

Affordability & the Bid Process: How Collecting the Right Data Can Make us Leaner

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Data Collection Roadmap

- Raw data
 - Do we collect it?
 - Is it out there somewhere?
 - Is it usable?
 - Is it relevant?
- Estimating databases
 - For analogy – project level? Component level?
 - For derived metrics
 - For parametric models
 - For multiple purposes
 - One or many?



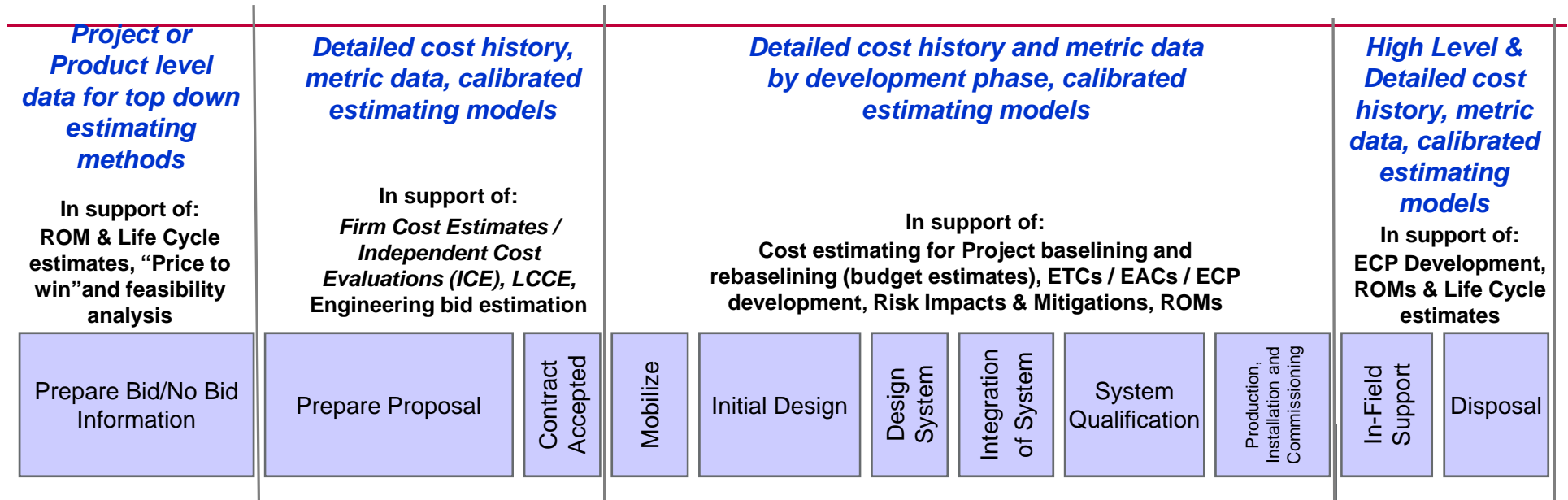
What data do we want?

- Within past 5 years
- Business we will be pursuing in the future (relevant)
- Data that is available
- Data from projects with cognizant personnel still available
- Contract restrictions on data use is understood

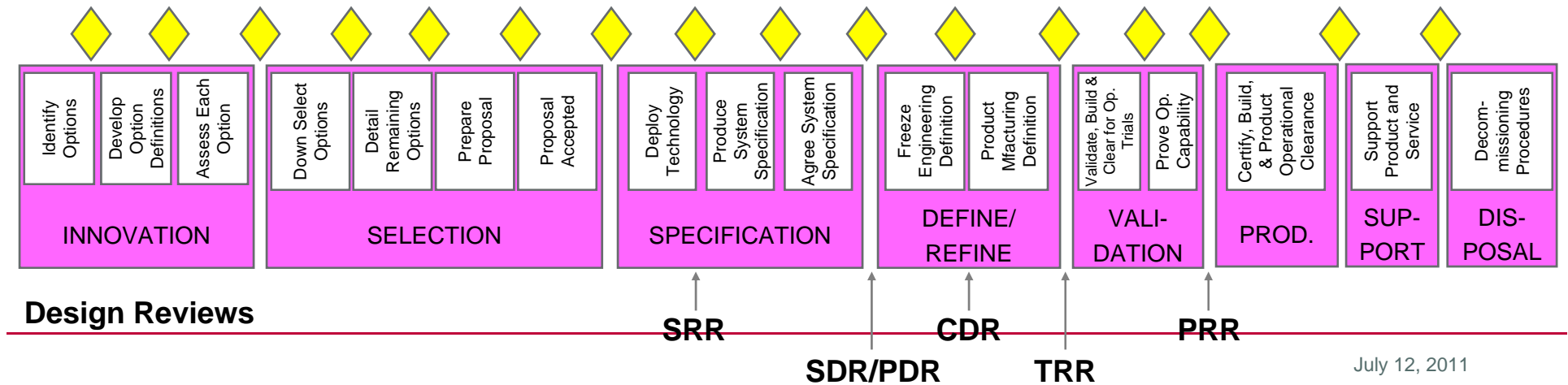
What do we want to use it for?

- Project level analogy
- Analogy at lower levels (product or component or CI)
- Derived metrics? Productivity metrics?
- To drive parametric models? Which ones?
- Sizing by analogy, estimating by parametric – database must support both methods
- Quick Look against Price-To-Win – what data does this require?

Data needs throughout the project lifecycle

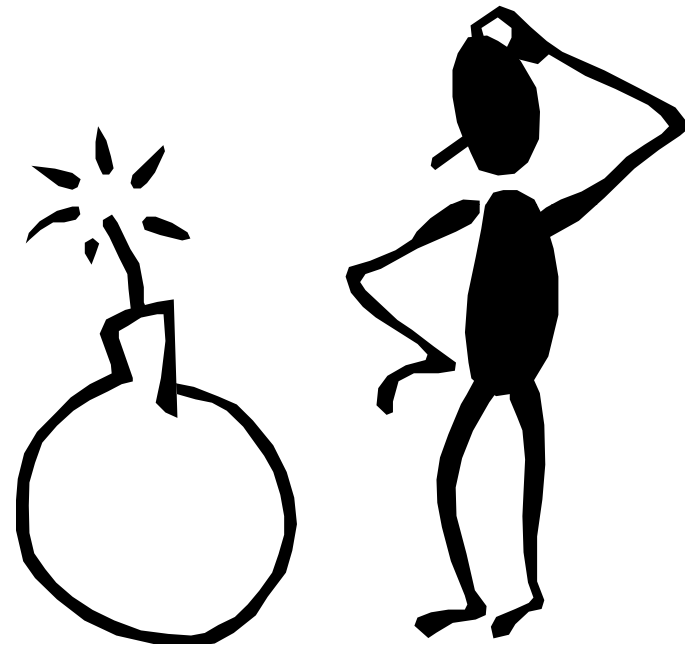


Phase Reviews at selected points



What are we starting with?

- Do you have the right data collected
 - Does it match the requirements?
- Does the WBS collect the data that you need for estimating?
 - Do projects adhere to the WBS?
- Cost history and metrics need to align with intended use
 - Don't need to collect everything possible
 - Some data is key to support estimating methodologies
 - Let use cases identify the data needs of your organization



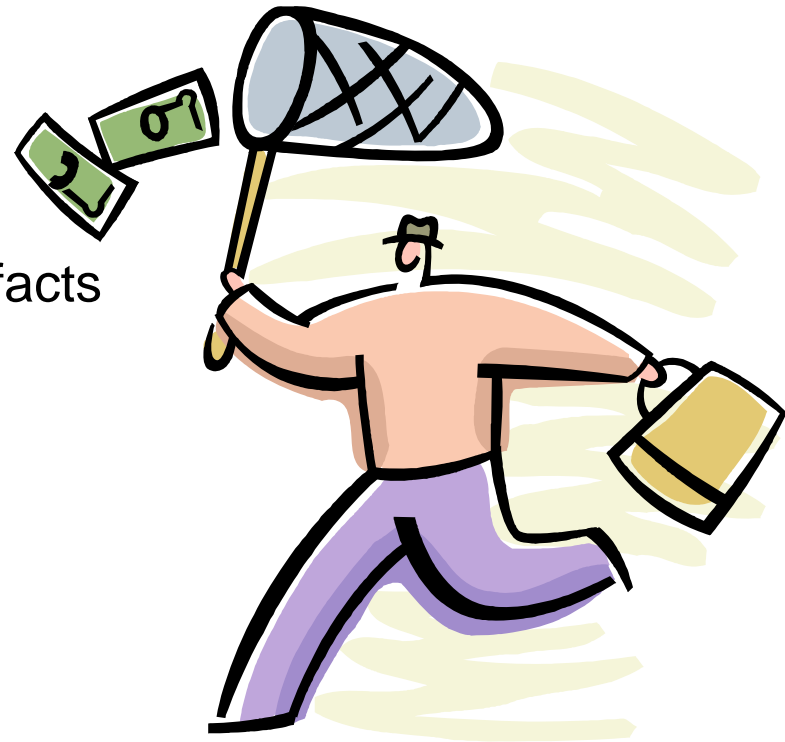
The Process - Designing the data access

- Levels of access:
 - Summary/Dashboard
 - Summary for the project
 - Detailed for the project
 - Combinations of data
 - Derived data
- Data Markings:
 - Are there any restrictions?
 - How many flavors?
 - No access
 - Limited permissions
 - No restrictions within RFP constraints
 - Unlimited permissions, no restrictions



The Process – Your data must have a gatekeeper

- Data review is critical
 - For consistency
 - For assumptions
 - For right level of detail
 - For nothing inappropriate
 - No finger pointing, just the facts



Derived metrics, which ones are useful?

- Average and standard deviation of:
 - Allocations by discipline (SW, HW, Systems)
 - Allocations by Engineering life cycle phase
 - Concept Definition, Design/Implement, Integration & Verification, Transition & Validation
 - Allocations by WBS elements
 - Top level only
 - Third level
 - All levels?
- Multiple program sets of data
 - Selectable
 - Entire DB segments



Partial/incomplete project data sets

- Are they still meaningful?
 - For life cycle phase information
 - In support of ETCs
- What do they tell us?
 - Compare against original estimate for phase
 - Estimate ETC and compare to total estimate
 - Early indicator of a cost overrun



Data output from the database

- What do we need for output?
 - Analogous program data sets
 - Derived metrics for analogous programs
- How will it be used?
 - In Basis of Estimate justification
 - Referenced by program task code
 - Referenced by bid code mix



Many uses.....

- Price to Win assessment
 - From an architecture diagram
 - “Building block” representation
 - Cost history must support this
 - Or Productivity metrics for common “blocks”
 - Also need factors for “support” activities
 - And don’t forget management
 - Does your project data collection support all these needs?

Parametric Models

- Existing models require specific input parameters
- Does project data collection include these parameters?
 - Part of closed loop metrics process
 - Painful to collect after the fact
 - Less complete, less accurate
 - Inherent in database, can be used for analogous sizing
 - Drives new inputs into parametric model with lower risk/variance

Parametric Models – the Trust issue

- General reluctance to trust parametric models
 - Bidding is too important to make a mistake
 - Don't understand how they work
 - Trust in “old ways”, bottoms up
- Suggest using as validation of estimate
- Baseline estimate using parametric, use it for iterations after that
- Cost savings from bottoms up iterations
- Use for analogy of input parameters, less risk in input assessments



Care and feeding of the database

- Aging of the program data
- Changes in data have to be propagated
- Populating is part of business rhythm
- Automated import of data to the extent possible
- Access control
- Communication/training
- Maintain experts at Org level
- Governance/ownership
- Sustained management championship and support – resources and funding



- **Questions?**

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