

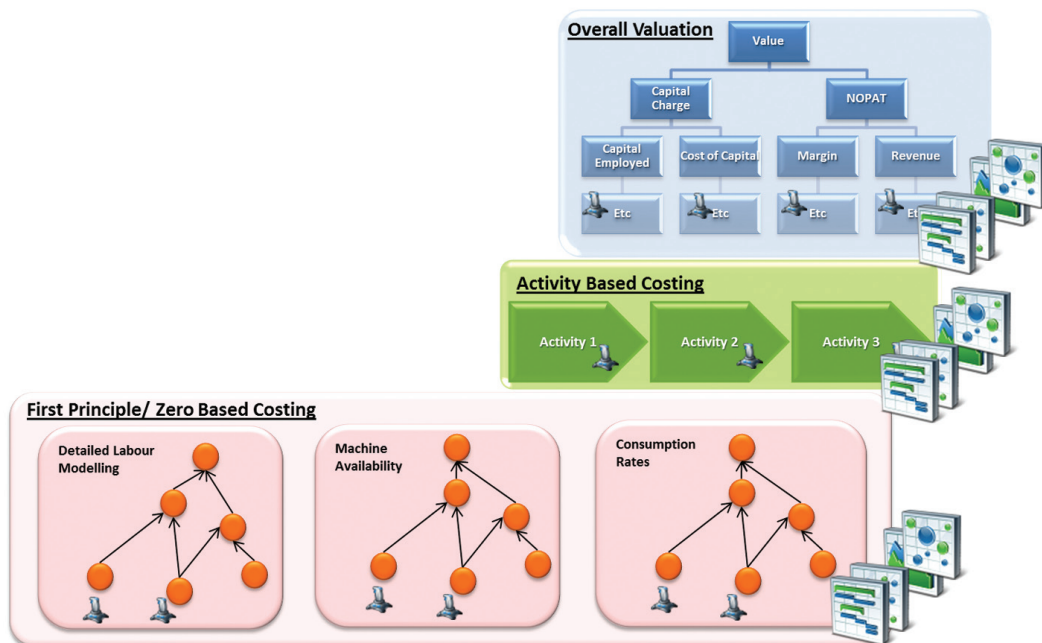
# Cyest Analytics

## Operational Expenditure Modelling (OPEX)

The Cyest OPEX department has years of experience doing activity based and first principle costing for mining companies to derive an accurate estimate of the expected operating expenditure (OPEX) to run the mine.

Capital project teams put in a great deal of effort developing the mine design, production schedule, engineering design and associated infrastructure capital. The same rigor is often not applied to estimating the necessary operating expenditure to run the operation and often a shaft level estimate, proxy shaft, or current actuals are used. This is generally without a full understanding of the impact of different infrastructure configurations, mining methods, depth and distance from the shaft and mining efficiencies. Cyest's OPEX department has filled this gap and has gained extensive domain knowledge in OPEX modelling.

Through extensive experience in OPEX modelling on capital projects for multiple clients in platinum, gold, coal, nickel and diamonds, the OPEX department has developed a database of historical cost benchmarks for particular activities for different mining methods. This information, where relevant, first principle costing and in some instances actual achievements by activity, are used to model and derive expected OPEX for the life of mine.

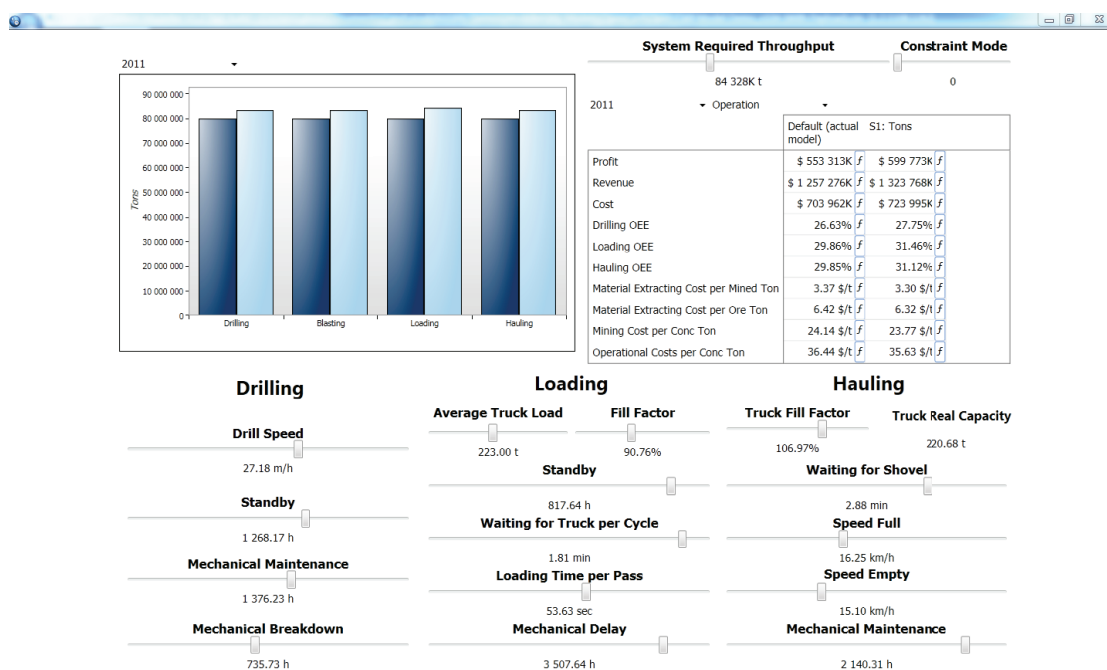


*OPEX modelling and valuation can be done at different levels of detail*

The OPEX models are built using Cyest's **Carbon Economics** solution which allows for the rapid configuration of an OPEX model to represent the mine structure, activities and cost elements. The **Carbon Economics** solution allows a model to be developed at the start of the project based on the information available. Even with a low level of confidence in the initial project assumptions, the initial model outputs such as expected operating costs (OPEX) and NPV etc. are valuable to the project team as they can assess the financial viability of the project at the start. Using the inherent **Carbon Economics** analytical functionality, the project team can understand the main drivers of value and in this way guide the project focus through its life cycle to achieve an 'optimal' mine design, production schedule and capital footprint. True value engineering is now possible to achieve the desired objective function (NPV or unit cost or capital constraint).

Once the **Carbon Economics** model has been configured for the project, multiple scenarios can be rapidly generated to test different assumptions, mine designs and production schedules to test the impact on operating costs and project value.

The OPEX department also offers full project valuation modelling that can incorporate quantitative risk modelling of the OPEX, capital and overall project valuation.



What-if dashboard with levers to test impact on cost and value

To discuss all your operational expenditure modelling and project valuation requirements please contact Martin Terblanche.

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