EagleEye: Wedge-tailed eagle monitoring
Sustainable Timber Tasmania

The Wedge-tailed Eagle is Australia's largest bird of prey, distinguished by its wedge-shaped tail. Tasmania is the only home to the Wedge-tailed eagle subspecies Aquila audax fleayi, where the total adult population is estimated to be less than 1000. Wedge-tailed eagles nest in mature forest areas across Tasmania and are particularly sensitive to disturbances in their habitat while nesting, which may result in them abandoning eggs and even chicks. As an endangered species, the successful growth of the eagle population requires consideration of forestry management practices that protect their nests during the breeding season.

OBJECTIVES

Sustainable Timber Tasmania (STT) is a Tasmanian Government Business Enterprise responsible for the sustainable management of 800,000 hectares of forest within Tasmania's Permanent Timber Production Zone land. As forest custodians, STT is committed to the management and protection of forest biodiversity. An important aspect of their forest activities is the protection of Tasmania's wedged-tailed eagle nesting habitat.

Eagle nests are protected during the breeding season, and logging activities cannot occur within 1km of an active nest. Sustainable Timber Tasmania sought to pilot the use of IoT as an accurate and cost-effective means to monitor eagle nest activity discretely, so as to protect breeding activities, whilst also optimising efficiencies in forestry management practices.

DATA NEEDS

Existing challenges include the time-consuming and costly nature of eagle nest observations. Current practices rely on manual in-field observations which provide data at static points in time, inhibiting the ability to collect long-term time series data relating to eagle nest activity. In addition, these observations fail to capture changes in nest occupancy over the course of the breeding season.

To overcome these challenges, the solution needed to collect data that:

- Accurately collects nest activity in real-time
- Collects and analyses nest activity data over the course of the breeding season
- Surpasses existing manual methods in terms of cost-effectiveness

SOLUTION

In order to avoid disturbance to eagle breeding, the installation of the EagleEye IoT Solution occurred during the breeding off-season. Data were collected using two different types of IoT technology, one being a LoRaWAN Sensor, and the other a 4G video camera. The devices were installed overlooking known eagle nests.

The INDICIUM DataBus was used to collate data from these devices, after which it was analysed to determine the activity status of the nest. Machine learning algorithms were trialled as a way to analyse the captured videos to determine when eagles were detected.

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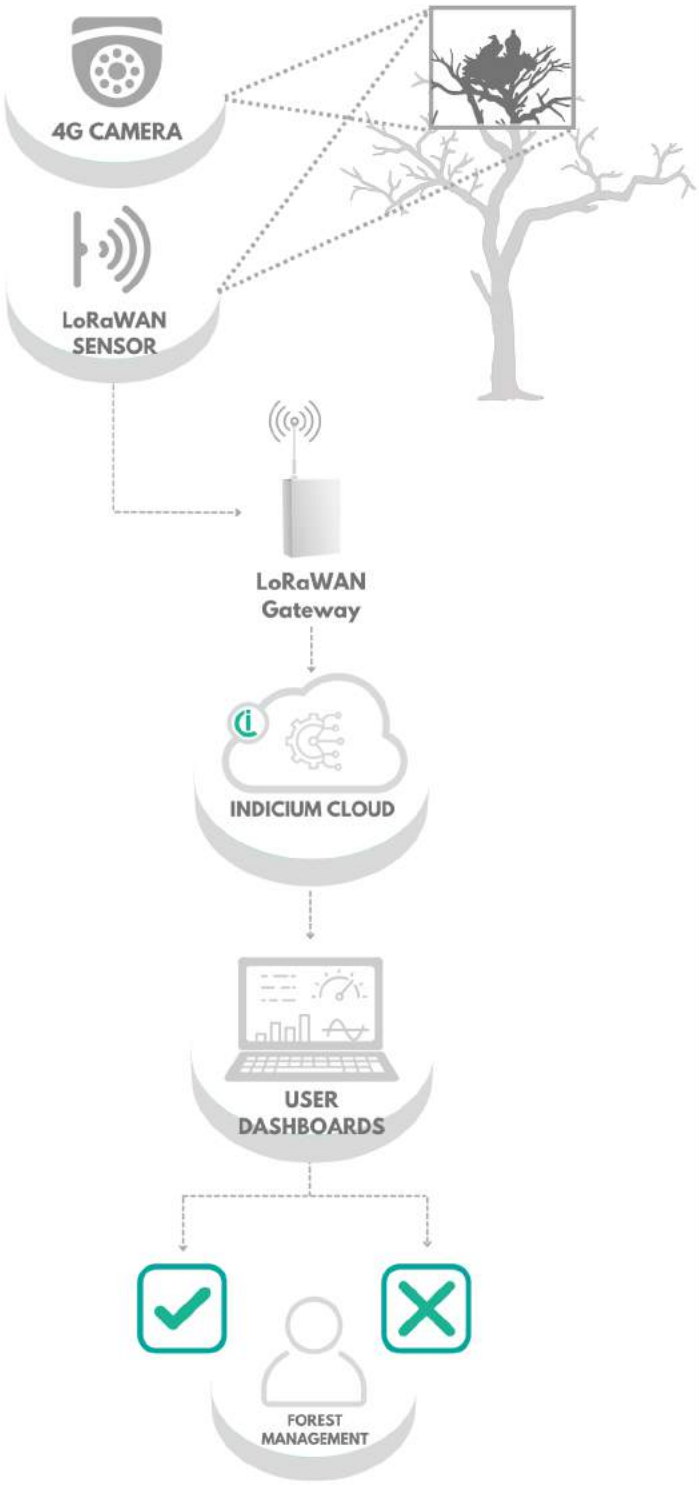


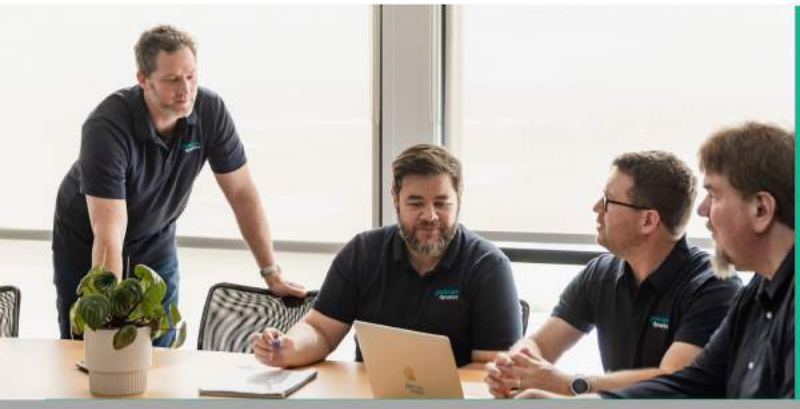
BENEFITS

- The solution allows for discrete and safe observation of wedge-tail eagles in their nest, ensuring that nesting behaviour is not negatively impacted
- Data relating to in-nest activity can be collected in near-real time, and stored to a rich time series of nest behaviour
- Data collection surpasses manual methods for accuracy and cost-effectiveness, removing the need for expensive and potentially disruptive monitoring methods (e.g. helicopters)
- INDICIUM Dashboards allow for users to see nest activity in real-time, allowing the monitoring of nests throughout the entire breeding season
- The solution can be used to monitor nest occupancy and breeding activities of other species of birds

FUTURE APPLICATIONS

This project has demonstrated the applicability of IoT within a forest setting to monitor the habits of native wildlife.

The design of this solution contains the scope to apply this monitoring system to other animals both within and outside of a forestry context.



ABOUT US

Indicium Dynamics is a full-service Internet of Things (IoT) and Data Integration solutions provider. We deliver customisable data solutions that manage the collection, analysis and display of information; supporting clients to make empowered and meaningful decisions that support business growth and success.

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