



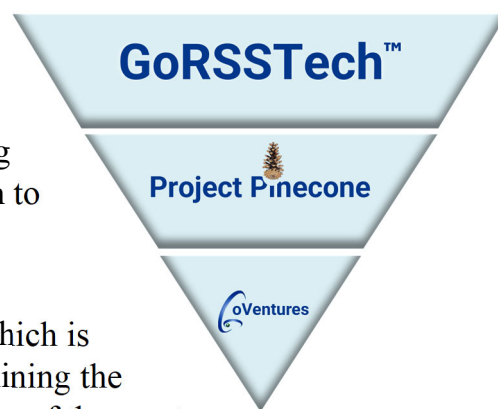
Project Pinecone

Project Pinecone is an initiative of GoVentures, Inc., to develop the GoVentures Remote Sensing System Technology (GoRSSTech), a new system to detect hidden explosive remnants of war (ERW) safely and economically over large areas.

The Geneva International Centre for Humanitarian Demining, which is dedicated to clearing landmines and other ERW, states, “Determining the exact location of minefields or cluster munition strikes can be one of the most difficult tasks faced by national authorities and operators.”¹

We believe GoRSSTech is the long-awaited solution to find and describe buried ERW so dangerous land can be marked, disarming can be performed, and uncontaminated land can return to productivity.

Project Pinecone aims to advance GoRSSTech from concept to deployment. All preliminary work has been self-funded by GoVentures, a woman-owned small business, and supported by an initial development team of volunteers. We all are motivated by GoRSSTech’s great promise.



Why It Matters

Nearly every hour in the world today, someone is killed or suffers horrific injury by accidentally encountering hidden landmines or other explosive ordnance left behind by war, training, or testing. It is estimated that more than half of the countries in the world are affected.

In Ukraine—one of the world’s top agricultural producers and exporters—an estimated one-third of fertile land is contaminated, severely harming people, the economy, and global food security.

Unexploded ordnance has been a tragic nightmare at least since World War I. Current timelines for remediation wherever these dangers exist are decades to centuries.

► Current Detection Methods

Humans and animals. Manual mine clearance methods and techniques rely on deminers working along marked lanes using metal detectors, prodders, rakes, and excavation tools to identify ERW. Dogs and rats are trained to detect various types of explosives or other materials associated with ERW, but they are most effective in areas of low-density contamination.

Mechanical. While primarily for ERW clearance, mechanical systems can aid manual and animal detection methods by removing vegetation and tripwires and breaking up soil.

Remote sensing/ robotics. Now primarily used as part of planning, monitoring, and evaluating clearance operations, these methods are the wave of the future for demining operations.

¹ <https://www.gichd.org/our-response/operations-management/detection-and-clearance/>

► GoRSSTech

GoRSSTech is an integrated system with five major subsystems. Its unique elements are a cloud-based computing and software system called the remote analysis facility (RAF) and the instrumented penetrometer. This penetrometer provides data the RAF uses to find, characterize, and precisely geolocate ERW objects. GoRSSTech produces four vital pieces of information:

1. The general location of potential ERW when GoRSSTech initially senses a soil anomaly, triggering focused examination.
2. Details about the ERW, based on data fusion and Artificial Intelligence (AI), including its size, shape, construction material, burial depth, and probable device type (e.g., specific model anti-personnel mine, grenade, or unexploded shell.)
3. Hazards and obstacles nearby.
4. Ultimately, the precise location of the ERW object to centimeter (half inch) precision in all three dimensions.

► GoRSSTech's Value

By finding ERW and enabling remediation, GoRSSTech can add extraordinary value by reducing immediate and long-term impacts due to: ²

ERW explosions, causing—

- Human casualties—thousands every year.
- Death of domestic animals and wildlife.
- Ecosystem damage.
- Wildfires.

The presence of ERW, causing—

- Health hazards from chemical shedding.
- Soil and water pollution from metals and toxic materials.
- Marine pollution.
- Radioactive contamination.
- Loss of agricultural land, resulting in economic hardship and food insecurity.

In addition, GoRSSTech:

- Can cover broad areas.
- Can examine a wide range of earth volumes, from shallow to deep.
- Is scalable for use on sites large and small.
- Uses data from other sources for accurate and efficient ERW identification, enabling it to provide more and better results than existing methods.
- Is economical because it is highly automated, leverages the Cloud to make optimal use of powerful computing resources, uses cheaper off-the-shelf hardware and software where practical, and is mass-produced, reducing the cost per unit.

► Other Applications

Other potential applications for GoRSSTech are foreseen in fields such as construction, energy, hazardous waste removal, archeology, and space. Project Pinecone's technology development will help establish this broader potential.

² <https://ceobs.org/how-does-war-damage-the-environment/>, <https://cdnscepub.com/doi/10.1139/er-2015-0039>, <https://therevelator.org/war-harms-wildlife/>, <https://www.undrr.org/understanding-disaster-risk/terminology/hips/so0004>