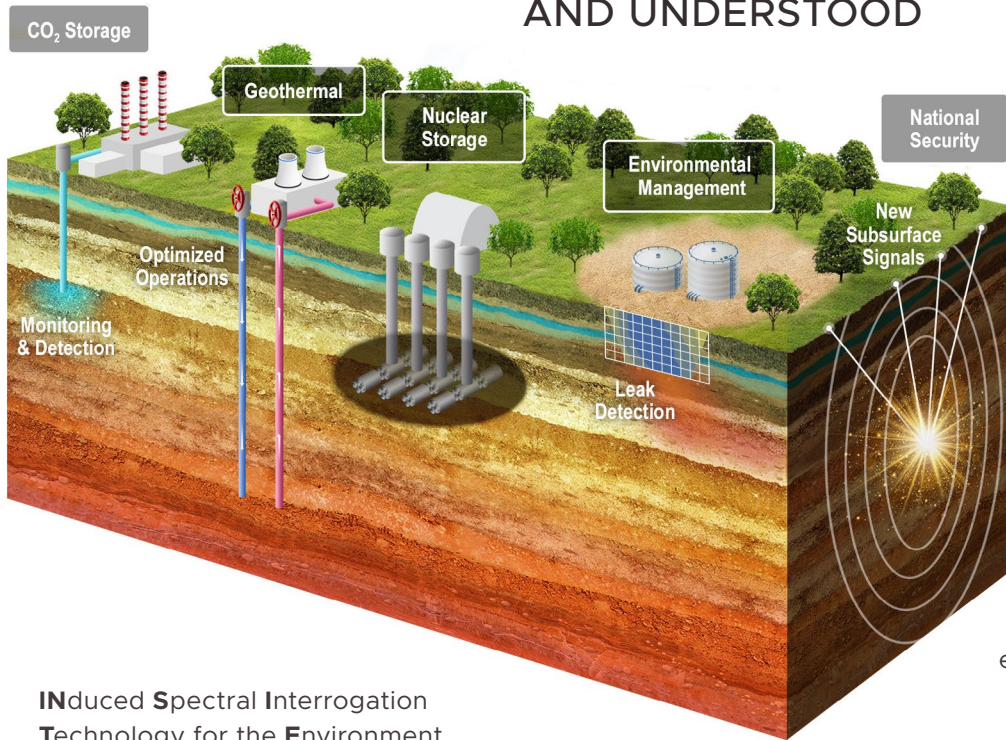


INSITE

REVOLUTIONIZING HOW THE SUBSURFACE ENVIRONMENT IS INTERROGATED AND UNDERSTOOD

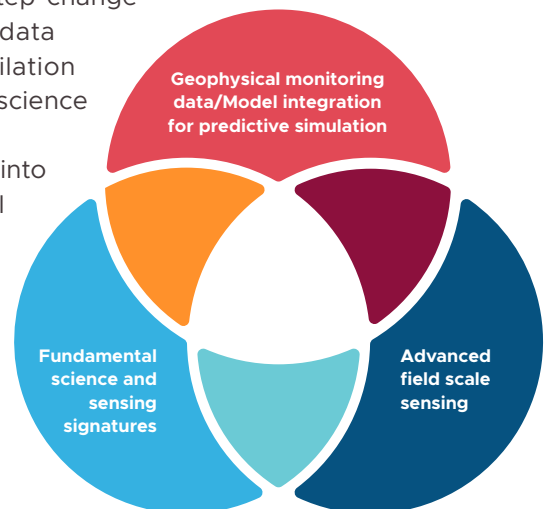


THE TECHNOLOGY

Through PNNL Laboratory-Directed Research and Development funding, **INSITE** is being developed to advance cutting-edge technology to enable remote, autonomous, and continuous interrogation of subsurface systems—benefiting multiple research missions, from renewable energy to national security.

Induced Spectral Interrogation Technology for the Environment (INSITE) is Pacific Northwest National Laboratory’s revolutionary subsurface monitoring and assessment approach. **INSITE** is reshaping the ability to interrogate, document, understand, predict, and control natural and engineered processes in complex subsurface environments with dramatically more detail and accuracy.

At **INSITE’s** core is unparalleled field electrical sensing capabilities with step-change advancements in data integration/assimilation and fundamental science signatures. These competencies fall into three foundational thrust areas to provide next-generation subsurface tomography:



INSITE is a revolutionary subsurface monitoring and assessment platform centered on highly sophisticated autonomous and continuous electrical sensing.

FUNDAMENTAL SCIENCE AND SENSING SIGNATURES

PNNL is advancing scientific theory to establish foundational links between remote subsurface sensing (i.e., geophysical) observations and the physical and biogeochemical parameters that control and/or describe subsurface behavior.

ADVANCED FIELD SCALE SENSING

PNNL is transforming the design and engineering of large-scale electrical sensing to provide cutting-edge technology that delivers autonomous field-scale, time-lapse measurement and imaging. This next-generation technology has unparalleled signal and timing accuracy, and noise and interference immunity, to deliver disruptive advancement in remote characterization and monitoring of subsurface systems.

GEOPHYSICAL MONITORING DATA/ MODEL INTEGRATION FOR PREDICTIVE SIMULATION

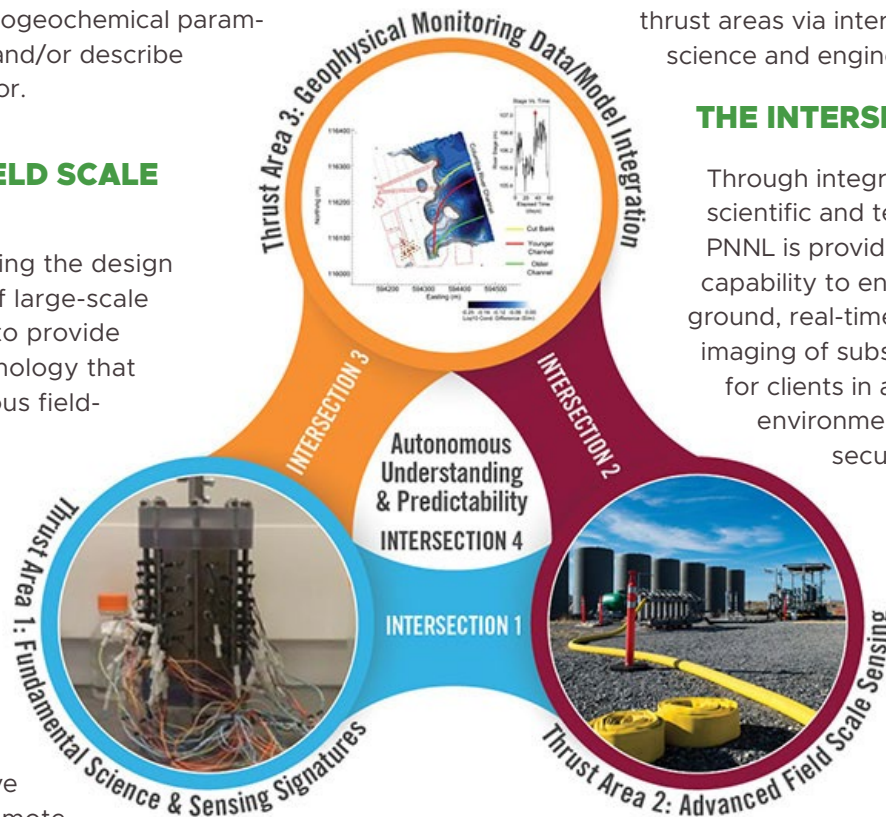
PNNL is leading the integration of multi-science simulation with inversion, data-driven analytics, and physics-based prediction to transform how subsurface remote sensing data is utilized to inform subsurface simulators. These advancements address data paucity issues that currently prohibit

predictive capabilities sought by sponsors like the Department of Energy (DOE).

Although the three thrusts of **INSITE** are critical to its overall mission, its breakthrough applications are found in the intersections between its thrust areas via inter/trans-disciplinary science and engineering.

THE INTERSECTIONS

Through integration of these scientific and technical thrusts, PNNL is providing a world-leading capability to enable above-ground, real-time, four-dimensional imaging of subsurface systems for clients in applied energy, environment, and national security spaces.



Intersection 1:

- ▶ FUNDAMENTAL SCIENCE - ADVANCED FIELD-SCALE SENSING

Intersection 2:

- ▶ ADVANCED FIELD-SCALE SENSING - GEOPHYSICAL MONITORING DATA/MODEL INTEGRATION FOR PREDICTIVE SIMULATION

Intersection 3:

- ▶ GEOPHYSICAL MONITORING DATA/MODEL INTEGRATION FOR PREDICTIVE SIMULATION - FUNDAMENTAL SCIENCE

READY TO PARTNER WITH PNNL?

PNNL offers a variety of options for working together. Learn more about PNNL's partnering mechanisms for technology development and deployment. To explore opportunities to partner with PNNL's complex subsurface environmental systems research team, contact these Earth Systems Science team members.

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