

# Geothermal Resource Discovery Software

Did you know 1% of Australia's geothermal energy could meet our power needs for 26,000 years?

Geothermal energy is not commercially utilised at scale in Australia because a paucity of data about geology at sufficient depth makes it extremely difficult to locate and expensive to extract.

Existing data provides only limited knowledge of geothermal targets and is often:

- Held in many different places
- Held in incompatible formats
- Owned by different parties
- Access restricted by commercial/privacy sensitivities.

Current methods for generating geological models have three main problems that NICTA seeks to overcome:

1. It is difficult or impossible to merge data from disparate sensors into a single model in a principled way.
2. Current models often require a large amount of human judgement and tuning.
3. It is difficult to estimate the uncertainty in current techniques, and these uncertainties themselves are rough estimates.

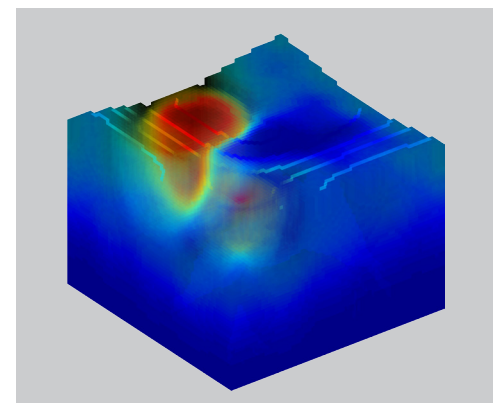
NICTA aims to solve the problem by developing software that will enable geothermal companies and government decision-makers to better understand what makes a good geothermal site and where the best target sites for geothermal resources are.

**NICTA has developed software tools to:**

- Collate and unify different sources of data into one place and format
- Generate better models of Australia's sub-surface (ie. underground)
- Understand the uncertainty in those models arising from the input data
- Find new regions with geothermal energy potential
- Characterise identified geothermal sites to enable better drilling strategies and locations
- Provide quantitative risk assessments, taking into account uncertainties in the data sources.

The initial target for this technology is the geothermal community and Government resources agencies.

Additionally, as the tools being developed are widely applicable, NICTA anticipates eventually being able to tap into the large global market for geological/geophysical modelling software.



## Collaborators



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# Leading the Way

NICTA is Australia's Information and Communications Technology (ICT) Research Centre of Excellence, driving innovation through high quality research, research training, commercialisation and contract research.

NICTA has the largest concentration of ICT researchers in Australia. Our research focuses on use-inspired basic research that benefits industry, the community and the national interest.

Since NICTA's inception in 2002, NICTA has built strong research capability in:

- Software Systems
- Networks
- Machine Learning
- Computer Vision
- Optimisation.

Our Business Teams are the market focus of our research capabilities:

- Broadband and the Digital Economy
- Infrastructure, Transport and Logistics
- Security and Environment.

NICTA researchers work on Business Team projects supported by:

- An Engineering and Technology Development Team
- IP, Legal and other professional support.

Our work as a world-class research institute and Centre of Excellence in science and innovation brings together many of Australia's and the world's top ICT researchers. NICTA provides them with the facilities and support they require, making imagination to impact a reality.

NICTA's unique approach fosters and develops ICT research. We work closely with both industry and other research institutions to solve problems and make breakthroughs in ICT with real impact. NICTA's focus on use-inspired research means our projects have direct relevance to the challenges faced by business, government and individuals around the world. The result is breakthrough technologies that provide commercial opportunities and have a positive impact on Australia's export earnings.

[www.nicta.com.au](http://www.nicta.com.au)

