

## **“Calculating for Uncertainty: How the Rise of Scenario-Based Planning Could Save Your Company”**

Hindsight is 20/20—at least according to the old adage. But no one can say with certainty that they hear the oracle telling us the future. Given the clouds of doubt cast upon the technology landscape, can we do any better than listen to soothsayers? They tell us to continue to hedge our bets and wait for the next big wave in computing—and in business generally. But in competitive marketplaces, waiting is not a viable strategy; instead, you need to sharpen your organization’s ability to plan and execute *through* the fog of uncertainty.

Networks and systems grow in size and complexity, adding more and more data: and yet, we hear constant worry about whether IT can manage this information volume toward a purposeful outcome. Before, the plea was simply to deliver information to the user: Now, the mandate is to transform this “tacit” data into kinetic knowledge. Only then can strategic decision makers probe the fog of uncertainty and allow a set of possible answers to materialize before it’s too late—before a condition or event comes to the foreground of reality. However, IT managers should not despair: the power of foresight is closer than you think.

Economists and business leaders have long subscribed to the notion of planning for the ebb and flow of business cycles. In that sense, the problems posed by today’s protracted spending slump are no different than previous eras—except for the new influence of information at our fingertips. Demand signals are tighter and more frequent. Data and its implications are communicated much more rapidly. The compressed intervals have us spinning to gain a sensibility about what reality is—and isn’t.

The fundamental application of mathematical and statistical modeling continues as it always has—with one big change. The information deluge has vastly improved the accuracy of predicting the successive reaction chain, from customer behavior to the marginal benefits of deploying the technology to measure that behavior. By filling the models with enough real-time information, analysts can look into the future with unparalleled clarity. Decisions can be made with more supreme authority.

The rationale for modeling uncertain outcomes dates back centuries, to the time when statistical science was gathering speed and ultimately taking shape as the heart of economic theory. As the practice of mathematics and statistics gained momentum, the biggest roadblock was lack of data. Without data, analysts couldn’t derive a set of scenarios strong enough for reliable enterprise planning. Given the current expansion of real-time data, the calculation process is clearly more exact in hitting its desired target—and in generating insight.

### **Scenario-Based Planning**

Challenging economic times force CIOs to measure technology investments in terms of explicit performance parameters and tangible business yields. Scarce resources compete with “limitless” project possibilities; choosing the right combination means finding the perfect match of current capabilities with foresight into demand, including that

which is unaccounted for in the organization's current plan for growth. The result is an agonizing conflict between wants and needs in which the outcome always leaves some party unsatisfied.

Step back and consider how much this sounds like an economics problem. Every organization produces something of worth or value, which in turn generates an economic profit that propels further investment in customer markets, process improvements, and expanded production capacity. Technology investments are no different than any other move to allocate capital and labor to enhance the organization's ability to deliver goods and services. Why don't we simply treat technology decisions as we do decisions regarding other enterprise functions? An organization's decisions about hiring and production goals also take into perspective unknown contingencies and events yet to materialize.

If we look at technology through the lens of a typical investment equation, we can apply methods of scenario-based planning (SBP) for evaluating the investment's ability to achieve a desired outcome. The concept of SBP has been in existence for as long as the span of modern mankind: but the results have never had the potential to be more effective than now, thanks to increasing data resources. SBP simply creates a set of probabilities that are aligned with a particular cost or production circumstance. This blend of economic relevance (choice) with and a set of statistical measures (chance) lets us take full advantage of information's context. The blend also gives us flexibility, allowing us to define multiple conditions upon which to base our decisions.

Putting mathematics center stage for a moment, you can consider SBP as blending together, within an organization's production environment, a set of statistics with the linear algebra of behavior among variables. SBP requires that the business manager or analyst understand how the "variance" from a set of defined outcomes will behave given the conditions and constraints that exist within an organization's business processes. The path to understanding variant behavior begins by staging experiments and/or gathering external data that can tell you the defined outcome's occurrence at specified frequencies. By combining these probability measurements with known economic conditions, you can arrive at a graphical overview of your organization's ability to perform within a specified future period. You will be able to see how adding technology to production capability will change the variance in revenue or output. The mathematics, therefore, are about joining statistics and economic variables to exactly how and why change happens.

### **Setting Priorities**

As an example, consider a domestic airline carrier that had to examine their CRM application investment to determine whether to expand its scope to include relationships with trade partners. The business goal was to improve overall transportation services marketing. The carrier knew the immediate costs of extending the CRM system's functionality. What was less known, and certainly unclear, was whether the potential investment would make more efficient the carrier's effort at earning revenue through the output of its core services. The dilemma involved a fierce battle over scarce dollars, with the added dimension of whether to maintain the "sovereignty" of all those incremental revenue sources. All sides put forth their views of the options as best they could: but answers about how much to spend and where to allocate effort remained unsolved.

When contemplating an IT project, every organization faces these same questions: how to prioritize staff, plan implementation, and choose which vendor solution among many possibilities. When it all boils down to making the enterprise profitable or not, the choices narrow quickly. Taking the known parts of the equation (such as cost provisions and days of implementation) and solving for the unknown variables (such as total cost reduction and marginal revenue productivity) gives you an opportunity to evaluate an optimal mix: that is, just the right amount to spend to produce a feasible and felicitous set of results. How you determine the impact of technology is just as important as how you assign traditional project costs. You want to reduce imbalances in the equation where possible.

Coming back to the airline carrier example: The CIO's team knew that inevitably, it would be important to include trading partners as a way of differentiating the organization from the competition. Plus, the carrier had to reach out to any potential revenue streams to try to counteract the effect of diminishing profits in other areas. Success was not assured; in fact, prospects were fuzzy given the costs of expanding the CRM system and the stack of projects that would be moved to the sidelines. The CIO's team began with an inventory of the top five projects that could (1) increase revenue within 90 days of implementation and (2) hold a total cost allowance that was equal to or less than \$5 million. Arriving at this final list required considerable pencil sharpening.

The team's next move was to establish the total economic envelope (TEE) factor for each of the projects on the list. The TEE factor represented a dimension of the incremental dollars that would be produced as a consequence of choosing to implement each project. Alongside each project on the list, the team supplied a weighting value that gave a probability estimate of achieving this TEE factor. Risk assessment led the team to put a lesser probability value next to some while putting a higher number next to others based on past experience. In the end, the goal of the process was to answer to the question of whether to move forward with the CRM expansion or recommend alternative solutions. Certainty was nowhere to be found; the airline was hemorrhaging millions of dollars every day, with no relief in sight. Success had to be in the outcome.

### **Optimizing for Uncertainty**

For some organizations, being backed into a corner with few choices can be healthy. Companies that learn how to manage through lean times are often better prepared to handle growth. As this airline carrier quickly discovered, technology investments needed to return results quickly and on target. Strategically speaking, the technology investment would either accelerate or delay the future that the company desired. Despite a few stumbles, the carrier's calm and calculated thinking prevailed and the company reached its planning objective.

The CIO's team felt a sense of comfort in having accounted for the range of potential technical and market-oriented snafus that might have come their way in the course of implementation. As a byproduct of the planning exercise, the team chose to reduce the initial scope of the CRM expansion to allow for putting additional functionality into call center integration—a project that had initially been put on the sidelines. Confident that they had conceived of every possible roadblock, the carrier could not have anticipated the stunning events of September 11, 2001. What

was an economic malaise became a nightmare, complete with new and unforeseen security, procedural, and bureaucratic requirements.

Unwavering in their commitment to deliver on the project—but also accepting the added burdens—the team kept its focus on the original planning diagram to reach revenue objectives. Looking back, the team’s leader acknowledged the role of computing for uncertainty as integral to a design process that also included lessons from previous projects and a continuous flow of real-time information about customer demand. Uncertain outcomes had always been considered: but never before had the team tried to reconcile calculations about uncertainty with the standard processes of deciding on a technology direction. The carrier saw that technology investments could no longer be justified by mere speculation; the decision process had to be overhauled with sharper calculation about the uncertain future.

The fundamental shift occurred when the carrier changed its definition of a successful project. By defining risk and reward—and aligning resources and project scope—to an *optimal point*, the design team felt in control; it could now plan for uncertain events that might unavoidably influence their decisions. One wrong move would now be far less damaging than a string of successive decisions haphazardly leading to failure. By taking a certain number of potential missteps into their calculations, the team could manage how the organization would deal with changed circumstances more effectively.

### **Crux of the Matter**

Courting the future means that companies must accept a degree of uncertainty in every aspect of planning. The inflow of information will never recede—it will come in ever-greater volume. The crux of how you put strategy in motion hinges on how well your team can convert information into a real knowledge utility, and further integrate this knowledge into a formulaic cast of assumptions. To achieve explicit results amid the unknown, your organization will need to muster unprecedented diligence in how it incorporates the latest knowledge.

Traditional scientific methods have a place in the next stage of economic evolution. The flow of information will bring greater respect to the emerging science of decisioneering. By taking deliberate steps toward dealing with uncertainty and using the process to create opportunities, your organization will gain valuable foresight into the future.