



# Requirements for Estimation Purposes

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## Instructor Introduction

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### Mr. William H. Roetzheim




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Leader in IT project modeling. Developed CostXpert. Co-Founded CostXpert Group. Author of multiple books, articles and columns. Regular lecturer at industry conferences. Extensive industry and government benchmark data.


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## Agenda

- Estimation concepts.
- Focused requirement analysis.
- Requirement analysis process.
- Supporting data elements.
- Cost analysis requirement document (CARD).
- Tips and Tricks.




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## Estimation concepts


- Good estimates are:
  - Accurate.
  - Comprehensive.
  - Credible.
  - Replicable and Auditable.
  - Timely.
  - Traceable.



Source: International Cost Estimating and Analysis Association (ICEAA)


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## Estimation concepts

- Cost estimating cannot:
  - Be applied with cookbook precision.
  - Produce results that are better than input data.
    - Garbage In, Garbage Out (GIGO).
  - Predict political impacts.
  - Substitute for sound judgment, management, or control.
  - Make final decisions.


 Source: International Cost Estimating and Analysis Association (ICEAA)


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## Estimation Concepts


- Determine estimate purpose.
- Define estimate boundaries:
  - Scope, time, exclusions, constraints.
  - Note that the estimate boundaries may be different from the project boundaries.
- If needed, create an estimate WBS:
  - Breakdown to apply estimation techniques.
  - Breakdown to support analysis and what-if.
  - Breakdown to support acquisition.
  - Breakdown to support Earned Value Management.
  - Estimation often aligns with control points in the WBS.

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# Estimation Concepts

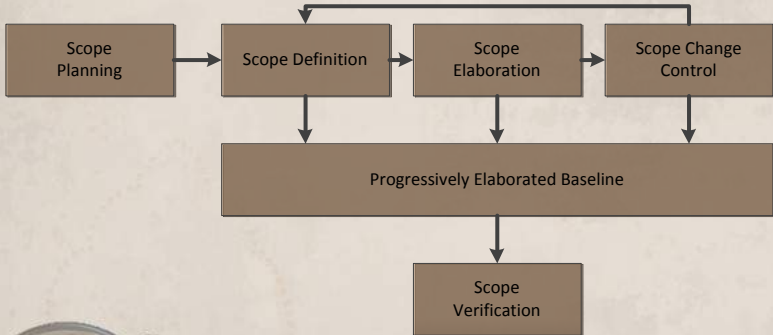
- Estimation approaches and applicability:
  - Catalog look-up.
  - Learning curve.
  - Analogy.
  - Parametric:
    - High level.
    - Parameterized catalog (High Level Objects, or HLOs).
  - Bottom-up.




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# Progressive Elaboration



```
graph LR; A[Scope Planning] --> B[Scope Definition]; B --> C[Scope Elaboration]; C --> D[Scope Change Control]; B --> E[Progressively Elaborated Baseline]; C --> E; D --> E; E --> F[Scope Verification];
```



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## Focused requirement analysis

- Three levels of requirement definition:
  - Business goals and objectives.
  - High level business requirements.
  - Technical requirements.





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## Focused Requirement Analysis

- Characteristics of good high level business requirements:
  - Unifying: Understandable to both business and technical stakeholders.
  - Deliverable focused, not activity focused.
  - Comprehensive: Capture all required delivered functionality.
  - Unique: Avoid redundancy.
  - Aligned: Provide an access point into the estimation methodology.




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# Focused Requirement Analysis

- Requirement components (may be inferred):
  - What must be delivered? How many?
  - Is this capability new, additional, enhanced, test only, or a repair?
  - How complicated or difficult is the thing being delivered?
    - For counts larger than 30, the central limit theorem can be applied and the values set to average.
  - As a minimum, high level requirements must form a basis for making informed assumptions about these elements.




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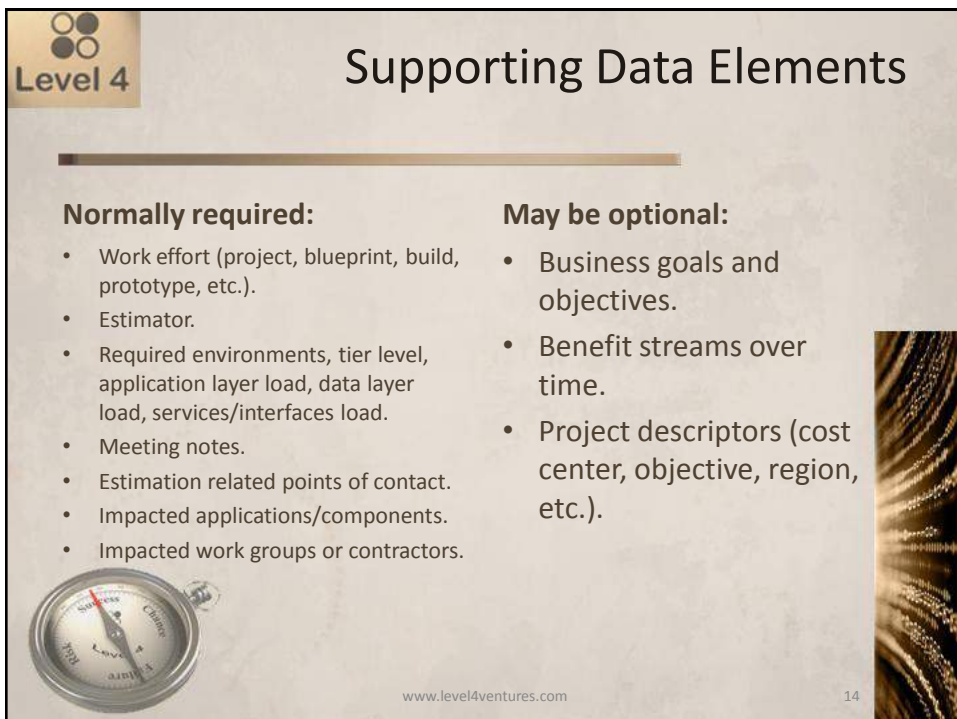
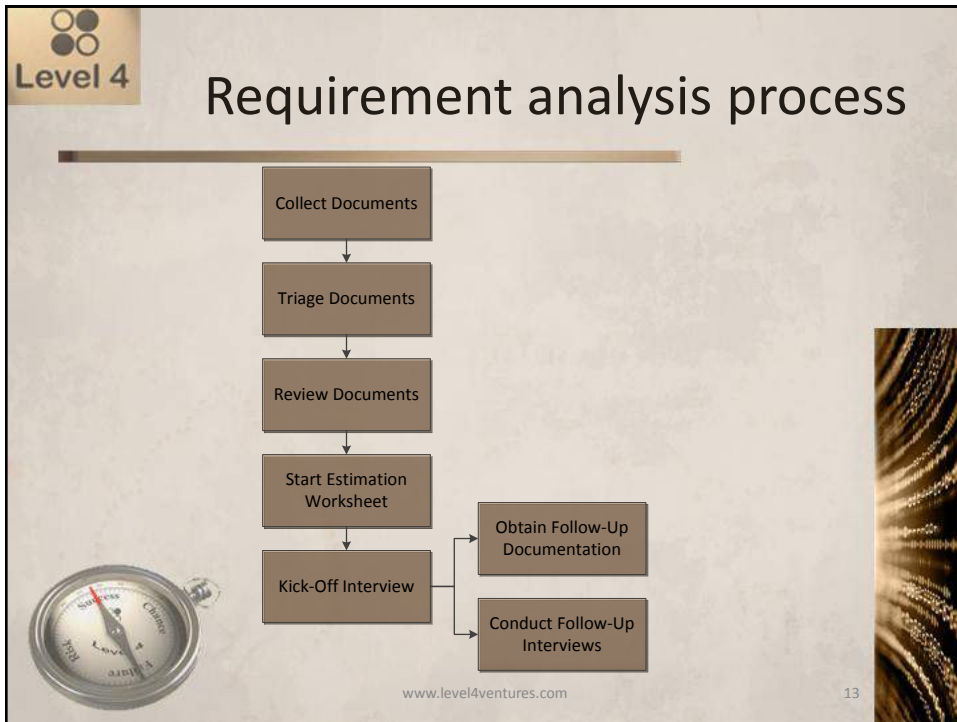
# Focused Requirement Analysis


## Some Estimation Catalogs

SAP	Demo-Financial	IVR
Other or Unknown	Unknown	Admin Screen
Batch	Batch/Service	Call Initiation
Business Requirement	Business Requirement	Call Tree Option
Configuration	Configuration	Interface
Defect	Consulting-Configuration	Report
Development	Consulting-Other	Security Profile
Interface	Consulting-Performance	Table
Report	Consulting-Security	Voice Message
Screen	Interface	Other IVR Work
Table	Page	
Workflow	Report	
Deployment	Software Application	
	Workflows	
	Other	
Agile	FFP	UML
Stories	Screens	Scenarios
	External Interface Files	Class-Control
	Reports	Class-Interface
	Messages	Class-Other
	Logical Internal Tables	Tables
		Methods




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## Cost analysis requirement document (CARD)

- Collects together the basis of the estimate.
- Value:
  - Credible.
  - Replicable and Auditable.
  - Traceable.
  - Supports updates to the estimate.




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## Tips and Tricks


- Team interview techniques.
- Estimating versus designing.
- Use the “sniff test,” but only at the end.
- When validating, focus on hands-on time at the component level.
- Accuracy versus precision.
- The wisdom of crowds.



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## Some case studies

- State of California
- Procter and Gamble
- Top 10 bank

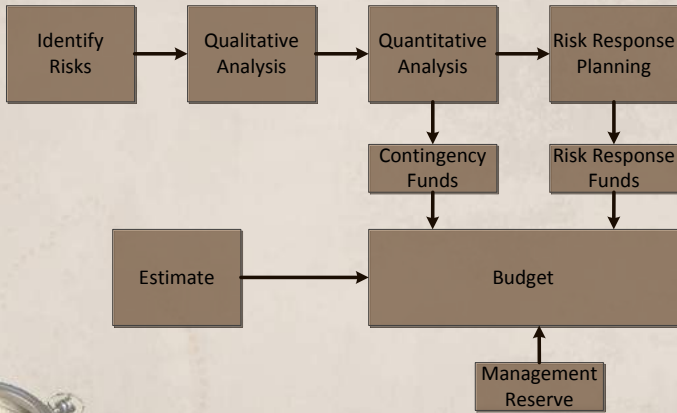


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## Project Risk Management



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graph LR; A[Identify Risks] --> B[Qualitative Analysis]; B --> C[Quantitative Analysis]; C --> D[Risk Response Planning]; C --> E[Contingency Funds]; D --> F[Risk Response Funds]; E --> G[Budget]; F --> G; H[Estimate] --> G; I[Management Reserve] --> G;
```



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# Interview Workshop

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# Questions? Feedback?

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