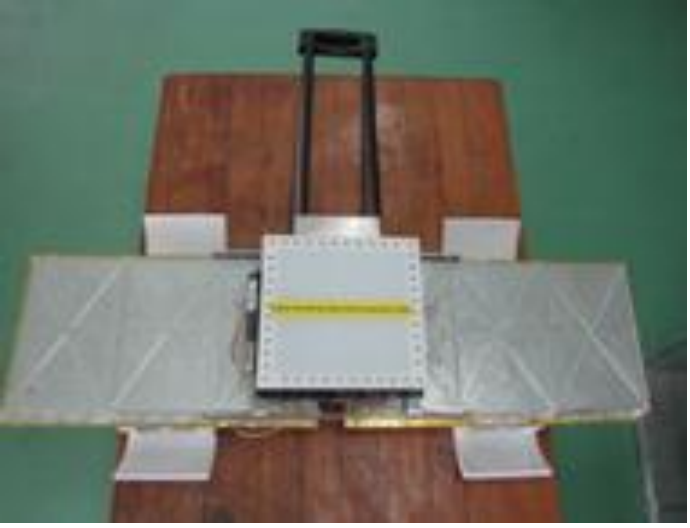


GROUND PENETRATING RADAR

Space Applications Centre (SAC) of Indian Space Research Organisation (ISRO) has developed a Ground Penetrating Radar (GPR) which is a high-resolution imaging radar that works on the principle of scattering of EM waves to locate buried objects. It operates by transmitting high-frequency directly down into the ground via wideband antennae and detecting the reflected signals from the targets (meaning the objects or materials with dielectric contrast with the surrounding medium) buried beneath.

GPR finds use in commercial as well as scientific areas. It is extensively used in environmental, engineering, archaeological, and a variety of other shallow investigations.

However, different applications require subtle changes in the hardware of the GPR instrument, specifically with regard to frequency selection and processing software.

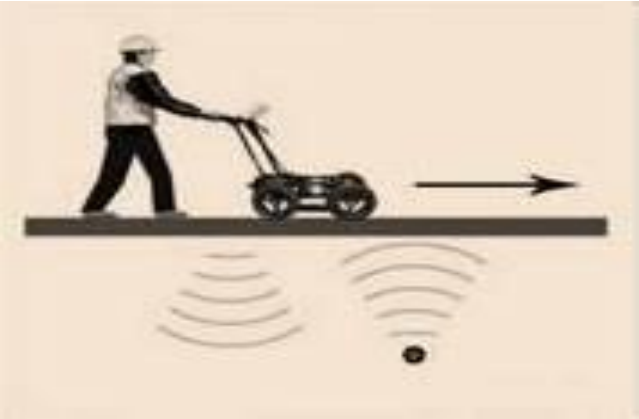
Salient Features

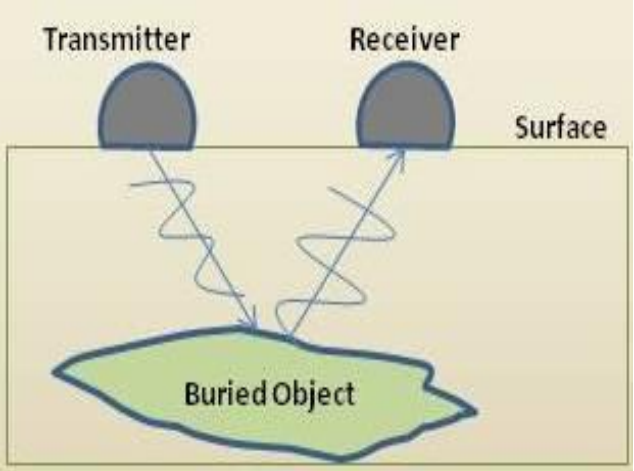
- Based on stepped-frequency continuous wave (SFCW) approach, ultra-wideband (100%, i.e. bandwidth of 500MHz with centre-frequency of 500MHz).
- Depth Resolution better than 30cm.
- Integrated GPS for geo-tagging of the recorded data.
- Built using commercial components readily available in the market, thus increasing the prospects of using indigenously developed GPR instruments at much lower cost (20 times lower compared to imported versions) for commercial and scientific use.
- Total mass of the system is 10kg out of which 5kg is for electronics and antennas and the rest for the structure (can be further optimized). Power requirement of the instrument is 10W.

SAC Technologies

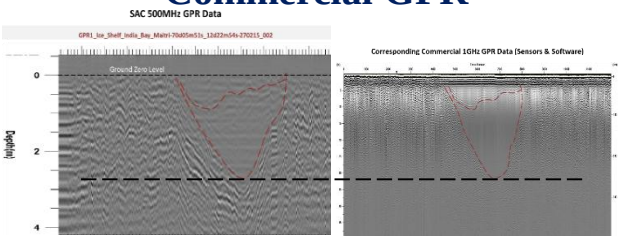
Potential Applications

- GPR is a high relution imaging radar that works on the principle of scattering of EM waves to locate buried objects. It operates by transmitting high frequency directly down into the ground via wideband antennas and detecting the reflected signals from targets (objects or materials with a dielectric contrast with the surrounding medium) buried beneath. It can be brought to use for the following applications:
- Can be brought to use for both commercial as well as scientific applications.
- GPR is an instrument that finds applications in environmental, engineering, archaeological, and other shallow investigations.
- Different applications require subtle changes in the hardware (frequency selection) as well as the processing software. Therefore once the exact application goal is defined the system can be tuned accordingly





Benchmarking with respect to Commercial GPR



Technology Transfer

SAC/ISRO, offers to transfer this technology of the **Ground Penetrating Radar** developed by SAC to industries in India with adequate experience and facilities. Enterprises interested in obtaining knowhow may write giving details of their present activities, infrastructure and facilities.

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