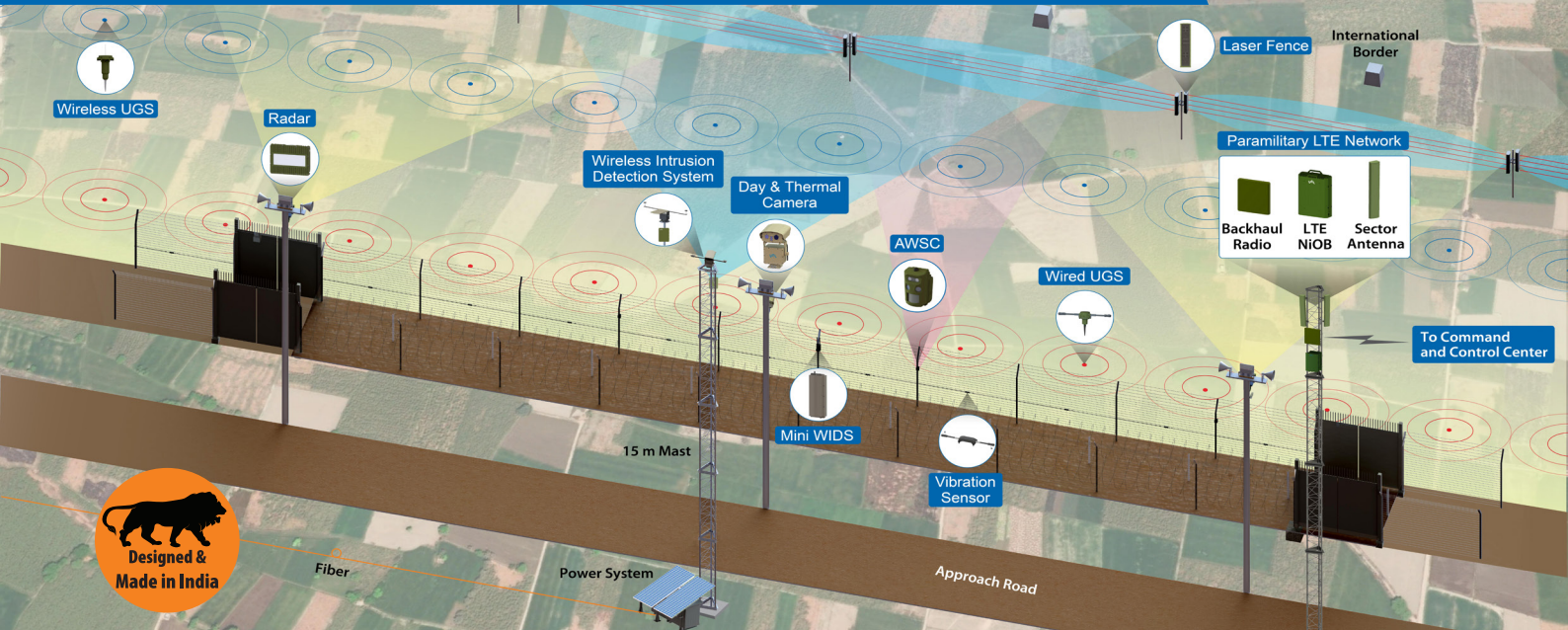


SBMS

Smart Border Management System



Securely Fencing The Border

Integrated intrusion detection and communication for borders of India

Critical assets like borders, camps and airbases are forever exposed to high levels of risk from approaching intruders. On the other hand, difficult weather and terrain always confound manual observation, making target detection and round-the-clock surveillance even more difficult. Thus, for instance, sensitive areas surrounded by thick vegetation can become extremely vulnerable, especially during winters. Or borders that are riverine can become especially difficult to guard during the rainy season.

Armed forces and border security agencies must have access to systems that enable high-resolution, day-and-night surveillance throughout the country's numerous border terrains and in the toughest of weather to ensure that security breaches are never a reason for concern.

Shyam VNL's indigenously developed, **intelligent solutions for Smart Border Management** comprise a combination of multiple sensors that form integrated, multi-layer security to **deter, detect, delay and avert intrusions across any border terrain**, and in any weather condition. Customised and developed especially for Indian border terrains, our SBMS becomes an integrated, one-stop solution that acts as a force multiplier for the Indian armed forces and border security forces

BENEFITS

- Real-time, live monitoring and dissemination of intelligence with advanced Command and Control software
- Intrusion localisation up to node-level
- Day-night operation; tamper alarm
- Sensitivity adjustment; low false alarm rate

HIGHLIGHTS

- User-friendly and intuitive display of sensors and alarms on digital/GIS map
- Intrusion identification by Slew to Cue when integrated with a camera
- Remote configuration and monitoring through Command & Control software
- Resistant to extreme weather; no maintenance needed
- Field-proven in India

In general, there is no 'fit for all' border security solution that is able to address the many complexities that relate to climate, topography, geographic location, and even associated politics. Real solutions require innovative products and seamless integration to work as a force multiplier and provide smart, effective border protection.

Shyam VNL's Smart Border Management solution includes an integrated and omnipresent system, called Perimeter Intrusion Detection System (PIDS), a Wireless Intrusion Detection System (WIDS), and

a host of ISR solutions that enable authorities with real-time, remote monitoring and control over critical locations. This integrated real-time intrusion detection and surveillance solution aids forces in effectively monitoring a designated area without endangering human lives to provide all-weather surveillance.

Each terrain type provides different complexities and challenges and a multi-layer security control and management solution is recommended with customizations.

APPLICATION

Each military/civilian installation of value has its own strengths and weaknesses in terms of how intrusion may be carried out. While the structure and layout of the effective solutions may vary, every installation follows the fundamental principles of the **five Ds – Deter, Detect, Deny, Delay and Defend**. The threat assessment is carried out from the outside – measuring the assessment

based on the threat levels at the outermost limits and then proceeding inwards as the coverage area reduces and threat perception increases.

As has been mentioned before, borders of different terrains and geographies require different Ds to be taken into consideration for PIDS setups. **A few examples of ideal setups are categorised as:**



Border areas in deserts, vast open spaces

A multi-tiered layer of sensors to ensure comprehensive security for borders with vast, open areas includes:

Detect: Situational Awareness

- Invisible Passive/Active infra red sensors with microwave sensors
- Ground surveillance radar
- Vibrations sensors for fence
- Day and thermal electro-optics
- Underground Seismic Sensor (UGS)

Defend: Apt Response Mechanisms

- IP public address system to revert intrusion with the psychological barrier
- Unmanned aerial vehicle for surveillance (Quadcopter for sustained security)



Border areas with delta, estuary & creek

A multi-tiered layer of sensors to ensure comprehensive security for borders with difficult-to-manoeuvre, marshy terrain includes:

Detect: Situational Awareness

- Day and thermal camera
- Ground surveillance radar
- WIDS on drone

Defend: Apt Response Mechanisms

- Unmanned aerial vehicle tethered on boat/buoy

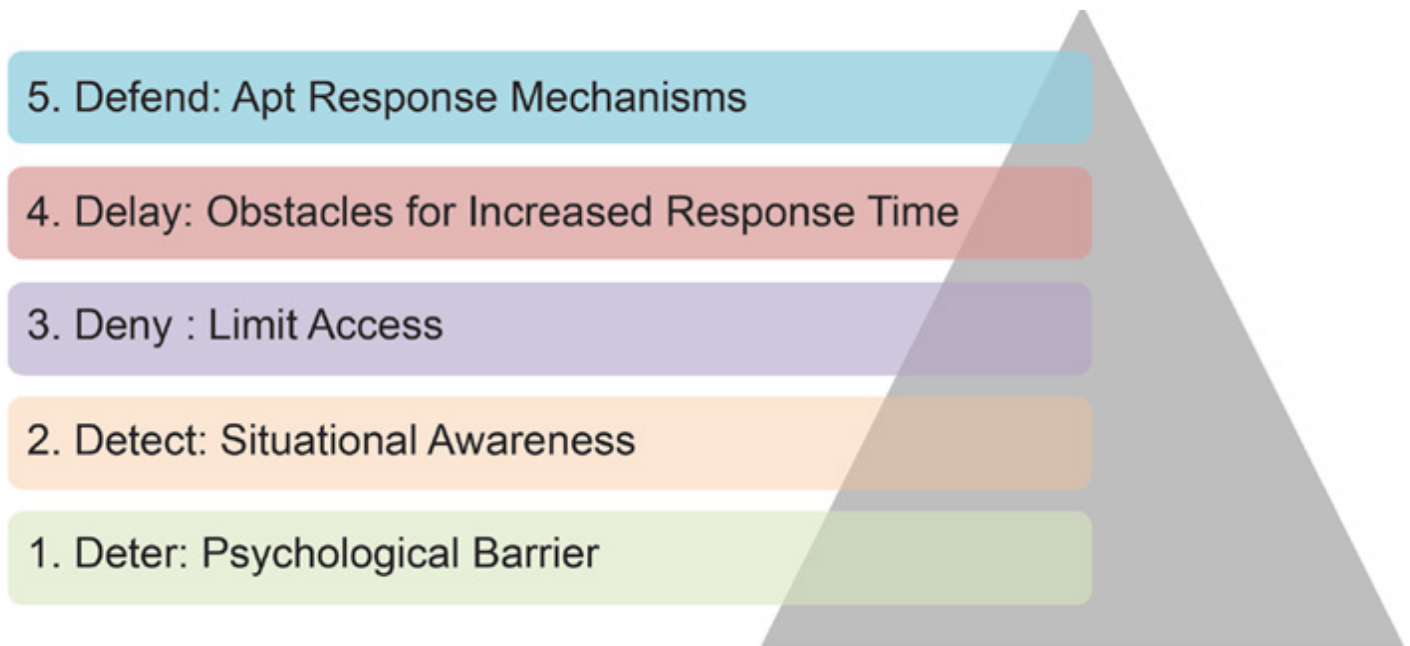


Fig. 1 Designing effective perimeter security system



Border areas with snowy, icy high-altitude mountainous conditions

A multi-tiered layer of sensors to ensure comprehensive security for borders with inaccessible, cold terrain, and lack of grid power includes:

Detect: Situational Awareness

- Ground surveillance radar
- Passive/Active infra red with microwave sensors
- Underground Seismic Sensor (UGS)
- Day and thermal electro-optics

Defend: Apt Response Mechanisms

- Unmanned aerial vehicle for surveillance (Quadcopter)



Border areas with damp soil, heavy fog, riverine areas and foliage

A multi-tiered layer of sensors to ensure comprehensive security for borders with limited walkable terrain, and low visibility includes:

Detect: Situational Awareness

- Passive/Active infra red with microwave sensors
- Underground Seismic Sensor (UGS)
- Ground surveillance radar
- Electro-optics

Defend: Apt Response Mechanisms

- Tethered, unmanned aerial vehicle for surveillance (Quadcopter for sustained security)

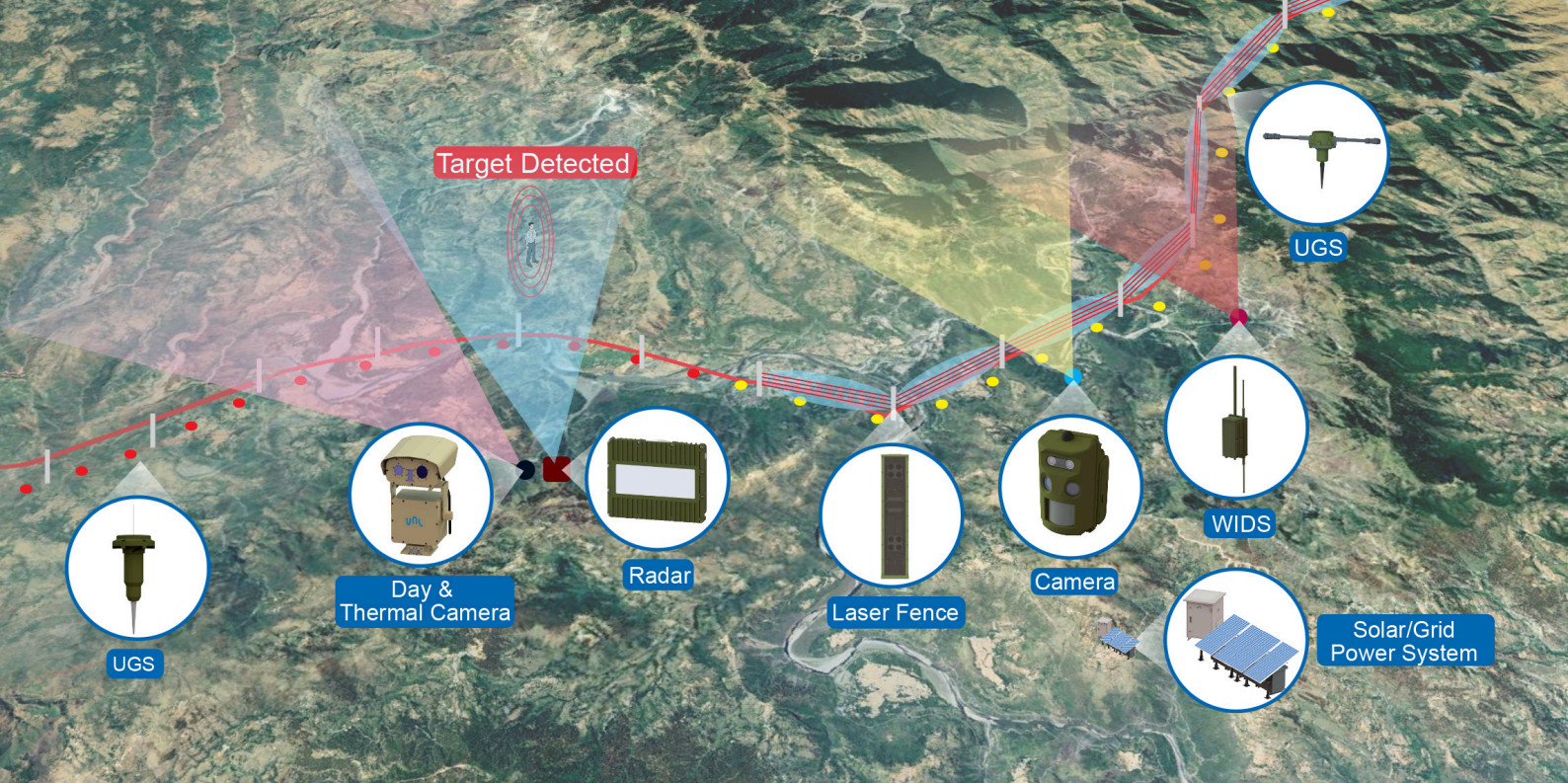


Fig. 2 Typical intrusion detection scenario for mountainous borders

CENTRALISED CONTROL FOR 360° SITUATIONAL AWARENESS

All the data from Shyam VNL's multi-layer lock security system merges at an automated command and control centre, helping authorities to constantly monitor vulnerable perimeter choke points, track unwanted activity and to apprehend intruders. Command and control software integrates multiple sensor technologies on a single, centralized platform, accumulating all the piecemeal information and presenting relevant information on a common display, thus delivering a common operating picture.

SOLAR-RUN POWER SYSTEM FOR 24X7 POWER SUPPLY

Almost all perimeter intrusion detection systems are vulnerable to power loss, regardless of how carefully they are built and implemented. As a result, Shyam VNL's system incorporates a solar-powered, long-term power source into its design to ensure the continuous operation of perimeter sensors, alarm reporting, and security staff reaction.

SECURE, ENCRYPTED COMMUNICATIONS TO SHARE RELEVANT DATA

Integrating a PIDS solution in an outdoor setting necessitates a durable, dependable communications system with continuous umbrella coverage that serves as a catalyst for total perimeter surveillance.

Shyam VNL's border management solution also uses a secure, encrypted backhaul network for voice, video, and data transmission between sensors and moving employees, as well as secure radio devices to send field intelligence to HQ.

RF AND SENSOR PLANNING TOOL USING 3D DIGITAL MAPS

In the event that terrain is affected by numerous external elements during PIDS installation, any PIDS setup necessitates substantial planning and proactive activity. PlanSens, Shyam VNL's smart, predictive analytic programme, allows customers to build plans for optimal sensor array configuration at a given terrain from afar.

For further information visit our website www.shyamvnl.com



CORPORATE HEADQUARTER

Shyam VNL Private Limited
21-22, Phase IV, Udyog Vihar
Gurgaon 122 015, Haryana, INDIA
Tel +91 124 265 7600

<http://www.shyamvnl.com>

Shyam logo and VNL logo are registered trademarks of Shyam VNL Private Limited. Shyam VNL assumes no responsibility for any inaccuracies in this document and reserves the right to revise this document without notice.

BR - SBMS-Smart Border Management System | 1st June 2023 | R3