

5: AI-Augmented Photogrammetry & Spatial Analysis

Capture → QC → Process → GIS + AI analysis → Field verification → Action → Remeasure

The nine-stage GeoComms workflow:

Stage	GeoComms workflow	Required result
1. Define the question and spatial unit	Identify the crop problem, farm/block/tree boundaries, baseline, and decision the client needs to make.	A survey and analysis plan
2. Acquire observations	Capture original RGB and separate MSI bands, flight logs, positioning data, and relevant field context.	Complete, traceable source dataset
3. Ingest and quality-check	Check coverage, blur, geometry, RTK/PPK status, band completeness, illumination, metadata, and coordinate system.	Accepted data with documented limitations
4. Process photogrammetry	Produce orthomosaics, appropriate surface models, reflectance products, indices, and processing reports.	Versioned, reproducible spatial products
5. Integrate and interrogate in GIS	Combine imagery with blocks, trees, terrain, history, and operations data. Use AI/MCP to help query metadata and prioritize unusual zones.	Evidence-linked investigation targets
6. Validate on the ground	Send QField teams to selected locations; record observations, photographs, samples, and context. A qualified expert interprets the evidence.	Verified findings or clearly stated uncertainty
7. Coordinate action	Create a case, obtain professional approval, issue a work order, and record execution and cost through FMIS/Odoo.	Accountable intervention record
8. Remeasure and assess impact	Repeat imagery and field checks under comparable conditions; assess efficacy, cost, and unintended effects.	Before-and-after evidence
9. Maintain the spatial operating model	Update the farm's persistent spatial history, share appropriate views, and use results to plan the next cycle.	