CANOPY. - Product Brief

Prime Three Offerings (v1)
CANOPY builds systems that model real-world environments as they evolve, using deployable sensing to create continuously updated synthetic models that inform real-time decisions.

1️⃣ Synthetic Models (Core Platform)

A software platform that maintains living, time-aware models of physical environments by fusing live sensor data, UAV data, and external data sources. This is not a static digital twin. It is a continuously updating synthetic representation of reality.

Inputs

- UAV data (imagery, LiDAR, telemetry)
- Ground / temporary sensor nodes (environmental, vibration, etc.)
- External APIs (weather, mapping, historical datasets)
- Manual annotations (optional)

Core capabilities (v1)

- Real-time state representation (what is happening now)
- Time-series persistence (what has happened)
- Predictive modelling hooks (what may happen next)
- Spatial awareness (GIS-native)
- Uncertainty scoring (confidence per data layer)

Outputs

- Model state API
- Time-based simulations
- Data layers consumable by dashboards and external systems

Non-goals (v1)

- Photorealistic rendering
- Game-engine visuals
- AI-only "black box" predictions

Why it exists
This is the long-term value moat. Everything else feeds or consumes this layer.

2️⃣ Deployable Sensing (Truth Layer)

A set of tools and workflows for rapidly collecting ground-truth data in environments where permanent infrastructure does not exist.

This includes UAVs and temporary sensors, but the value is in deployment + ingestion, not the hardware itself.

Components

- UAV-based data acquisition
- Temporary / mobile ground sensors
- Mesh or backhaul communications
- Location-aware data tagging

Core capabilities (v1)

- Rapid deployment (minutes, not weeks)
- Automatic geospatial tagging
- Time-synchronised data streams
- Health/status reporting for sensors
- Seamless ingestion into Synthetic Models

Outputs

- Live sensor streams
- Buffered data uploads
- Sensor metadata (location, uptime, confidence)

Non-goals (v1)

- Mass-manufactured sensor hardware
- Long-term fixed infrastructure replacement
- Perfect accuracy (confidence is surfaced instead)

Why it exists
Synthetic Models are only as good as the data feeding them.
This layer ensures CANOPY controls data quality and relevance.

3️⃣ Operational Intelligence (Decision Layer)

What it is
The interface layer that turns Synthetic Models into actionable understanding for operators, planners, and decision-makers.

This is not an analytics tool for data scientists. It is built for people who need to act.

Core capabilities (v1)

- Live situational awareness views
- Alerts based on model thresholds
- Time-based playback ("what changed")
- Scenario comparison (baseline vs current)
- Integration with existing GIS / ops tools

Outputs

- Dashboards
- Alerts / notifications
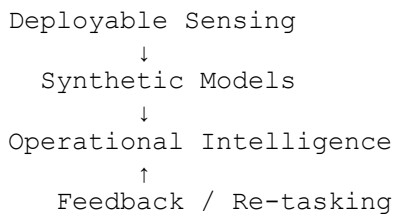- Reports
- External system integrations

Non-goals (v1)

- Custom dashboards for every user
- Heavy workflow engines
- Complex permissions hierarchies

Why it exists
This is how CANOPY becomes used daily, not just deployed occasionally.

System Relationship (Critical)

```
Deployable Sensing
        ↓
  Synthetic Models
        ↓
Operational Intelligence
        ↑
  Feedback / Re-tasking
```

- Sensing feeds models
- Models inform decisions
- Decisions drive new sensing

This feedback loop is the product.

Technical Principles (Guiding Rules)

- API-first architecture
- GIS-native data structures
- Time-aware by default
- Confidence and uncertainty are first-class data
- Modular (each layer usable independently)
- Dark-mode, low-distraction UI

Focus Summary

Build this first

- Ingestion → Model → Visualisation loop
- One environment
- One sensing modality
- One predictive output

Explicitly defer

- Scale optimisation
- Full automation
- Advanced AI/ML
- Broad hardware support

Model reality accurately, update it continuously, and make it usable.