

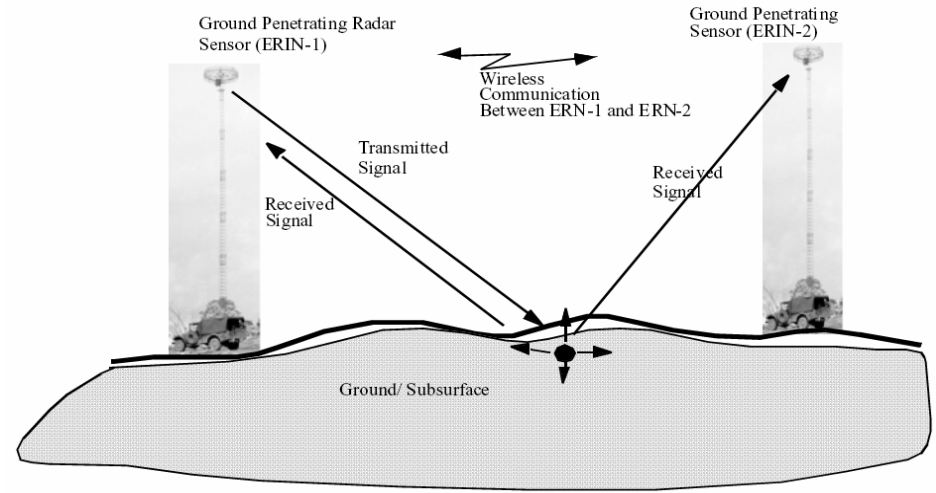
Developing an Expandable Reconfigurable Instrument Node as a Building Block for a Web Sensor Strand

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Objective

This project will develop a Web Sensor Strand (WSS) that utilizes an Expandable Reconfigurable Instrument Nodes (ERIN) as a building block. The WSS will utilize multiple ERINs to tie distributed sensors together. Each ERIN will have the ability to know the relative position of at least two other ERINs and would have short-range communications ability with them.

With a web of sensors (such as a web of Earth imaging and motion measurements satellites) distributed either in a specified manner or in a random fashion, it is important to make each member of the web radiate in coherence with other members. This enabling technology will be developed using wireless connectivity (a strand) between each node of a web.



Web of sensors (with two nodes only) with wireless connectivity for Earth Science observation

Approach

- The developed technology will operate multiple spatially distributed sensors in coherence. It will first be demonstrated for two ground penetrating radars (GPR) located close to the ground at two fixed locations.
- A technology that will enable individual sensors to operate in coherence with each other thus increasing their spatial cross resolution and also sensitivity. The coherent operation of these multiple GPRs can be achieved by establishing wireless connectivity between these sensors.

Co-I's/Partners

- Lawrence Hilliard, Manohar Deshpande/ GSFC

Key Milestones

- WSS Requirements definition model April/2007
- ERIN breadboard performance validated May/2007
- ERIN breadboard field test for a mono-static demonstration of digital beam forming Sept/2007
- Stationary strand model (WSS-SS) verification March/2008
- Tower/Boom truck WSS-RS model verification Sept/2008
- Test Agility of WSS comm link / DB-Synthetic Aperture Radar (DB-SAR) Feb/2009
- Verify the Stationary-Remote Web Sensor Model (WSS-SR) and enable InSAR on small platforms Sept/2009

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