



**TRUE PROGRAM  
SUCCESS**

**'06**

**PRICE Systems U.S. Symposium  
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San Diego, CA**

## **Software Estimating "Best of Breed" Solutions**

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L-3 Communications



***PRICE***

## About L-3 Communications



**communications**  
Integrated Systems

> *Headquartered in New York City, L-3 Communications is a leading provider of*

- *Intelligence, Surveillance and Reconnaissance (ISR) systems*
- *Secure communications systems*
- *Aircraft modernization*
- *Training and government services*

> *L-3 is a merchant supplier of a broad array of high technology products, including*

- *Guidance & Navigation*
- *Sensors*
- *Scanners*
- *Fuses*
- *Data Links*
- *Electro Optics*
- *Satellite Communications*
- *Electrical Power Equipment*
- *Encryption*
- *Signal Intelligence*
- *Propulsion Systems*
- *Simulators*
- *Avionics*
- *Antennas*
- *Microwave Components*

## About L-3 Communications Cont.

- > *L-3 also supports a variety of Homeland Security initiatives with products and services. Its customers include*
  - *The Department of Defense*
  - *Department of Homeland Security*
  - *Selected U.S. Government Intelligence Agencies*
  - *Aerospace Prime Contractors*



## About L-3 Integrated Systems



- > *L-3 IS is recognized internationally as a system integration organization specializing in the modernization and maintenance of aircraft of all sizes and the study, design, development, and integration of special mission systems for military and commercial applications.*
- > *The company has modified more than 15,000 different aircraft of more than 125 types.*
- > *Headquartered in Greenville, Texas, L-3 IS operates from multiple sites in*
  - *Alabama*      - *Kentucky*      - *Mississippi*      - *Texas*
  - *Australia*      - *Maryland*      - *Oklahoma*      - *Virginia*

## Price-S at L-3 IS Greenville

- > 1986 - Implemented as “Second Opinion”
- > 1987 - Evaluated as estimating tool
- > 1988 - Initial calibration
- > 1988/9 - Price-S run parallel to bottoms-up
- > 1989 - Used as Basis of Estimate
- > 1989 - Established Price-S users group
- > 1990 - Training for Software Engineers



## Our Estimating Goal



- > *The Cost Engineering (CE) group of the Engineering Support Department is responsible for the procurement, coordination, application, and calibration of all cost models and parametric methods applied to software/firmware cost estimating in support of L-3 Communications Integration Systems*



## Software Engineering Responsibilities for Estimating



- > *The Software Engineer (SWE)*
  - *Determines scope of bid*
    - *Engineering Bid Briefing*
    - *Side Discussions with System Engineer/Customer*
    - *White Papers*
  - *Establishes a technical description*
  - *Identifies the technical and environmental metrics*
  - *Accomplishes bottoms-up Rough Order of Magnitude (ROM)*
  - *Provide environmental and technical metrics to CE*
    - *Accomplished through Pathway – an in-house developed web application used by SW Engineering bidders to interface with Price-S*
  - *Review model inputs/outputs with CE as necessary*
  - *Document and submit estimate to Engineering Estimating System Tool (EEST) utilizing Pathway*
    - *An in-house developed engineering bid proposal tool*

## *Cost Engineering Responsibilities for Estimating*



- > *The Cost Engineer*
  - *Maintains and calibrates the models*
  - *Constructs models and provide estimates*
  - *Provides assistance to the engineer as necessary*
  - *Validates engineer's inputs to the model*

## Collecting The Data (Metrics)/Getting the Results



- > *Through Pathway, the SWE completes a series of technical and environmental questionnaires based on the project they are estimating.*
- > *The tool takes the data (metrics) entered through the questionnaires and creates a text file that is imported into Price-S to create the Price-S file.*
  - *The SWE never touches Price-S, this is all done behind the scenes*
  - *This portion can be an iterative process, the estimate is refined until it is within +/-10% of the bottoms up.*
- > *SWE submits their estimate to CE for review. CE is notified via e-mail of the estimate*
  - *CE reviews only the accuracy of inputs*
  - *CE does not validate the actual metrics*

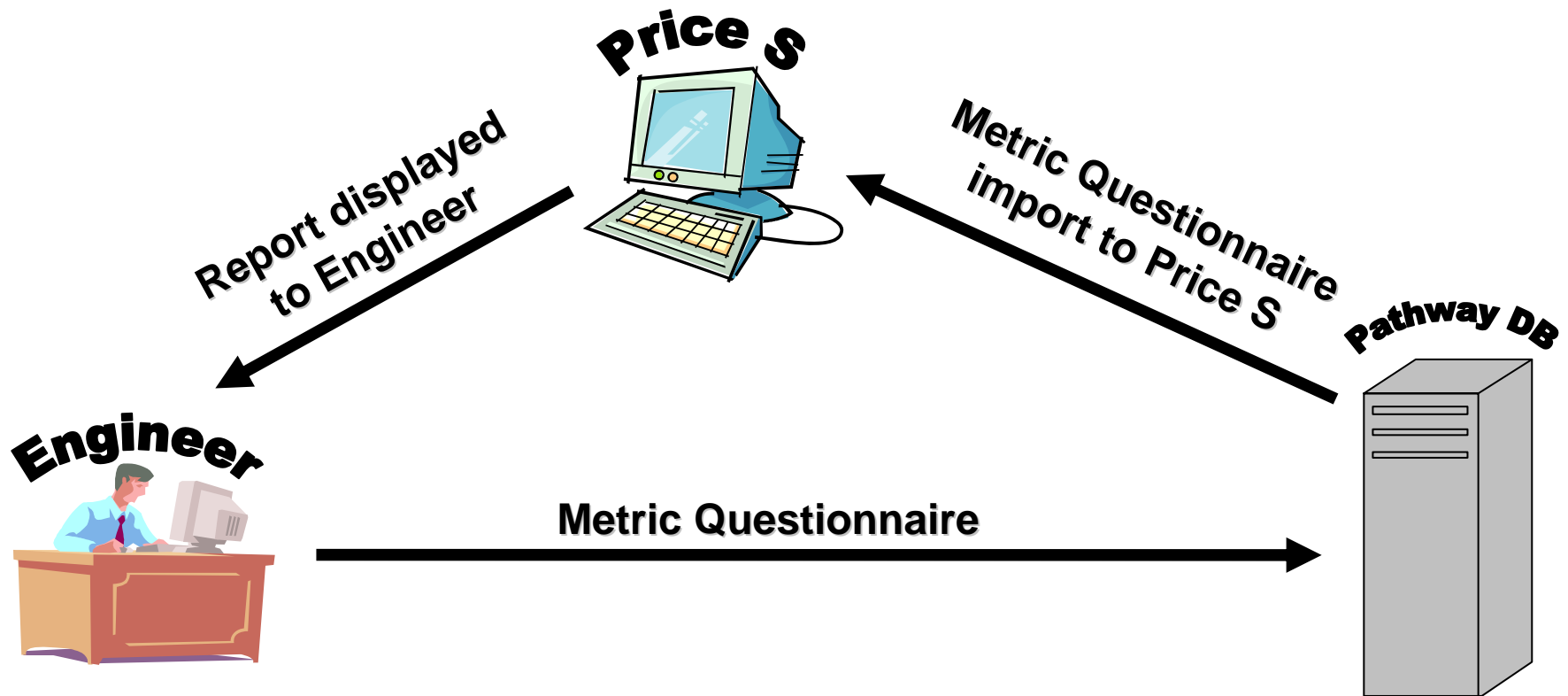
## Collecting The Metrics/Getting the Results Cont.



- > *CE reviews the estimate*
  - *Estimate is watermarked in EEST until reviewed by CE*
  
- > *CE approves the estimate if...*
  - *All inputs are valid Price-S inputs*
  - *The estimate is within +/-10% of the bottom's up*
  
- > *CE disapproves the estimate if ...*
  - *Invalid inputs are used*
  - *Anything looks unusual*
  - *The estimate is not within +/-10% of the bottom's up*
  
- > *If disapproved, CE documents why and works with the engineer to correct the problem.*



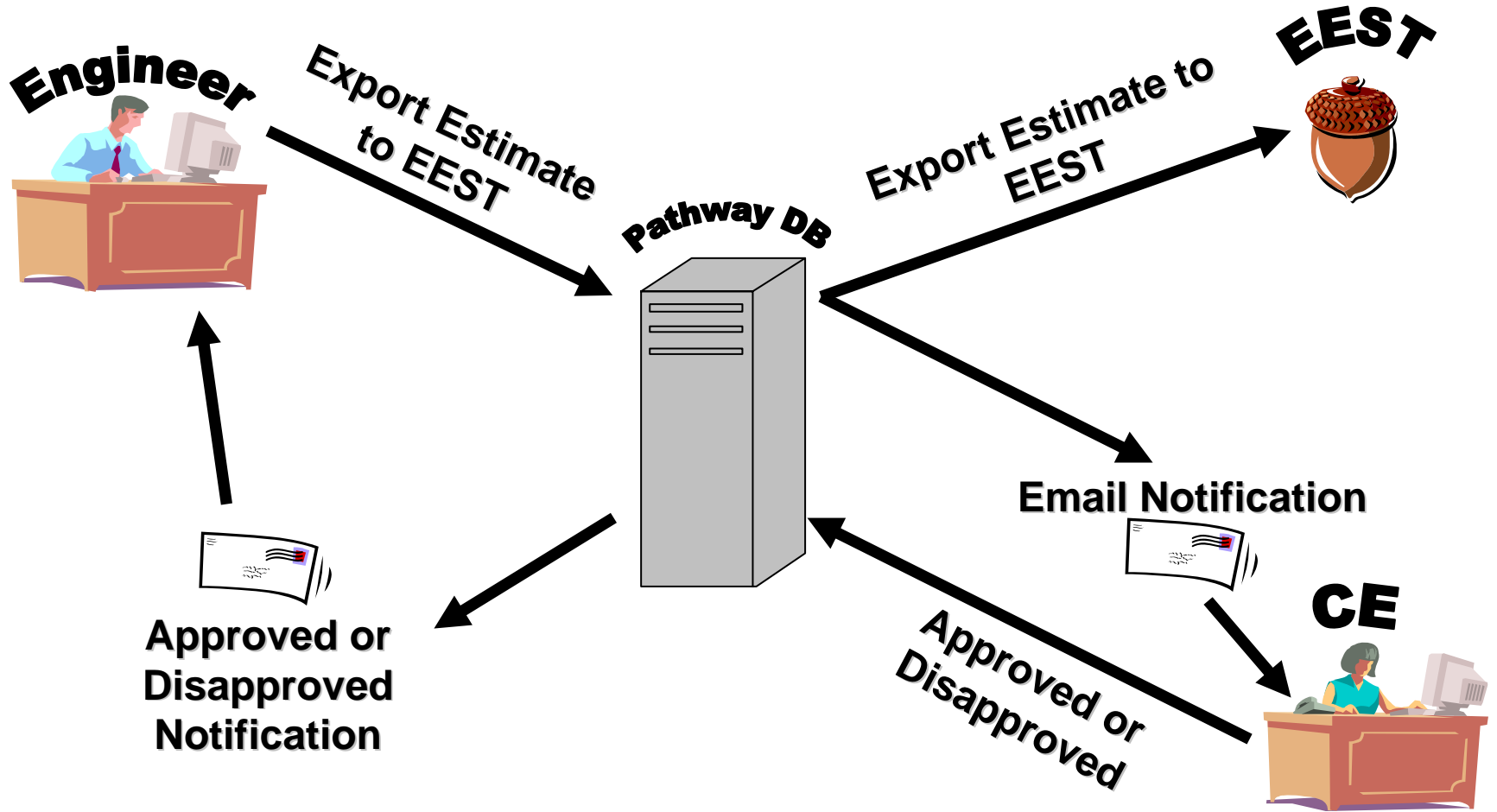
# The Estimating Process



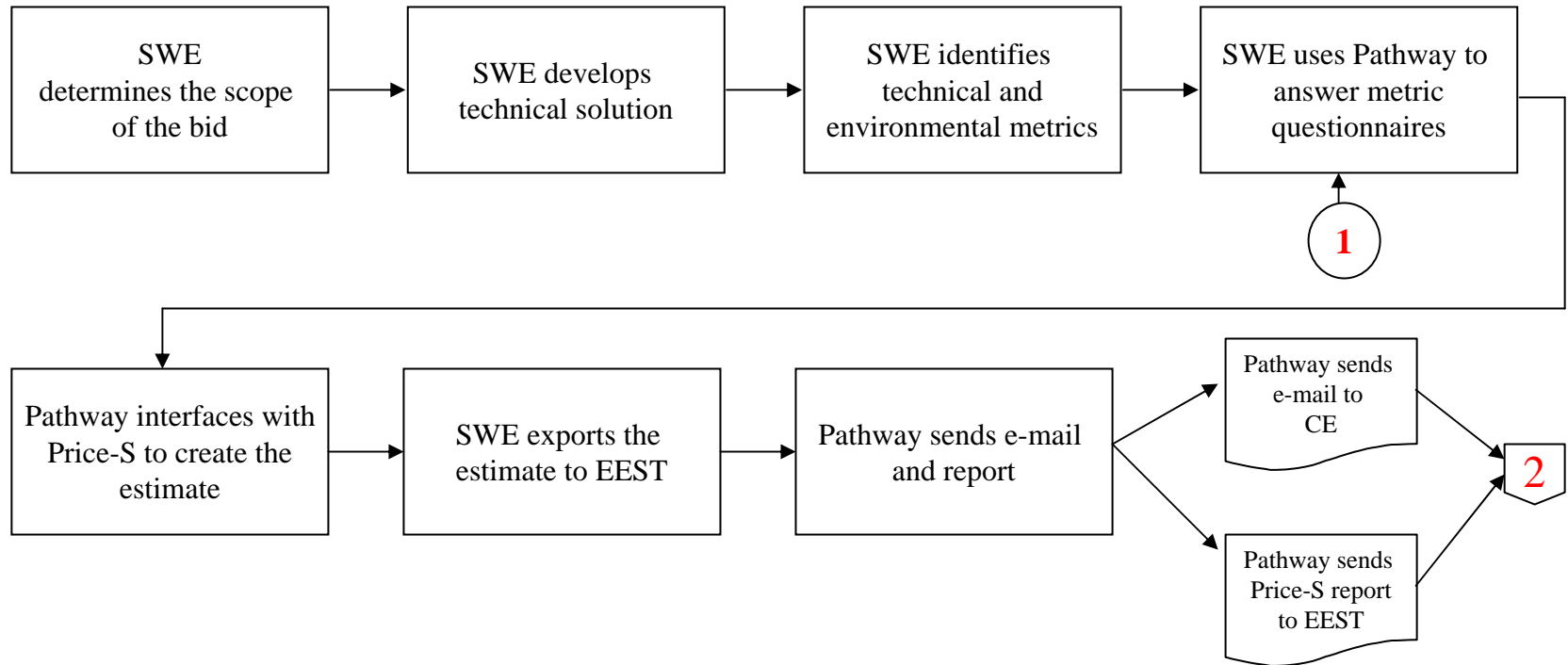
# The Estimating Process (cont.)



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# Estimating Software



## Estimating Software (cont.)

