Smart Parks

A solar-powered Long-Range Wide-Area Network that, together with other types of communication networks, covers entire protected areas. Sensors are deployed throughout the area and allow tracking of animals, vehicles, staff, visitors, and equipment in real time.

(Overview) What is the technology?

Smart Parks seeks to protect threatened species and conserve the environment by utilizing a state-of-the-art communication network to support protected areas in their anti-poaching efforts, the management of their assets, community conservation, and tourist safety. The solution specializes in the planning and installation of a solar-powered Long-Range Wide-Area Network (LoRaWAN™) that can cover a relatively large area. At the same time, sensors are deployed throughout the park and allow tracking of animals, vehicles, staff, visitors, and equipment. The data is collected and processed in a web application that displays real-time information in a central control room that provides park management with more situational awareness and actional intelligence. Smart Parks also sets up other types of communication technology within a reserve, such as Wi-Fi and Narrowband Internet of Things.

What are the current applications of the technology?

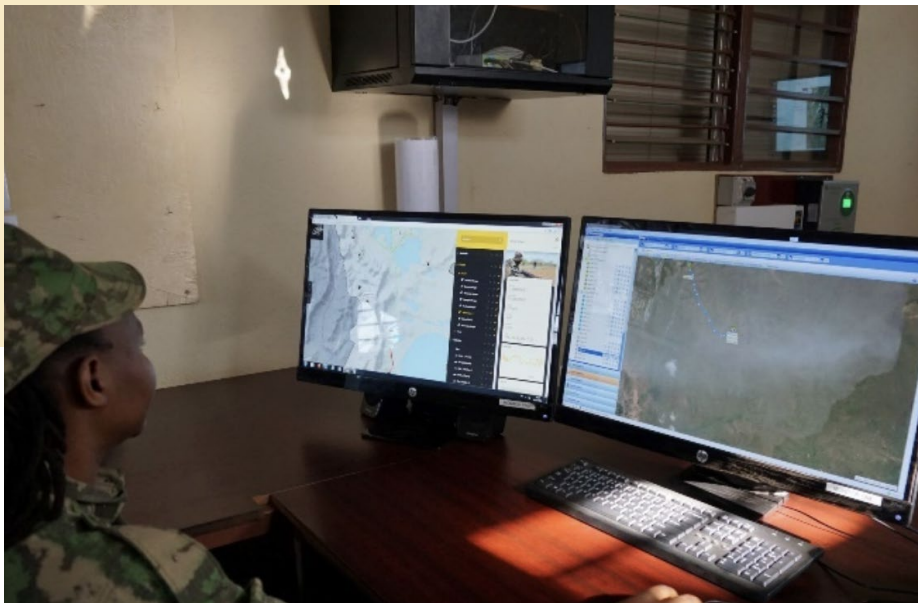
Smart Parks was launched in 2018 and has been deployed in wildlife reserved in 19 countries so far. In the locations where Smart Parks has been active for over two years, poaching has beendrastically reduced to almost no poaching incidents.

How is this technology reducing poaching?

Most protected areas do not have 3G/4G/5G coverage, which makes the communication among actors, the central unit, vehicles, gate security, etc., challenging and also prevents the effective tracking of animals and visitors entering the park. A network covering the entire reserve can quickly detect malfunctions of equipment, breaches of barriers, and poaching activities. This enables the rangers to act more quickly, forcefully, and in unison, therefore better protecting the park and its wildlife.

Specifically for wildlife protection, Smart Parks offers the following solutions: **1) Intrusion detection** via gate and barrier sensors; **2) Wildlife tracking** via collars based on Global Navigation Satellite Systems (GNSS) and LoRaWAN™ trackers; **3) Electric fence line monitoring** via fence probes measuring the height, timing, and number of high voltage pulses; **4) Ranger tracking,** using GNSS and LoRaWAN™ trackers; and **5) Vehicle tracking**, using the same trackers (Smart Parks, 2020).

An antenna is installed in a national park.
Source: ©Smart Parks



Monitoring of the Smart Parks application in the control room.
Source: ©Smart Parks

Websites and Social Media

Smartparks
https://www.smartparks.org/

Facebook
https://www.facebook.com/smartparksorg/

About the Project/Organization

Smart Parks was formed by the merger of the two charities in 2017: Internet of Life and ShadowView. The organization operates as a foundation in the Netherlands and as a registered charity in the UK. Smart Parks combines the knowledge of experts having 30 years of experience in conservation and law enforcement to use innovative techniques for the protection of threatened species, humans, and the environment.

Additional Resources

- Our Work
- Smart Park Akagera
- SMART PARK Akagera National Park (2018)

Smart Parks Factsheet

Number of projects/ places using this technology as of 2021-2022	Wildlife reserves in 19 countries: Belgium, Benin, Botswana, Burkina Faso, the Republic of Congo, Chad, India, Israel, Kenya, Malawi, Mexico, Mozambique, Namibia, Niger, the Netherlands, Rwanda, South Africa, Tanzania, the United States, and Zambia
Issues addressed	Poaching
Species focus	Multiple species
Locations where technology is currently implemented in	Protected areas; Buffer zones and corridors; community fields, livestock enclosures (boma), or villages; other potential locations could be private reserves
Data source	Collecting its own data
Current users	Rangers; protected area authorities
Devices and Technologies Used	
Communication devices	Computers/laptops; radio sets; tracking devices
Detection devices	Motion detection; visual detection (cameras); audio detection; perimeter protection
Infrastructure	Data storage platforms/Cloud services; radio frequency network; internet connectivity; Wi-Fi; electricity; solar panels
Compatibility with other technologies	Artificial intelligence
Setup and Implementation	
Typical size of implementation	Variable, depending on the size of the area and the lay of the land. For a test project usually one or two gateways are installed and several sensors implemented to track animals, rangers, vehicles, etc.
Duration from inquiry until set up	One week in the field, a few months to prepare
Costs	The full installation of the system requires GPS tracking devices, radio sets, cameras, communication network and perimeter protection; the costs of which can vary depending upon the size of the project from $50,000 to $150,000.
Operation	
Frequency of interaction with technology	Daily
Days per month for operation/analysis	As needed
Frequency of maintenance	4 days per month
Necessary expertise	Medium capacity (beginner-level computer skills and knowledge of how to operate a GPS)
Outputs	
Generated data	GPS data, Text alerts, Sound recordings, Status reports
Frequency of data analysis and reports	As needed
Can output or data be integrated into other solutions	Yes