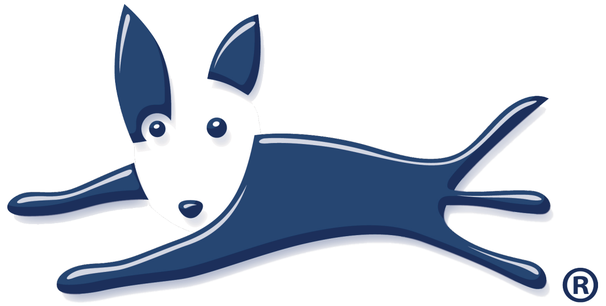


# Cost Benefit Analysis - Approach

Tom Termini - 04-Feb-2021

# Cost-Benefit Analysis

*…the process of using theory, data, and models to examine products, tradeoffs, and activities for assessing relevant objectives and alternative solutions in order to assist decision-makers in choosing the most appropriate alternative.*

- CBA supports investment decisions in response to changing demands.
- CBA represents an independent study that compares the costs and benefits of two or more viable and mutually exclusive alternatives in order to make an effective decision on a preferred alternative.

# CBA Approach

- **Determine Costs** — initial / capital outlays. Then look at on-going costs, including fully burdened Labor costs, contractors, and non-monetary (such as staff satisfaction). Consider crafting a sample WBS to capture the execution of the effort.

- **Calculate Benefits** — dollar value of time saved, infrastructure cost reductions, even morale and perhaps other benefits, such as energy saved from elimination of a data center.

- **Compare Alternatives** — compare “like” columns.
  Also, “do nothing” should be a consideration.

- **Report and Recommend a Plan of Action** — based on our analysis, allowing for the unexpected / risk assessment.

# Engineering-based Cost Estimate

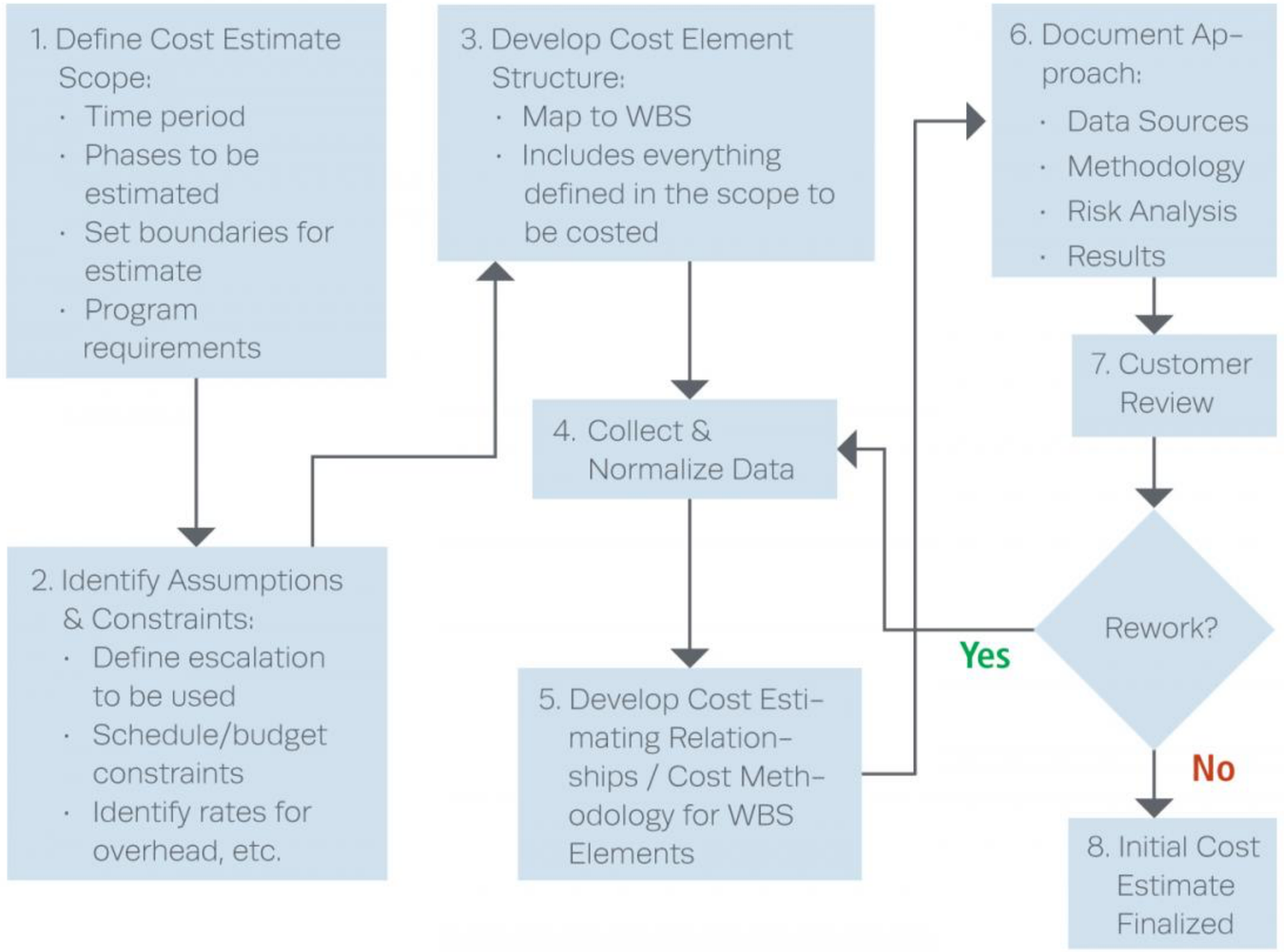
- Traditional method of developing cost estimates using a bottom-up approach that calculates cost and benefits at the lowest level of detail.

- This separates total products and services into individual components so that each unit is separate and distinct. The unit cost for each component is computed in order to arrive at a total material cost. A similar method is used for labor and other cost elements.

- The initial step is to define the possible scope of the cost model and the purpose for conducting the estimate.

- The scope determines the content of the cost elements that must be included in the model. Sources for scope definition of a program include the project management plan, the scope statement, the WBS, and any requirements documentation, etc.

# Crafting an Engineering-based Cost Estimate



# Identify Assumptions and Constraints

- Assumptions are statements that are used to limit the scope of the model. They are "givens" as opposed to "facts." They usually relate to a future occurrence and therefore contain uncertainty. Assumptions must be evaluated during sensitivity analysis.

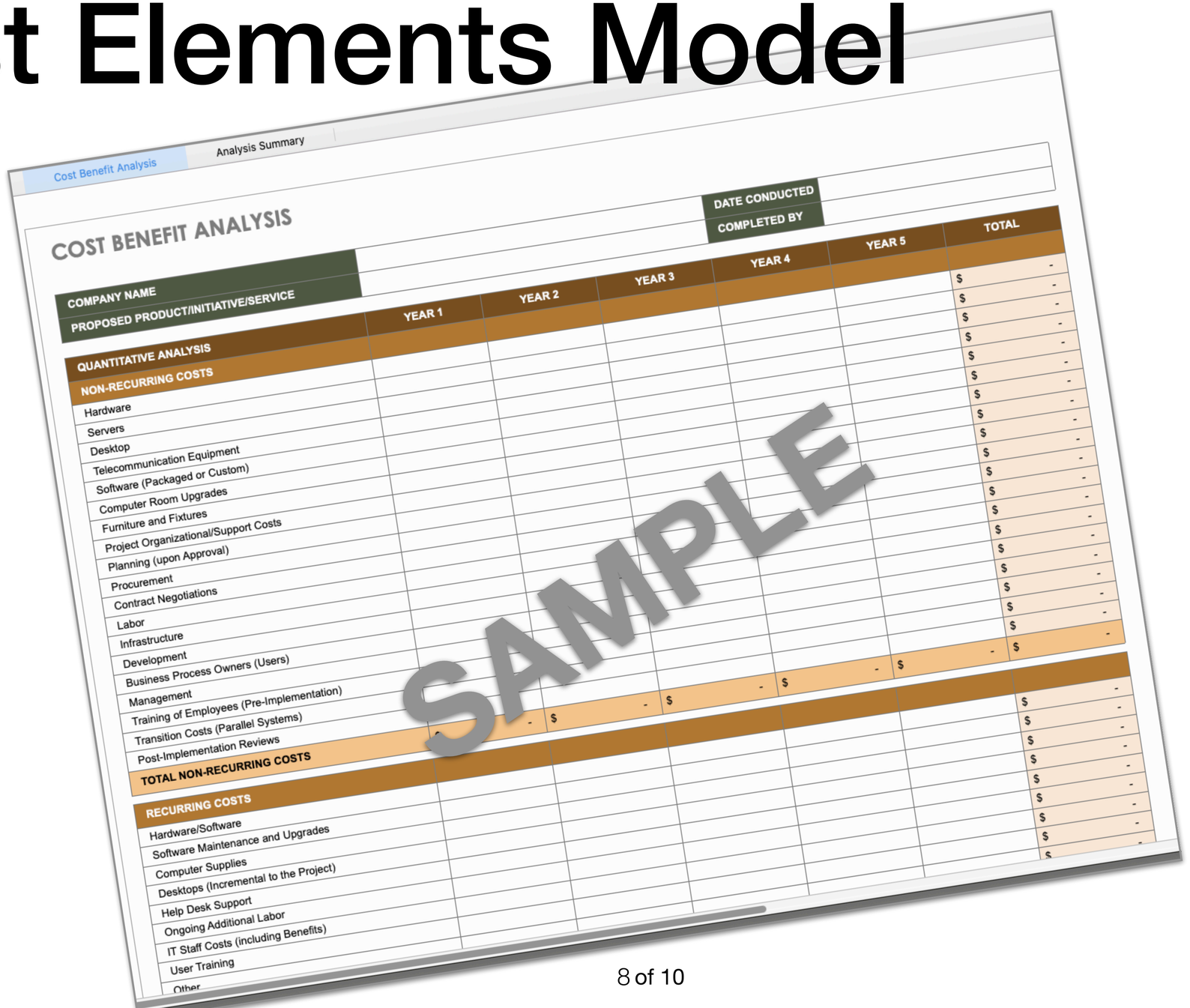
- Constraints are usually fixed, externally imposed boundaries such as schedule, policies, and physical limitations.

# Create Cost Element Structure

- The cost element structure looks like a chart of accounts, listing the possible categories of cost contained in the model.

- Each element must be defined so that all costs are covered without duplication within the structure.

# Cost Elements Model



Cost Benefit Analysis | Analysis Summary

## COST BENEFIT ANALYSIS

| | |
|---|---|
| COMPANY NAME | |
| PROPOSED PRODUCT/INITIATIVE/SERVICE | |
| DATE CONDUCTED | |
| COMPLETED BY | |

| QUANTITATIVE ANALYSIS | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 | YEAR 5 | TOTAL |
|---|---|---|---|---|---|---|
| **NON-RECURRING COSTS** | | | | | | |
| Hardware | | | | | | $ - |
| Servers | | | | | | $ - |
| Desktop | | | | | | $ - |
| Telecommunication Equipment | | | | | | $ - |
| Software (Packaged or Custom) | | | | | | $ - |
| Computer Room Upgrades | | | | | | $ - |
| Furniture and Fixtures | | | | | | $ - |
| Project Organizational/Support Costs | | | | | | $ - |
| Planning (upon Approval) | | | | | | $ - |
| Procurement | | | | | | $ - |
| Contract Negotiations | | | | | | $ - |
| Labor | | | | | | $ - |
| Infrastructure | | | | | | $ - |
| Development | | | | | | $ - |
| Business Process Owners (Users) | | | | | | $ - |
| Management | | | | | | $ - |
| Training of Employees (Pre-Implementation) | | | | | | $ - |
| Transition Costs (Parallel Systems) | | | | | | $ - |
| Post-Implementation Reviews | | | | | | $ - |
| **TOTAL NON-RECURRING COSTS** | $ - | $ - | $ - | $ - | $ - | $ - |
| **RECURRING COSTS** | | | | | | |
| Hardware/Software | | | | | | $ - |
| Software Maintenance and Upgrades | | | | | | $ - |
| Computer Supplies | | | | | | $ - |
| Desktops (Incremental to the Project) | | | | | | $ - |
| Help Desk Support | | | | | | $ - |
| Ongoing Additional Labor | | | | | | $ - |
| IT Staff Costs (including Benefits) | | | | | | $ - |
| User Training | | | | | | $ - |
| Other | | | | | | $ - |

SAMPLE

# Collect and Normalize Data

- Cost data is collected for all the elements within the model. Information from benchmark research and actual cost experience is used.

- The normalization process ensures that cost data are comparable. Cost data is used to develop equations that will be entered into the cost model. The equations are the basis for estimating costs as a function of system capacity and service level.

- The result of this step should be a point estimate of cost. Document each cost element, indicating the sources of data, assumptions used, and any equations used in the calculations.

- Also document any risk or sensitivity analysis that was conducted.

- Finalize the Model: Update the costs and benefits estimate to reflect new information.

# Three R's of a Credible Analysis

- **Replication**: The analyst must provide a sufficiently detailed audit trail, including clearly stated assumptions for each cost element, that would allow a third or external party to independently replicate the model.

- **Rationale**: The analyst should provide a convincing and justifiable rationale for the selection of key parameter values, labor estimates, cost factors, assumptions, and underlying inputs.

- **Risk**: The analyst will conduct risk and sensitivity analysis to assess the impact of the inherent uncertainty in input values.