



NEXT

New Exploration Technologies

NEXT SEMINAR AND FIELD TRIP:

**COBALT IN OROGENIC GOLD MINERAL SYSTEMS IN
NORTHERN FENNOSCANDIAN SHIELD**

RAJA TEST SITE AS A SHOW CASE IN PERÄPOHJA BELT

**8TH – 10TH OCTOBER, 2019, BEAR'S LODGE, POHTIMOLAMPI,
ROVANIEMI, FINLAND**

Horizon 2020 Project: **NEXT**

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About NEXT

NEXT consortium consists of 16 partners from leading research institutes (3), academia (3), service providers (5) and industry (5). The members come from 6 EU member states (FI, FR, DE, MT, ES and SE) and represent the main metal producing regions of Europe, e.g. the Fennoscandian Shield, the Variscan Belt of Iberia and in Central Europe. These economically most important metallogenic belts of the EU have diverse geology with evident potential for different types of new mineral resources. The mineral deposits in these belts are the most feasible sources of critical, high-tech and other economically important metals in the EU. The project consortium has also a vast international collaboration network, e.g. 50% of the Advisory Board members have been invited from outside EU.

In addition to the variable geology, the vulnerability of the environment and the glacial sedimentary cover in the Arctic regions of northern Europe, and the thick weathering crust and more densely populated nature of the target areas in the Iberian and Central European belts influence the mineral exploration in different ways. New environmentally sound exploration concepts and technologies will be optimized and tested on diverse mineral deposit types.

NEXT will develop new geological 2D and 3D models from deposit to belt scale, new vectors to ore, novel sensitive exploration technologies and data analysis methods which together are fast, cost-effective, environmentally safe and socially accepted. Methods developed reduce the current high exploration costs and enhance participation of civil society from the start of exploration, raising awareness and trust. Moreover, the reduced environmental impact of the new technologies and better knowledge about the factors influencing social licensing will help promote social acceptance of both exploration and mining and therefore support the further development of Europe's extractive industry.

1 INTRODUCTION

The Rajapalot and Rompas exploration projects are Mawson's flagship properties in Finnish Lapland. Both disseminated and nuggetty high-grade gold has been discovered on a camp-scale area approaching 10 x 10 kilometres within the Paleoproterozoic Peräpohja Belt in northern Finland. The teams in NEXT project are aiming to use Rajapalot as one of the test sites in order to achieve several goals of the project including e.g. development of geochemical vectoring tools (e.g. mineral trace element, stable and radiogenic isotope), the EM and vector magnetic field systems for drones, development of methods of multi-source surface geochemistry, development of new environmentally friendly instruments for mineral exploration using optical spectroscopy and development of vegetation filtering methods when using these data. Furthermore, Rajapalot target site provides data for testing the data integration tools developed in the project and it is also an important part of the mineral systems modelling. This seminar will bring together scientists dealing with wide range of research on mineral systems, economic geology, exploration technologies especially but not only related to hydrothermal Au-Co mineral systems within Northern Fennoscandian Shield and Rajapalot test site. The seminar is followed by a one day field excursion to Raja prospect.

2 PRELIMINARY AGENDA

THEME: COBALT IN OROGENIC GOLD MINERAL SYSTEMS IN NORTHERN FENNOSCANDIAN SHIELD – RAJA TEST SITE AS A SHOW CASE IN PERÄPOHJA BELT

2.1 Tuesday, October 8th 2019, Keynote talk at Bear's Lodge, Pohtimolampi, Rovaniemi

- NEXT project meeting for the project team during the day at the venue. Registration for the seminar open from 17.00 at Bear's Lodge.
- 18:00-18:45 Keynote: Ferenc Molnar, NEXT, GTK: Cobalt in orogenic gold mineral systems of northern Fennoscandia
- 20:00- Welcome Dinner

2.2 Wednesday, October 9th 2019, Seminar at Bear's Lodge, Pohtimolampi, Rovaniemi

- 8:50-9:00 **Vesa Nykänen and Nick Cook:** *Opening*
- 9:00-9:30 **Peter Sorjonen-Ward,** NEXT, GTK: *Tectonic evolution of Peräpohja Belt*
- 9:30-10:00 **Pentti Hölttä,** GTK: *Metamorphic structure of Northern Finland*
- **10:00-10:30** **Coffee break**
- 10:30-11:00 **Simo Piippo,** Smart Exploration, University of Turku: *Structural evolution of the Peräpohja Belt: variations in structural coupling between the Archean basement and the Paleoproterozoic cover strata*
- 11:00-11:30 **Pietari Skyttä,** Smart Exploration, University of Turku: *The rifted Archean basement and its influence on the development of the Peräpohja Belt*
- 11:30-12:00 **Jukka-Pekka Ranta,** University of Oulu: *Geological evolution and gold mineralization in the northern part of the Peräpohja belt: Evidence from whole-rock and mineral chemistry, and radiogenic and stable isotopes*
- **12:00-13:00** **Lunch**
- 13:00-13:30 **Sara Raic,** Ferenc Molnár, Yann Lahaye, Hugh O'Brien, GTK: *Mineral trace element and sulphur isotope geochemistry from the Rajapalot Au-Co prospect: preliminary results and implications in vectoring to ore*
- 13:30-14:00 **Mikael Vasilopoulos,** Ferenc Molnár, Hugh O'Brien, Yann Lahaye, Jukka-Pekka Ranta, GTK, University of Oulu: *Discrimination of gold and cobalt mineralizing events at the Juomasuo Au-Co deposit, Kuusamo Belt, northeastern Finland*
- 14:00-14:30 **Pertti Sarala,** NEXT, GTK: *Geochemical sampling at Rajapalot prospect*
- 14:30-15:00 **Bijal Chudasama,** NEXT, GTK: *Prospectivity modelling for gold in target scale within Rajapalot prospect*
- **15:00-15:30** **Coffee break**
- 15:30-16:00 **Alan Butcher & Quentin Dehaine,** GTK: *Update on the geometallurgy of recently discovered cobalt mineralisation at Rajapalot Project*
- 16:00-16:10 **Jarkko Jokinen,** Loop&Line: *NEXT geophysical surveys at Mawson Rajapalot area*
- 16:10-16:40 **Janne Kinnunen,** Mawson: *Evolution of 3D understanding of geophysics and its relation to mineralisation at Rajapalot prospect*
- 16:40-17:10 **Nick Cook,** Mawson: *Silicate alteration mineralogy and whole rock geochemistry of Rajapalot*
- 17:10-17:30 **Mawson:** *Introduction to fieldtrip*

19:00 Dinner

2.3 Thursday, October 10th 2019, Field excursion

- 08:00 Departure to field site
 - 12:00-13:00 Field lunch
- 13:00-16:00 Mawson drill core shed in Rovaniemi to view Raja prospect