Level 4

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HYBRID PARAMETRIC ESTIMATION FOR GREATER ACCURACY

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Abstract

- With hybrid parametric estimation, a high-level-object, or HLO, catalog is created based on historic data to represent estimation components at different levels of granularity. An HLO catalog based approach is in between traditional parametric estimation and estimation using implementation metrics (e.g., SLOC/FP) in terms of both precision and required level of application design work. With hybrid parametric estimation we apply the statistical analysis and modeling techniques used for parametric estimation, but we look specifically for functional outcomes as our independent variables.

Bio

William (MBA, CCEA, PMP, RMP, CISA, CRISC, IFPUG) is one of the world's leading cost model development experts. He developed two commercial cost estimating tools, Cost Xpert and ExcelerTools. He has personally estimated over 500 information technology projects with a cumulative value over $7 Billion, including multiple states; 13 of the Fortune 100 companies; plus many Federal organizations. He has written 27 published books, over 100 articles, dealing with a variety of management and technology issues.

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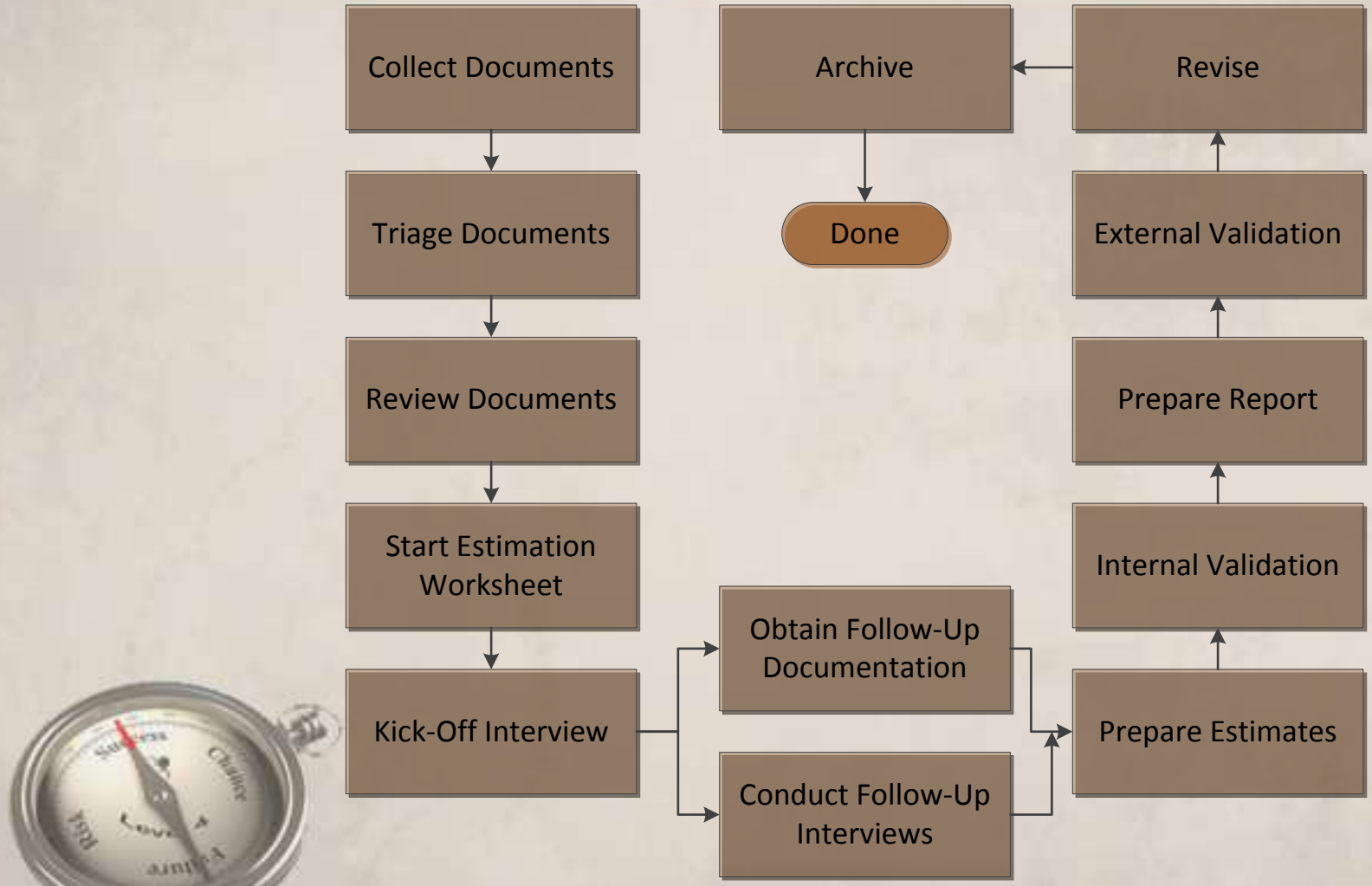
Estimation Approaches

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

Estimation Process



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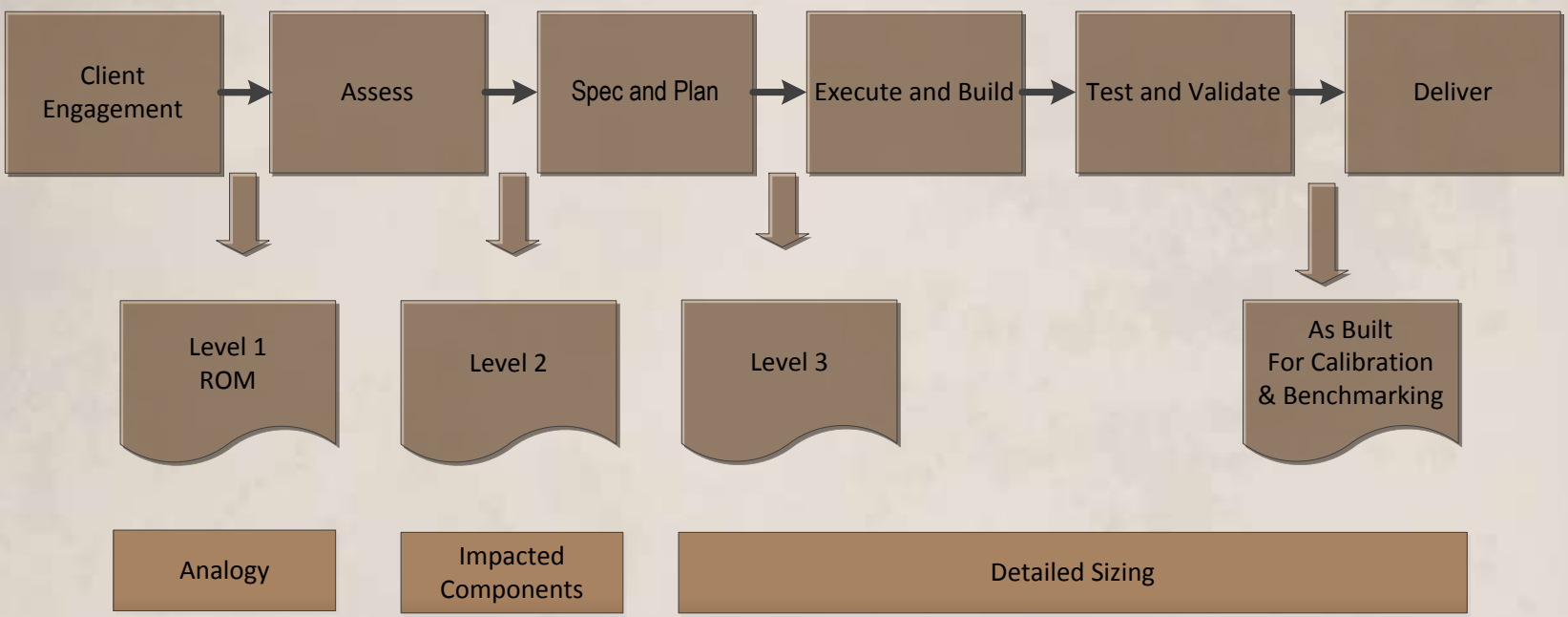
Estimating Lifecycle



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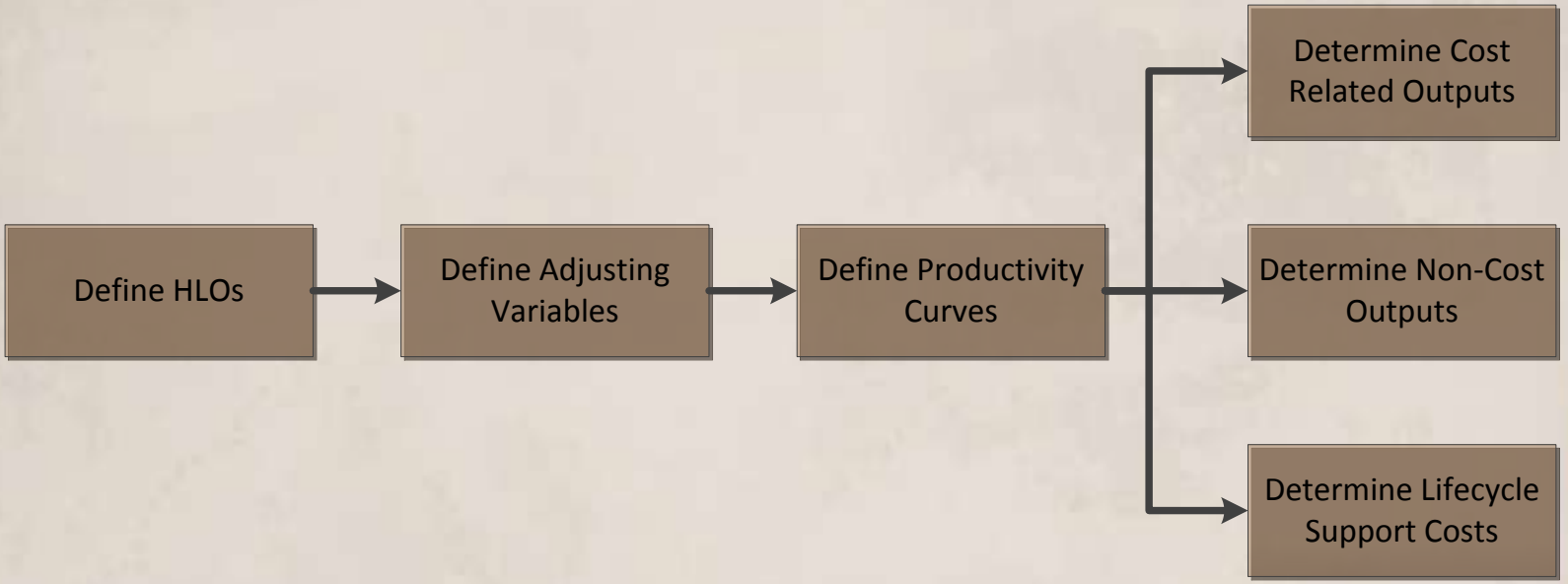
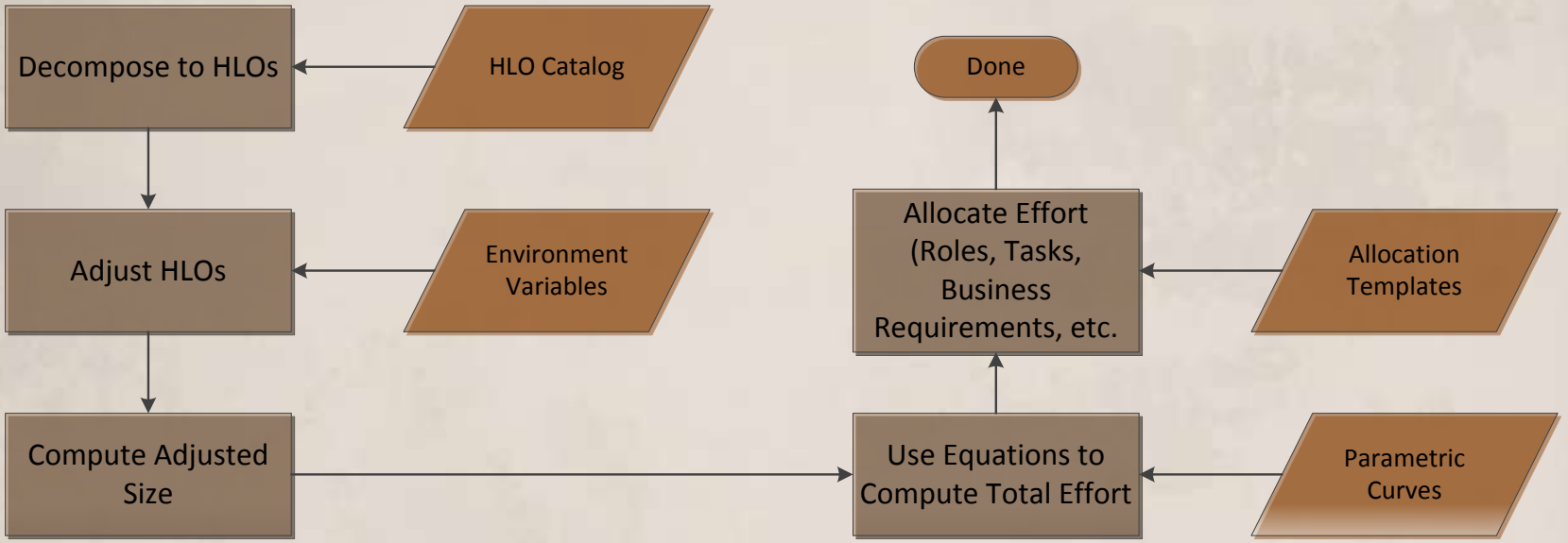
Core Estimating Concept



(True) Parametric estimation

- Description.
- Uses, advantages, disadvantages:
  - Dimensions: Accurate; Comprehensive; Credible; Replicable and Auditable; Timely; Traceable.
- Development of Cost Estimating Relationships (CERs):
  - Identification of independent and dependent variables.
  - Collection and clean-up of historic data.
  - Correlation analysis to identify adjusting parameters.
  - Regression analysis to identify core equations (often power function).
  - ANOVA to help fine tune the model.
- Applicability to non-traditional modeling:
  - IT acquisition timeline.
  - Benefits from taxation modernization.

Hybrid parametric estimation



Some HLO Catalogs

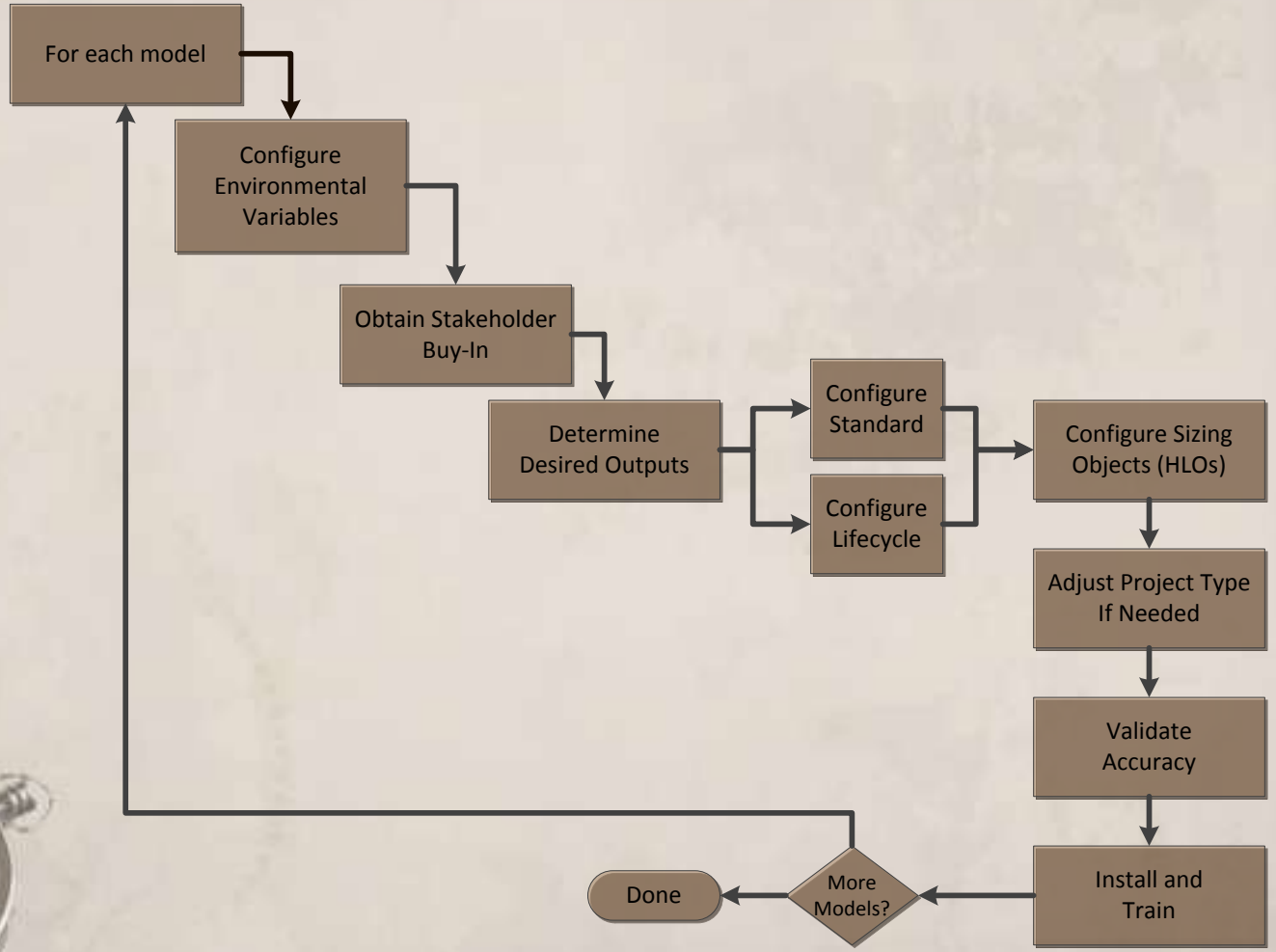
SAP	Demo-Financial	IVR
Other or Unknown	Unknown	Admin Screen
Batch	Batch/Service	Call Initiation
Business Requirement	Business Requirement	Call Tree Option
Configuration	Configuration	Interface
Defect	Consulting-Configuration	Report
Development	Consulting-Other	Security Profile
Interface	Consulting-Performance	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

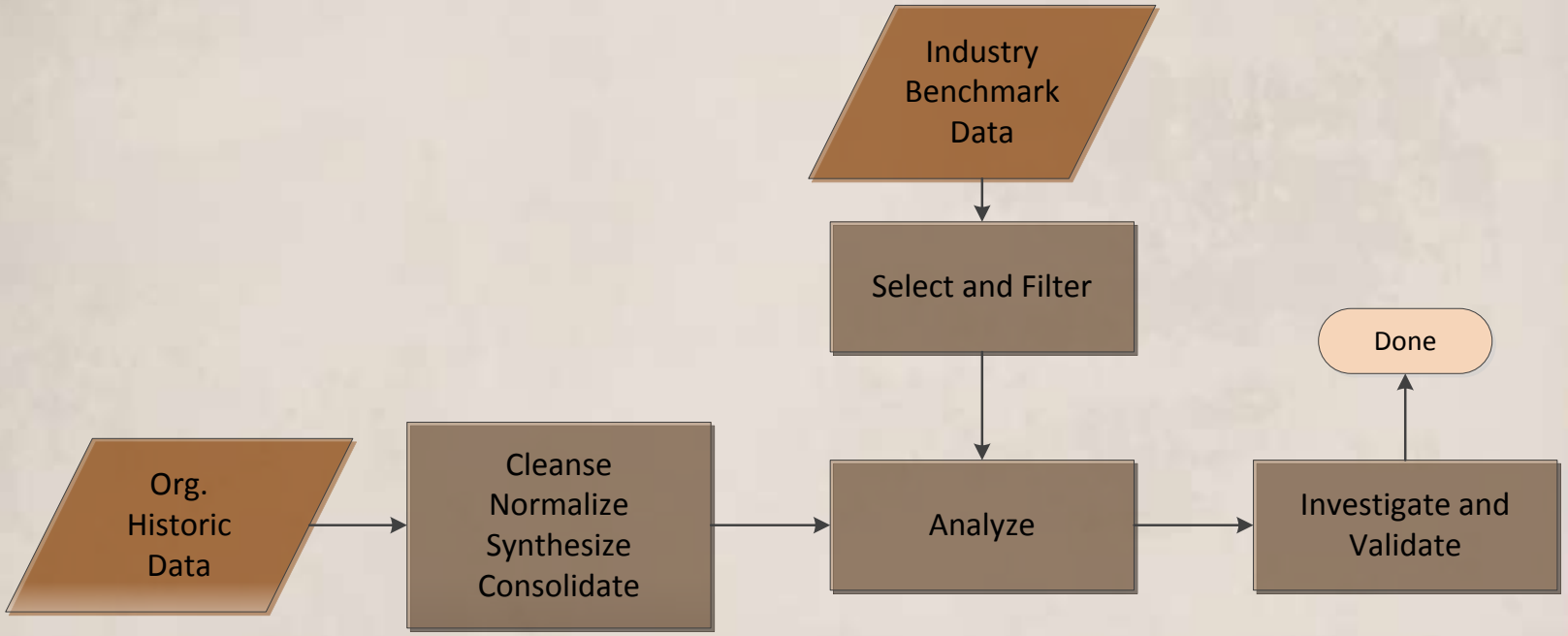
Hybrid parametric estimation

- Uses, advantages, disadvantages:
  - Dimensions: Accurate; Comprehensive; Credible; Replicable and Auditable; Timely; Traceable.
- May be used “out of the box” or configured:
  - Configuration advantages: Extend to new domains; improve accuracy; simplify use using preset variables.

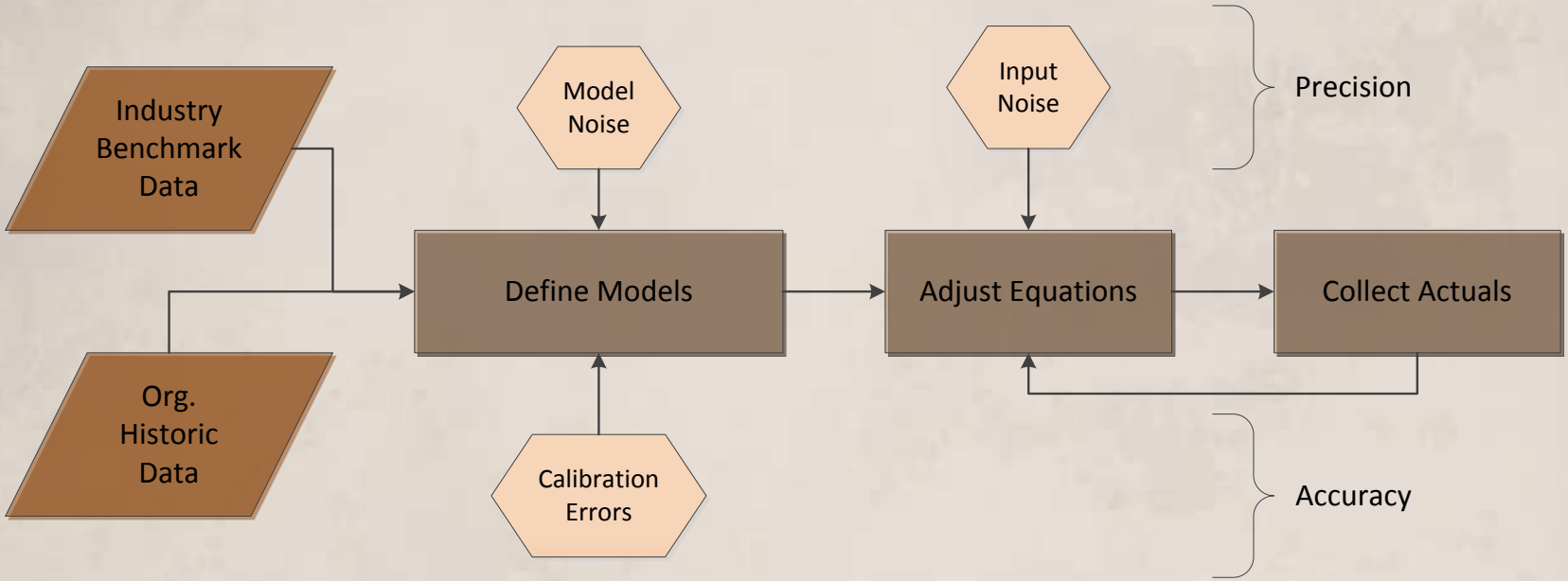
Validation and Deployment



Data collection and clean-up



Calibration



Under the covers

$$SU_n = Q_n * A_n * HLO_n * C_n * W_n$$

Where

Q = quantity
A = Area adjustment
HLO = HLO type multiple
C = Complexity adjustment
W = Work adjustment

$$SU_t = \prod_1^p E_s * \sum_1^n SU_n$$

Where

E_s = Environmental param size adjustment

$$Ph = \propto_t * \propto_w * \propto_l * \propto_a \prod_1^p E_\propto * SU_t^{\beta_t + \beta_w + \beta_l + \beta_a + \sum_1^p E_\beta}$$

Where:

Ph = Person hours of effort
$\propto_t$= Linear type multiple
$\propto_w$=Linear WBS multiple
$\propto_l$=Linear labor multiple
$\propto_a$=Linear artifact multiple
$E_\propto$=Environmental linear multiple
And β is the non-linear component of the above

Demonstration

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Demonstration