USING CRYSTAL BALL IN LEAN SIX SIGMA AND DESIGN FOR SIX SIGMA PROGRAMS

Whether you're designing an engine or perfecting a process, efficiency is key—and you rely on your Lean Six Sigma or Design for Six Sigma practice to get you there. But if you're only basing your analysis on hard data—not on the variation inherent in any manufacturing, engineering, or service process—you're only getting halfway there. Oracle's Crystal Ball takes you the rest of the way, allowing you to use simulation, modeling, optimization, and forecasting to predict and reduce the effects of variation.

As a powerful set of add-on tools, Crystal Ball software lets you turn your engineering and process spreadsheet models into dynamic analytical tools.

KEY FEATURES

- User-defined specification limits for each forecast
- Views of simulation-based capability metrics
- Split view forecast charts (allowing graphs and tables to be viewed together)
- Data Analysis tool for capability analysis of data
- Wide selection of example models
- *Crystal Ball Process Capability Guide* (with tutorials)

KEY BENEFITS

- Big picture analysis (accounting for variations in systems and process)
- Identification of key business drivers (through sensitivity analysis)
- Early insights (via modeling and simulation)
- Identification of optimal solutions (accounting for variation and constraints)
- Easily communicated results (via interactive charts, graphs, and reports)

Crystal Ball in Six Sigma

To succeed, Six Sigma programs must combine a tight focus with the right people and the best tools—and when it comes to software, the best tools are the ones that streamline your journey to profitability. Crystal Ball is one such tool.

As a suite of Microsoft Excel add-ins, Crystal Ball software works to turn your existing engineering and process spreadsheet models into dynamic analytical tools that help you identify and control the negative effects of variation throughout your Six Sigma projects.

Six Sigma applications of Crystal Ball include

- Design development and optimization
- Tolerance and reliability analyses
- Project selection
- Process simulation (especially important when historical data is lacking)

Crystal Ball in Design for Six Sigma

Because testing on physical models can be prohibitively expensive, Crystal Ball is particularly valuable in Design for Six Sigma (DFSS) practices, providing designers with easy access to simulation and optimization techniques that help them predict capability, pinpoint critical-to-quality factors, and explore design alternatives.

Engineers use "design by analysis" and simulation to estimate data, improve designs and uncover defects before products are built—a process Crystal Ball facilitates by helping them identify, test, and control how the input (X) variation affects the output (Y). The result is better designs, which lead to overall savings.

In the end, customers receive robust products and processes, and get to market fast

while avoiding the costly consequences of bad design.

Applying Crystal Ball to Your Six Sigma Projects

Whether you're looking to remove variation from a process or to establish new process or product capabilities, Crystal Ball provides tools critical for your analysis. The following sections describe how you can apply Crystal Ball across an entire Six Sigma or DFSS project.

Define

By allowing you to consider the uncertain costs and success rates of a project's initial phases, Crystal Ball can help you to understand the potential impacts of these variables on customer satisfaction and profitability.

As you get your project up and running, you can use Crystal Ball to

- Select projects
- Assess value streams
- Estimate costs
- Identify critical-to-quality project characteristics

Measure

With Crystal Ball, you can use your historical data to quantify the current performance of your processes. Crystal Ball simulation is especially helpful in situations where data is infrequent, estimated, or costly to gather.

To assist in your quantification efforts, you can use Crystal Ball to

- Establish quality and efficiency baselines for your processes
- Calculate statistics and capability from historic data
- Measure gaps and risks

Analyze

Using the tools available in Crystal Ball, you can take the mystery out of process performance, discovering and validating the underlying causes of waste and variation. You can also take advantage of Crystal Ball's powerful analytical capabilities to figure out which opportunities to pursue (and when) based on their contribution to customer satisfaction and overall profitability.

Using Crystal Ball, you can analyze

- Tolerance
- Sensitivity
- Root causes
- Linear regression

Improve / Design

By applying Crystal Ball analysis to your Excel spreadsheets, you can virtually test the proposed process and design improvements that will allow you to deliver the performance and results you desire. You can also take advantage of Crystal Ball's

CUSTOMERS SAY IT BEST

"Crystal Ball . . . helped reduce the total-defects-per-million opportunity from 50 percent to 80 percent for some of our customers. It allowed us to provide a more-solid Master Black Belt program while keeping costs under control and the flexibility of our modeling approach at a maximum."

—Ernesto L. García C., PhD, Senior Consultant, **Sigma Breakthrough Technologies, Inc.**

modeling capabilities to achieve the perfect balance of quality, cost, and time to market in your designs and products.

To assist in the design and performance optimization processes, you can use Crystal Ball to

- Analyze reliability
- Simulate processes
- Optimize inventory
- Allocate resources

Control / Verify

To optimize process performance, you need to be able to identify both areas that need improvement and areas in which improvements have already been made, so that you can learn from the results: Crystal Ball helps you do both. In addition, you can employ Crystal Ball to verify prototype models that help you establish controls and action plans as well as ensure that designs meet customer requirements.

To ensure that your team is coming up with the best processes and designs, you can use Crystal Ball to validate your

- Designs
- Functional control plans

Learning How to Use Crystal Ball for Your Six Sigma Projects

All it takes is a day to learn how simulation, risk analysis, stochastic optimization, and Crystal Ball analysis tools support quality improvement methodologies such as Six Sigma, DFSS, and Lean principles. Simply attend a public training course or create a customized onsite course using Oracle Certified Trainers through Oracle University. For more information on this option, please visit http://education.oracle.com.

Contact Us

For more information about how your organization can leverage the power of Oracle Crystal Ball, please visit www.oracle.com/crystalball or call 800.289.2550 (+1.719.757.2173 from outside the U.S.) to speak to an Oracle representative.

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