A Process Improvement Commentary

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This commentary provides some observations regarding process improvement (PI) throughout the past 20 years, offering views related to process models and standards, organizational change, and the PI practitioner.

During the past 20 years, I have worked as a PI practitioner, educator, trainer, consultant, manager, community leader, standards integrator, model builder, and assessor in industry, academia, applied research, and various governments in the United States, Europe, and the Middle East. None of the following comments should be attributed to any particular organization or group I have worked with or for, but represent my synergized views derived from these experiences.

That said, basically the past 20 years have seen the launching of the entire PI field. I have chosen to focus on just a few major themes, although there are several others that could be explored. However, I will restrict myself to some observations in the following three areas:

1. Process models and standards.
2. Organizational change.
3. The PI practitioner.

Process Models and Standards
The Beginning
Let us start with a look at what can be considered the major catalyst for PI: the inception and development of process models, standards, and frameworks. Beginning in the late 1980s, several now-influential process models and standards were born.

For example, we have witnessed the launching of capability maturity models, starting with early work on the Capability Maturity Model® (CMM®) for Software (SW-CMM®) in the late '80s; the International Organization for Standardization (ISO) 9000 Quality Management Systems (1987); the Information Technology (IT) Infrastructure Library (ITIL, late '80s); the Malcolm Baldrige National Quality Award (1987); the ISO/International Electrotechnical Commission (ISO/IEC) 15504 Process Assessment (Software Process Improvement and Capability dEtermination [SPICE], early 1990s); the Internal Control Integrated Framework (1992); the ISO/IEC 12207 – Software Life Cycle Processes (1995); and the Control

Objectives for Information and related Technology (1996).

Internationally, the ISO and IEC created a joint technical committee in 1988 to strive for standardization in the field of IT. This committee now has several subcommittees and working groups.

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Proliferation
The past 20 years have seen not only the inception but the expansion and evolution of many standards, models, and frameworks in a host of fields. For example, starting with the SW-CMM, the movement to codify process knowledge in the form of a capability or maturity model has exploded to the point where there may be hundreds of such maturity frameworks in existence.

Many other models and standards have been developed through national and international standards bodies, industry, universities, research organizations, and diverse professional communities and societies. We now have a plethora of models, standards, appraisal/assessment meth-

ods, and PI approaches that we did not have 20 years ago.

It is important to note that some models and standards that deal with a particular discipline may be mutually supportive and provide guidance at different levels of granularity. However, many are process standards that are at the same or similar level of abstraction with frequent content overlaps but different structures and terminology.

Confusion
What has transpired as a result of all these models and standards? As a student of these endeavors, I have found that each offers guidance useful from the perspective of the model developer, and that these individual efforts have resulted in an immense collection of useful, important, practical guidance. I encourage our professional colleagues to continue to codify good/best practices.

But I am also saddened by the so-called *model wars* that seem to arise as a result: the politics, the competition, the confusion, and the expense that multiple isolated standards can cause.

This is not necessary. We need to rectify these problems for the benefit of our PI customers and the PI community. Such an abundance of disconnected models and standards might impede the adoption of any improvement efforts at all. We in the model-building community need to take heed.

There are several things we have been doing and can do regarding this situation, including model integration, harmonization, and providing guidance for model builders.

Integration and Harmonization
The model proliferation problem was recognized by the late '90s, and efforts were launched to integrate various models. Initial model integration efforts resulted with the release of the Federal Aviation Administration's (FAA) initial integrated Capability Maturity Model (iCMM) in 1997 (integrating the software acquisition, software, and systems engineering CMMs), and with the CMM Integration[SM] (CMMI®) initial release in 2000 (integrat-

ing the software, systems engineering, and integrated product development CMMs).

Both of these model integration initiatives continued to evolve. The iCMM approach has been to extend beyond CMMs by integrating several ISO standards, the Baldrige award, and several safety and security standards into a single integrated model. Meanwhile, the CMMI initiative chose to provide different models for different disciplines resulting in CMMI for development, CMMI for acquisition, and CMMI for services under construction. These multiple CMMI models, or constellations, share common material and a common structure.

Examples of some other integration efforts include the Trillium model, an early effort to embellish the SW-CMM with other standards for telecommunication software product development; the Integrated System Framework, especially intended to reduce costs of appraisals versus multiple standards/models; the Enterprise IT Capability Model, a research project integrating several models; and several initiatives, mostly software or IT specific, within the ISO/IEC 15504 SPICE community.

We also have instances of model builders collaborating that we might mirror. For example, iCMM and CMMI stakeholders collaborated in developing safety and security extensions intended for use with both models. Safety and security experts also collaborated to integrate and harmonize several safety and security standards in this effort. The ISO systems and software lifecycle standards builders are seeking to harmonize their efforts.

Guidance for Model Builders

We need to encourage the codification of good/best practices in many disciplines and domains but we also need to provide guidance for these initiatives. I suggest model builders follow the international requirements for process models as set forth in ISO/IEC 15504 (SPICE). I further invite the experts developing these models to join forces with the Enterprise SPICE initiative (in the following section) so that their discipline-specific efforts can be integrated into Enterprise SPICE and, thus, be made available for use across enterprises internationally.

What Is Next?

In the global arena, the multiple standards problem has been recognized as needing international attention. This resulted in launching the Enterprise SPICE initiative to develop an integrated standards-based model as part of the ISO/IEC 15504

product suite. Enterprise SPICE will provide a single, standards-based model addressing major activities performed across a typical enterprise. It will not be sector-specific and it can be used selectively according to the business objectives of the enterprise.

The Enterprise SPICE model will include all disciplines and source models already integrated into the iCMM and will consider other integrated standards and frameworks that have been developed in Canada, Brazil, and across the global community for the initial baseline model.

Initial decisions for scoping beyond the previous disciplines have been made by the Enterprise SPICE Advisory Board based on analysis of stakeholder inputs. The initial Enterprise SPICE release will also address, at a minimum, service management, human resource management,

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financial/investment management, knowledge management, environmental standards, and other potential disciplines still under discussion.

Organizational Change

Now let's consider the customer: the organizations and enterprises that the models and standards are developed for to help them be more successful. What has been happening over the past 20 years?

Mixed Adoption

As the standards, models, and frameworks mature, their acceptance continues to rise. Organizations are, to varying degrees, adopting standards, implementing good practices, getting certifications, being audited and appraised, addressing compliance issues, addressing requirements for levels and certifications, improving performance, and measuring the results of improvement activities.

PI is rarely a smooth journey, however. Tides continue to rise and fall, and even though great gains are made and improvements are believed to be institutionalized, management changes and reorganizations may sweep it all away or,

worse yet, try to tear it all down. Change is difficult. Managers may prefer the status quo that led to their success, workers may fear layoffs, and rewards may be based on putting out fires rather than preventing them in the first place. It may be difficult to measure the value of improvements made.

PI is still fragile and not yet fully ingrained in many organizational cultures. Strong enterprise leadership and vision remain critical. We continue to need strategic-minded executives to lead and support the path to improved performance; we need business motivation and strong commitment for successful implementation; and we need clear statements as to why an organization is pursuing PI and communication to all regarding their roles and responsibilities in striving for that vision.

Business Objectives

What is your business? What are you trying to achieve? What problems do you need solved? It is important to be clear, as answers to these questions will guide the use of appropriate process standards.

For example, an acquisition organization may seek objectives such as getting value for their money, ensuring alignment of acquired products and services with business/mission need, providing high-quality requirements for acquisitions, minimizing acquisition risk, choosing competent suppliers, and ensuring appropriate oversight over contracts and agreements. Several models and standards have been developed specifically to support acquirers.

Product and service suppliers may seek profit, more business, to remain competitive, to meet client requirements and service level agreements, to enhance customer satisfaction, to improve quality, predictability and productivity, reduce costs, and reduce time-to-market. Again, many models and standards are available to support suppliers.

A public or private sector *enterprise* will typically seek all of these and, additionally, look at business objectives from several broader perspectives such as operational (e.g., reduce time-to-market, increase reliability and productivity); financial (e.g., cost control, better return on assets, meet spend targets); strategic (e.g., customer satisfaction, innovation, improve professional competency); and external (e.g., improve market position, seek recognition in selected areas, address public responsibility).

These objectives and viewpoints need to be tied to a standards-based improve-

ment effort that can help meet these needs.

But the model wars discussed previously persist within our user organizations as well. Multiple compliance issues lead to excessive expense for organizations, adoption of multiple stand-alone models in isolation that can be suboptimal and confusing, and a check-the-box mentality that degrades the value inherent in the use of best practices. Level-chasing sometimes overshadows the business focus that is essential for successful change.

Think Enterprise

From my experience and perspective, most enterprises, large or small, seek excellence and performance results across the enterprise. An enterprise typically will both acquire and supply products and services. You may think that government is just about service and business is just about business but, in fact, government is seeking to operate as a business, and businesses typically provide a service. An enterprise has broad objectives and is likely to engage in many cross-organizational functions and disciplines. It can use best practice guidance regarding them all and is likely to need to address compliance with multiple standards.

Focusing on overall performance improvement remains difficult, however. It is unusual to find a strategic process vision or to see incentives provided for embracing improvement across an enterprise. Even if enterprise-wide improvement is encouraged in a general way, middle managers and staff will work according to their personal directives, which are likely to be more stove-piped in nature. Collaboration might even be penalized.

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Recommendations

- Use process standards and best practices. They have been shown to be effective.
- Assure alignment with business objectives – this is a critical success factor. Consider what your enterprise is about.
- Use an integrated approach. This will save you time and money; most organizations need to follow three or more standards.
- Improve for real business value not just for certification or to check the box. Does your organization really need ISO 9001 certification? Do your practitioners really need ITIL certification?

- Think *enterprise-wide* to help all aspects of your business.

The PI Practitioner

We now have many process models and many organizations trying to sort them all out and use them to improve the business. So now, over the past 20 years, a new profession has also sprung up: the PI practitioner. Those in this profession include process group leaders, change agents, appraisers, PI trainers, process champions, process engineers, quality managers, process action teams, process owners, facilitators, and change advocates – lots of people trying to help their business by improving its process.

Organizations need help in prioritizing where and how to use standards and best practices, and this is the job of the PI practitioner.

PI practitioners have a dual role: to develop and improve the PI process we own and to use that process to help others improve the processes they own.

PI Knowledge

Through the years, PI practitioners have built up a broad body of knowledge regarding PI. For example, here are some known factors that are critical for successful PI:

1. **Support, commitment, and involvement**
   - Visible support and sustained commitment from senior management.
   - Middle management support and commitment.
   - Grass-roots support and involvement; technical staff involvement.
2. **Showing measurable, observable results**
   - Observable results backed with data to sustain interest and motivation.
   - PI measured, results made visible.
3. **PI management**
   - Effort must be planned and managed.
   - Senior management actively monitors progress.
   - Adequate staff time and resources dedicated.
   - Clear assignment of responsibility.
   - Process group staffed by highly respected people.
   - Risks recognized and mitigated as necessary.
4. **Goals and alignment**
   - Clearly stated, communicated, well understood, appropriate PI goals aligned with the business.
   - Shared values and goals, improvement in everyone's performance plan.

- Sustained focus and follow through; no constant shifting of priorities.
5. **Knowledge**
   - Having ability, skills, knowledge.
   - Sufficient education about process and PI.
   - For managers, learn enough to manage it and to have confidence in methods used.
6. **Culture**
   - Open communication, teamwork, and mutual trust.
   - Respect for the individual and investment in people.
   - Quality orientation, customer focus, and continuous learning.
   - *Not* a belief that PI gets in the way of real work, and *not* cynicism from previous unsuccessful PI efforts.
   - Culture needs to enable and motivate change.

We know these things, yet they are still difficult to implement and achieve, and many PI initiatives fail. Why? Often it can be traced back to one or more of the previous factors. PI is always a challenge, and this has not changed at all.

Infrastructure

We cannot do it alone. We need a support infrastructure. In this regard, I have been influenced by my experiences abroad. When you work abroad, you are successful when you transition what you know to the nationals, so when you leave they can carry on. My philosophy, in general, is to continue to learn, transfer information, and build an infrastructure of experts that can do the work. In other words, do not be a hero, be a catalyst and a builder, transferring knowledge with the hope of continued improvement.

We need to continue to build our PI infrastructure. We need to infiltrate the organization with PI champions, build in-house skills and a cadre of trainers, process action team leaders and appraisers so the organization is smart, informed, and capable of leading their own improvement efforts.

Challenges

One practitioner challenge that continues to arise is the *flavor-of-the-month* syndrome – the latest fad, newest standards and models, and newest approaches. Do practitioners need to be chameleons and keep changing colors to be successful? I think not. We need to be consistent in our messages: Use best practices, use standards and models, and bring them together to help the business. There will always be new practices that emerge based on

proven use. Rarely, however, do new best practices conflict with previous best practices – it is just an evolution as disciplines mature. There are certain fundamental concepts and principles that do not change, and we need to foster that continuity.

Some Other Advice

Just as we have encouraged organizations to focus on their business objectives, PI practitioners need to do the same by working with the business and treating PI as a strategic initiative when enterprise investment decisions are made. We need to do the following:

- Keep PI aligned with enterprise processes such as investment management and enterprise architecture.
- Consider PI as a strategic service for the enterprise. Know the customer, prepare the business case, work for PI to be in the enterprise portfolio, negotiate service-level agreements, meet PI service levels, and treat processes and PI services as enterprise assets.
- Ensure best practices are addressed in to-be processes prior to investment decisions.
- Minimize investment risks by reviewing internal and external programs for the capability to carry out relevant processes and address weaknesses with corrective action.

More generally, it is important that PI practitioners remain strong. This is not an easy profession, nor necessarily a very popular one, but it can be very rewarding. Continue to motivate and encourage people to take pride in their work and to heed guidance that might help them do their jobs better. Encouraging managers to recognize improvement is all about helping them achieve their objectives and not (as we always hear) getting in the way of the *real work*. Keep it simple. Talk business, not process.

For me, one of the greatest gratifications from PI work has been the reported differences that improved processes have made in people's work lives. Morale has improved, people feel valued, teamwork is enhanced, and people feel good about their jobs when they work together performing sound processes.

Conclusion

Basically, our whole standards-based PI profession has come about over the past 20 years. There has been much advancement in terms of codifying best practices, as organizations have been improving their performance, and practitioners have been developing, implementing, and

improving the PI process. There are PI conferences, journals, books, and networks.

I am an integrator, synergizer, and collaborator and my experience has consistently reinforced the value of this approach, which I have put forth in these conclusions.

Model builders and standards developers need to work together. We need to provide sound, robust products that are easy to use and understand for a business. Organizations need to embrace and support the use of standards-based best practices to meet their business needs. Practitioners need to remain persistent and continue to build and use the body of practical PI knowledge.

Model developers, enterprise customers, and practitioners must work together. This should not be difficult since we are all working for the same goals and objectives. We are a team. And as a team we have now formed, done a little storming, and also progressed towards norming. I am convinced the PI community will be performing at an even higher level over the next 20 years.◆

About the Author

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