

**AACE**  
INTERNATIONAL  
RECOMMENDED  
PRACTICE

**74R-13**

**BASIS OF ESTIMATE - AS APPLIED  
FOR THE SOFTWARE SERVICES  
INDUSTRIES**

**SAMPLE**

**AACE**  
INTERNATIONAL

AACE® International Recommended Practice No. 74R-13

BASIS OF ESTIMATE – AS APPLIED FOR THE SOFTWARE  
SERVICES INDUSTRIES

TCM Framework: 7.3 – Cost Estimating and Budgeting

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# BASIS OF ESTIMATE – AS APPLIED FOR THE SOFTWARE SERVICES INDUSTRIES

TCM Framework: 7.3 – Cost Estimating and Budgeting



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## INTRODUCTION

AACE International's *Total Cost Management (TCM) Framework* identifies a basis of estimate (BOE) document as a required component of a cost estimate. As a recommended practice (RP) of AACE International, the template outlined in the following sections provides guidelines for the structure and content of a cost basis of estimate specific to the software services industries (i.e. software development, maintenance & support, infrastructure, research & development, etc.).

This document is based upon AACE International Recommended Practice 34R-05, *Basis of Estimate* <sup>[1]</sup>. It identifies a basis of estimate (BOE) document as a required component of a cost/effort/duration estimate.

In the *TCM Framework*, the BOE is characterized as *the one deliverable that defines the scope of the engagement* and ultimately becomes *the basis for change management*. Note: In the software services industries, the term “engagement” is commonly used and synonymous with “project”. When prepared correctly, any person with (capital) project experience can use the BOE to understand and assess the estimate, independent of any other supporting documentation. A well-written BOE achieves those goals by clearly and concisely stating the purpose of the estimate being prepared (i.e. cost/effort/duration study, project options, funding, etc.), the project scope, cost basis, allowances, assumptions, exclusions, cost risks and opportunities, contingencies, and any deviations from standard practices. For software services the effort expended is the main driver for cost and duration. In addition the BOE is a documented record of pertinent communications that have occurred and agreements that have been made between the estimator and other stakeholders.

A well prepared BOE will:

- Document the overall engagement scope.
- Communicate the estimator's knowledge of the engagement by demonstrating an understanding of scope, quality and duration as it relates to cost.
- Provide a record of all the hypotheses and assumptions taken into account for deriving the BOE.
- Alert the stakeholder to potential cost risks and opportunities.
- Provide a record of key communications made during estimate preparation.
- Provide a record of all documents used to prepare the estimate.
- Act as a source of support during dispute resolutions.
- Establish the initial baseline for scope, quantities, effort, duration and cost for use in engagement control.
- Provide the historical relationships between baselined estimates throughout the project lifecycle.
- Facilitate the review and validation of the estimates.

This RP is intended to be a guideline, not a standard. It is understood that not all organizations that prepare estimates employ the same processes and practices, and therefore, may opt to use this information either in part or in its entirety. However, in all cases this RP supports creating consistent estimate documentation that provides a high degree of traceability and repeatability for the estimate.

## RECOMMENDED PRACTICE

The primary intent of this RP is to provide a guideline for the topics and contents to be included in typical BOE. However, before describing the template contents there are a few points of significance worth noting. A BOE should:

- Be factually complete, but concise.

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- Be able to support facts and findings (traceability).
- Identify estimating team members and their roles.
- Describe the tools, techniques, estimating methodologies, and data used to develop the estimates (repeatability).
- Identify scenarios and constraints that influenced the estimates.
- Identify other projects that were referenced or benchmarked during estimate preparation.
- Be prepared in parallel with the estimate.
- Establish the context of the estimate, and support estimate verification and validation (V&V).
- Qualify any rates or factors that are referenced either in the estimate or BOE; e.g. productivity can be expressed as either units/time (function points/hour) or time/unit (hours/function point).

The following describes the suggested topics and contents included in a typical BOE.

### **Purpose**

In this initial section of a BOE, the estimator should provide a brief and concise description for the total software architectural solution for the engagement. The types of services should be identified (e.g., new development, addition to existing, migration, infrastructure, etc.), as well as the type and capacity of the staffing, the location (onshore/offshore/mix), and the overall duration of the engagement.

### **Engagement Scope Description**

This section of the estimate basis should be organized to correspond with the engagement's product breakdown structure (PBS). The BOE should identify what is to be provided; how it will be provided; and the activities necessary to deliver it. It's also good practice to indicate the primary staffing roles that will be involved with the engagement. Be as thorough as necessary without being overly descriptive, so as to adequately explain the scope of work being estimated.

### **Methodology**

The BOE should indicate the estimating methodology/methodologies (functional size based, expert based, analogy based, process metrics based, parametric, etc.) used to prepare the estimate or components of the estimate. This should include documentation of the resources used to support the engagement, and any historical and/or benchmarking data that is applied. Documenting the level of effort or man-hours used in preparation of the estimate is also recommended.

Preferably apply metrics/units in the BOE that can be collected at the appropriate level of granularity during operation (control) and project/program closure.

### **Estimate Classification**

The AACE International estimate classification should be identified, along with reasons or justification used in the selection of the estimate classification. (See: AACE International Recommended Practice 17R-97, *Cost Estimate Classification System* <sup>[2]</sup>)