

# How To Estimate ROI for Inspections?

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## RETURN-ON-INVESTMENT (ROI) FOR INSPECTIONS

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\* DEVELOPMENT: The ROI for inspections is about six to one (6:1) if you ignore maintenance or total life cycle costs.

. . . . .  
Phased Return-on-Investment (ROI)  
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- . - It's good to model ROI after every software life cycle phase, software process, and activity (e.g., analysis, design, code, and test).
- . - This shows that we're smart software managers and we really know what we're doing, we use ROI for project planning and management, and we are of the "very" high-maturity variety.
- . - This shows that there is ROI for software process improvement (SPI), ROI can be achieved very early (in hours, days, and weeks), and software processes are measurable.
- . (Many still believe SPI has no ROI at all, has no early ROI, or its ROI is simply not quantifiable!)

\* MAINTENANCE: The ROI for inspections is about thirty-six to one (36:1) if you include maintenance or total life cycle costs.

. . . . .  
Cumulative Return-on-Investment (ROI)  
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- . - ROI figures based on total life cycle costs enable us to create "strong" business cases for justifying software process improvement (SPI) budgets.
- . - It's imperative to calculate total life cycle or maintenance costs to select development strategies which will maximize product success when complete.







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!
! * ADVANCED ROI FOR INSPECTION VS. TEST
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! . . . . .
!
! . Inspect 5 hr saved
! . BCR ----- = ----- = 7:1
! . Test .7 hr spent
!
! . Inspect 5 hr saved -.7 hr spent
! . ROI ----- = ----- * 100 = 614%
! . Test .7 hr spent
!
! . . . . .
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! * ADVANCED ROI FOR INSPECTION VS. MAINTENANCE
!
! . . . . .
!
! . Inspect 26 hr saved
! . BCR ----- = ----- = 37:1
! . Maint .7 hr spent
!
! . Inspect 26 hr saved -.7 hr spent
! . ROI ----- = ----- * 100 = 3,614%
! . Maint .7 hr spent
!
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!
! COMPARISON OF SOFTWARE PROCESS IMPROVEMENT (SPI) METHODS
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! * SOFTWARE PROCESS IMPROVEMENT (SPI): MODELING ROI
!
! . . . . .
!
! . ROI Comparison for Six SPI Methods
! . -----
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! . Lifecycle ROI Development ROI
! . -----
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! . Inspection 37:1 7:1
! . PSPSM 33:1 6:1
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! . Inspection 37:1 7:1
! . PSPSM 33:1 6:1
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!	. TSP <sup>SM</sup>	14:1	3:1	. !
!	. SW-CMM®	14:1	3:1	. !
!	. CMMI <sup>SM</sup>	11:1	2:1	. !
!	. ISO 9001	8:1	2:1	. !
!	.			. !
!	.	( <a href="http://davidfrico.com/sepg02pdf.htm">http://davidfrico.com/sepg02pdf.htm</a> )		. !
!	. . . . .			. !
!				. !

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! BOTTOM-LINE CONCERNING TOTAL LIFE CYCLE ROI !

! ----- !

! \* TOTAL LIFE CYCLE ROI IS NOT FUZZY MATH !

! . . . . . !

! . ROI estimates for total life cycle costs are well- . !

! . established methods within the U.S. DoD, and are . !

! . based on solid data, empirical relationships, and . !

! . valid mathematical equations. . !

! . . . . . !

! \* TOTAL LIFE CYCLE ROI ESTIMATES ARE NOT INCORRECT !

! . . . . . !

! . Total life cycle costs are based on estimating . !

! . statistical software defect populations through . !

! . software maintenance and retirement, and the costs . !

! . of removing software defects at various life cycle . !

! . stages. . !

! . . . . . !

! \* TOTAL LIFE CYCLE ROI IS NOT UNCONVENTIONAL !

! . . . . . !

! . While, total life cycle costs aren't typically . !

! . considered by most software organizations, they do . !

! . represent a higher-state of maturity and responsible . !

! . economic philosophy. . !

! . . . . . !

UNUSUAL RETURN-ON-INVESTMENT (ROI) PHENOMENON

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\* ROI OF INSPECTIONS DECREASES AS EFFICIENCY INCREASES

. . . . .  
. Ironically, the ROI of inspections actually decreases .  
. as inspection efficiency increases. That is, as .  
. inspections begin achieving world-class performance .  
. levels, they become so efficient, that testing and .  
. maintenance costs decrease radically, and thus .  
. decrease the magnitude of the benefits to costs. In .  
. other words, as the latent defect population is .  
. reduced by highly-efficient inspections, maintenance .  
. costs decrease radically, lessening the dramatic .  
. impact of inspections on total life cycle costs. .  
. .  
. (This is obviously a good problem to have, low ROI, .  
. but very low total life cycle costs!) .  
. . . . .

\* ROI OF INSPECTIONS INCREASES AS EFFICIENCY DECREASES

. . . . .  
. Conversely, as inspection efficiency decreases, that .  
. is, inspections detect fewer defects, the ROI of .  
. inspections increases radically. This is caused by .  
. the shift in latent defect populations to the testing .  
. and maintenance periods, where the cost of defect .  
. elimination is ten, to even a thousand, times more. .  
. Since testing and maintenance become so cost-prohibi- .  
. tive, the ROI of performing inspections increases .  
. radically, and makes for real good case studies on .  
. justifying costs of doing inspections based on ROI. .  
. .  
. ROI seems to have use in the low-maturity software .  
. organization that instinctually transfers its latent .  
. defect population into testing and maintenance. ROI .  
. may have very little usefulness to the high maturity .  
. organization that either prevents its defect popula- .  
. tion from occurring or removes it with very efficient .  
. defect-mitigating processes and tools! .  
. .  
. I designed some fascinating equations to model this .  
. most unusual phenomenon! .  
. .  
. But, not to worry, as most organizations are of the .





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