



knowledge
nodes
AI DOMAIN ASSISTANTS



Making agricultural expertise widely available with Knowledge Nodes

- with AI Farmer & Saai

Knowledge Nodes are a core capability of the VectorMind AI platform. They transform unstructured, domain-specific documents into queryable knowledge, accessible through natural language. Instead of leaving expertise locked in binders, PDFs, or training manuals, Knowledge Nodes embed and index this information, making it available via conversational interfaces such as chat, mobile, or API.

By anchoring every answer in trusted source material, Knowledge Nodes ensure domain intelligence is accurate, localised, and reliable. In agriculture, this has enabled the South African Agri Initiative's (Saai) app, AI Farmer, to act as a 24/7 digital extension officer for family farmers.

Knowledge Nodes are much more than chat bots; it's an expert-in-your-pocket, always on, always relevant.

THE CHALLENGE

The Southern African Agri Initiative or Saai, is a farmer network focused on helping small- and medium-scale family farmers thrive despite financial, environmental, and policy pressures.

Farmers in rural South Africa face entrenched challenges:

Sparse extension services: Experts are based in urban hubs, far from most family farms.

Language barriers: Advice is often only in English or Afrikaans, excluding millions.

Knowledge locked in documents: Research and government guidance are not accessible in the moment of need.

The result: poor pest and disease management, inefficient fertiliser use, crop and livestock losses, and weak resilience to climate shocks.



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THE KNOWLEDGE NODES SOLUTION

CohesionX deployed Knowledge Nodes on their VectorMind platform, as the foundation for AI Farmer. Agricultural research papers, extension manuals, and market guides were ingested and structured into a queryable knowledge layer.

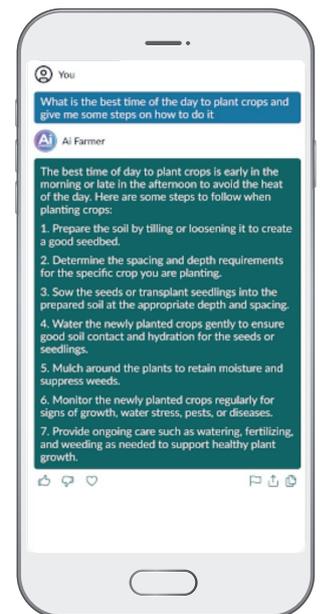
Knowledge Nodes have enabled AI Farmer to deliver:

- ✓ **Localised weather forecasts tailored to farm regions.**
- ✓ **Market price updates and trading insights.**
- ✓ **Pest control guidance with step-by-step recommendations.**
- ✓ **Farm management instructions contextualised to soil, crop, and livestock types.**

Using Retrieval-Augmented Generation (RAG), Knowledge Nodes combine:

- **Semantic retrieval:** Finds the most relevant passages of domain documents.
- **Generative response:** Summarises and delivers contextual advice.
- **Language adaptability:** Supports all 11 official South African languages, plus dialects.
- **Farmers interact with AI Farmer via WhatsApp or app.** Their queries (from diagnosing pests to asking about livestock feed) are routed to Knowledge Nodes, which return grounded, actionable responses

Results: Improved yields, healthier herds, reduced input waste, and stronger resilience — all at lower cost than scaling traditional extension officers.



Daily, I see the benefits of being able to use my home language Setswana on the app. When I run into problems on the farm, I ask anything and get a useful answer. For somebody in the rural areas like me who is not exposed to technology, it's useful."

- **Rustenburg farmer, & AI Farmer user, Kelebogile Mosime**

BBC NEWS



WATCH THE BBC INTERVIEW



One rural farmer from a goat project downloaded the app. It identified contaminated water as the cause of livestock deaths. They replaced the JoJo tank, installed filtration, and immediately stopped the losses."

Francois Rossouw, Saai CEO



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COHESIONX
HARMONY IN EXPERTISE

VALUE ADDED:

Knowledge Nodes prove that domain intelligence can be:

Accessible: Delivered on familiar platforms like WhatsApp.

Inclusive: Multilingual and context-aware.

Simple: Conversational format requires no training.

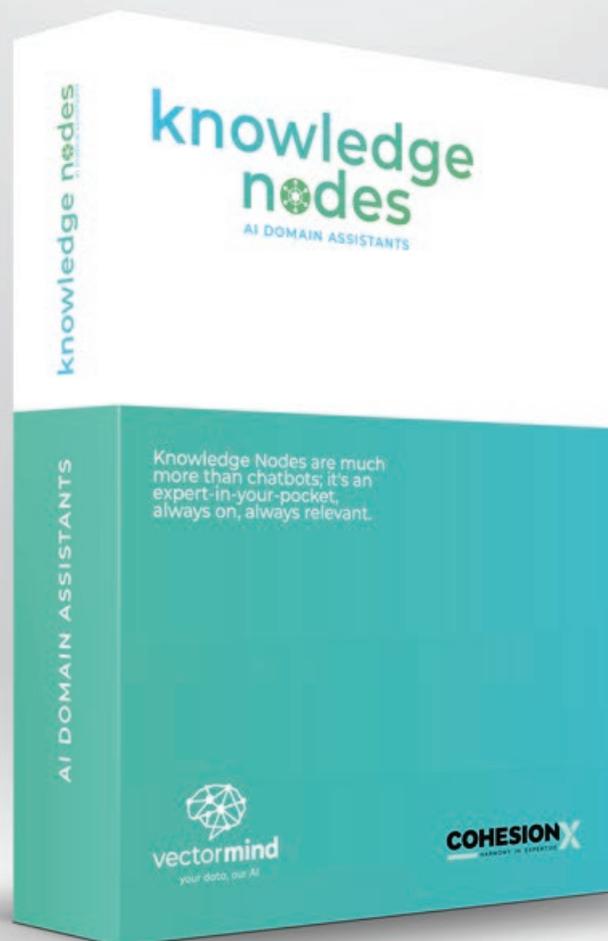
Scalable: Thousands of interactions supported simultaneously.

For organisations in any sector, Knowledge Nodes offer the same foundation: turning static knowledge into living, accessible intelligence.

While AI Farmer is the agricultural application, the Knowledge Nodes model is domain-agnostic. The same foundation can be applied in:

HR | Operational Management | Legal | Retail
Education | Laboratories | Pharmaceutical |
Analytics and more.

Knowledge Nodes are the hidden engine behind AI Farmer's success. By unlocking trapped expertise and making it interactive, VectorMind has enabled Saa's community app to deliver inclusive, scalable agricultural advice to thousands of farmers.



Watch the demo



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