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Estimating Accuracy Improvement Strategies & Expected Results

- Presenter: Duane Eilers
- E:mail address: eilers@us.ibm.com
- Phone #: (312) 245-2049



Agenda

- Establish an improvement strategy
- Focus on both estimation and project execution
- Utilize an Automated Framework
 - Benefits
 - Count by Complexity with Effort Standards
 - Use Historical Information and Adapt to Needs
- Ensure Terminology is Understood
- Use Effort Adjustment Factors to Fine Tune
- Address Uncertainty
- Achievable Results
- Questions



Improvement Strategy

Attain Maturity:

- Implement size counting as per industry best practices (maturity)
- Build upon a research relationship (IBM Watson Labs/Academic Environment) to incorporate/validate new thought leadership and industry best practices

Reduce Variability:

1. Increase accuracy by establishing effort standards for estimating components
2. Reduce the number of people estimating applications

Capture Existing Knowledge - Leverage and build upon existing practices, knowledge and experience where possible

Assure Manageability - Utilize equivalency classes (e.g. billing, ordering, etc.) to handle multiple applications at a time, thereby reducing the number of estimating components requiring data standards

Perform Simplification:

1. Simplify the estimating process, but ensure process linkage
2. Consolidate and simplify documentation

Reduce Uncertainty - Focus on risk and incorporate risk into effort estimates

Increase Efficiency - Reduce the time to generate an estimate

Increase Coordination: Align changes to other process improvement efforts

Improved Communications - Ensure complete adoption, to include subcontractors, with all organizations and geographies working from the same list of drivers, same effort standards, and the same process



Accuracy is about the estimate and execution

Accuracy Capabilities to Evaluate:

- are there reasonable accuracy targets established?
- are you collecting actual hours accurately?
- are you able to evaluate actual hour investments by life cycle phase/activity?
- are you able to determine and explain variances in effort/productivity?
- are your project managers aware of their actual to estimate results and management's oversight?
- are you keeping historical estimating data?

Utilize an Automated Framework

An automated framework (tool) can help to:

- implement an efficient and automated process
- standardize the process
- ensure consistent output
- eliminate variability
- compress the time to generate the estimate
- determine and set effort standards
- reduce the manpower needs for estimating



Counting by Complexity with Effort Standards

COUNT BY COMPLEXITY - APPL1										
ESIMATING COMPONENTS/COST DRIVERS	Enter Quantity for LOW	Enter Quantity for MEDIUM	Enter Quantity for HIGH	Construct IMPACT (PW)	Description of Changes	Driver Assumptions	Driver Issues			
	LOW	MED	HIGH							
1 Driver 1 - New External Input	2.00	4.00	2	6.00	8.00	1. New rate adjustment screen and, 2. Discount matrix update screen				
2 Driver 2 - Change/Delete External Input	1.00	1	3.00	5.00	1.00	change to LIFO input screen				
3 Driver 3 - New External Output	2.00	4.00	6.00	1	6.00	New external report				
4 Driver 4 - Change/Delete External Output	1.00	3.00	5.00	0.00						
5 Driver 5 - New Logical Internal File	2.00	4.00	3	6.00	12.00	Changes require database table additions, and database restructuring of relational tables				
6 Driver 6 - Change/Delete External Interface File	1.00	3.00	5.00	0.00						
7 Driver 7 - New External Inquiry	4.00	2	8.00	12.00	8.00	New SQL scripts required for data search requirements				
8 Driver 8 - Change/Delete External Inquiry	1.00	3.00	5.00	0.00						
9 Driver 9 - Business Process Design	2.00	4.00	2	6.00	8.00	New business processes for loan processing required				
10 Driver 10 - Business Process Change/Delete	4.00	1	8.00	12.00	4.00	Rate change table could lead to note acceptance range elimination and process changes				
11 Driver 11 - New Business Scenario Design/Test	1.00	3.00	1	5.00	3.00	Test scripts are incomplete for new process updates and the system changes				
12 Driver 12 - External Documentation	2.00	1	4.00	6.00	2.00	A new user manual section will be required				
13 Driver 13 - Internal Documentation/Technical	4.00	8.00	2	12.00	16.00	Update existing technical documents for operations and maintenance support reflecting new reports				
14 Driver 14 - New Production/Operations Procedures	1.00	1	3.00	5.00	1.00	Change in batch processes will require operational schedule changes, which require coordination				
15 Driver 15 - Change/Delete Productions/Operations Procedures	2.00	4.00	6.00	0.00						
16 Driver 16 - New Business Rules	4.00	8.00	12.00	0.00						
17 Driver 17 - Change/Delete Business Rules	1.00	3.00	3	5.00	9.00	Review and update business decision matrix				
18 Driver 18 - Change Management Plan	2.00	1	4.00	6.00	2.00	Establish deployment plan inputs				
19 Driver 19 - Performance Monitoring Support	4.00	8.00	12.00							



Use Historical Information and Adapt to Needs

Microsoft Excel - Size_Model_Framework

File Edit View Insert Format Tools Data Window Help

Arial 10 B I U \$ %

Q27 =

1	1st Est											APPL1				1st Est			
2	T&C (0) DEVELOPMENT EFFORT											Enhancement							
3												Number of Components Impacted							
4	Total P05 & P06 Estimate in Person WEEKS											86.00							
5	Total P05 & P06 Estimate in Person HOURS											3,440.00							
6												Low				Medium			
7												7				15			
8												High				1			
9												Total				23			
10	Recommended % by Phase																		
11	Proj Effort											P01				P02			
12	HIGH											1.00%				6.00%			
13												13.00%				8.00%			
14												17.00%				23.00%			
15												18.00%				8.00%			
16												5.00%				1.00%			
17												100.00%							
18	Used % by Phase																		
19	Use Default %											1.00%				4.00%			
20												11.00%				9.00%			
21												18.00%				24.00%			
22												19.00%				10.00%			
23												3.00%				1.00%			
24												100.00%							
25	Total Application Technical Effort by Phase																		
26	PW											2.91				11.64			
27												32.00				26.18			
28												52.36				69.82			
29												55.27				29.09			
30												8.73				2.91			
31												290.91							
32	PH											116.36				465.45			
33												1,280.00				1,047.27			
34												2,094.54				2,792.72			
35												2,210.91				1,163.64			
36												349.09				116.36			
37												11,636.35							
38	Total Application IST Effort by Phase																		
39	PW																		
40																			
41																			
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Project Risk Factor 1.08

	PW		PH
Life Cycle Estimate	236.50	=	9,460.00
Additional Effort	4.00	=	160.00
Total Development Effort	240.50	=	9,620.00
12.0% Other Fixed Cost By %	28.86	=	1,154.40
Total Development & Fixed Cost Effort	269.36	=	10,774.40
Total Dev & Fixed Cost Effort with Risk	290.91	=	11,636.35
IST Costs	-	=	-
IST Costs with Risk	-	=	-
16.5% IBM PM & Project SQA By %	44.44	=	1,777.78
IBM PM & Project SQA with Risk	48.00	=	1,920.00
GRAND TOTAL Estimate	338.91	=	13,556.35

Please describe effort for Additional Effort (PW)

Qty 6 - Weeks of training time coverage for new project team staff.

Please describe effort for Other Fixed Cost %

Management Overhead

Please describe reason for PM & SQA %

Assumes 12% for Project Management and 4.5% for SQA

Project Info / Output / Application / 1st Est / 2nd Est / 3rd Est / Definitions / IST / Data /

Ready NUM

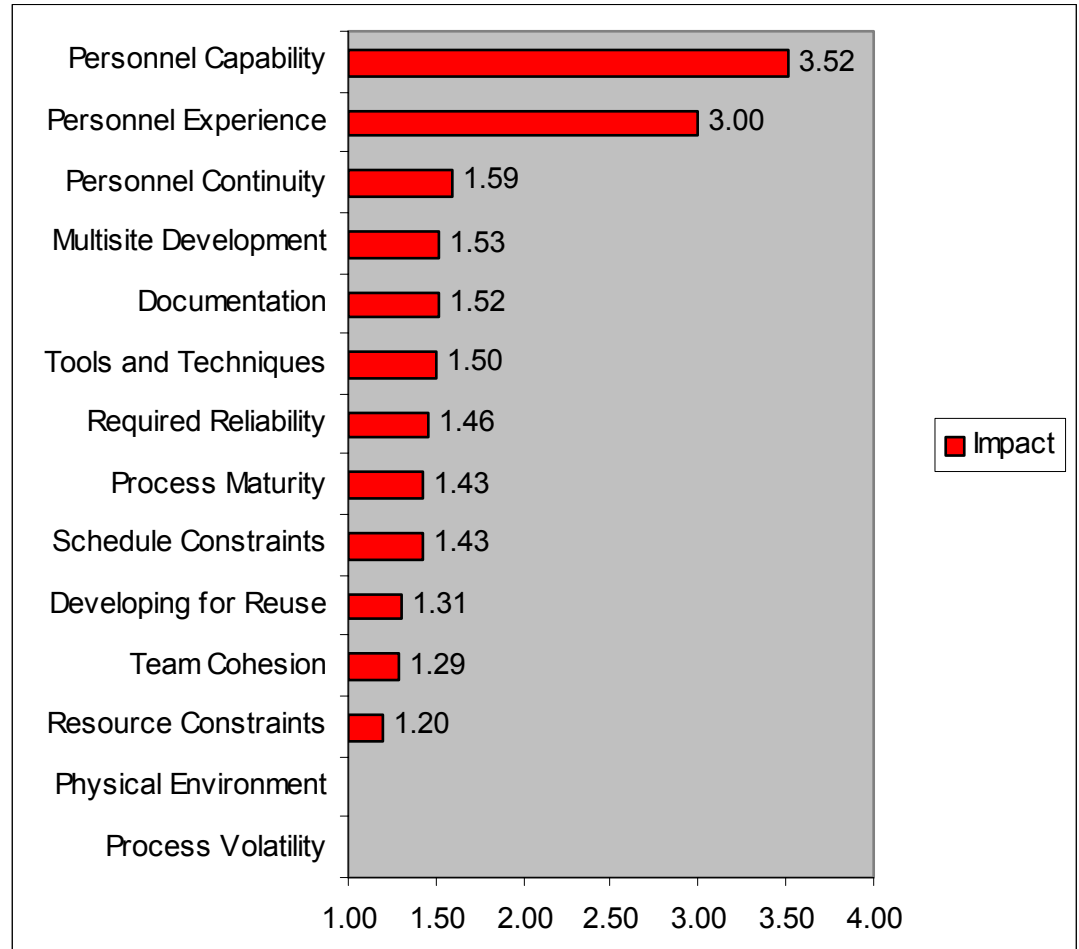
Assure the Terminology is Understood

- **Estimating Component** - Estimating components are the size and complexity “cost drivers” that determine the development effort and duration.
- **Size** – Project size is defined by the count of estimating components / cost drivers by complexity that are present in the solution for the application.
- **Effort** - The total number of person hours required completing a task, activity or project.
- **Size Model** – A MS Excel framework model, which contains the sizing and effort estimating process and the data standards to use for estimating an application within a grouping called an an equivalency class.
- **Equivalency Class** – A grouping of applications with similar business function, technology, solution components and work efforts to either develop, enhance or maintain. These applications are grouped together because they have common cost drivers / estimating components and effort standards.

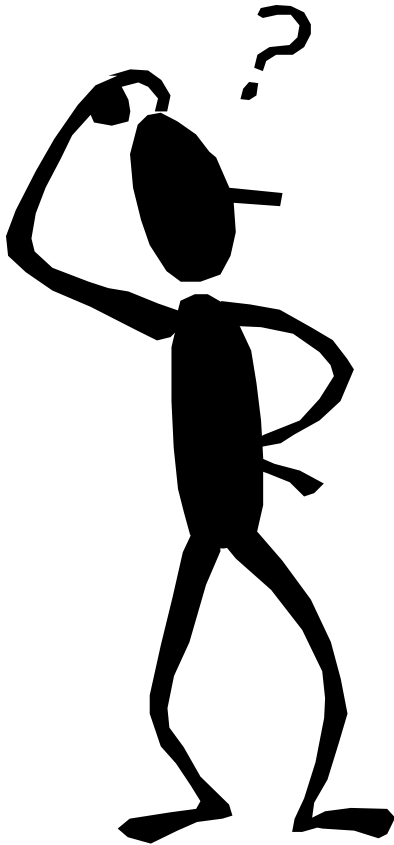
Use Effort Adjustment Factors for Fine Tuning

Industry Standard

Unique local factors



Address Uncertainty



- Make sure teams are discussing the correct things
- Uncertainty/risk can have major accuracy impacts
 - Too often the discussion is on the amount of effort, when the basic requirement is not understood or documented
 - Ensure a focus is put on assumptions, issues, and risks early
 - Factor your effort for risk, versus price; this ensures that the risk is addressed at the technical level
 - Establish a standard relationship between the risk score and set a effort multiplier for the levels of risk



Achievable Results – An Example

- In less than one year, an outsourcing contract moved from ~50% of all projects within +/-20% of estimate to over 88%
- Improved small project estimates from only 25% within the accuracy range, to over 80%
- Nearly 70% of all projects now complete within +/-15% of the estimate, and in the past month, 30%+ closed within +/-5%
- Key projects, the largest and most important to the customer in the past month all closed within +/-5% actual to estimate
- Process is stabilized and more efficient
- Customer satisfaction is rising dramatically
- Less call for detail reviews of estimates due to lack of trust
- The new framework took only three months to establish the new effort values for 45 different equivalency classes encompassing over 150 applications.
- The new framework and process was deployed within three months across a global environment with remote development centers

Q & A

