

# Raytheon's Structured Estimating Boosts Software Cost Accuracy



**Background:** Raytheon Communication Systems significantly improved its software cost estimates by adopting a structured estimating process. This shift has enhanced estimate accuracy and confidence, crucial for the profitability of large programs.

Raytheon Communication Systems, a leader in communication and battle management systems, develops critical software for land, sea, air, and space applications. With operations in seven states and over 5,500 employees, the division primarily uses C++ and Java for its applications, which often run on supercomputing platforms.

## Estimating Challenges

Large software projects are complex to estimate due to evolving methodologies, languages, and standards. Traditional bottom-up methods vary in accuracy and lack proper documentation, complicating negotiations and error management.

Spreadsheets, commonly used for bottom-up estimates, are prone to errors and don't account for uncertainty, leading to significant inaccuracies.

## Standardized Methodology

Raytheon addressed these challenges by adopting structured estimating tools like SEER-SEM™ from Galorath Incorporated. SEER-SEM uses a wide range of input parameters to generate accurate estimates and allows for historical data calibration, improving accuracy over time. The tool also provides phase distribution of effort and scheduling information, enhancing project oversight.

## Generating Estimates

Using SEER-SEM, the process begins with engineering teams developing a solution set based on the proposal requirements. Estimating teams then build the model, organizing costs effectively. SEER-SEM's ability to include probability levels for parameters helps in understanding the impact of changes, providing a range of probable values.

## High Accuracy and Benefits

Raytheon consistently achieves high accuracy in its estimates, with a plus or minus 10% variance. This success is due to comprehensive calibration efforts, comparing model estimates to actual costs and adjusting parameters accordingly.

Structured estimating tools like SEER-SEM also support negotiations by providing a transparent methodology, helping increase customer confidence. The tool aids in project performance evaluation by comparing actual results with detailed estimates, allowing early visibility of issues and informed decision-making.

Gary Constantine, Manager of Parametric Estimates, highlights that SEER-SEM is favored for its high-quality estimates and customer preference.

In summary, Raytheon's move to structured estimating has significantly improved the accuracy and consistency of its software cost estimates, benefiting both project profitability and customer confidence.