DACS ROI Dashboard

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DoD Data & Analysis Center for Software

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The DACS ROI Dashboard

- Objective: To provide for the DoD software engineering and acquisition community web access to and display of open/published benefits data on various software engineering improvements
- Build a community to help populate and evaluate data contents. Starts here
- A Work in Progress

Types of Improvements

- CMM Software Process Improvement
- Inspections
- Team Software Process (TSP)
- CMMI Process Improvement
- Reuse
- Cleanroom
- Personal Software Process (PSP)
- 14 others

What Benefits are Measured?...1

- Return on Investment (ROI)
- Impact on Quality
  - Defect Removal (% improvement, % removed)
- Impact on Development Cost
  - Typically stated relative to Productivity
- Cost of the Improvement
  - e.g., training costs, SEPG
- Impact on Schedule
  - Reduction in schedule
  - % milestones met
  - Cycle Time

What Benefits are Measured?...2

- Impact on Estimating Accuracy
  - Estimated vs. actual schedule, cost, productivity
- Impact on Customer Satisfaction
  - Award fee
  - Survey results
- Impact on Employee Morale
  - Staff turnover
  - Survey results
- Impact on Operational Performance
  - Did the improvement make the product more accurate?
- Lessons Learned

Sources of Data

- Data from 1999 “A Business Case for Software Process Improvement – Revised”
- IEEE Software
- IEEE Transactions on Software Engineering
- SSTC Presentations
- SEPG Presentations
- CMMI Tech Conference Presentations
- SEI CMMI Benefits Reports
- DACS Data Submissions

ROI Database Characteristics

	CMM Software Process Improvement	Inspections	Team Software Process	CMMI Process Improvement	Reuse	Cleanroom	Personal Software Process (PSP)	Peer Reviews	Continuous Quality Improvement	Best Practices	Software Process Improvement	Software Development Standards	Goal-Question-Metric	Product Line Development	Experience Factory	Facility Investments	Ada vs. Fortran	Mediocre vs. High Quality Teams	Orthogonal Defect Classification	Risk Management	Root Cause Analysis	Total
Number of Reports	**39**	**12**	**6**	**7**	**4**	**5**	**3**	**2**	**2**	**2**	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**95**
Quality	42	16	12	4	3	4	3	2	1	2	1	1	1		1		1		1		1	96
Development Cost	28	12	2	6	2	3	1	2	1	2	2	1	1	1		1		1				66
Return On Investment (ROI)	22	14	2	3	2	1	3	3	1	1	1	1	1									55
Cost of the Improvement	20	2	2	1	2	2	1	1			1		1									33
Schedule	20		1	3	1					1	1		1	1								29
Estimating Accuracy	9		11	1			1															22
Customer Satisfaction	6	1							1			1										9
Employee Morale	3	1							1			1										6
Operational Performance	1	1							1			1										4
Lessons Learned	1	1																		1		3
Total Benefits Observed	152	48	30	18	10	10	9	8	6	6	6	6	5	2	1	1	1	1	1	1	1	323

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Demo

General Data Issues for ROI Dashboard

- Most data skewed to CMM-type data. Hoping to find ROI type data on other software items (e.g., agile software development)
- Only successes/improvements reported. Few failures.
  - Exception w/o data: A. W. Florence, “What Worked at Level 3 May Not Worked at Level 4/5: Lessons Learned”. STC 2001.
- Some observations are vague
- Notional Data To Illustrate Model, Not Real Data
- Data not adequately defined/quantitative
  - “Near zero defects delivered”. B. K. Hilden, “A Successful Implementation of the CMM in a Very Small Company”. STC 2001.
- Benefits reported, but not cost of improvement
- Some report only averages. How can these be combined with case studies?
- Variability in units and definitions
- Inconsistent use of terms in reporting data