



FORTISSIMO
PLUS

FFPLUS SUCCESS STORY: BUSINESS EXPERIMENTS

PRECISION WEED DETECTION FOR SUSTAINABLE ARABLE FARMING

ORGANISATIONS

PerPlant ApS is a Danish precision-agriculture SME developing AI-powered camera sensors for real-time, plant-level weed detection and spot spraying on existing farm machinery. **D-Cube** is an AI and computational-strategy provider responsible for designing and optimising the large-scale Vision Transformer models behind the Perplant system.



THE CHALLENGE

Arable farms still rely on broadcast herbicide spraying, a costly and environmentally damaging method facing tighter EU sustainability rules. Current vision systems struggle with changing light, dust and shadows, and cannot reliably support spraying at 9-15 km/h. PerPlant needed to train a robust Vision Transformer on 267,324 high-resolution images (168 GB), making multi-GPU HPC essential to overcome training bottlenecks.



Technology used: HPC, AI, Edge Computing
Industry Sector: Agriculture

THE SOLUTION

PerPlant and D-Cube built a retrofit camera sensor system that detects individual weeds in real time and activates the spray boom only where needed, at tractor speeds up to 15 km/h and without cloud connectivity. Using the Leonardo supercomputer, they trained the model on 267,324 images with multi-GPU semi-supervised and active learning workflows, then compressed it for reliable edge deployment in dusty, variable field conditions and continuous farm operation.

THE IMPACT

Access to Leonardo shortened PerPlant's route from pilot to commercial production by cutting AI training cycles by 50% and reducing prescription errors by 60% compared with standard infrastructure. This created a stronger, field-ready product for a European crop-treatment market valued at €56.5 billion and growing at 13.1% CAGR to 2030. With 700 units targeted over five years in Denmark, the Nordics and wider EU, this represents €7 million in hardware revenue and €700,000 in annual recurring revenue at maturity. Market readiness is evidenced by 50 paying customers in Denmark, the Czech Republic, the Netherlands and the UK.

Farmers can reduce herbicide use by up to 90%, saving up to €70 per hectare per season. At about €5 per hectare, the operating cost is around 6x lower than drone services, making precision spraying affordable for mainstream arable farms and supporting EU environmental mandates.

BENEFITS

- 50% faster AI training on EuroHPC Leonardo, halving R&D time.
- 60% fewer prescription errors from large-scale multi-GPU training.
- Up to 90% less herbicide, saving farmers up to €70/ha per season.
- Spot spraying costs ~€5/ha, 6x lower than drone services.
- 50 paying customers in 4 countries; 700 units targeted in 5 years.



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