

**Predator
Control**

Capability Statement

FTP provide unambiguous, real-time visibility to clients' operations enabling data-driven decisions based on increased operational intelligence.

Our Company

FTP, founded in 2012, is a global technology company, with offices in Canada, New Zealand, and Australia.

Using our proprietary technology, we take vast streams of data, and present them through our easy to use, operationally focussed management platform. The Integrated Management System (IMS) is easy to integrate, use, and to leverage to ensure that whenever you need data from the field, whether that's about weather, irrigation, water use, where things are, and if people and machinery are on task. IMS gives you the knowledge you need, without going into the field to retrieve it. What IMS can do isn't limited, and comes with intuitive out of the box functionality, such as: asset tracking, personnel tracking, device performance monitoring, mesh/sensor RF planning and environmental management. FTP also provides around-the-clock support services to help customers through any technical difficulties they may be experiencing.

Although technology brings us all many benefits, it also brings with it a great deal of added complexity and increased requirements. At FTP, we take those complexities away, leaving you with the data and insights, for better decision making, increased situational awareness, and ultimately, the greatest competitive advantage, no matter the industry or application.

Our vision is to connect in-field data to systems and people, to maximise that data's potential, decrease operational complexity and maintain the ultimate vantage point for users and business that need to make real-time, accurate, and informed decisions, whether for tactical or strategic advantage.

Our Values



Safety

Commitment to safety and wellbeing above all



People

Our people are the foundation of our success



Enduring Value

We target solutions to deliver value for all stakeholders

Our History

FTP was originally known as Forces Transitioning Personnel. Back then, the company's purpose was to help former Defence Force personnel transition to civilian employment in the mining industry.

FTP quickly became the go to source for network engineering, with FTP later focussing on wireless networking design and implementation for many large multinational mining companies. Today, we're known as FTP.

IMS came about through the realisation of a gap in the market when it came to real-time in-field data capture from complex systems, such as those found on mine sites running autonomous systems.

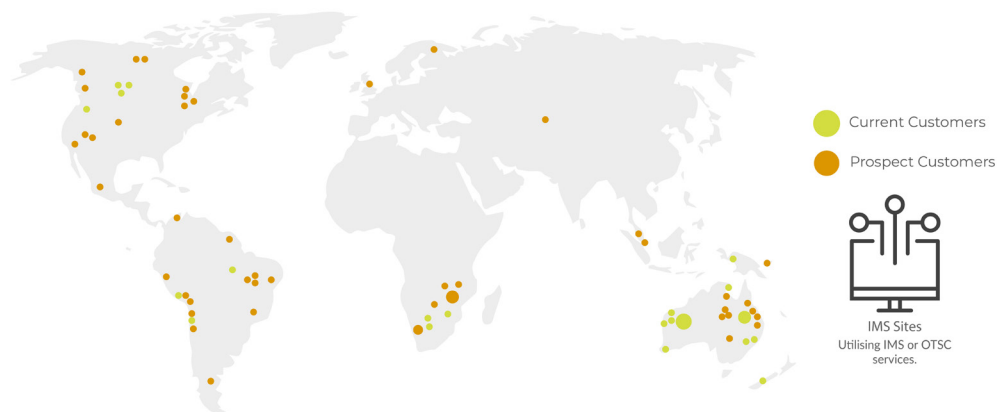
Through the knowledge and experiences of the founders, this market gap was able to be addressed.

At this point, key personnel were brought into the business and significant investment was made to create the IMS platform to bridge the gap. IMS is a vendor agnostic digital platform, and in the years since we first developed IMS, FTP has expanded into several more industries including marine, agriculture and the environment. We aim to use our ground-breaking technology in as wide of a context as possible, so that businesses can reach and understand their data from anywhere.

Shortly after IMS's development, the Operational Technology Support Centre (OTSC) was created. The OTSC is a team of experienced technologists who can leverage IMS unlock the software's maximum advantage. OTSC provides cutting-edge operational support for IMS and to its customers, ensuring that data is always accurate and available.

Global FTP Customers

FTP operates across the globe, with offices in Australia, Canada and New Zealand



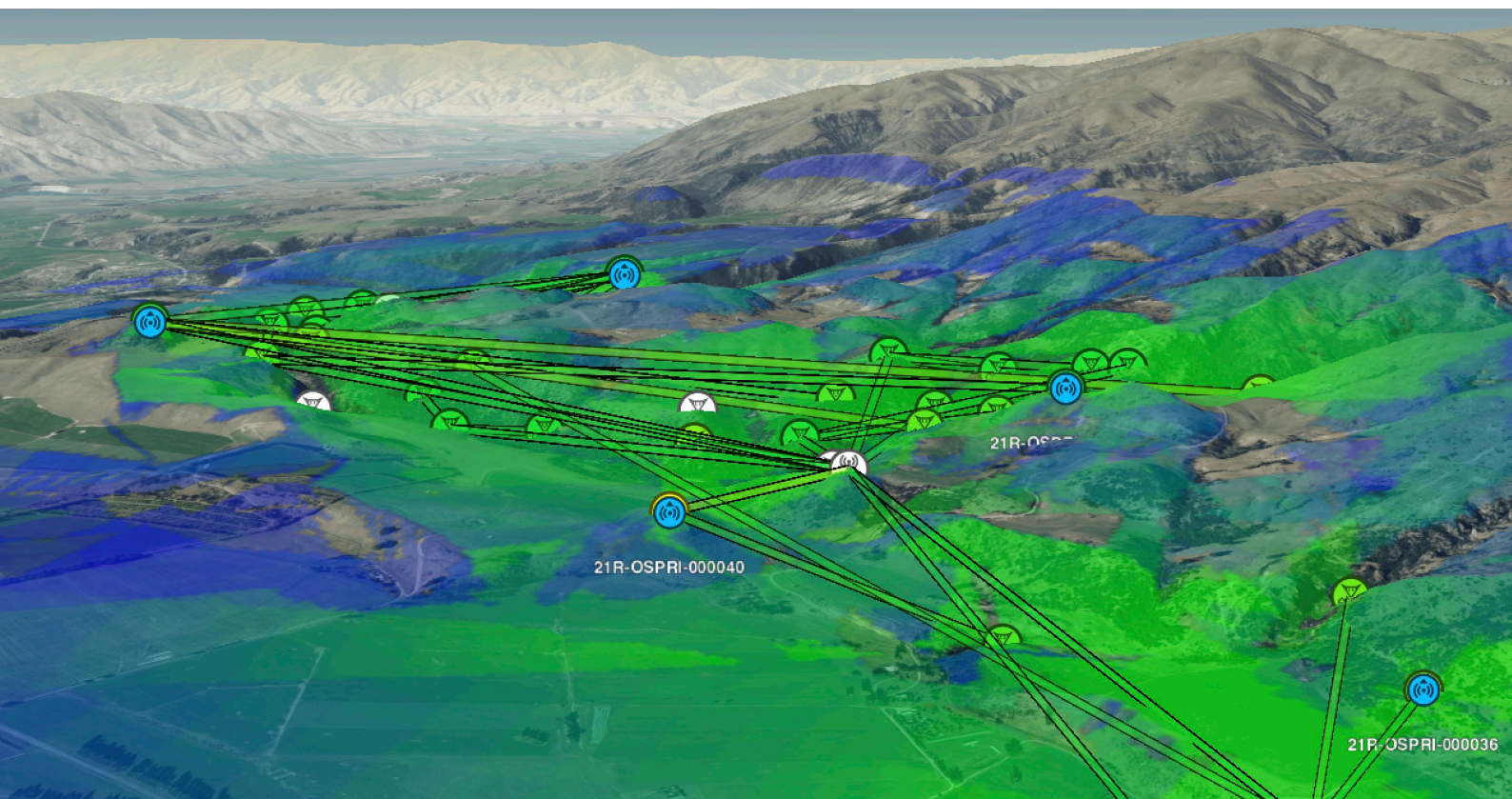
Connecting Everything, Everywhere

Yarn Mesh is a next-generation, low power 802.15.4 sensor mesh network, optimised for interconnecting devices and users over wide areas and difficult terrain, designed and delivered by the Team at FTP.

Yarn is specifically designed to connect large landscape scale areas for predator control, environmental monitoring, and farm management. Yarn is a reliable and secure solution that enables real-time monitoring and control of sensors and devices from remote locations. With Yarn, you can remotely track and manage predator activity, monitor environmental conditions, and optimise farm operations. Our cutting-edge technology is designed to increase productivity and efficiency, while also promoting sustainable and responsible practices in farm and environmental management. Yarn is the ultimate solution for those who value innovation, security, and performance.

Yarn operates using the 2.4GHz radio spectrum, with a planning radius of roughly 1-3km in sub-optimal conditions. If required, 6km+ links are possible in good conditions with good line-of-site; all with a compact omni-directional antenna.

- **Simple:** Simple installation, start up, and operation.
- **Secure:** All devices in a Yarn network are authenticated and all communications are encrypted.
- **Reliable:** Self-healing mesh networking, with no single point of failure, and spread-spectrum techniques to provide immunity to interference.
- **Efficient:** Low-power Yarn devices can operate on solar & battery power for years.
- **Scalable:** Yarn Mesh networks can scale up to hundreds of devices in a single chain and consist of multiple chains.
- **Intelligent:** Yarn Mesh devices enable real-time AI & Machine Learning at the edge of the network.

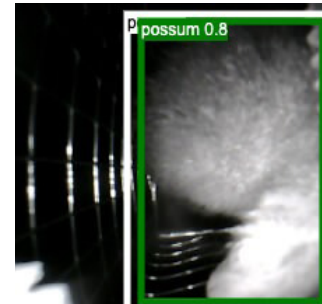
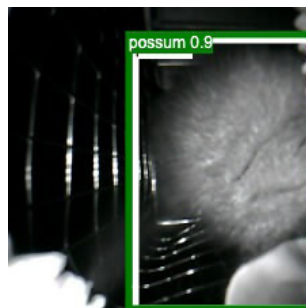
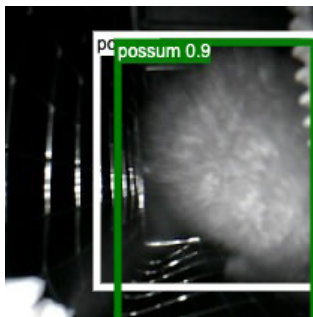


Connecting Everything, Everywhere

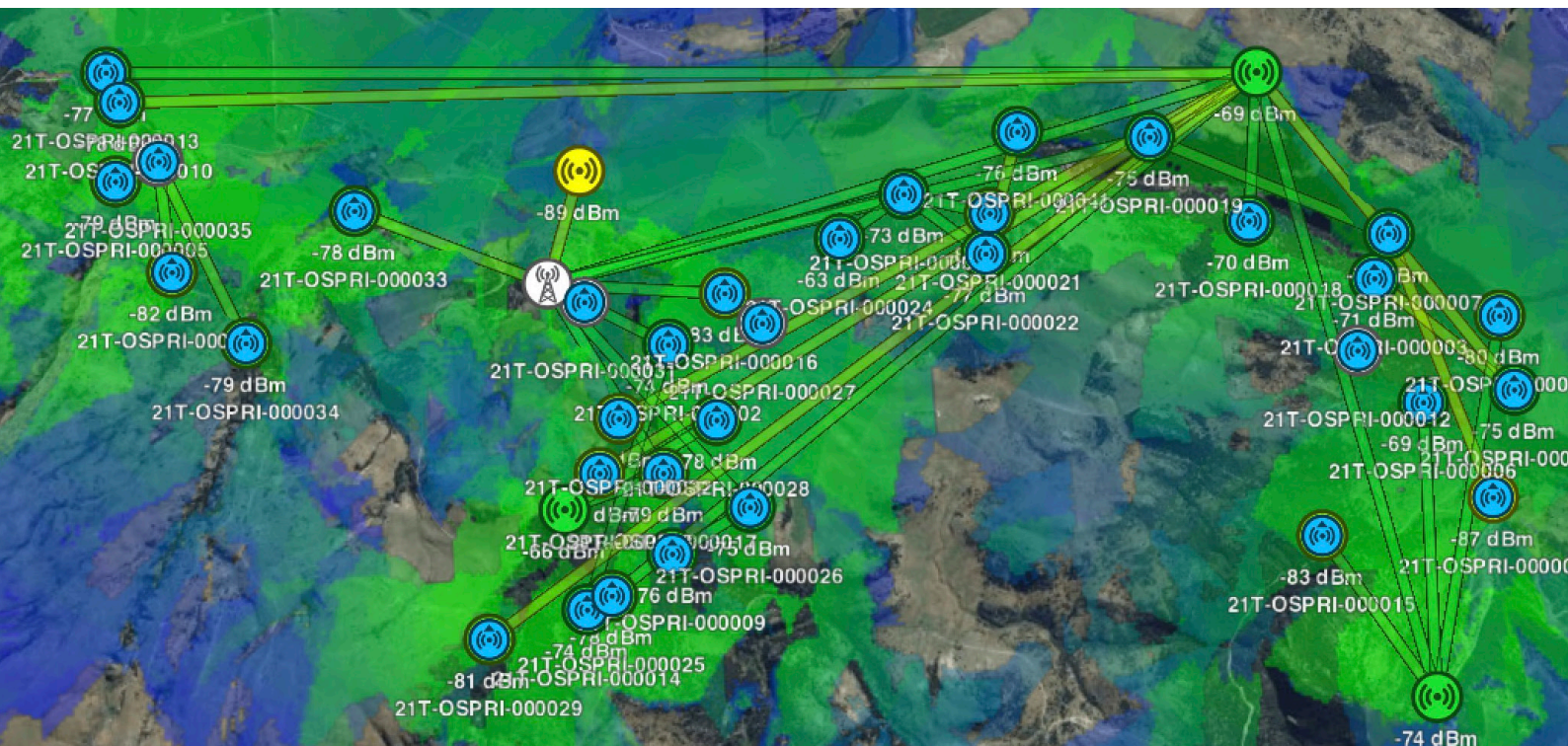
With the Yarn Mesh OS installed, the device automatically forms an ad-hoc radio mesh network with other Yarn Mesh devices that are in range. Each node can both send and receive messages, and can relay messages between nodes, thereby providing connectivity between nodes that may be out of the original sender's range. Each device added to the Yarn Mesh network increases the network's physical reach and reliability.

Yarn Mesh enables solar and battery powered devices to stream real-time telemetry from the field, farm or areas that span both. Yarn's IMS integration provides users with access and insight into the data from the remote sensors, with IMS' immersive user interface, able to manipulate time, location, state, and telemetry-based information, for total command and control of devices, sensors, networks and operations.

Yarn Mesh nodes are accelerated by AI/ML through machine vision which can recognise and categorise events and then take action. This is done without needing cloud/server backed processing, leaving the network free from unnecessary file transfers, saving power and lowering capacity requirements, resulting in smaller and cheaper batteries, solar panels and installation costs.



The AI/ML algorithms can be updated over the air too, along with sensor/radio/camera/device firmware; that means less frequent trips into the field for maintenance, giving people more time to focus their energy on extracting the most from their operations.



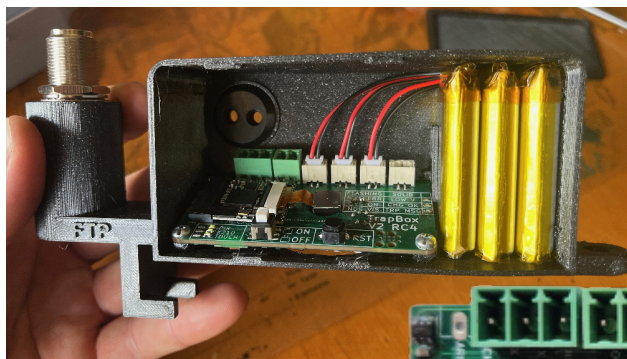
Yarn Mesh TrapNode



TrapNodes fit inside NZ AutoTraps AT220's turning these automated traps in to a powerful smart traps with long-range mesh communications for remote monitoring of trap operations and predator interactions. TrapNodes automate the collection of field data for statistical analysis, modelling and reporting purposes, ensuring the decisions Predator Free projects have to make are grounded in empirical data.

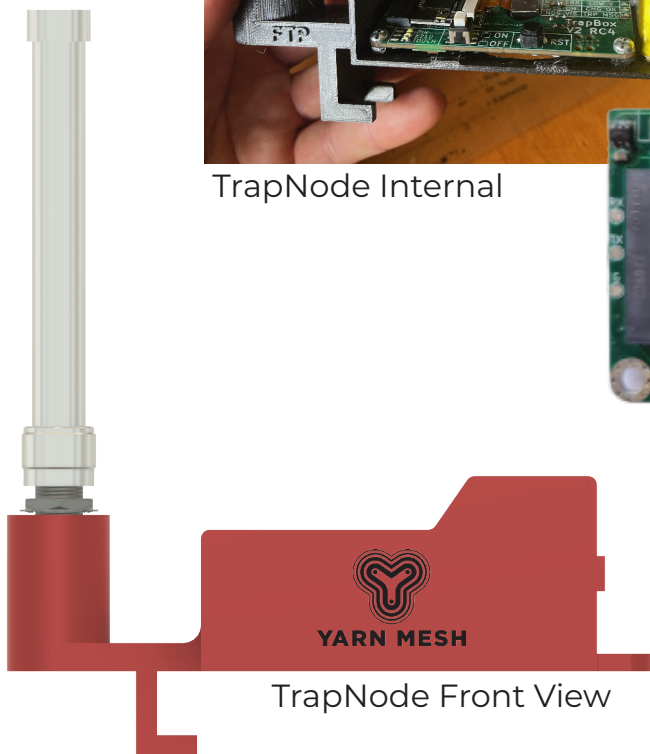
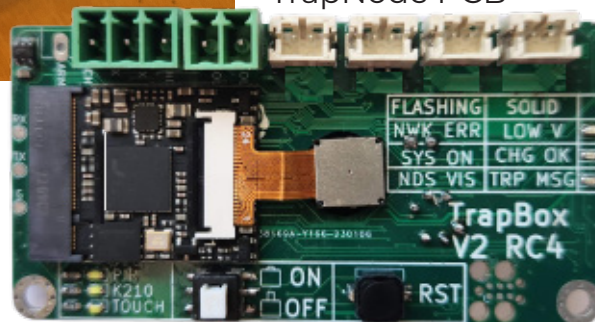
The TrapNodes Intellicam adds an AI/ML camera module for automatic detection and classification of target and non-target species. IntelliCam instructs the AT220 trap whether to be armed or disarmed based on the identification of a target or non-target species. IntelliCam reduces the risk of non-target bykill as well as automatically capturing accurate and timely monitoring data with the AT220 acting not only as a trap but also a lure station.

TrapNodes can also be used to monitor other devices as part of a trapping network, such as: DOC series traps, cage traps, MotoLures, bait stations and many other predator control devices.

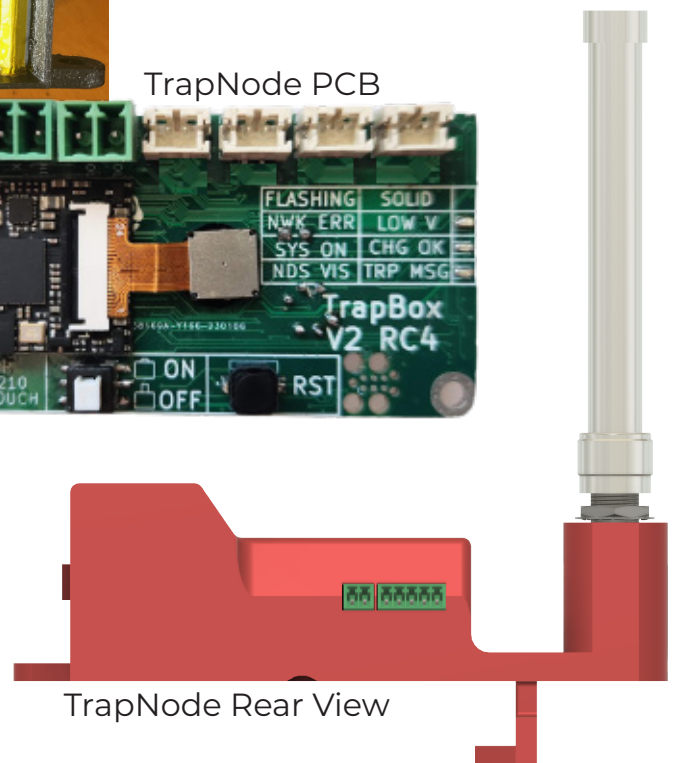


TrapNode Internal

TrapNode PCB



TrapNode Front View

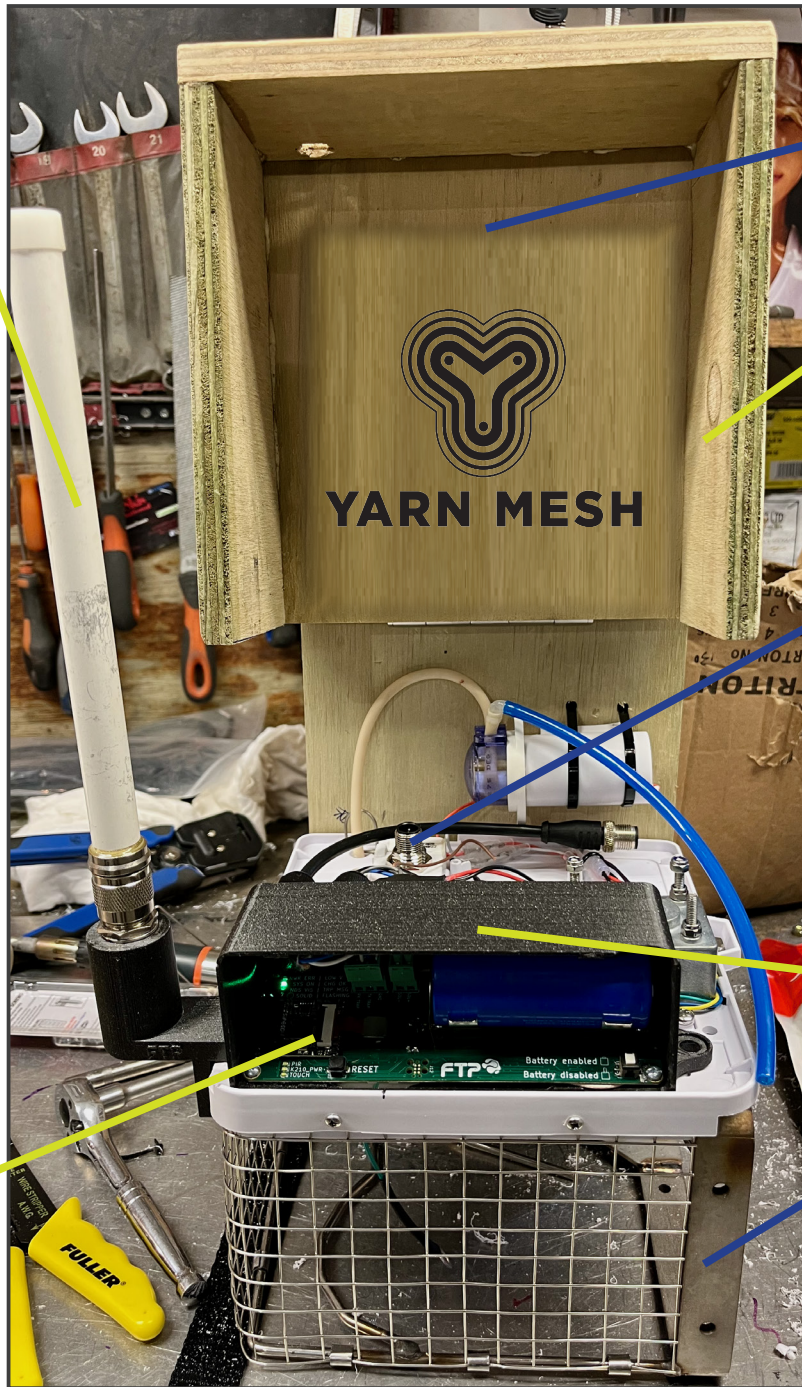


TrapNode Rear View

TrapNode Specifications

| FTP Yarn Mesh TrapNode Specifications (AT220 retrofit model) | |
|--|--|
| Feature | Benefit |
| 802.15.4 long-range mesh radio | <ul style="list-style-type: none"> • 3km+ clear line-of-sight node-to-node communication • Self-forming, self-healing network. • Forms a full-mesh topology network. |
| Bluetooth 5.3 interface | <ul style="list-style-type: none"> • Enables wireless configuration and deployment testing from your smartphone using the Yarn Companion mobile app. • Provides ability to receive BLE beacons, useful for tracking high-value animals (needs specialist Bluetooth Low Energy tag) |
| Onboard GPS | <ul style="list-style-type: none"> • Provides accurate trap location data in IMS, helps you locate the trap in the field and have accurate location specific statistics. |
| IR proximity sensors | <ul style="list-style-type: none"> • Automatically detects when predators approach the trap and wakes up the AI/ML camera to identify the species. |
| IR illumination LEDs | <ul style="list-style-type: none"> • The array of Infrared illumination LEDs gives consistent illumination of predators in, or approaching the trap, providing clear night-time images of predator interaction and eradication. |
| Camera with AI/ML co-processor | <ul style="list-style-type: none"> • Night-time optimised camera with AI/ML co-processor captures and rapidly processes images, classifying the species detected and whether it is a target species (predator) or not. |
| Set & forget operation | <ul style="list-style-type: none"> • TrapNodes are easy to install on AT220s and once deployed, the requirement for continual in-field checks is removed. TrapNodes, through the IMS integration, will stream live telemetry to allow the maintainer to manage by exception. |
| With IMS integration AT220 telemetry & control | <ul style="list-style-type: none"> • Automatically Arms/Disarms AT220 traps based on AI/ML classification of approaching animal (target vs non-target). • AT220 telemetry including Triggers, Resets, Bait Pump Cycles, Voltage, Temperature and Possum count. • Enables management by exception reducing maintenance visits. |
| 24x7 monitoring & alerting | <ul style="list-style-type: none"> • IMS will react to any conditions that have been set, alerting users of the system when they occur. This might be for flat trap batteries or successful eliminations. Errors and warnings are also monitored. |
| Super power efficient design | <ul style="list-style-type: none"> • Can operate in low-light and forested environments year round. |
| Solar charging | <ul style="list-style-type: none"> • A solar panel custom designed for high-efficiency in low-light conditions, charges the 6000mAh Li-Ion battery. |
| Yarn Companion app configuration | <ul style="list-style-type: none"> • The Yarn Companion mobile app enables field personnel to automatically configure and test the TrapNode and AT220 so you know it is working as expected before you leave it in the field. |
| Yarn Chat enabled device | <ul style="list-style-type: none"> • The Yarn Chat feature of the Yarn Companion app provides the capability to chat via messaging using the Yarn Mesh TrapNode network with your fellow fieldworkers, your remote office support team or anyone else in the world you need chat with. |

TrapNodes & AutoTraps



Yarn Mesh
Long-Range
Antenna

Yarn Mesh
Solar Panel*
(external)
*not shown

Yarn Mesh
TrapNode
IntelliCam
(AI/ML camera)

NZ AutoTrap
AT220
Kea Proof Lid

FTP Yarn Mesh
TrapNode
EnduraLid*
*not shown

New* AT220's:
FTP Yarn Mesh
TrapNode
compatible
Controller*
*from July 2023

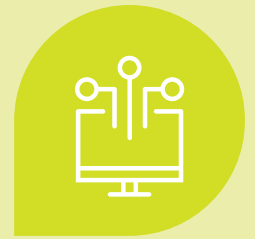
Existing* AT220's:
FTP Yarn Mesh
TrapNode
(retrofit)
*available now

NZ AutoTrap
AT220

TrapNode Options

| FTP Yarn Mesh Hardware Devices | |
|--|--|
| Product | Function |
| Yarn TrapNode AT220 (retrofit) no IntelliCam | TrapNode retrofits inside NZ AutoTraps AT220's making these a smart trap with long-range mesh communications. Provides telemetry and monitoring of trap functions and predator interactions |
| Yarn TrapNode AT220 (retrofit) with IntelliCam | <p>Same as TrapNode above but adds AI/ML camera module for automatic detection and classification of target and non-target species . IntelliCam instructs trap to be armed or disarmed based on identification of target or non-target species.</p> <p>Telemetry and monitoring of trap functions and including images of trap predator vs non-predator interactions..</p> |
| Yarn TrapNode Cage* (retrofit) | The same TrapNode technology but specifically designed to be fitted to live capture cages such as wild cat cage traps. Adds an accelerometer in addition to the AI/ML Intellicam to detect and notify when trap has triggered. |
| Yarn TrapNode DOC series (retrofit) | This variant is the same as the TrapNode Cage but fits DOC series traps.. |
| Yarn TrapNode EnduraLid* (AT220 Long-Life Lure & Battery Solar Lid) *available late 2024 | TrapNode EnduraLid replaces the lid on NZ AutoTraps AT220's. <ul style="list-style-type: none"> • Provides long-lwufe lure up to 4 x volume compared to standard. • Provides large capacity long-life batteries integrated inside the EnduraLid. • Provides integrated solar panel to recharge batteries and power AT220 removing the need to swap AT220 batteries in the field. • Designed for up to 2 years continuous operation of the AT220 without need for human intervention. |
| Yarn TrapNode EnduraLid 15W with IntelliCam (AT220 Long-Life Lure and Battery Solar Lid with AI/ML camera module) | <p>Same as TrapNode EnduraLid above but adds AI/ML camera module for automatic detection and classification of target and non-target species . IntelliCam instructs trap to be armed or disarmed based on identification of target or non-target species.</p> <p>Telemetry and monitoring of trap functions and including images of trap predator vs non-predator interactions.</p> |
| Yarn Solar Panel 10W (retrofit TrapNodes and power boost for EnduraLid AT220's in low-light environments) | External Solar Panel to power Yarn TrapNode. Also added for TrapNode EnduraLid AT220's installed in low-light environments. |
| Yarn SafeTag PLM (Personnel Locator Messenger) | Enables real-time location tracking of field staff and provides ability to send chat messages, SMS and email from the field. |

Integrated Management System



IMS (Integrated Management System) is a vendor agnostic piece of software developed by FTP and catering specifically to the needs of the modern farm or operational environment. This cutting-edge platform collates data from a variety of third-party systems and hardware and presents them in an easy-to-understand interface. It is a single end-to-end monitoring system that records and reports your farm and environmental data in real time, 24 hours a day.

IMS grants you access to key information geospatially, relative to exact locations on your farm or operational environment. This bird's eye view of your operations allows you to monitor and track asset and animal performance and anticipate where and when issues might arise, enabling you to unlock vital performance gains. IMS is a fast, flexible and intuitive interface that gives you the ultimate vantage point



Readily Available Data

IMS gathers data from connected assets on your farm and presents them in a single-pane-of-glass. View your data in real-time or turn back the clock to identify past events.



Make Informed Decisions

IMS visualises data not only from connected devices on-site, but also pulls data from important external databases, applications and key on-farm systems to give farmers access to the information that's important to them.



Vendor Agnostic

FTP can pull data from any device that is connected to your network and display that data on the IMS platform.



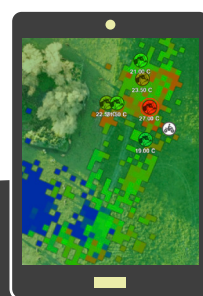
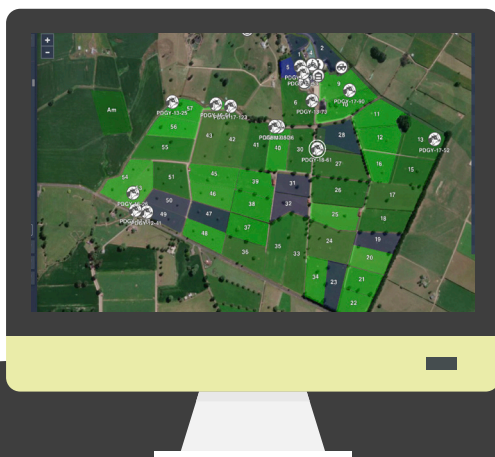
Resource Optimisation

With technology continually improving and demands in the agriculture sector increasing, effective communications are key to ensuring that all the tools available to farmers are available and performing. IMS provides the ability to set up cost-effective wireless wide-area networks in remote locations that can readily integrate the range of different devices and systems to run your operation.



Improve Operational Intelligence

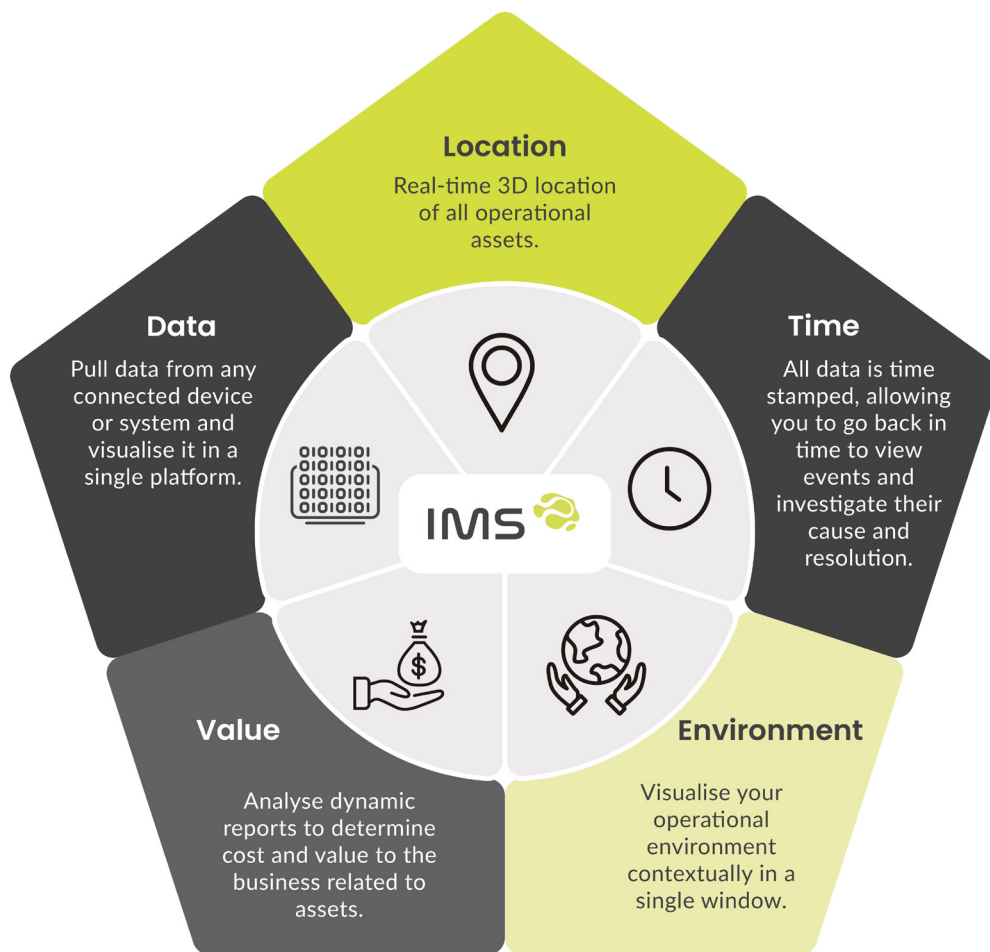
Operational Intelligence is vital to running an effective operation. It focuses on your day-to-day operations and ensures you are operating your business at maximum efficiency so that you can make more informed and accurate decisions.



Single Pane of Glass



IMS combines five key parameters for every asset



Unifying data in a single system
Providing unparalleled operational insight

Yarn Mesh & IMS Case Study

An example of the power of Yarn Mesh for connecting remote assets, infrastructure and sensors is shown the following real-world deployment using Yarn enabled hardware. This case study example shows how the Yarn technology has been utilised in southern corner of New Zealand's Queenstown Lakes District to connect automated predator traps that leverage the FTP Yarn TrapNode for communications, telemetry and predator identification via the Yarn enabled in-built AI/ML camera for embedded image processing and classification. In a project area with no cellular connectivity this case study provides a real-world example of the capabilities this connectivity technology enables for Predator Free projects. In this real-world deployment the nearest cellular connectivity is approx. 28km away - and inaccessible without Yarn Mesh - to the project site due to two (2) mountain ranges blocking access to this connectivity.

The project site consists of the confluence of two major valleys, the main valley being the Greenstone Valley which is intersected by the Steele Creek Valley. The project site is administered by the Southern Lakes Branch of the New Zealand Deerstalkers Association (NZDA), where they have private off-grid hunting hut known as the Mid-Greenstone Hut. The Mid-Greenstone Hut and predator eradication area sits within a working farms (Greenstone Station) summer grazing land in the valley floor and within government administered conservation land managed by the Department of Conservation (DoC). The valley system has been identified by DoC as a wild re-introduction habitat for one of New Zealand's rarest flightless birds, the Takahe.

The valley is also home to a small and important population of another rare native NZ bird the Kea, the world's only alpine parrot, an intelligent and inquisitive bird that likes to pull apart foreign objects with its beak. Kea have a habit of interfering with, and taking apart predator control traps, regularly chewing through up to 25mm of timber to access bait in traditional (manual) predator control traps.



Rare native NZ Takahe, one of the rarest native birds. The Greenstone Valley is a prospective valley for Takahe reintroduction.

Yarn Mesh & IMS Case Study



Rare native Kea, the world's only mountain parrot.

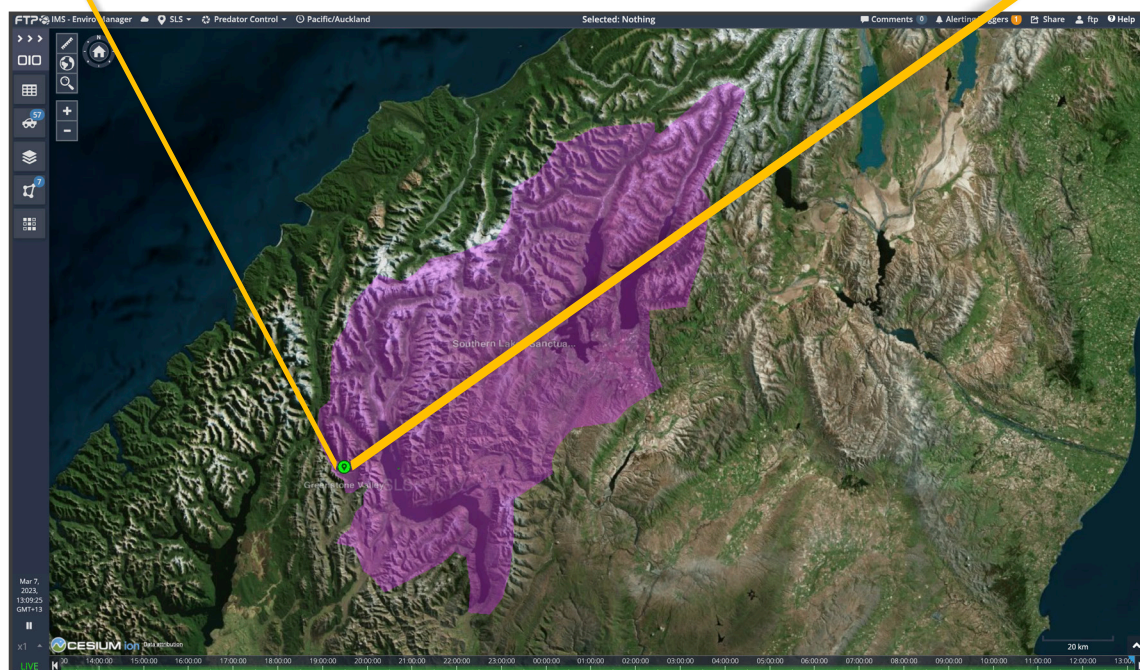
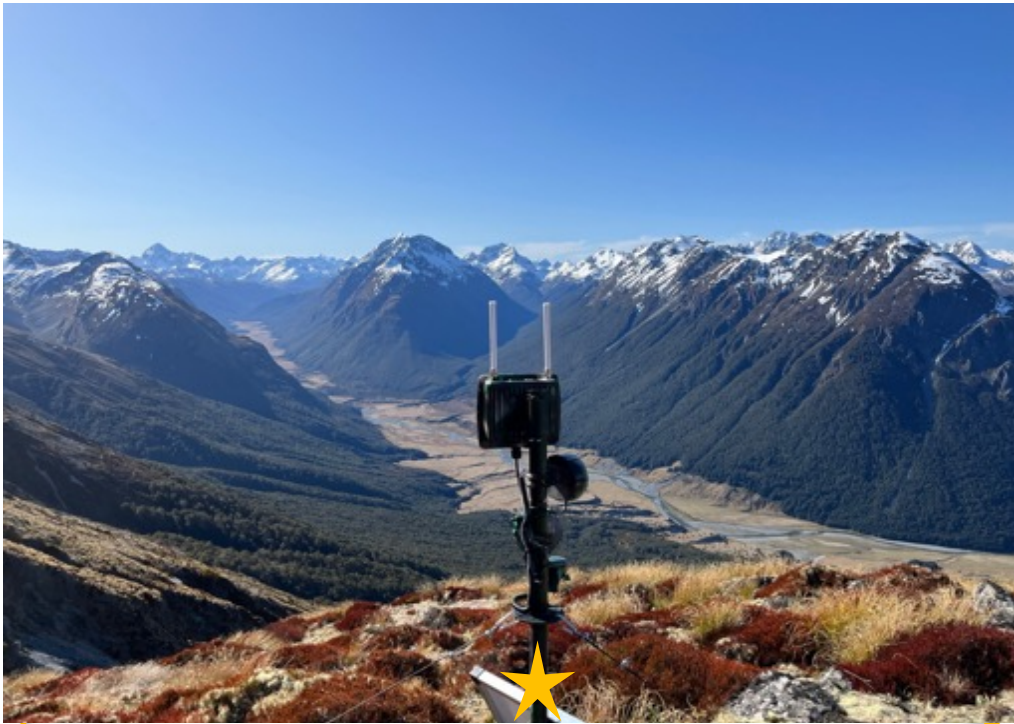
FTP's TrapNode is used inside automated predator traps to monitor the trap and both target and non-target species interactions, it sends telemetry and images from inside the trap over the Yarn mesh and out over the Yarn Gateway via IP interface over the internet to FTP's Integrated Management System (IMS) in the Cloud. FTP's IMS enables both wireless and operational project planning, network and operational monitoring, management-by-exception, alerting and reporting in a 3D/4D digital-twin like environment. The IMS technology enables 'hands free' management of large-scale operational environments for industries such as mining, agriculture, and environmental management. IMS integrates data from many devices, systems and communications technologies to build a live data-driven 4D digital-twin of each operational environment in a single integrated management system.

The FTP TrapNode uses Yarn Mesh at its core to talk with other traps via the integrated TrapNode inside. Each trap added in the environment extends the reach and coverage of the mesh, increasing the redundancy and resiliency of communications.



Yarn Mesh & IMS Case Study

Queenstown Lakes District, NZ. Southern Lakes Sanctuary Project area

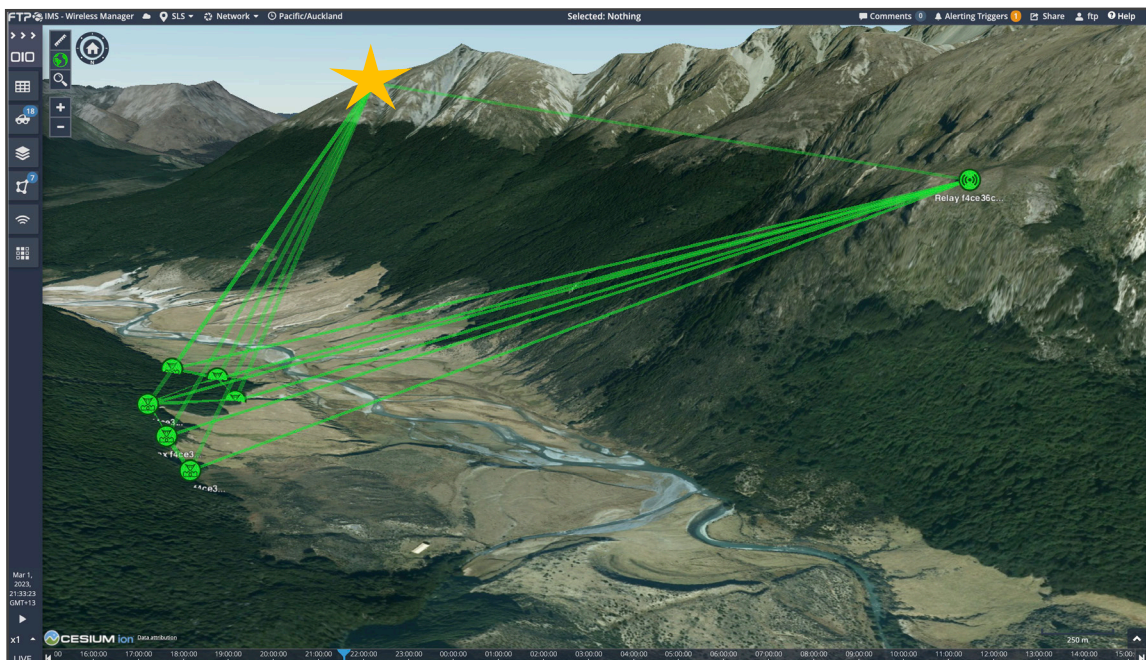
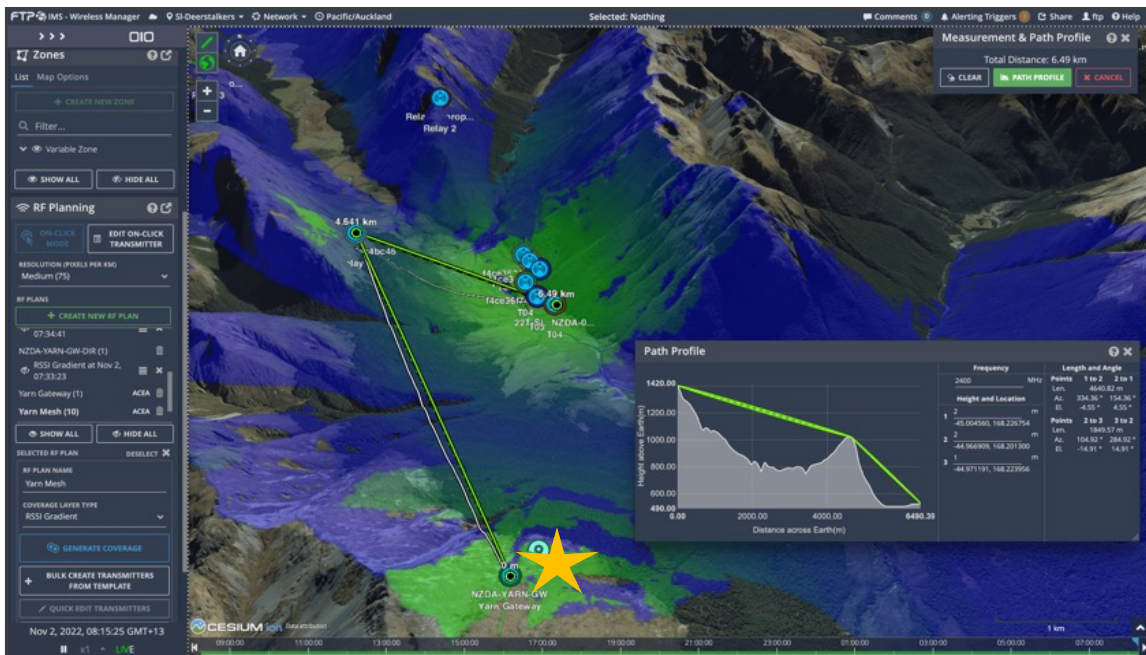


FTP Yarn Mesh IoT Gateway, Greenstone Valley, New Zealand

Yarn Mesh & IMS

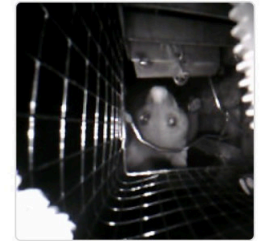
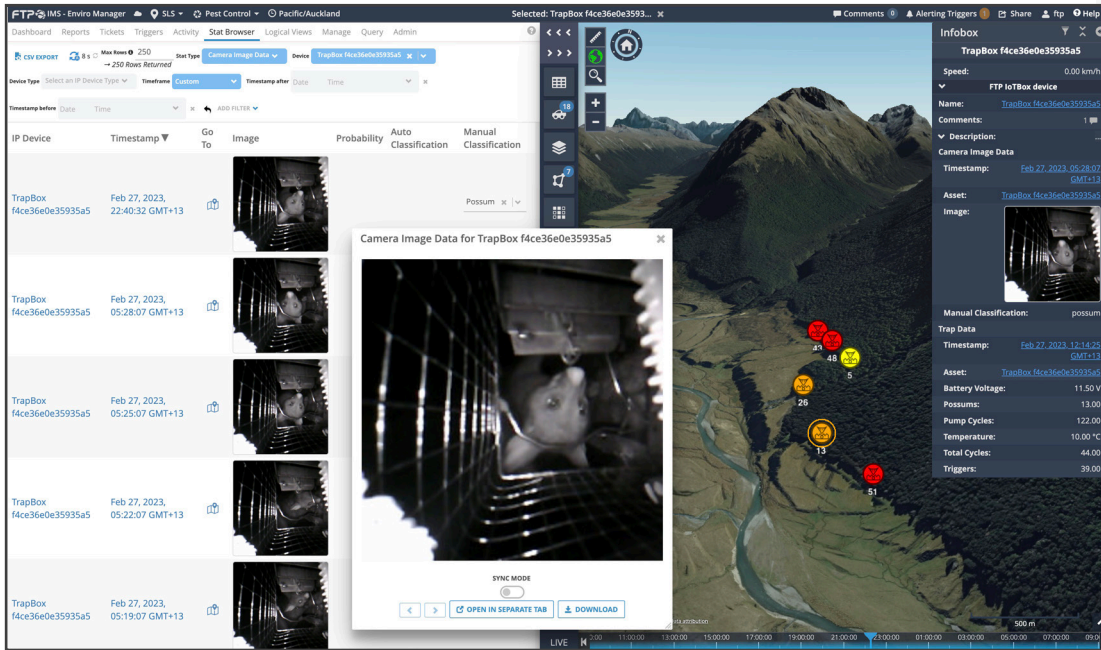
Case Study

FTP Yarn Mesh AT220 TrapNode network, showing Yarn Mesh coverage area in green & blue, Greenstone Valley

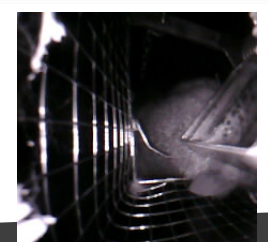
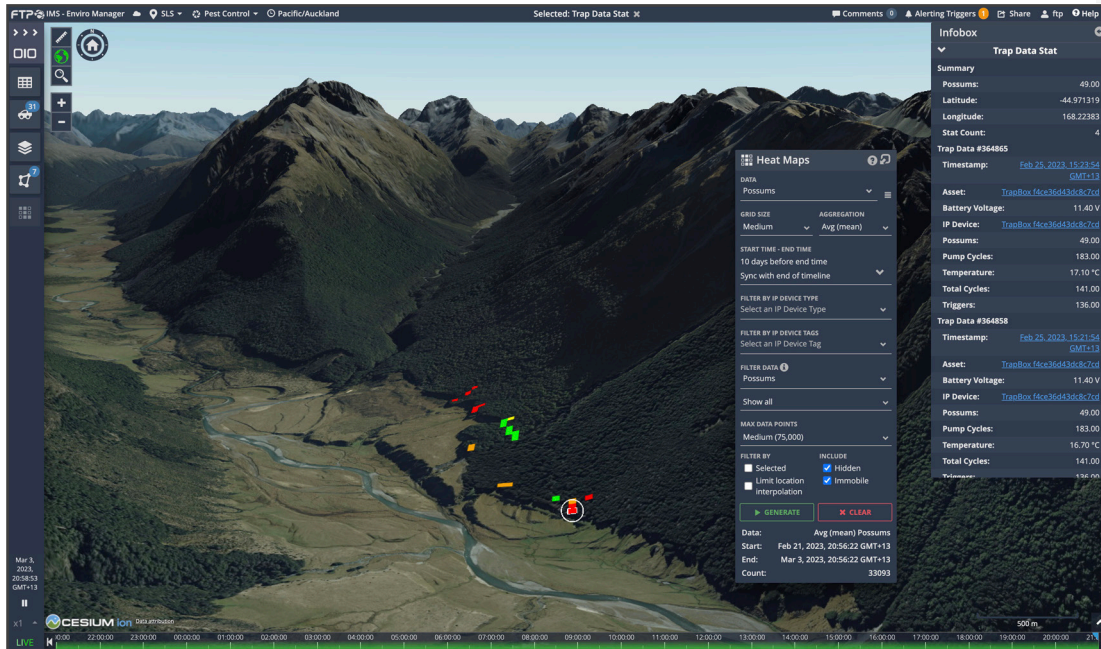


FTP IMS showing the Yarn Mesh TrapNode connecting AT220 automated traps

Yarn Mesh & IMS Case Study

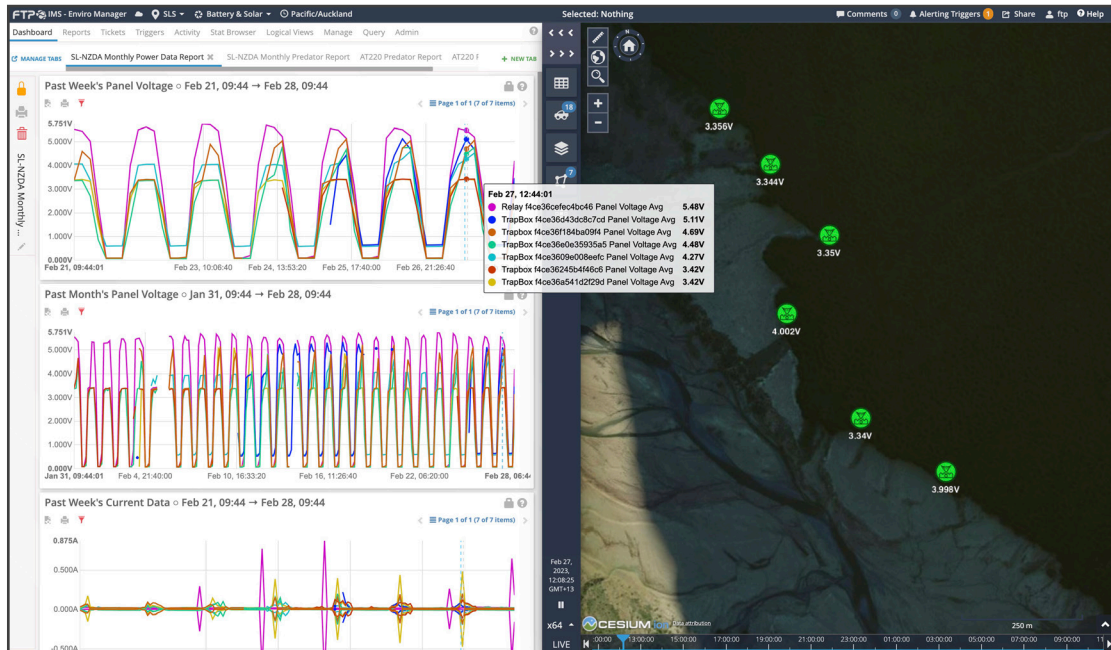


Above: FTP Yarn Mesh AT220 TrapNode network visualised in IMS, showing possum being detected by TrapNode IntelliCam upon entering NZ AutoTraps AT220 trap. Right: IMS, showing predator interaction images captured in sequence.

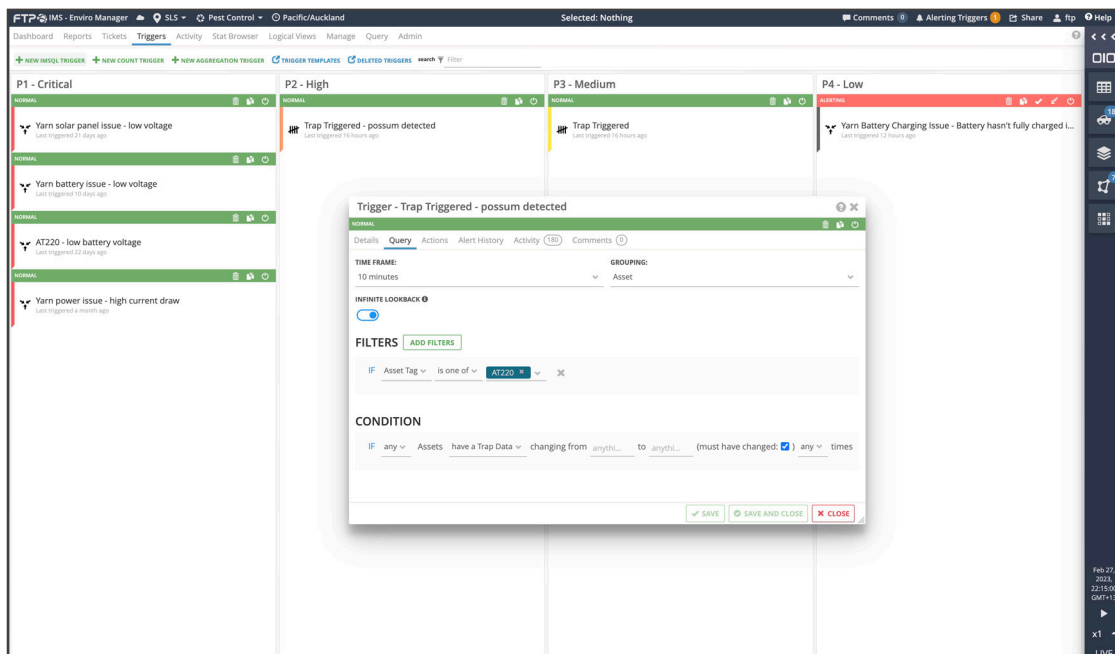


FTP IMS showing a heat map of historic trapping statistics, red means very-high predator numbers detected during the selected time window. In this example possum numbers are visualised over a 10 day period.

Yarn Mesh & IMS Case Study

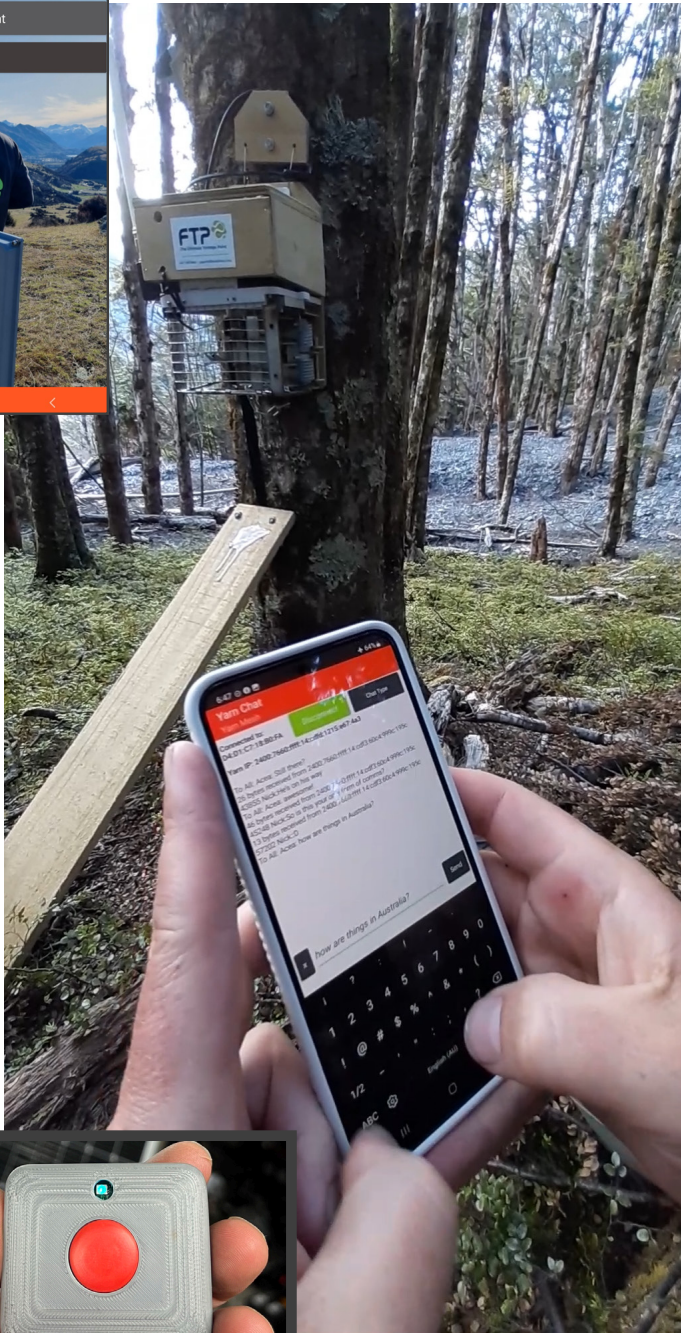
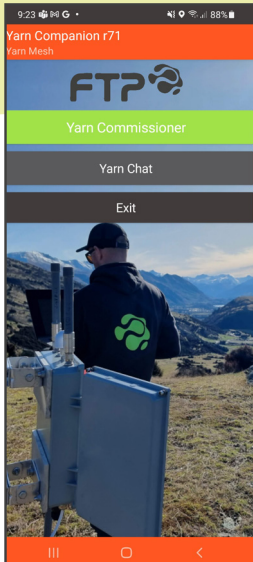


FTP IMS Dashboard Charts are used to visualise and report automatically on and data in IMS. In this example battery and solar power data from the trap is visualised.



FTP IMS showing Triggers (condition monitors), these automatically monitor for conditions that you care about and notify or alert relevant team members or external contractors that action needs to be taken.

Extending Yarn Mesh



Beyond TrapNodes

TrapNodes are just one type of device that can be connected to Yarn Mesh.

Yarn Mesh is a ubiquitous low-powered communications medium. Yarn Mesh provides the ability to connect many disparate device types together, securely, using the same single self-forming, self-healing mesh to communicate..

Yarn Chat

The Yarn Companion app not only provides the Yarn Commissioner functionality to commission your new TrapNode connected devices in the field, it also provides Yarn Chat that allows you connect and talk with your team regardless if they are in the next valley over, or on the other side of the world.

If close to a TrapNode you can pair your Yarn Chat app with any TrapNode using Bluetooth. If you need comms on the move then a Yarn Personal Locator Messenger (PLM) is for you.

Yarn Personal Locator Messenger

The Yarn PLM is small pocket size device you carry with you in the field. It peers with your phone via Bluetooth and provides a bridge to your phone for Yarn Chat, online real-time GPS tracking for health, safety, situational awareness as well as an SOS/man-down button to contact help in an critical situation. In a addition to these functions the PLM also simplifies task management, especially when you're in the field and the plan changes. The Yarn PLM allows the rest of your team to know where you're up to and where to find you.



Don't Ferret Around- Contact Us

If you've seen anything that you'd like more information on, we'd be happy to speak with you to discuss your requirements and demonstrate our products.

You can reach out via:

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Don't ferret around, let us help you get the best results

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