

Integrated Design to Life Cycle Cost - The Real Thing

by

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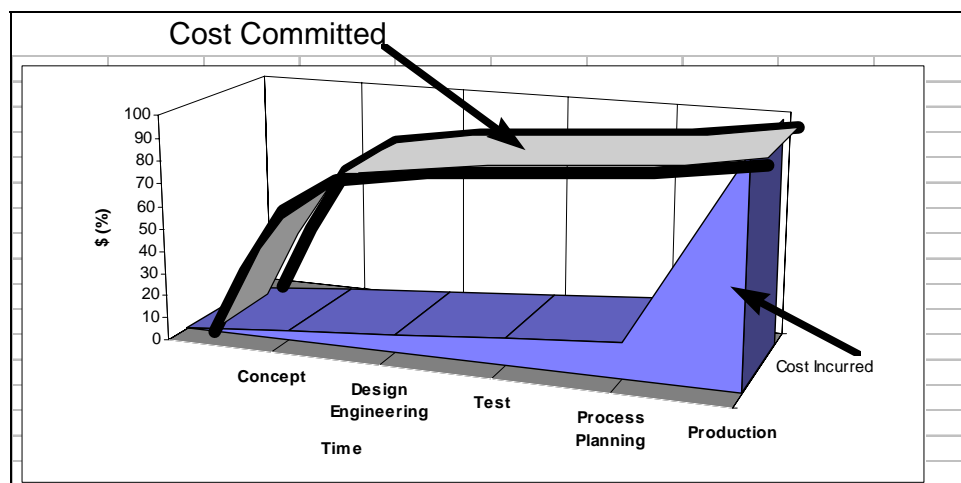
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Engineers by nature are innovative and do not like constraints that inhibit their creativity. Traditionally, aerospace and defense engineers ignored design to life cycle cost (DTLCC) requirements. During the Cold War and before open global competition, expense budgets could afford engineers' unrestricted innovative nature. Complex procurements typically exceeded budget expectations by factors of two or more. *Times have changed.* Affordability is the primary requirement for all new aerospace and defense procurements. But will engineers ever be sensitive to life cycle cost issues?

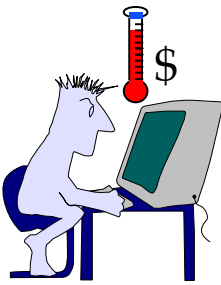


The US Advanced Research Projects Agency (ARPA) is addressing the DTLCC dilemma through a technology program named RASSP, Rapid Prototyping for Application Specific Signal Processors. The RASSP goal is to improve signal processor life cycle cost by a factor of four by developing an industry standard design methodology and automating the methodology through integrated computer-aided design and information systems. The conceivers of RASSP recognized that life cycle costs for high-technology procurements were impacted greatest by design decisions made earliest in the program. They concluded that the only way to achieve the 4X improvements was to attack the heart of the issue. Hence, RASSP requirements specified that the proposed methodology must include techniques for early-on cost/performance tradeoffs.

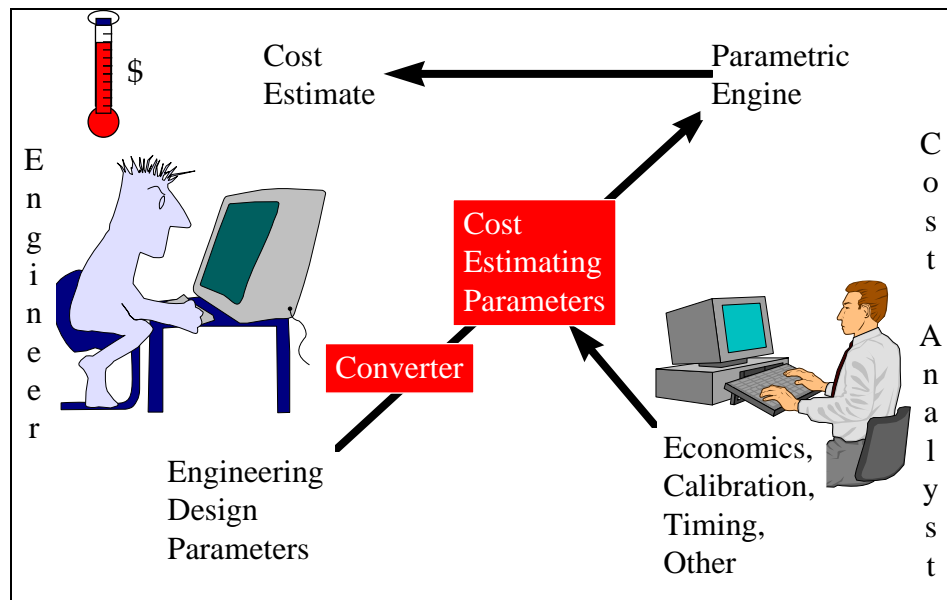


Program costs are committed by designers long before the costs are incurred.

PRICE Systems was chosen to provide cost estimating capability for early-on cost/performance tradeoffs. PRICE's concept was to put DTLCC "in the engineer's face" as seamlessly and unobtrusively as possible. The PRICE RASSP team met the challenge by defining an automated concurrent engineering approach to cost/performance tradeoffs. Out of the laboratory is emerging a new tool, PRICE E. PRICE E is an application that allows analysts to define translations from the information provided by CAD tools to the information needed for a PRICE model estimate. The result is an instantaneous feedback loop between the tools, providing the engineer with changes in life cycle cost as he changes systems design -- true, practical, and useful DTLCC.



This is how it works. A trained parametric cost analyst is placed on the concurrent engineering team from the start. Immediately, he confers with the systems engineering, design, manufacturing, logistics, and other team members to capture the major programmatic and economic characteristics of the product and project. Initial physical characteristics are determined but noted preliminary. The cost analyst can then create a baseline model in PRICE of the project. Next, the analyst and an engineer determine how product design parameters derived from CAD tools affect the cost drivers of the PRICE model. The analyst starts with the systems engineers during concept stage,

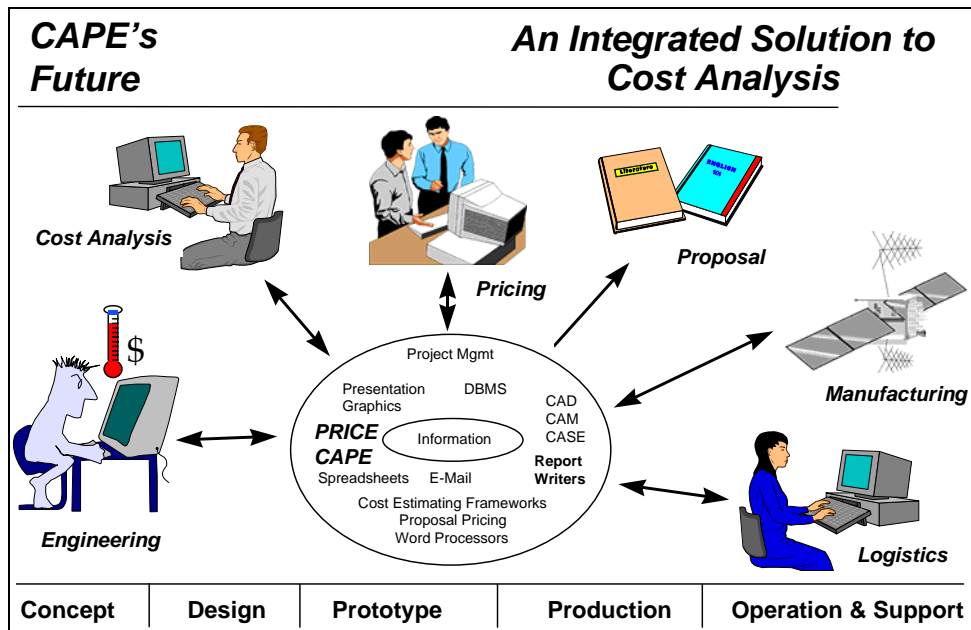


A cost analyst provides the backbone of an instantaneous feedback-loop to provide effective design-to-life-cycle-cost.

continuing with low-level designers as the project matures (This process was piloted and refined with Ascent Logic's Requirements Driven Design tool and is now being extended to Mentor Graphics and ProEngineer). The relationship between the CAD tool

parameters and PRICE is described with an easy-to-use language called PIRL (PRICE Import and Report Language). Now, as the engineer completes the design and performs tradeoffs with a CAD tool, a “cost thermometer” on his screen projects the life cycle cost impact of each design decision. How? PRICE E digests the design parameters from the CAD tool, translates them to PRICE parameters based on the PIRL description, overlays the new parameters on the baseline description, executes the PRICE model, and updates the cost thermometer on the engineer’s screen – true, real time design-to-life-cycle-cost.

PRICE Systems’ vision of the future is for Computer-Aided Parametric Estimating (CAPE) to serve an entire enterprise during every phase of a product’s life cycle. Seamless, unobtrusive integration with other tools, guided by a trained cost analyst, is the key goal to realize this vision. PRICE E is the vehicle to achieve the goal.



Computer-Aided Parametric Estimating will serve all functions of an organization with cost estimating and analysis services through enterprise-wide integration.

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