



18 NOV, 2019

## A smart solution to poaching in Royal Belum

The Edge, Malaysia

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BY **R THILLAI RAJ**

Poaching of wildlife is rife in the country due to the demand for their meat and purported medicinal properties. This is common knowledge among conservationists and environmentalists, if not the general public.

Numerous wildlife species, such as the Malayan tiger, pangolin, sun bear, deer and exotic birds, are targeted. As for flora, again, anything that makes money is a target such as the iconic Rafflesia as well as rare rainforest trees like the gaharu tree or agarwood.

If these illegal activities continue to proliferate unhindered, there is a well-founded fear that the gene pool of many of our endangered species may face depletion and consequently, the rich biodiversity of our rainforests may forever be lost.

Fortunately, the authorities are aware of these illegal activities and are taking appropriate measures to prevent the plunder. However, due to resource constraints, monitoring and enforcement activities are not as effective as they ought to be. How can we improve this dire situation?

One way is to augment existing enforcement practices with innovative technology solutions.

Currently, World Wide Fund for Nature (WWF-Malaysia) and the Perak State Parks

Corporation are working hand in hand with national applied research and development centre MIMOS Bhd to design, develop and deploy a technology solution to curb the poaching of endangered flora and fauna species in the Royal Belum State Park in Perak. The system has been dubbed the WWF Royal Belum Surveillance System.

Poachers often use boats as a convenient means to enter the park and to transfer their ill-gotten gains. Hence, vetting all boats entering and exiting the waters in the park is an appropriate approach to mitigate this illegal activity.

To this end, the Perak State Parks Corporation has set up a checkpoint at the main entry to the park via Temenggor Lake. This surveillance system will augment the manual operations at this checkpoint for greater effectiveness.

The principle behind the surveillance system is simple. Any boat that does not report at the checkpoint will be deemed a trespasser and the system will immediately alert the ranger on duty.

This is done in two ways – the siren at the checkpoint will be triggered and at the same time, an alert sent to the mobile device of the ranger on duty.

The surveillance system consists of both hardware and software components. For a start,

power for the entire system comes from solar energy via solar panels installed on the roof-top of the checkpoint building. The solar energy is stored as electricity in solar batteries for use by the rest of the system.

Video cameras are used to capture the movement of the boats across a swathe of designated water area where the "barrier gate" sits. The barrier gate comprises a linked set of buoys strung out from the checkpoint to the opposite bank.

In addition to video information on boat movement, data on temperature and humidity are also collected via installed sensors. The temperature and humidity data are used to predict on-site weather for monitoring the functionality of the solar panels. All collected information is pushed to a cloud server for storage and kept for a period of a month.

The mobile application for the system has several features to help the ranger make a decision or take an action. The features include a real-time video view of the area being observed, a historical count of all boats entering and leaving the site being monitored, temperature and humidity status check and battery power status check.

The benefits of using such a system for surveillance include 24/7 real-time monitoring, greater accuracy since fatigue may lead to human error, manpower freed to carry out

other useful activities at the checkpoint and availability of recorded data for subsequent analysis aimed at additional insights.

It is hoped that with the operation of this surveillance system, poaching and other illegal activities at the Royal Belum State Park will be significantly reduced.

Looking from the technology perspective, the surveillance system comprises a combination of established and cutting-edge technologies such as solar, artificial intelligence-based video and data analytics and Internet of Things as well as edge and cloud computing to derive a useful solution to a real-life problem.

It would not be wrong to generalise and say that this system is typical of a complex technology solution – a number of technologies are needed to be knitted together to develop a solution for a real-world problem. No single technology can provide the answer.

Therefore, MIMOS as per its charter, always looks ahead and works on emerging technologies to develop novel technology platforms and innovative products for industry take-up and to meet strategic national needs such as the one for the Royal Belum State Park.

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### SUMMARIES

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