TruNavigator Answers the Questions that Cannot Be Answered

December 2014

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The fourth article in the series "Little Questions = Big Answers" highlighted the basis for how Lone Star delivers the right answer. This article continues the discussion and will show how using Lone Star's tried and true process can deliver answers to the questions that seem unanswerable.

Lone Star is internationally recognized in the fields of decision analysis, business modeling and simulation for pushing the state-of-the-art in decision support tools. TruNavigator™ harnesses the sophistication necessary to enable clients to peer into the future and gain a true understanding of the range of potential outcomes for any decision that matters to them, regardless of size or complexity. With TruNavigator there are now few questions which cannot be answered.

Lone Star's tools, like TruNavigator, are designed to deliver understanding, not just numbers. They provide several different ways to effectively visualize the results of a model. Understanding, from visualization, sensitivity analysis and other features of our modeling environment is critical to delivering answers with confidence.

Lone Star is often asked why TruNavigator works. The long answer is that the tool is based on sound mathematics, solid code development, and evolution through empirical use in hundreds of client engagements. Our track record for delivering extremely accurate answers when looking into the future is second to none. Empirical evidence supports that the model does what it claims to do — it provides reliable answers to highly complex questions. The short answer is, it just does.

TruNavigator is being used by large and small organizations alike, including defense agencies, prime contractors and enterprise and entrepreneurial ventures. Universally, Lone Star customers tell us that in addition to the accuracy TruNavigator delivers, an unexpected benefit was increased consensus within the management and project teams in making the final decision. They also told us they found they gained a better understanding of interrelationships across their organization through the visualization the model provided.

Data elicitation is a critical element in executing predictive enhanced decision analysis (EDA). Frequently little or no historical data exists which can be mined for use in analysis. In addition to lack of data, another dilemma is that when data exists, it frequently creates added uncertainty. TruNavigator, is natively designed to deal with "sparse data sets" and easily incorporate the uncertainty associated with looking at future outcomes. To enable the collection and inclusion of disparate data types (data fusion) within the TruNavigator modeling

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environment, an intuitive approach to defining cause and effect for the sources from which data is being collected was developed.

In order to develop the probabilistic input ranges required varying techniques are used to obtain information from subject matter experts and other personnel with specific knowledge. These techniques include interviews, surveys, Delphi groups, focus groups, and other options as appropriate. Each of these processes must be tailored to obtain the proper information and in a context which reflects the inherent uncertainty of the particular piece of information. Lone Star has developed both processes and tools to address this particular area.

In order to effectively represent the uncertainty associated with future events and predictions, an approach to collecting data must be implemented which helps establish the degree of uncertainty. This approach must also be tailored to support the tools that process the data and establish the future probable outcomes. As we saw in the previous article, Lone Star's method is focused on collecting ranges of inputs that correlate with our five point distribution (e.g. Low, Nominal, High, Absolute Low, and Absolute High).

Lone Star tailors each session based on the particular analysis being conducted and the audience being engaged. Questions are formulated that focus on extracting the five point distribution data for the Data Input nodes. Like kind information is then aggregated, analyzed and inserted into the model for simulation purposes. Should historical data exist to support a particular Data Input node it would also be analyzed and inserted into the model in the form Lone Star's five point distribution.

The Lone Star TruNavigator™ tool implements an Implicit Bayes approach. The implementation is supported through the Lone Star five point representations for each input that possesses uncertainty. These five numbers are compatible with human risk cognition and represent both the most probable outcomes and the limits of possibility in a simple way.

With Lone Star's enhanced decision analysis approach, the five point representation is compatible with Monte Carlo Sets, even when there is sparse data. EDA is also capable of handling the implementation of historical data, when available. In either case, the approach can represent arbitrarily large data sets, whether real or simulated. It should be apparent that when implementing Diverse Object Representation (very large organization representations), and/or representing and simulating critical uncertainty, it is essential to have the capability to scale large amounts of data.

The entire system has been designed to be capable of quickly executing large simulations on a standard business laptop. The current benchmark for execution time for a simulation processing 250,000,000 data points is less than 3 minutes, including all probability outcomes and sensitivity analysis. This speed is critical

when executing real time "what if" scenario analysis, which is typically part of virtually every model Lone Star has provided.

In addition, the model should be able to quickly and easily add influences to support evolving customer requirements, emerging data relationships, and changing environmental conditions. It is not unusual that when evaluating differing "what if" scenarios, new influences, mathematics and data may need to be added in real time in order to understand the impact to the system being evaluated. With Lone Star's drag and drop feature, data can be added to the model without impacting the model's structure at any time.

Summary

The objective of this article was to show how using Lone Star's tried and true process delivers the answers to the questions that don't seem capable of being answered. TruNavigator™ harnesses the sophistication necessary to enable clients to peer into the future and gain a true understanding of the range of potential outcomes for any decision that matters to them, regardless of size or complexity. TruNavigator was designed to deliver understanding, not just numbers. TruNav models provide several different ways to visualize the results. Understanding, from visualization, sensitivity analysis and other features of the EDA modeling environment is critical to delivering answers with confidence.

Here are some additional reasons why TruNav has gained such popularity with organizations both large and small; TruNav:

- Equips executives and managers to effectively manage uncertainty

- Allows an organization to assess the impact of decisions before resources are committed

- Offers a highly cost effective approach which requires less data collection to define the desired outcomes

- Evaluates decisions/programs/systems in the context of complexity and interrelationships

- Provides a GUI interface for easy development of the model and fast additions at any time

- Supports graphical output of results yielding an easy way to see the effects of potential decisions

- Offers sensitivity analysis of any element of the strategies being considered

- Uses the language of the customer's organization, not a predefined Lone Star nomenclature

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