



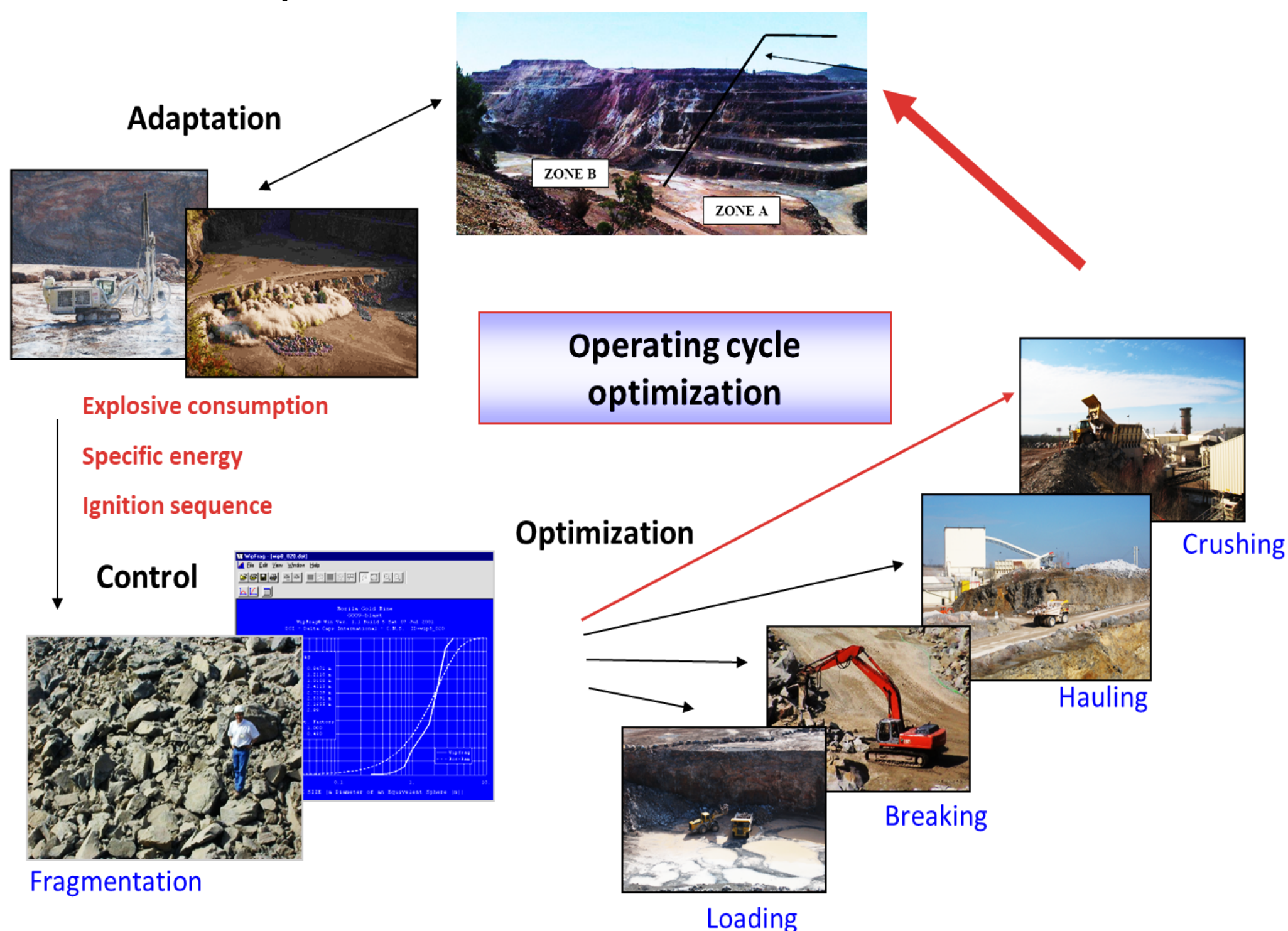
**SCALABLE APPLICABLE SYSTEM TO OPTIMIZE BLASTING PARAMETERS SPECIFIC TO SAFE ECploITATION TECHNOLOGIES IN SURFACE MINING OPERATIONS**

Patent no. A 2021 00702

**Authors:** Laszlo Robert, Găman George-Artur, Ghicioi Emilian, Pupăzan Gheorghe Daniel, Vasilescu Gabriel-Dragoș, Gheorghiosu Edward-Jan, Kovacs Attila, Rus Daniela-Carmen, Rădeanu Cristian, Jitea Ilie Ciprian, Ilici Ștefan, Manea Florin, Garaliu Bușoi Bogdan

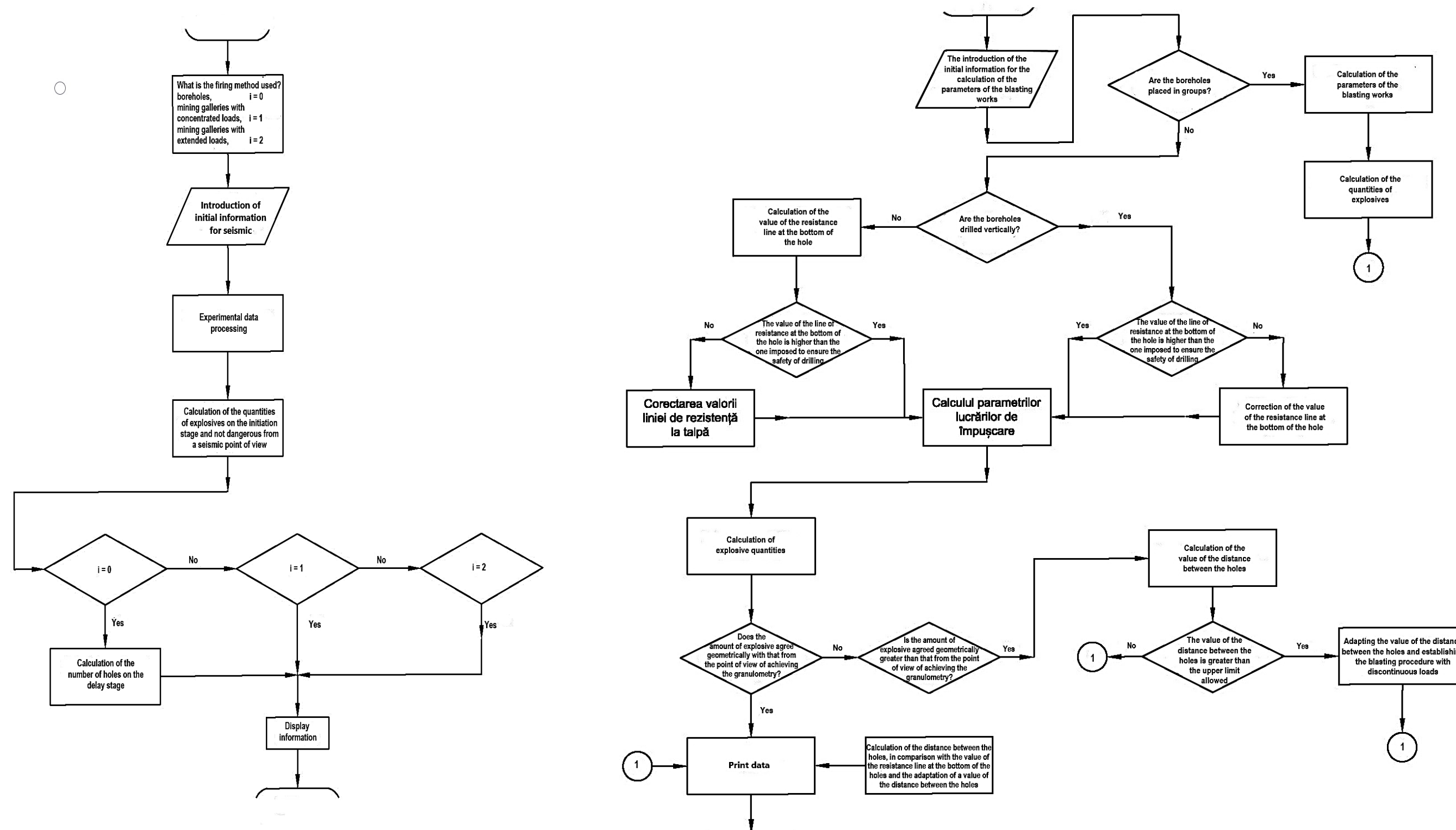
**Summary of invention**

The invention deal with the development of a scalable applicable system that allows the determination and choice in real time of the optimal parameters of the blasting activities in correlation with the specificity of each rock deposit, of the types of explosives used and in close dependence with the established seismic restrictions regarding the quantities of explosives that can be used in such a way as to ensure the performance of the blasting activity in conditions of efficiency, security and a low carbon footprint.



In order to be able to include all the blasting procedures used in surface operations, the application system deals with the problem of establishing the blasting parameters according to the position of the holes - vertical or inclined, allowing to establish the real value of the burden, the length of the borehole and the explosive column structure. Depending on the amount of explosive required to detonate the volume of rock related to a hole, the possibility of maintaining the geometry of the explosive charge in the hole is analyzed and the spacing between the holes placed in a row is determined.

If the seismic protection of the objectives in the area is necessary, the application system also ensures the processing of seismic measurement data and allows the calculation of the quantities of explosives that are not dangerous from a seismic point of view. Depending on this amount of explosive determines the number of holes that can be blasted instantaneously or on per delay.



Presentation of the way to establish the parameters of the blasting works

Achieving the desired results of the mining activity is conditioned by establishing the blasting parameters in such a way as to ensure the detachment of the rock from the massif, reduce the degree of back cracking, a reduced scattering of the blasted mining mass, obtaining the desired granulometry, respectively a reduced seismic effect and carbon footprint.