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Using Crystal Ball in Continuous Improvement: Six Sigma and Design for Six Sigma

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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 suite of Microsoft Excel add-ins, Crystal Ball software lets you turn your engineering and process spreadsheet models into dynamic analytical tools.

KEY FEAUTURES

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

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

Crystal Ball in Continuous Improvement

To succeed, Continuous Improvement 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 powerful suite of Microsoft Excel add-ins, Crystal Ball software works to turn your existing Continuous Improvement spreadsheet models into dynamic analytical tools that help you identify and control the negative effects of variation throughout your Continuous Improvement projects.

Continuous Improvement applications of Crystal Ball include:

- Selecting Cost-Effective Continuous Improvement Projects
- Establishing Performance Targets
- Predicting Process or Product Performance
- Engineering Design Analysis
- Predicted Reliability / Time-to-Failure

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, your customers receive quality products and services and you get to market faster while simultaneously avoiding the consequences of poor design.

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interactive charts, graphs, and reports)

"Oracle Crystal Ball is easy to deploy and use, and can drive meaningful change from day one. With the tool, we were able to reduce wobble for a popular commercial lock, cutting the defect rate by 87% and saving our security technologies group at least US$492,000 per year."

RAMON BALISNOMO
DESIGN FOR SIX SIGMA, BLACK BELT, SECURITIES TECHNOLOGY
INGERSOLL RAND

Applying Crystal Ball to Your Continuous Improvement 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:

- Analyze project business case and risk profile
- Identify critical-to-quality project characteristics
- Identify high-risk failure modes

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 a Data Collection strategy
- Baseline Process or Product performance
- Estimate the "Cost of Poor Quality"

Analyze

Using the tools available in Crystal Ball, you can take the mystery out of process performance. You can take advantage of Crystal Ball's powerful analytical capabilities to discover and validate the underlying causes of defects and waste and to assess the impact on customer satisfaction and overall profitability.

Using Crystal Ball, you can analyze:

- Examine data for underlying relationships
- Determine root cause(s) of major significance
- Baseline your "as-is" process performance

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 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 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:

- Formulate an improvement strategy
- Generate and test candidate solutions for the new “to-be” improved state
- Compare “as-is” and “to-be” states to predict the improvement

Control/Verify

To optimize process performance, you need to validate and maintain process performance. Crystal Ball helps you do both. By using the most current data, you can continuously monitor and predict process performance against customer and internal CTQ’s.

To ensure that your team is maintaining the gains and continuously improving your processes, you can use Crystal Ball to:

- Monitor process performance
- Validate product designs

Learning How to Use Crystal Ball for Your Continuous Improvement 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.

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