



**expande**  
Impulsando soluciones para  
la minería del futuro

# “Simulation and optimization of drilling campaigns”

June, 2019

Articula:



Socios estratégicos:



Gracias al aporte de:



Apoya:



# Introduction



---

The Mining Open Innovation Program, Expande, is a public-private initiative designed and executed by Fundación Chile. The purpose is to promote innovation and make possible a better future for global mining, enhancing the mining ecosystem in Chile together with constituting a collaborative model that enables the best solutions for the high complexity challenges of mining today and tomorrow .

In this context, **Codelco** has asked Expande to prospect the local and international ecosystem to identify technological solutions that respond to the technical challenge "Simulation and optimization of drilling campaigns"

# General Description



## General Framework

Currently the design of drilling campaigns is conditioned to different variables and restrictions that may affect their development: operational interferences, budget restrictions, technological limitations, execution times and environmental conditions among others.

Considering the cost of capital, the opportunity arises to optimize the design of the drilling campaigns (positioning of positions, course, manteo, length, etc.) achieving more efficient drilling in terms of information capture and costs.

## Aim and Scope

Identify technological solutions to optimize the design and temporal sequence of drilling campaigns, conditioned to obtain precise objectives (eg X% measured resources, recognize a structure or contact, etc ..) with temporary restrictions of different nature and, such as access to the area of interest, operational, environmental, technological and financial interferences.

Additionally, the technological solution must simulate and propose new designs to obtain partial results of the campaign as the drilling progresses, having a dynamic character. The latter means that it must be capable of rethinking the design of the missing drilling campaign, during the execution of partial results obtained, or of operational contingencies, assuring the pre-established objectives (Kpi).

# Technical requirements of the solution

## 1) Input Information:

- Existing block model.
- Coded database of existing drillholes.
- Existing geological models that affect estimation / categorization, or specific objectives
- Objective of each drillhole or group of drillholes: Geotechnics, Geo metallurgy, Geological, etc.
- Development and operation plans that may interfere with the development of the campaign.
- Estimation plan and categorization methodology.
- Accepted shifts and distances to postures, dressing rooms, transfer equipment, access, etc.

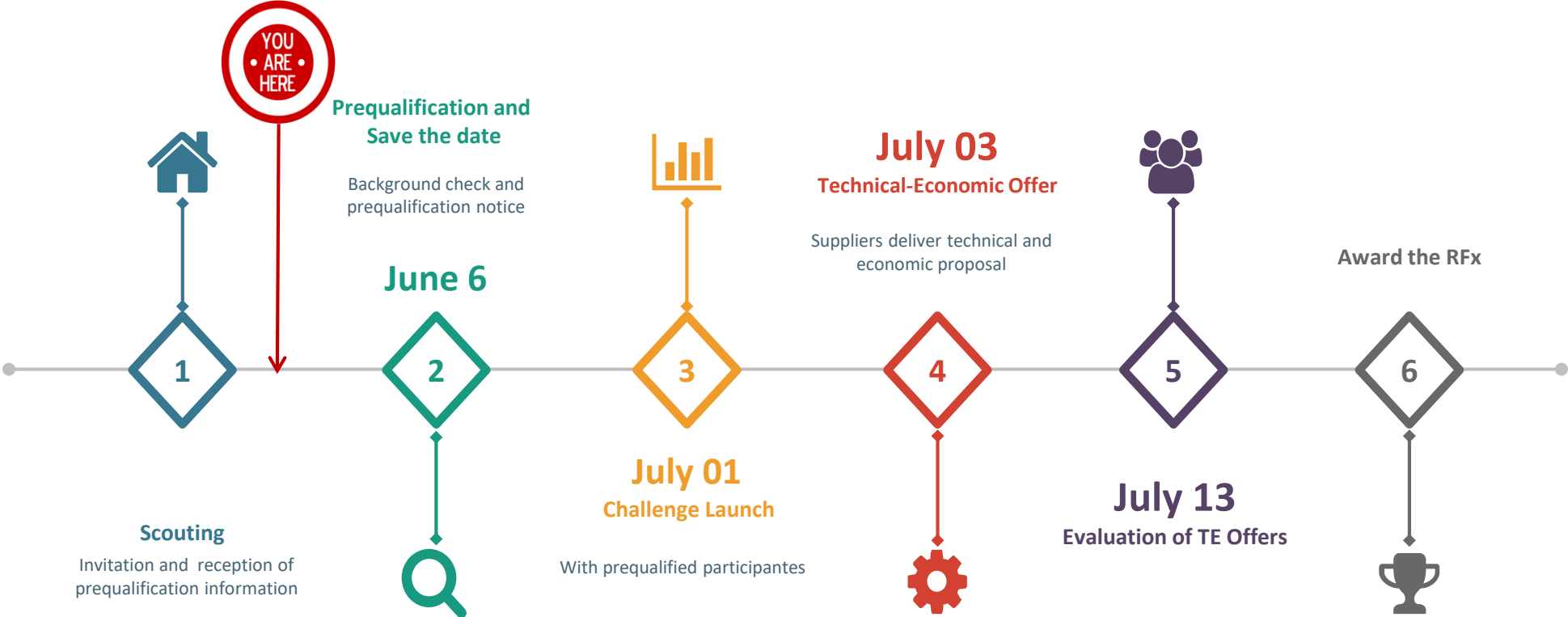
## 2) Flexibility:

- Type of drillings, Diamond, Reverse Air, etc.
- Characteristics of drillholes: Diameter X long, triple tube, oriented, tests to execute during or completion of well
- Underground or open pit operations.
- Compatibility with directional drilling.
- Characteristics of programmed drilling machines

## 3) Output information:

- Probe location: X, Y, Z coordinates, azimuth, inclination, length, diameters.
- Drilling sequence and tests.
- Cost of the campaign.
- Compliance with the fixed Kpi (example% of measured resources, indicated, location of contacts, variability of the grade of Cu,, Mo, As, etc.
- Quantity and distribution of geometallurgical samples, density of specimens for geotechnical tests, settlement of hydrogeological tests , etc.

# Stages of the process



**Please send your background before June 27, 2019.**



# Experience and Administrative Information



**To participate in the Scouting stage, please send the following information to [innovacion.abierta@fch.cl](mailto:innovacion.abierta@fch.cl):**

- Indicate applications in mining operations currently available and / or in development.
- Experience of the company in this technological field.
- Ability to provide initial services and follow-up of drilling campaigns during its execution.
- Proposed Business Model.
- Availability to operate in Chile or through technical / commercial representatives

The information delivery format is free (pptx, pdf, image) and can be a brochure or presentation of the company's capabilities and technological solutions that apply to the proposed challenge.



Articula:



Socios estratégicos:



Gracias al aporte de:



Apoya:

