

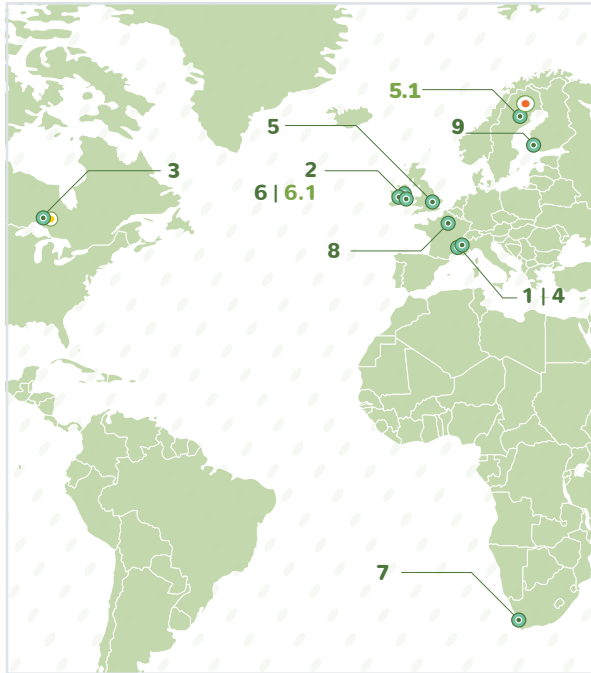


## PACIFIC PARTNERS

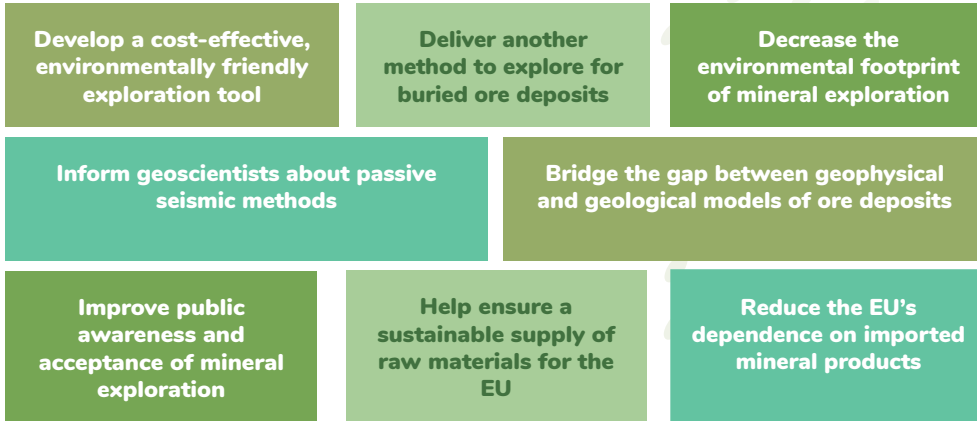
1. Université Grenoble Alpes
2. Dublin Institute for Advanced Studies
3. Generation PGM Inc.
4. SAS Sisprobe
5. Beowulf Mining Plc
  - 5.1 Jokkmokk Iron Mines Ab
6. Geological Survey Ireland
  - 6.1 Economic and Social Research Institute
7. Institute of Mine Seismology
8. ARTTIC
9. Oy Fennoscandian Resources Ab

-  Marathon test site
-  Kallak test site



## EXPECTED IMPACT

PACIFIC will impact numerous aspects of mineral exploration: technical, environmental, industrial, economic, societal, risk perception and communication.  
PACIFIC will:



### COORDINATION TEAM

Université Grenoble Alpes - Florent Breguier and Noélie Bontemps  
Sisprobe - Nick Arndt and Sophie Beauprêtre  
ARTTIC - Project Office



**Passive seismic techniques for environmentally friendly & cost efficient mineral exploration**

[www.pacific-h2020.eu](http://www.pacific-h2020.eu)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 776622.



GENERATION PGM



## CONTACT US



[www.researchgate.net/project/PACIFIC-H2020](http://www.researchgate.net/project/PACIFIC-H2020)



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[@PACIFIC\\_H2020](https://twitter.com/PACIFIC_H2020)

## AT A GLANCE

Start: June 2018

Duration: 3 years

EU contribution: 3.2M €

## WHY PACIFIC?

PACIFIC introduces innovative and sustainable technologies to explore for new deposits to help meet the global demand for mineral resources.

PACIFIC will develop new tools for finding mineral deposits beneath the surface. These tools will have relatively low cost and only a minor impact on the environment.

The passive reflection seismic technique

The multi-array passive seismic imaging technique

## PACIFIC CHALLENGES

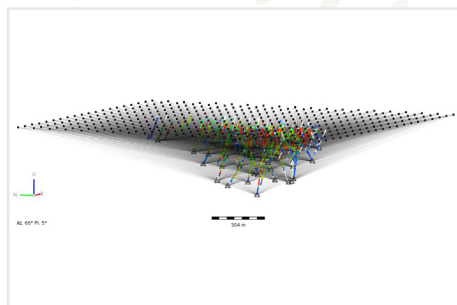
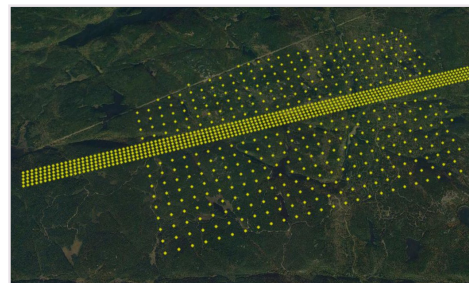
- The minerals industry requires **accurate and high-resolution techniques** to locate ore bodies, but these must also be **environmentally friendly**. PACIFIC will develop and optimise computer codes for seismic array processing to separate body- from surface-waves and perform high-resolution imaging.
- PACIFIC will also carry out **research on social acceptance and public perception** of mining activities.
- The new mineral exploration tool will be able to image small targets and provide detailed 3D subsurface information, which will enable the mineral industry to **more efficiently find new mineral sources**.

## PACIFIC PASSIVE SEISMIC TECHNIQUES

The passive seismic technique relies on the deployment of hundreds to thousands of nodes to record body and surface seismic waves. They produce **images of the sub-surface** based on the processing of ambient seismic noise.

### 1. PASSIVE REFLECTION SEISMICS

PACIFIC will develop new acquisition and processing procedures to **extract body-waves from ambient seismic noise**. The data will then be processed to acquire **reflection seismic sections**, following industry standard methods applied in the hydrocarbons sector.



### 2. THE MULTI-ARRAY APPROACH – USING SEVERAL VERTICAL ARRAYS COMBINED WITH A SURFACE ARRAY

The traditional passive technique uses surface waves that have **poor resolution and weak amplitude** at depth. PACIFIC will develop a complementary technique – the new multi-array approach. In this method, a **surface array is used in conjunction with vertical arrays deployed in drill holes** to obtain better resolution at depth. Ongoing drilling will be used as a noise source.

## PACIFIC TEST SITES



### PILOT PROJECT 1 Marathon deposit, Canada

Test of the passive reflection seismic method on a magmatic PGM-Cu deposit



### PILOT PROJECT 2 Kallak deposit, Sweden

Test of the multi-array technique on an iron deposit



PACIFIC uses the two sites to test and validate the two methods in different geological environments and with different sources of ambient seismic noise.