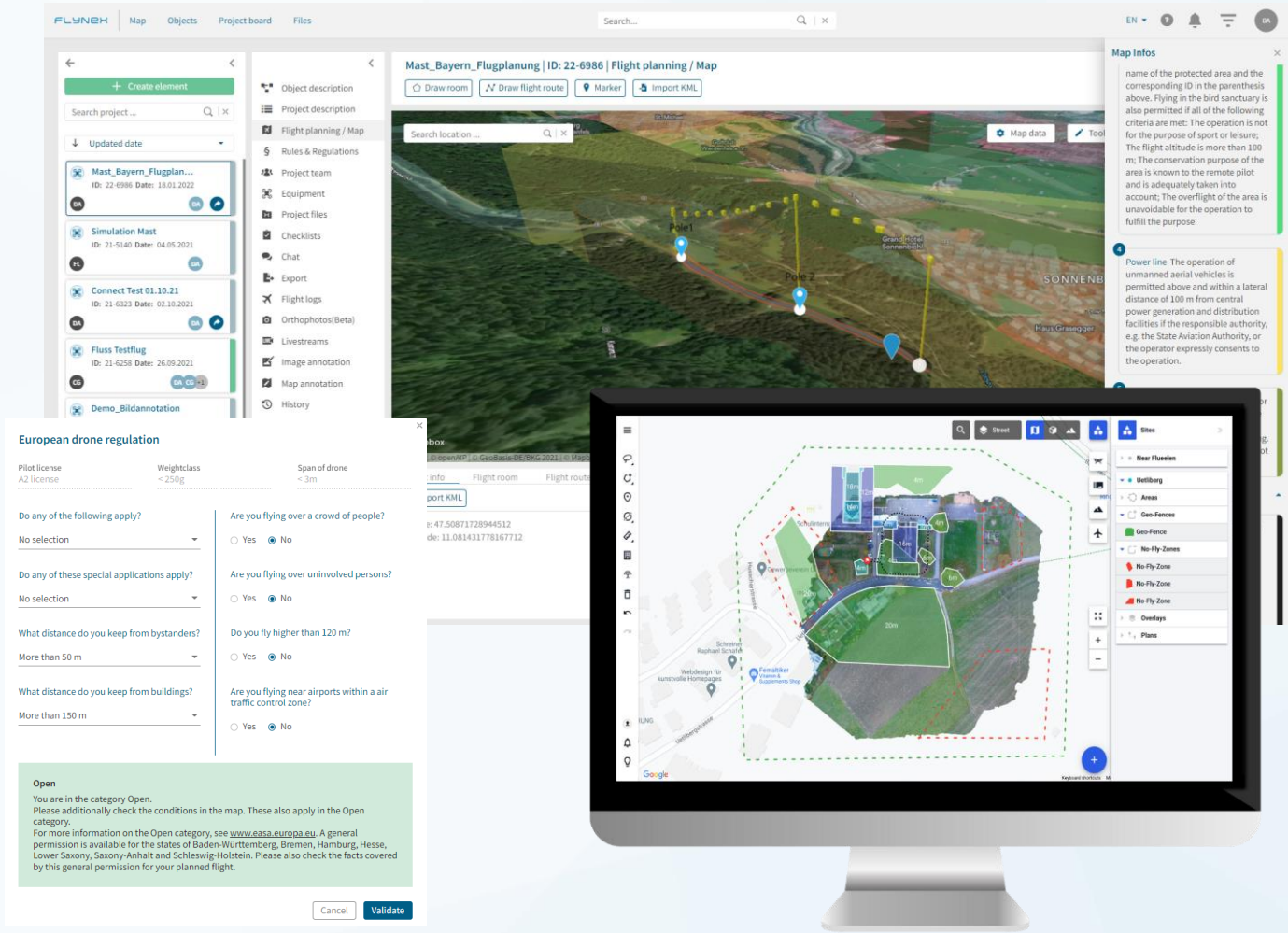
Permit & Compliance Management – Oversight of route-specific authorizations and regulatory requirements.

Task Coordination – Role-based access and rights management for streamlined workflows.

Automated Flight Logbook – Legally compliant documentation of all drone operations.

Regulatory Proof for Authorities – Ensuring adherence to national and regional aviation laws.

Geospatial Compliance Checks – Verification of flights against geographical restrictions.



Deployment Planning - FlyNex Platform

DATA CAPTURE PLANNING

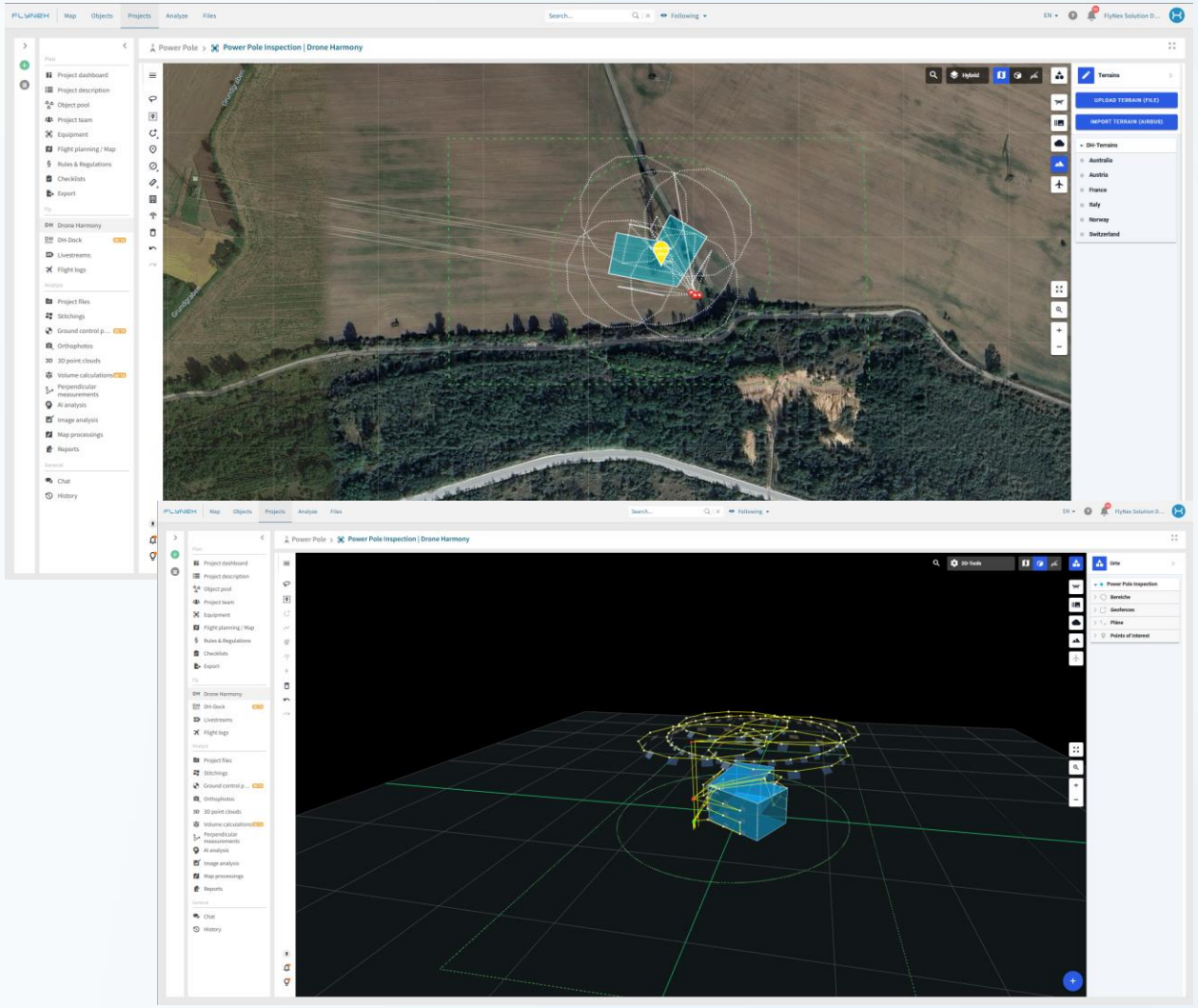
Flexible On-Site Adjustments – Adapt flight plans directly via mobile devices for maximum efficiency.

Automated Inspection Support – Conduct precise aerial surveys of pylons and power line sections to assist pilots.

Consistent Data Quality – Standardized flight patterns and image capture ensure reliable and comparable results.

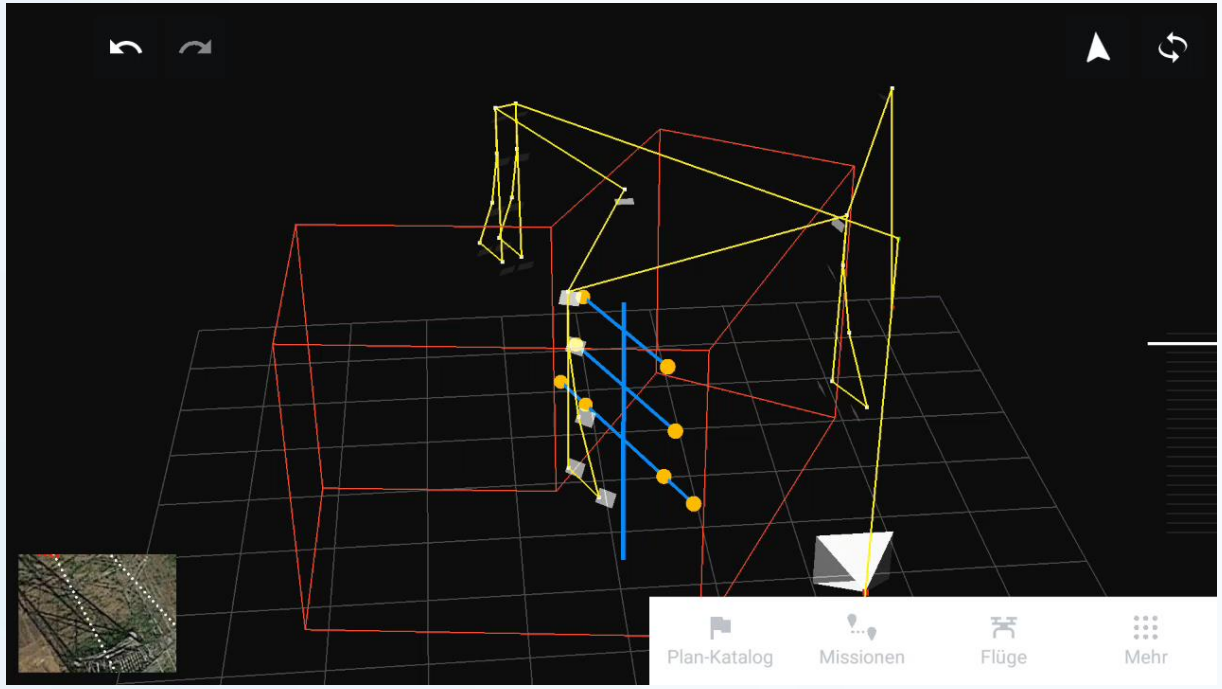
Live Streaming Capability – Enable real-time monitoring from the field to a central office (1:n connection).

Seamless Cloud Integration – Automatically upload inspection data to the FlyNex cloud for secure storage and analysis.



Flight Planning – FlyNex

DATA GATHERING



Flight Planning Interface – FlyNex

Flight Execution – FlyNex

DATA ANALYSIS

High-Resolution 3D Modelling – Generation of detailed point clouds for precise visualization and structural assessment of power pylons directly in the FlyNex cloud.

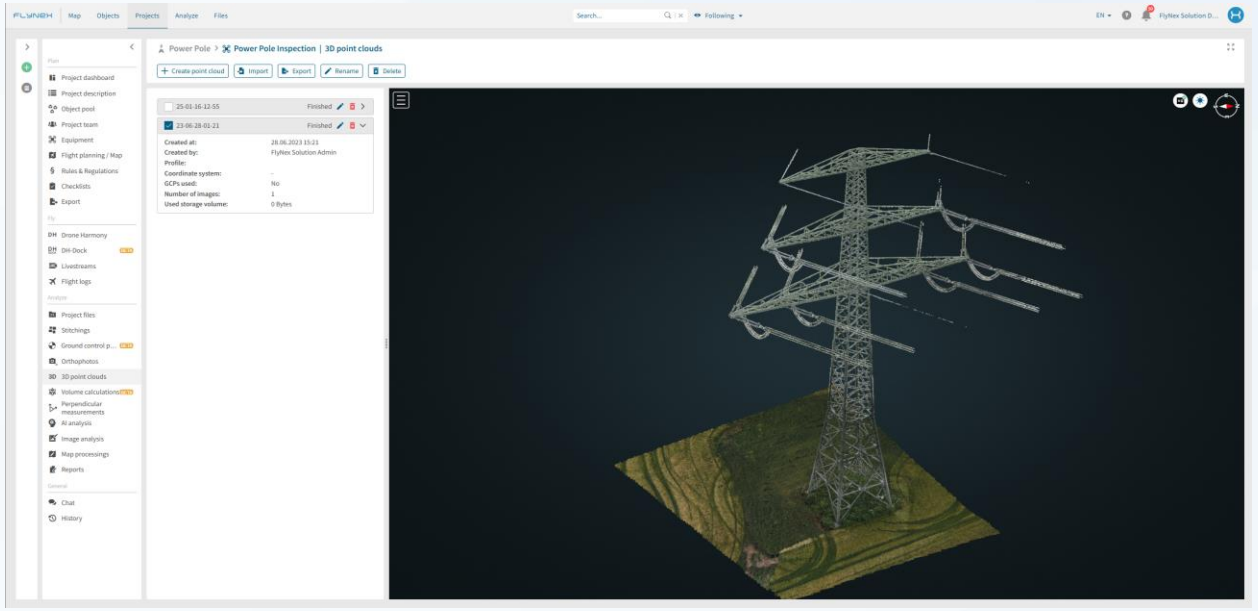
Image Annotation – Detection and marking of critical components, such as insulators, fasteners, and cable connections, to streamline inspections.

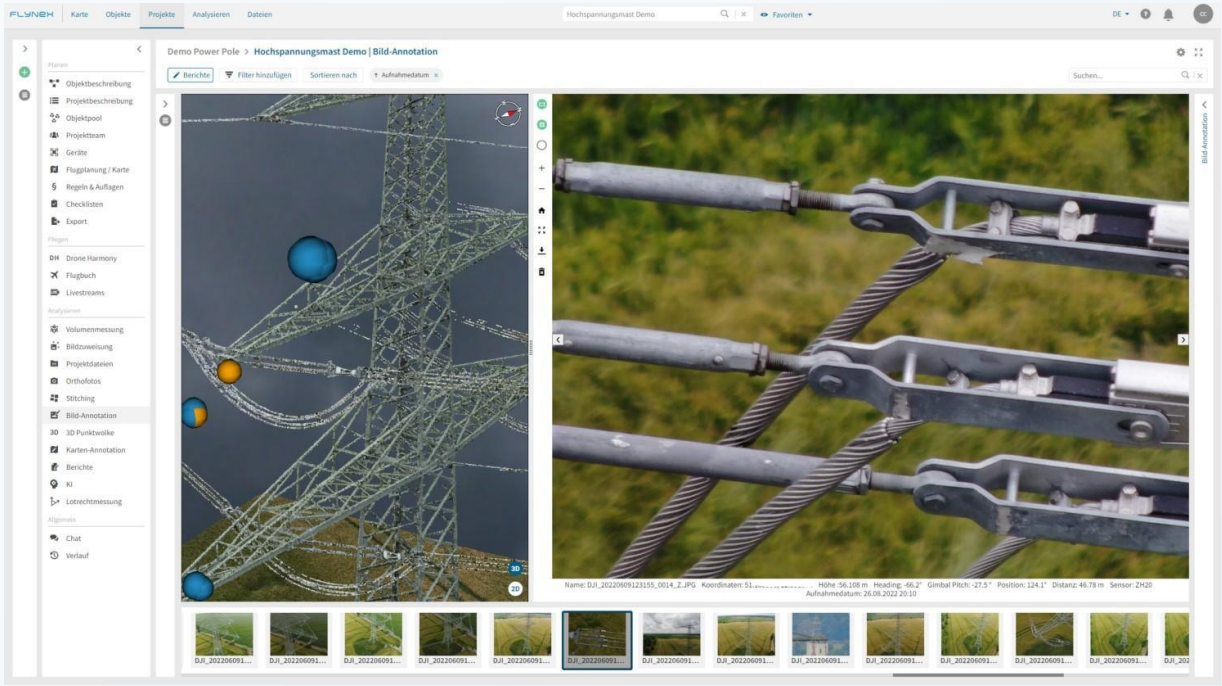
Seamless Image Navigation – Intuitive interface to zoom into specific details, compare multiple images, and review historical data for trend analysis.

Efficient Data Structuring – Categorization of images and 3D models into project folders for easy access and collaboration.

Integrated Workflow Management – Direct linkage of analysis results to maintenance tasks, ensuring that insights lead to actionable decisions.

Cloud-Based Data Storage – Secure and structured storage of raw data, annotations, and reports for fast retrieval and compliance tracking.





AI-Based Power Pylon Analysis

Component Detection & Evaluation – Identification of critical elements such as insulators, rivets, and split pin fasteners.

Rust Detection – Automatic recognition of corrosion on metal components.

Component Inventory Management – Systematic documentation and classification of power line assets.

Splice Detection on Conductors – Identification of weak points and irregularities in cables.

Clearance Monitoring – Ensuring safe distances between power lines and vegetation.

Point Cloud Classification – Categorization based on ASPRS scale and custom classification schemes.

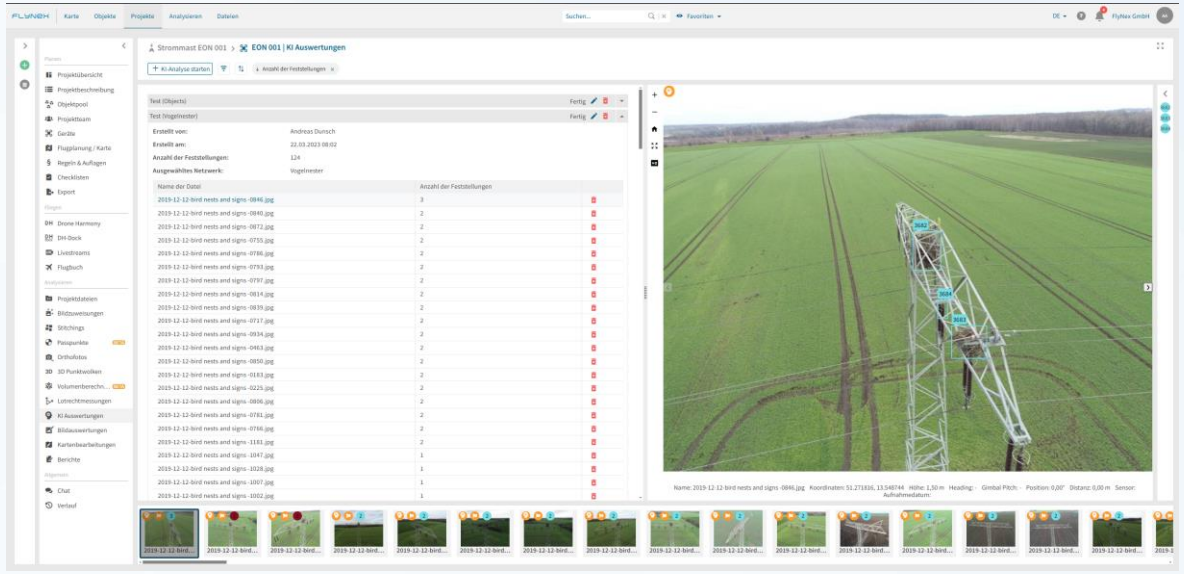
Manual Inspection Capabilities – Support for expert verification and specialized assessments.

Precision Measurements – Evaluation of gap widths and structural integrity.

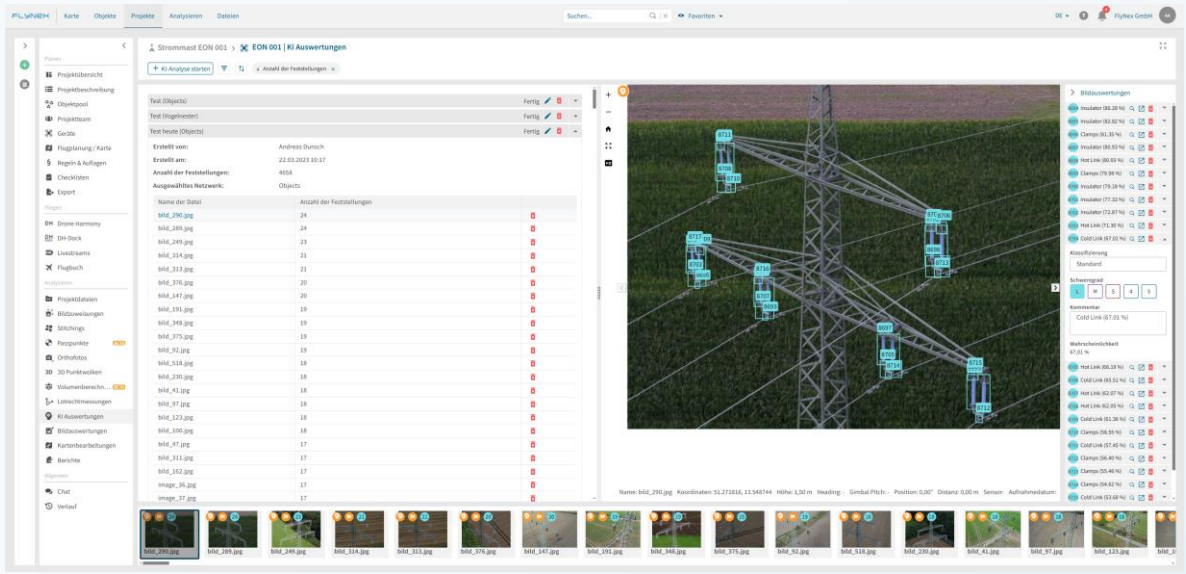
Automated Workflows – Seamless integration through tailored system interfaces.

Defect Classification Review – Verification of predefined damage categories.

Structured Data Output – Delivery of analysis results in a predefined format for target systems.



AI-based bird nest detection



AI-based object inventory of components

IMPLEMENTATION

POC

- Start with one DJI Dock at a test site
- Collect learnings through out the project
- Get legal approvals
- Scale to more docks and operations

(type of dock is interchangeable later on)

Start approval process	Site setup	Implementation	Operations
Define location and flight area Explore site and rules and regulations Prepare documents and file for operational approval	Prepare site and location Laserscan of site Check power and connectivity Manual installation of dock	Cloud server setup and connection to the dock Platform integration and automatic data upload Site flight planning on captured 3D pointcloud	Test flight paths and time patterns Explore collected data and connect analytics Explore connection to own IT infrastructure

AUTOMATE AND DIGITIZE INFRASTRUCTURE WITH US

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Schedule a call