



# Business Simulations

## Questions:

**How does a management team confidently make and execute decisions in a difficult economic environment with tremendous uncertainty?**

**What are the long term business implications of responses to near term economic issues?**

## Answer:

**Use business simulations to forecast and understand the impact of internal decisions and external events, evaluate responses and opportunities, define strategies, test scenarios, mitigate risk, and find the best path forward.**



Simulations deliver clarity from complexity and ambiguity. Business simulations avoid the cost, time, interruption, and possible disasters that can occur when “experimenting” with a running business.

Business simulations can be used to

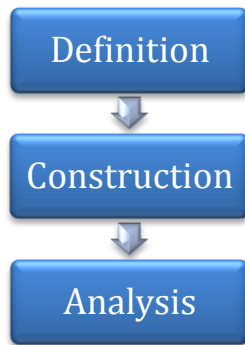
- Predict the evolution of markets and businesses under different economic scenarios to identify a firm’s best response given near and long term considerations
  - Optimize the development portfolio of a life science firm given cash burn, clinical, intellectual property, market, regulatory, resource, scientific, supply chain, and NPV factors
  - Determine the appropriate R&D and manufacturing infrastructure for a firm, by region, both internally and outsourced,
- given financial, geographic, market, risk management, technical, and other considerations
  - Value an acquisition target with both multiple upstream raw material sources and multiple products targeting many downstream markets, each subject to its own trends and drivers
  - Understand the impact of government incentives, tariff changes, new technology, price changes of traditional fuels, and other variables on renewable energy suppliers
  - Predict the impact that industry capacity additions will have on pricing and individual industry participants through time
  - Understand the evolution of an end consumer market undergoing demographic and technology changes and, the impact of these changes on direct and indirect suppliers to this market; for example, toothpaste penetration in emerging markets and the popularity of striped and

gel toothpastes have changed toothpaste formulations and impacted suppliers to the toothpaste industry

- Value and explain the effect of different business and liquidity event outcomes to each class of investors in a privately-held firm
- Understand the options that both parties have in upcoming negotiations to find the “win-win”

Business simulations lead to the “Ah ha!” moments where wisdom and confidence are found.

At Trout Creek Consulting (TCC), a business simulation is comprised of three distinct phases - definition, construction, and analysis.



Business Simulation Process

### Simulation Definition

A business simulation starts with defining the questions to be answered. That is, what do we need to learn about the future, our opportunities, our business, our industry, and the impact of various internal decisions and external events to find the best path forward? TCC works with the client to define the questions to be answered, the scenarios and sensitivities to be investigated, and the

simulation output metrics and format that are most useful to the client.



### Which door do we go through?

For example, output metrics might include NPV, cash burn per quarter or year, resource level by function, ROI, EPS impact, market share by application and region, and profit by product and region. The output format might include tables, tornado diagrams, pie charts, or line graphs contained in presentations or written reports. Output metrics and format are chosen to best convey the situation and the decisions to be made, as well as to reflect client preferences.

### Simulation Construction

The second phase of business simulation involves algorithm development, market research, and simulation programming. TCC, either by itself or working with the client, develops the mathematical relationships that describe how demand, price, cost, market share, resources, and other elements change through time with competition, product life cycle, government regulation, excess capacity, development stage, and other variables. Decision trees are constructed to include external events, internal decision points, and various outcomes. Market research on the underlying subject matter and close proxies

is necessary to develop algorithms, find input data, and determine appropriate discount rates. In many instances, market research involves “scrubbing” data to understand and either (a) remove true one-off anomalies or (b) add non-recurring events that regularly occur.

Monte Carlo analysis may be utilized to (a) determine outcome probability or (b) define an operating window, optimum set of deal terms, or other area of interest.



#### The inner workings...

The simulation is programmed in a user friendly format and rigorously tested for quality assurance. Validation is accomplished using test scenarios.

For certain projects, TCC uses market comparables and asset- or cost-based valuation methods in conjunction with simulation-derived valuations.

## Simulation Analysis

Lastly, there is the “playing with spreadsheets” phase where scenarios are analyzed, insights and “Ah ha!” moments are found, and answers are obtained.



#### So that's how it works!

The usefulness of a good business simulation doesn't end when the strategy project is over. The simulation can be periodically updated and used to guide ongoing decision making in many areas of the underlying business, including budgeting, marketing and sales, development portfolio management, supply chain, and performance management.

## About Trout Creek Consulting

TCC combines “real world” experience, judgment, and industry knowledge with sophisticated strategy and valuation tools to **help clients create value through improved decision making**. TCC's founder began his career simulating complex chemical processes and successfully transferred that competency to the simulation of products, development portfolios, market segments, industries, businesses, and deal structures to drive improved decision making in overall business management, technology management, and negotiations.

To learn more about Business Simulations and how TCC can help you create value through improved decision making, please contact Hal Craig, Principal, at 610-296-2370 or [hcraig@troutcreekconsulting.com](mailto:hcraig@troutcreekconsulting.com).

Please visit our website at [www.troutcreekconsulting.com](http://www.troutcreekconsulting.com).