Life Cycle Cost Estimating

TruePlanning® 2016 Deep Dive Webinar Series

Joe Bauer, PRICE® Systems
PRICE Cost Analytics Framework

1. **DATA CAPTURE**
   - Private or Public Data
   - Data dictionary
   - Data Quality Standard
   - Define Collection Cycle
   - Define Collection scope
   - Selective automation
   - Supplier Training

2. **DATA MINING & ANALYSIS**
   - Determine Taxonomy
   - Build Database
   - Data Cleansing
   - Categorization
   - Normalization
   - Calibration
   - Selective automation

3. **KNOWLEDGE MANAGEMENT**
   - Historical data repository
   - Statistical tools
   - Perform Data Studies
   - Create Findings, metrics, CER’s
   - Inject historical perspective into cost models
   - Foundation for data-driven estimates

4. **PARAMETRIC MODELS**
   - Proven, reusable Parametric Models
     - Effort
     - Materials
     - Activity Duration
     - Metrics
     - Activity-based models
     - Integrated
     - Custom Model Development Platform

5. **ESTIMATION FRAMEWORK**
   - Estimate cost, schedule and risk
   - Estimate parts to programs
   - Comprehensive
     - Burdening
     - Escalation
     - Schedule
     - Risk
   - Systems & Integration level
   - Integrated with Common Tools
   - COM API

6. **ESTIMATE MAPPING**
   - Map your estimate into your customers’ preferred format, WBS, CES, OBS, etc.

7. **Top Down**
   - Estimate Reconciliation

8. **Bid or Should Cost ESTIMATE**
   - (Cost, Schedule, Risk)

9. **DATA INTEGRATION**

**Program Execution**
(PLM, EVM, PPM, PM)
Life Cycle Cost Definition

- The **total cost** to the Government or organization of the Acquisition and Ownership of a system over its **complete Life Cycle**
  - LCC includes the cost of Development, Acquisition, Support, and, where applicable, Disposal*

* SCEA Glossary
TruePlanning® Equipment Hierarchy

- Possible combinations:
  - **LRU**
    - LRU only
    - LRU made of Modules only (no Parts)
    - LRU made of Parts only (no Modules)
    - LRU made of Modules made of Parts
  - **Module**
    - Module only
    - Module made of Parts
  - **Part**

- Equipment modeled depends on two TruePlanning® inputs
  - Number of Module Types
  - Number of Part Types
Maintenance Locations / Levels

- **Locations**
  - **On-Equipment**
    - *Maintenance performed on the end item (i.e., airplane, ship, tank)*
    - *Maintenance Actions*
      - Remove / Replace LRU
      - Remove / Replace Module
      - Remove / Replace Part
  
  - **Off-Equipment**
    - *Maintenance performed off the end item, usually in a maintenance repair facility*
    - *Maintenance Actions*
      - Remove / Replace Module
      - Remove / Replace Part

- **Levels**
  - **Equipment**
    - *On-Equipment Maintenance*
    - *No Work Shop*
    - *Often performed by crew*
  
  - **Organization (Direct Support)**
    - *Performed by organization on its assigned equipment*
    - *“Back shop” support*
  
  - **Intermediate (General Support)**
    - *Facility with Controlled Environment and Automated Test Equipment*
  
  - **Depot**
    - *Government or Contractor*
Types of Spares / Support Equipment

- **Spares**
  - **Initial**
    - Initial stock required to fill maintenance pipeline or supply chain for 2 years
    - Produced concurrent with mission equipment
    - Quantity based on repair cycle times and failure rates
    - Production cost
  - **Replenishment**
    - Spares needed to replenish initial stock
    - Also known as Balanced Consumed spares
    - Total spares minus initial spares
    - O&S cost

- **Support Equipment**
  - **Common**
    - Items found in common usage across multiple systems
    - Not estimated by TruePlanning®
  - **Peculiar**
    - Items used by a specific weapon system with no operational value to other weapon systems
    - Estimated by TruePlanning®
Life Cycle Cost Drivers

- **Number of Operational Hours**
  - Operating hours per month

- **Mean Time Between Failure**
  - Determines number of failures

- **Mean Time To Repair**

- **Maintenance Concept**
  - Determines
    - *Initial Spares*
    - *Replenishment Spares*
    - *Support Equipment Acquisition and Setup*
    - *Support Equipment Maintenance and Calibration*
    - *Maintenance Labor*
    - *Maintenance Contractor Support*
    - *Transportation, Spares Storage*

- **Number of supply / maintenance points**
Life Cycle Input Parameters

System Cost Object Input Sheet

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Hardware Component Cost Object Input Sheet

- Life Cycle Key TruePlanning® Hardware Drivers
  1. Number of System Deployments
  2. Maintenance Concept
  3. Supply / Maintenance Points, as necessary
  4. Number of Operational Hours
## Maintenance Concepts

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**Legend:**
- LRU
- Module
- Part
- Discard LRU
- Discard Module
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- **LRU**: Like Replacement Unit
- **Module**: Maintenance Module
- **Part**: Reusable Part
- **Discard LRU**: Discard Like Replacement Unit
- **Discard Module**: Discard Maintenance Module