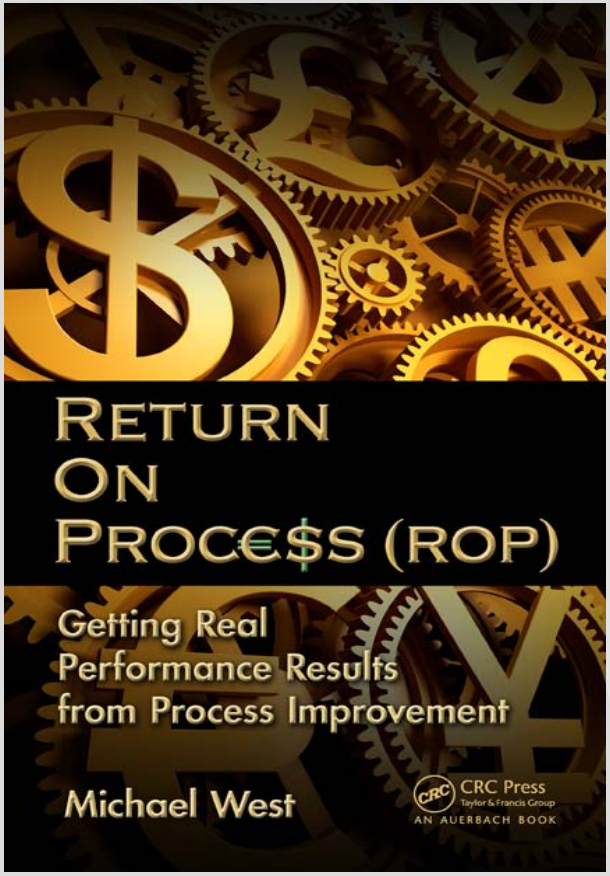
Return On Process (ROP):

Getting Real Performance Results from Process Improvement

Natural SPI

For in-depth information

Look for my new book in 1Q2013



Content

The Current State of Process “Improvement”

First, a Quiz – True or False

False If we achieve a CMMI maturity level, ISO/AS/TL registration, or ITIL certification, we have improved our performance.

False If we implement Lean or Six Sigma, we will improve our performance.

False We can improve our processes by writing better or more detailed processes and procedures.

False If we improve our processes, we will automatically see performance results.

False Implementing Agile will improve performance.

False Using models and standards is the best place to start with improvement efforts.

Why Do We Need ROP, and Why Now?

- Many of the giant financial institutions that would have collapsed in 08 and 09 without taxpayer bail-out had achieved CMMI maturity levels or SOX compliance … where was the performance?
- A giant auto maker – also bailed out – had achieved CMMI maturity levels for years … where was the performance … where were the controls?
- A major airframe integrator and defense contractor, with years of AS9100 registrations and CMMI maturity levels, has its multi-billion dollar contract cancelled by the Navy for lack of performance.

When business leaders invest in tools and technology, they closely track and watch for the return on the investment. When they invest – sometimes many millions – in process improvement, why does no one track the resulting performance results … the **Return on Process**?

What's Wrong with Models and Standards$_1$

Inherently, nothing. It's how people perceive or misperceive, or use or misuse them that is the problem:

1. Viewed as "requirements" or prescriptive instead of viewed as guidelines
2. Viewed as "best practices" without implementation context
3. Perceived literally instead of conceptionally or notionally
4. Used as a "test" instead of a measure
5. How models and standards are "sold" (see following slides)

What's Wrong with Models and Standards$_2$

It's how they are sold:

When the "benefits" of CMMI use are presented or published, only a subset of the entire set of possibilities are addressed.

	Successful organizations	Unsuccessful organizations
Organizations that use the CMMI	This is the subset of organizations touted to promote CMMI adoption.	What is the size of this subset relative to the superset?
Organizations that don't use the CMMI	What is the size of this subset relative to the superset?	What is the size of this subset relative to the superset?

Real Performance Improvement

What is “Performance” and ROP?

The amount of useful work accomplished by a system compared to the time and resources used.

“Better Performance” means more work accomplished in shorter time and/or using less resources.

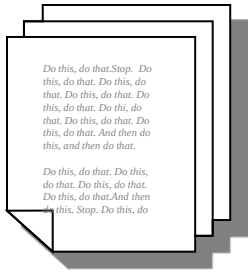
ROP = The value of “better performance” less the investment in process improvement.

Three Ways to Improve Performance$_1$

There are only three things you can change to improve business performance:

Improving skills, knowledge, and learning can affect productivity and quality.

Improving technology can affect delivery cycle time through greater automation and efficiency.



Improving processes can contribute to greater effectiveness, efficiency, and quality via process performance.

Three Ways to Improve Performance$_2$

Improvement Dimension	Possible Performance Improvement	Relationship to Other Ways to Improve
Improve people	Improving the knowledge, skills, and expertise of workers can enable them to perform tasks more effectively and efficiently. Systemic capture, analysis and dissemination of organizational learning and knowledge assets lowers knowledge and skill acquisition and replacement costs.	Process: Defined processes should accommodate user spectrum of novice performers and expert performers. Technology: Technology may need to be improved to not "dumb down" task performance for workers.
Improve technology	Introducing new technology or improving existing technology can automate information transactions and task performance, which can yield faster delivery of higher quality products and services.	People: Ironically, the reason many technology insertions/changes not only do not yield performance improvement, they often diminish performance because workers are not trained to use the technology effectively and efficiently. Improvement in technology almost always requires changes to worker knowledge and skills. Process: Defined and performed processes need to accommodate the use of the new or changed technology.

Three Ways to Improve Performance$_2$

Improvement Dimension	Possible Performance Improvement	Relationship to Other Ways to Improve
Improve process	An organization can improve performed processes, defined processes, or both. (See Chapter 2, Real Process Improvement.) Improving process can enable workers to perform tasks more effectively and efficiently to deliver higher quality products and services in shorter time frames and with less effort.	People: When processes are defined or reengineered, workers need to be educated in the use of the new or changed processes in order to perform them effectively. Technology: Process performance (per the defined processes) often incorporates the use of technology. Thus, impovements to processes often require concommitent changes to tools and systems that support process performance.

Learning What to Improve and Why$_1$

If I had an hour to save the world, I would spend 59 minutes defining the problem…and one minute finding solutions.
– Albert Einstein

Learning What to Improve and Why$_2$

The first step in performance improvement is learning or knowing what to improve, and why. Important considerations include:

1. What are the significant challenges or barriers to higher performance?
2. What needs improving the most: deliverable quality, delivery time, delivery cost?
3. If we don't improve anything, will we be better off, the same, or worse off in our market space?
4. How will the proposed improvement support our strategy(ies)?

Learning What to Improve and Why$_3$

Current Problem or Risk	Candidate Improvement Areas
Diminishing revenue	Competitiveness Market/customer base Marketing, branding, or eminence Value proposition Product market life
Diminishing profit or shareholder value	Revenue Market space/customer base Operating or product realization efficiency
Diminishing capacity	Leadership Workforce skills, morale, or incentives Cost of labor Cost of capital Operating efficiency or efficacy Throughput Technology Process efficiency or efficacy Regulatory compliance

Learning What to Improve and Why$_4$

Almost any change will drive some amount of change to people, technology, and process. However, the organization should focus the improvement where it expects to get 80 of the percent performance results – people, technology, or process.

- **People:** If the performance objectives and measures indicate the greatest improvement gain will come from increasing the knowledge, skills, expertise, or motivation of workers, then focus the improvement on people.
- **Technology:** If the performance objectives and measures indicate the greatest improvement gain will come from technological changes or improvement (i.e., automation), then focus the improvement on technology.
- **Process:** If the performance objectives and measures indicate the greatest improvement gain will come from process improvement, then focus the improvement on process.

Learning What to Improve and Why$_5$

The place for best practices in performance improvement:

Capability segment	Improvement focus	The place for best practices
Differentiation: Capabilities that set your organization apart from all others in your market space.	Innovate	
Core: Capabilities critical to your business but are not your source of competitive advantage; includes areas of work such as product development, service delivery, customer support, sales/marketing and business development.	Automate Simplify Outsource	Improve technology Improve process Improve people
Support: Capabilities necessary for running your business yet are not your core business. This includes areas such as IT, HR, finance, legal, security, facilities, and operations.	Eliminate Minimize Outsource	Improve process Improve process Improve people

Extrapolated from Stephen Shapiro's Innovation Targeting Matrix in Best Practices Are Stupid.

Establishing Performance Objectives

After establishing what performance to improve and why, the next step is to establish performance objectives. Criteria for performance objectives or goals include:

- The goal supports the organization's strategy and vision
- The goal is aligned with the organization's core business and core competency
- The goal is achievable and neither unrealistic nor mediocre
- There is a consensus understanding among the goal stakeholders of the meaning of the words used to define the goal
- Achievement of the goal is measurable and/or observable
- The goal identifies what must be accomplished and perhaps why, but not how
- The goal can be communicated, and can be easily articulated by everyone in the organization
- This goal can be prioritized with other goals
- The business benefit(s) resulting from the goal's achievement can be identified and articulated
- The products or deliverables that would result from goal achievement can be identified

Measuring Performance$_1$

Things to keep in mind when you plan and define performance measures:

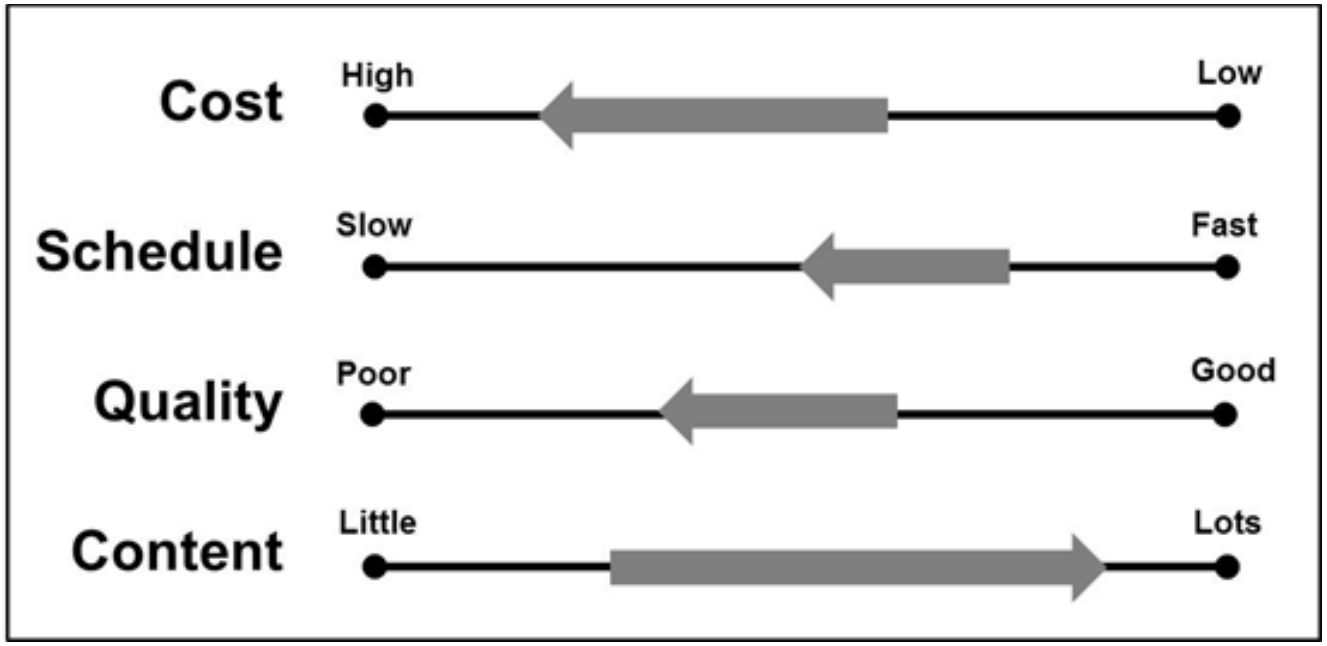
- "Success" is never one measure or indicator.
- What gets measured, gets attention. Or, what you measure or reward is what you get.
- Take a contextual, wide perspective view of performance measures.
- The act of measuring or observing can affect what is being measured.

Measuring Performance$_2$

Picture of gate agents at airport checking bags for free

Measuring Performance$_3$

Example of context-based performance measurement – the effects of increasing product or release content:



Measuring Performance$_2$

Before you implement an improvement, know what to observe or measure to determine the extent of the improvement.

Project Performance	Product Performance	Process Performance
Cost (CPI) Schedule Earned Value Cycle time Scope management	Quality Functionality Maintainability (and MTBF) Safety Security Unit Product Cost Shelf-life Market life	Efficiency Efficacy Billable : Overhead ratio (or Direct : Indirect) Productivity Tailorability/Scalability Adoptability Adaptability Extensibility Queuing / wait or lag time Redundancy

Measuring Performance$_3$

After establishing performance objectives, the organization should define the performance measures to be collected, reported, and analyzed. A robust measurement specification defines:

- Measure ID
- Measure name
- Performance objective(s) supported
- Measure type (process, product, project)
- Description
- Measurement level
- Source
- Collected by and how
- Calculations (for derived measures and indicators)
- Preferred analysis technique
- Reported to and how

Real Process Improvement

Real Process Improvement$_1$

Achieving real process improvement involves:

1. Establishing process performance objectives that align with and support business performance objectives.
2. Improving the performed process.
3. Improving the defined process.
4. Synchronizing the performed and the defined process.

Real Process Improvement$_2$

Example of aligning process performance objectives with business performance objectives:

Sample business performance objective	Candidate processes performance improvement
Deliver customer fixes and enhancement requests faster	Requirements development process Project scope management process Product design and development processes Product release and delivery process
Reduce call-to-closure service request lapsed time by 20 percent	Help-desk processes Call transfer and escalation processes Call record capture processes and tools
Reduce the cost of learning (COL) by 10 percent per year	Lessons-learned process Lessons-learned capture and access process Training acquisition and delivery process
Increase name and brand recognition by one million customer potentiates per year	Content management process Employee brand promulgation process Media content development and delivery process

Real Process Improvement$_3$

Define the relationship between the process improvement and the expected performance improvement.

Process Improvement	Expected Business Performance Improvement	Relationship
Improve project risk management practices	Projects perform within estimated budgets	Effective risk management practices can mitigate the impact of risks that cause over-spending
Define test procedures	Reduce the number and density of defects in released products and subsequently increase customer satisfaction	Missed or incorrectly performed steps in testing causes product defects to go undetected
Develop a standard for product requirements and use that standard to review requirements	Reduce the cost associated with rework in product design and development	Design and development rework has been attributed to poor requirements
Introduce standards for conducting meetings	Reduce operating costs	There is waste/loss cost associated with meetings that do not result in defined decisions, actions, or outputs
Implement an organization-wide lessons learned	Reduce operating costs	There is signficant waste/loss cost associated with individuals and teams relearning things that have been previously learned by others

Improving the Defined and the Performed Process$_1$

Understand the relationship between the performed process and the defined process:

Many organizations spend hundreds of thousands or millions of dollars improving their defined (written) processes. But the only aspect of process that provably affects performance is the performance of the process.

Process performance can be improved irrespective of how it is defined, or even if it is defined.

Improving the Defined and the Performed Process$_2$

Understand the relationship between the performed process and the defined process:

Simply improving the defined processes doesn't necessarily improve performance. However, we can positively affect business performance dimensions such as throughput, efficiency, efficacy, and product quality **if the following conditions are true:**

1. Our process representations (defined processes and assets) enable efficient and effective process performance, **and if**
2. There is high fidelity between the performed process and the defined process, **and if**
3. The affects of skill or technology changes on performance are negligible.

Improving the Defined and the Performed Process$_3$

Three ways to improve the performed process:

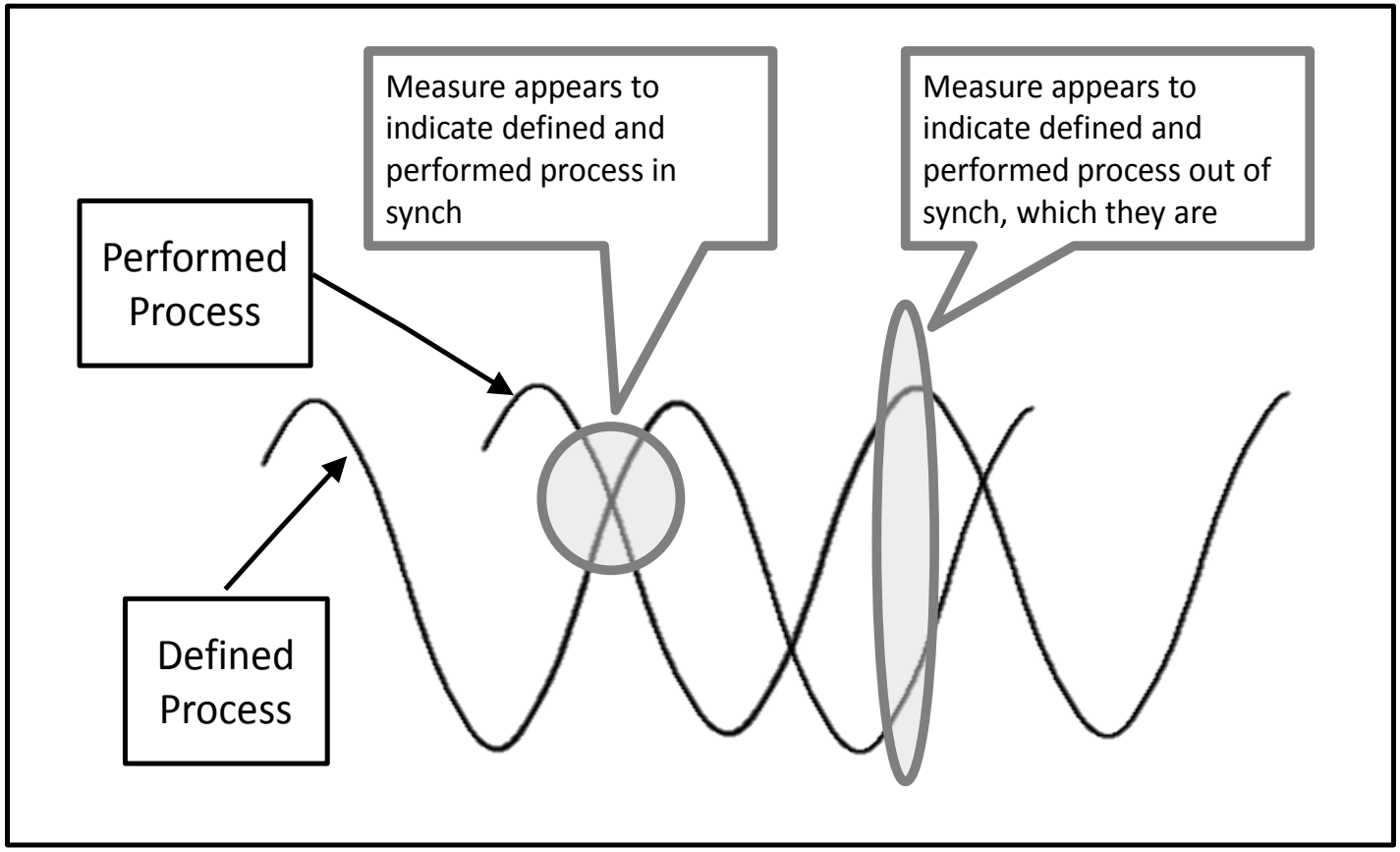
1. Accelerate process performance
   - Reduce process performance tasks or steps
   - Reduce lag or wait-states
   - Implement parallel or concurrent process performance
2. Improve process performance efficacy
3. Improve performed process output quality
   - Preventive quality
   - Corrective quality

Improving the Defined and the Performed Process$_4$

Improving the defined process involves:

1. Treat the process as a product
2. Build the process for its users
3. Design the process for the way users work
4. Establish process design standards
5. Provide meaningful process tailoring

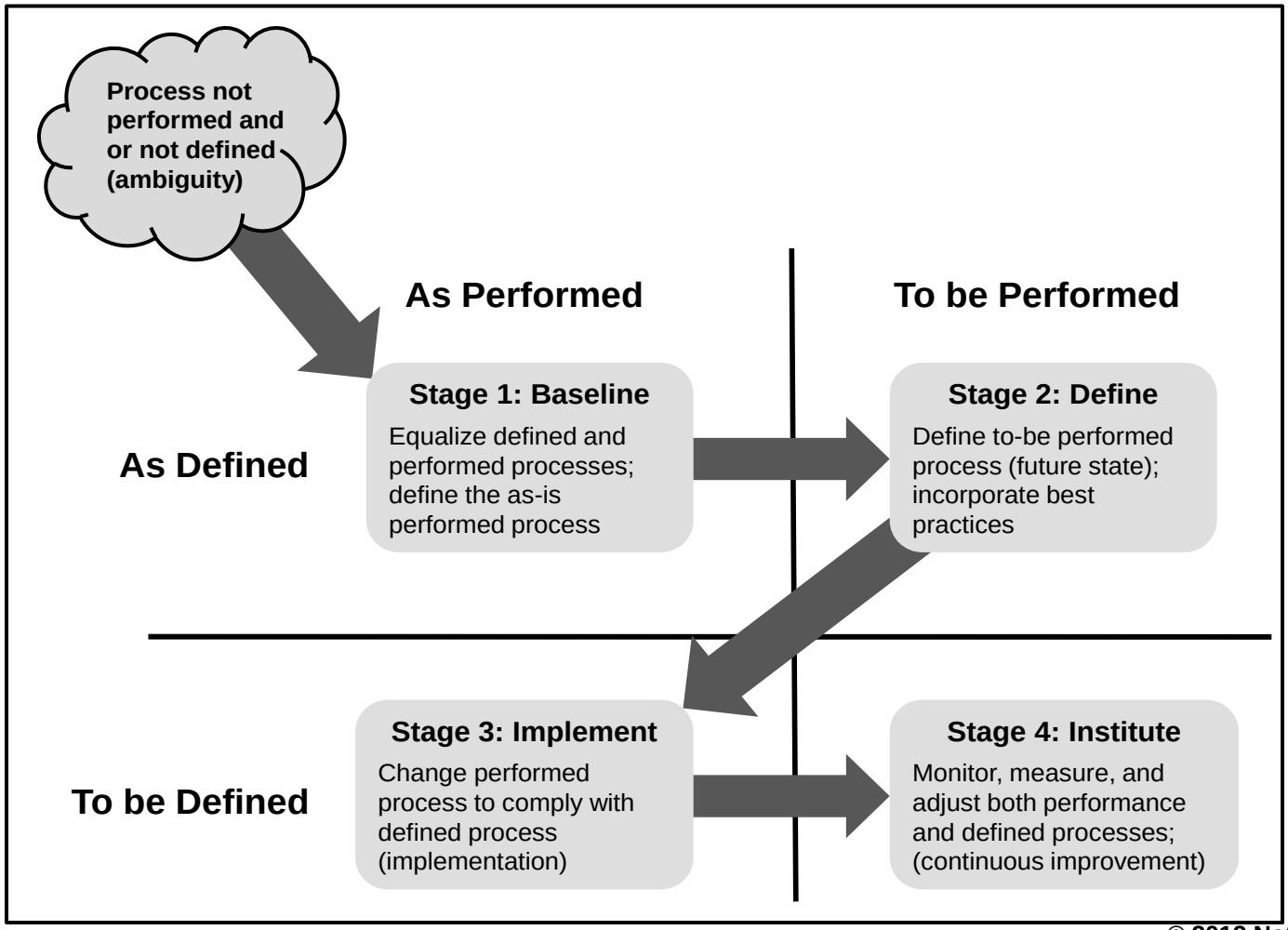
Synchronizing the Defined and the Performed Process[1]



Before you can improve process performance by changing the defined process, you first need to determine the fidelity between the defined and the performed process. **SCAMPI appraisals and ISO/AS audits won't necessarily do this!**

Synchronizing the Defined and the Performed Process$_2$

The illustration below shows a natural evolutionary path to synchronizing the defined and the performed process.



Getting the Return On Process (ROP)

Getting the Return on Process $(ROP)_1$

Realizing the return on process improvement (ROP) involves:

1. Measuring the effects of changes to the performed process
2. Measuring the effects of changes to the defined process
3. Valuating the effects

Measure what you changed.

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Getting the Return on Process $(ROP)_2$

Example of making changes to the defined and performed peer review process:

Peer review performance dimension	Baseline (before improvement implementation)	Performance (post improvement implementation)
Average number of peer reviews conducted per project	8	14
Percentage of peer reviews conducted on requirements work products	2 percent	18 percent
Percentage of peer reviews conducted on project planning work products	3 percent	14 percent
Average number of peer review iterations on the same work product	2	1
Average number of defects detected in peer reviews	35	47
Percentage of technical or content defects detected in peer reviews	11 percent	45 percent

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Getting the Return on Process $(ROP)_3$

Example of making changes to the defined and performed peer review process:

Peer review performance dimension	Baseline (before improvement implementation)	Performance (post improvement implementation)
Percentage of technical or content defects detected in peer reviews	11 percent	45 percent
Defects removed in first peer review of a work product as a percentage of all defects eventually removed through all iterations	65 percent	85 percent
Average peer review effort per reviewer (planning, conduct, and follow-up defect removal)	5.5 hours	6.2 hours
Average number of people involved in a peer review	4.8	3.5
Average downstream savings per defect removal	No baseline; will estimate based on peer review literature and benchmarks	

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Getting the Return on Process $(ROP)_4$

Example of measuring process efficacy improvement:

Process efficacy improvement	Post-improvement measure
Work necessity	Tasks/steps that were not performed but needed to be performed and associated waste, rework or lost value Tasks/steps that were performed but were not needed an associated waste
Work results	Effort and cost saved not performing actions that do not result in creation or change of state of work products Value of work products created or changed resulting from actions performed that previously did not yield results

Getting the Return On Process

Small Changes, Big Performance Improvement

Small Changes, Big Performance Improvement[1]

Not all improvements have to be grandiose, sweeping changes. Using the "tyranny of numbers" principle, a performance improvement that results from one person or one team implementing even a small change multiplies by the number of people, teams, or occurrences of change. Small changes that yield big performance improvement include:

- Use 20 to do the 80
- Making meetings work
- Involve the right people for the right work at the right time
- Learn one, learn all
- Do only what really needs to be done (and no more)
- Make decisions once and make good decisions
- Do less to do more

Small Changes, Big Performance Improvement$_2$

Example* savings using "Signature" feature in MS Outlook.

Organization Size (# of employees)	Daily Savings (person-hours)	Quarterly Savings (person-days)	Annual Savings (person-days)
50	2.5	17.6	70.3
100	5.0	35.2	140.6
500	25.0	175.8	703.1
1000	50.0	351.6	1,406.3
10000	500.0	3,515.6	14,062.5
100000	5,000.0	35,156.3	140,625.0

An organization with 100,000 employees could save 625 person-years per year!

* Detailed scenario provided in book: Return on Process (ROP): Getting Real Performance Results from Process Improvement

About Natural SPI

Natural SPI …

- Is a small, woman-owned process and performance improvement consultancy founded in 2001
- Is a Software Engineering Institute (SEI) Partner for SCAMPI appraisal services and Introduction to the CMMI training
- Integrates customer improvement efforts based on the CMMI, Lean, Six Sigma, balanced score card, PMBoK, and ITIL
- Employs a virtual office model for greater flexibility and responsiveness to customer needs at a cost-effective price
- Has extensive, hands-on process and performance improvement experience (not just a “talk-shop”)
- Principal Michael West is author of Real Process Improvement Using the CMMI (Auerbach, 2004), and Return On Process (ROP): Getting Real Performance Results from Process Improvement (to be published by CRC Press 1Q2013)

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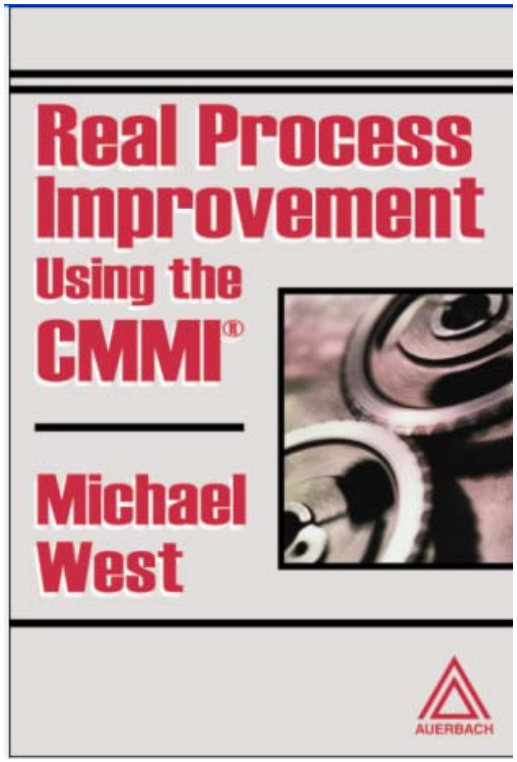

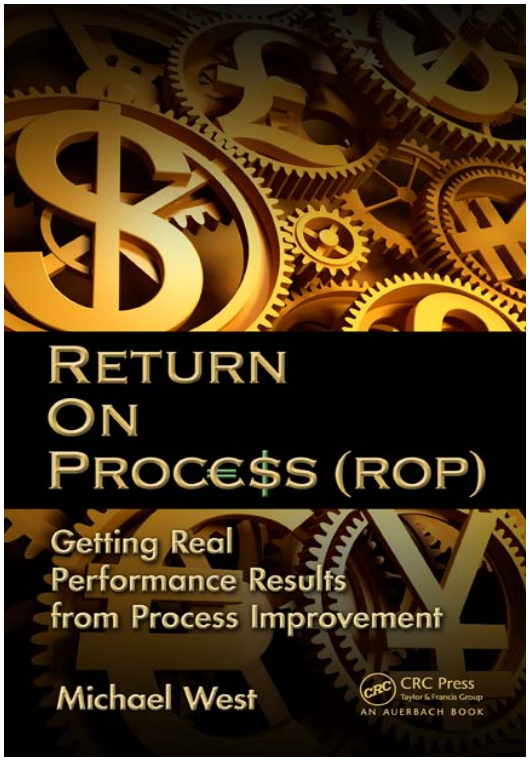

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Questions and Discussion