

Project Management Innovations

A Quarterly Publication of the Project Management Institute's®
New Product Development Specific Interest Group

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This conference has been specifically tailored to appeal to NPD SIG members. Topics include Six Sigma, Co-development, and NPD Phase Gate processes, all hot topics from our NPD SIG discussion group, among others. Read the articles in this newsletter on these topics and then come to the conference to learn even more. Seven out of the sixteen practitioner presenters are your fellow NPD SIG members, as are many of the Roundtable discussion leaders. There is a wide range of companies represented, from start-ups to well established industry leaders, along with practitioners from a wide range of industries, all with unique perspectives on common problems.

Speakers include recognized agility expert **Jim Highsmith** (author of *Agile Project Management: Creating Innovative Products*) and leading NPD managers from **Halliburton, Bullard Companies, Texas Instruments, Raytheon, MDS Sciex, Baxter Healthcare, Hewlett Packard, Baker Oil Tools, Iomega, Electronic Theater Controls**, and many more!

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Past, Future and Present - the NPD SIG

By Alex Walton, PMP,
NPD SIG Chair

The past year for the NPD SIG saw improved communications; Yahoo! Groups, new web site, and newsletter. Our future is for a more autonomous organization, with a symbiotic relationship with PMI Headquarters, Chapters and other SIGs.

In the present, we will be participating in the upcoming Leadership Global Congress in Baltimore.

My question to our members is, **“What do you want from the NPD SIG?”**

Our NPD SIG Annual Meeting will include a short (10 minute) summary of the Leadership Conference, and at least 20 minutes of an Open Forum.

For the remainder of the meeting, I am requesting agenda items, meeting format suggestions and other thoughts, associated with the Annual Meeting be sent to either Yahoo! Groups (PMI_NPD_SIG@Yahoo.com) or directly to me at pmguru@yahoo.com.

There are two projects that I want to “kick off” at the annual meeting which require volunteers to drive them; an *NPD living glossary* and an *NPD process guide*. Both would be contained on our web site and within our Yahoo! Groups site. Please let me know your interest as well as any other projects that you feel would be of value to you and our members.

NPD SIG Annual Meeting
Sunday, September 21, 2003
12:30 -2:00 p.m.
Baltimore Convention Center,
Room #331

A Review of *Six Sigma for Everyone*, by George Eckes

Reviewed by Alex Walton, PMP

With a background in process improvement successes, statistics from engineering courses, and a general love for keeping things simple and focused; I looked forward to sitting down with this book on a long flight. Shortly after beginning, I was upset to read the classic “blah blah blah” of a consultant touting philosophy and explaining why this process was *soooo* different and better than anything before.

The first two chapters can be skipped for those who “believe” in process improvement and the need for real sponsorship.

The key concepts of Six Sigma associated with DMAIC (Define, Measure, Analysis, Improve and Control) are simply and effectively introduced in chapter 3. Chapter 4 is good for a quick review of a few simple quality control diagramming techniques. Then chapter 5 falls into the “soft tools,” like having an agenda for a meeting, and chapter 6 is back to philosophy and a sales pitch.

My recommendation is to quickly speed read chapters 1 and 2, slow down to read chapter 3 in detail (after the first two pages of selling), review the quality tools in chapter 4 that you might be a little “rusty” on, then pick up the speed reading again until the end of the book.

Terms covered in this book:

DMAIC - (Define, Measure, Analyze, Improve and Control) with associated “toll gates” (sub process steps).

Mother Sigma - a combining of defect opportunities instead of evaluating each one separately thereby replacing a “unit” of effort with an “opportunity” to create a defect.

Non-value added categories:

Black Belt - Team Leader

Green Belt - A Team Leader multiplexing with other responsibilities

Master Black Belt - The consultant (please!). You’d think keynote speakers of Six Sigma should be called “master.”

In summary, if you want a simplistic introduction to Six Sigma and want to understand the sales pitch and vocabulary being introduced to your upper management - this book is an

option. For process maps there is value in the Six Sigma approach, but I suggest you become familiar with the classic Rummler Brache techniques for added benefits.

I would like your feedback. Please identify other references, that may be a better first level Six Sigma treatment on the web, book and/or video. Good intermediate and advanced level coverage is also an interest.

Reviewing this book and conversing with Olaf Diegel on a separate article (see page 4), it does beg the question - what does this have to do with New Product Development? If you are a NPD process owner or part of a group trying to address NPD process improvements, then the techniques in chapter 3 makes sense to me. For a specific project, well, I am a little lost on how to use Six Sigma tools. Perhaps for improving on-time attendance and status reports, but we are then back to the process and not a specific product (project). Hopefully, our upcoming articles and your inputs will make this all clear!

Business Process Alignment for Successful Product Co-development

by Curt Raschke, Senior Member Technical Staff,
Texas Instruments, Inc.

New product development today is characterized by both increasing product design complexity and decreasing time to market demands. In order to stay competitive, more and more companies find it essential to enter into product co-development partnerships or alliances to obtain needed technology or business core competencies. In effect, the co-development partnership is a tool to quickly obtain a missing business process or strengthen one that is weak. (Technology development, manufacturing capability, and marketing expertise are examples of fundamental business processes that are often obtained or strengthened through co-development partnerships.)

In over twenty years of managing and observing new product co-development projects, I have noticed that such partnerships seldom fail to meet expectations because they did not find a partner to adequately fill the missing business process “gap.” Rather, they usually fail because they could not adequately align their other fundamental business processes with those of their partner. They put their focus on the business process “gaps” they are trying to close and do not spend enough time and effort to ensure that their other underlying business processes are sufficiently aligned to support success. These other business processes are often well established and entrenched within each of the partner companies and cannot necessarily be easily adapted to support each other. Thus the “best” co-development partner may not be the one with the greatest expertise in filling the “gap,” but rather one that has adequate expertise along with other underlying business processes that are already aligned or can be easily aligned.

For purposes of co-development partner analysis, the business processes can be arranged into four different levels, each of which must be adequately aligned between the partners to assure success. These levels are:

- **The Business Level** (The co-development partnership must make sense for the underlying business strategy for both companies.)
- **The Portfolio Level** (Each co-development project is part of the project portfolio of both companies and must provide tactical advantage for both.)

- **Project Level** (Each partner is actually performing a sub-project of the overall co-development project and the project management of the two sub-projects must be adequately aligned if the overall project is to be successful.)
- **Technical Level** (Because the co-development has been undertaken to fill a gap, the technical tools used by one partner to provide sub-project deliverables to fill the gap must align with the tools used by the other partner to incorporate those deliverables.)

Excellent alignment at just one or two of these levels is not enough. For the co-development to succeed, reasonable alignment must take place at all four business process levels. If the initial alignment between the partners at all four levels is not adequate, then this must be recognized up front and effort expended to bring about the alignment. For example, the business press is full of stories of companies that partnered or merged because of underlying “business synergies” (i.e. alignment at the business level), only to ultimately fail to meet expectations. Inevitably, the cause of failure is not because the business synergy failed to materialize, it is because the details of implementing that synergy through the other three levels was taken for granted and turned out not to be adequate.

Likewise, the engineering press often reports on companies that partner because they have “complementary technologies” (i.e. alignment at the technical level) only to ultimately fail to meet expectations. Here, the cause of failure is seldom that the technologies were not really complementary. Inevitably it is because the business strategies and tactics of the two companies were not aligned, even though the technology was.

While business process misalignment at the top and bottom levels get the most press, it has been my experience that co-development can fail as well because of misalignment at the middle two levels. For example, if a project is a key element of the portfolio of one company but not the other, co-development seldom succeeds. Likewise, if the PM methodologies and techniques of the two partners are sufficiently different, the project will fail because the deliverables of one of the sub-projects do not adequately meet the needs of the overall project.

continued on page 6

Demystifying Six Sigma

by Olaf Diegel and Alex Walton, PMP

Over the last century we have seen an almost logarithmic acceleration in the development of new products and technologies. As we now enter the new Millennium, we can expect to see new technologies being developed, improved and quickly becoming obsolete as the need for newer, more advanced technologies arises. In this dynamically changing world, we can expect product life cycles to be reduced to just a few months. To meet these demanding requirements product developers have to learn to develop products that are safe, reliable, and competitive in ever shortening amounts of time.

Every product development professional's goal is to design a product or process that is minimally sensitive to factors causing variability (defects, failures, noise, vibration, unwanted phenomena, etc.) at the lowest possible manufacturing cost. One useful tool in helping to achieve this goal is that of Six Sigma (6σ).

Six Sigma is a rigorous and disciplined methodology that uses data and statistical analysis to measure and improve a company's operational performance by identifying and eliminating "defects" in manufacturing and service-related processes. It is a methodology that provides businesses the tools to improve the capability of their business processes. This increase in performance and decrease in process variation leads to defect reductions and vast improvements in profits, employee moral and in the quality of product they produce.

The origins of Six Sigma as a measurement standard can be traced all the way back to the early days of statistics and the concept of the normal curve. Six Sigma, as a measurement standard in product variation however, was first introduced to mainstream management in the 1970s by Motorola.

In recent years with quality management having grown in popularity, the average industry runs at around four sigma, which corresponds to 6,210 defects per million opportunities. This means that in payroll processing, for example, this sigma level could be interpreted as 6 out of every 1000 pay checks having an error of some sort. As four sigma is the average current performance, this implies that there are industry sectors running above and below this value. Two Sigma performance is where many non-competitive companies run. The American Internal Revenue Service (IRS) phone-in tax advice, for instance, runs at roughly

two sigma, which corresponds to 308,537 errors per million opportunities.

This could be interpreted as 30 out of every 100 phone calls resulting in erroneous tax advice of some kind or another.

The goal of Six Sigma is to reduce process output variation so that there is no more than +/- six standard deviations (Six Sigma) between the mean and the nearest specification limit. The term "Six Sigma" is thus a statistical term that refers to 3.4 defects per million opportunities (or 99.99966% accuracy).

A defect can be anything from a faulty part to an incorrect customer bill. Ideally we would like no variation, zero defects, and have consistent results. The number of defects due to variation can be used to indicate how well a process is working.

***"Six Sigma
quality is about
measurable
total customer
satisfaction."***

Six Sigma teams use extremely rigorous data collection and statistical analysis to find sources of errors and to find ways to eliminate them. The basic approach is to measure performance on an existing process, compare it with a statistically valid ideal and figure out how to eliminate any variation. Project teams might speak in terms of reducing cycle time, improving customer satisfaction, cutting down

on returns and improving the speed and accuracy of order fulfilment. No project is considered complete until the benefit has been shown.

Six Sigma has taken the best of Business Process Improvement, the standard Quality Improvement Team (QIT) tools, and added a thoughtful and more rigorous methodology and set of associated tools during the Measure and Analysis stages, that adds better visibility to the issues and results of improvement efforts.

Additionally, the Six Sigma statistical tool set helps management and other employees to address the significant REAL causes of defects during the other phases of the Six Sigma. Six Sigma includes the DMAIC improvement framework (Define, Measure, Analyze, Improve, and Control) which is an improvement system for existing processes falling below specification and looking for incremental improvement.

Though commonly defined as 3.4 defects per million opportunities, Six Sigma can be better defined and understood at three distinct levels: metric, methodology and philosophy. Each of these areas will all be discussed in upcoming newsletters.

In the next installment: *Six-Sigma, the Metric.*

Phase Gates - How Many is Just Right?

by Curt Raschke

Recently, many of the SIG members belonging to the NPD SIG Yahoo! Group had a fairly heated online discussion regarding the best way to use project phases and gates as part of a formal NPD process. It seemed that every industry and company represented in the discussion used a phase gate process of some sort, but there was a wide variation on the number and purpose of the phases and phase reviews. In addition, some of the companies followed standard commercial phase gate process templates (e.g. PACE™ or Stage-Gate™) very closely. Some of the others used company specific tailored versions of the commercial templates and some had their own unique variations. For those readers who may have missed the discussion, let me summarize how my company, Texas Instruments, approaches these various issues.

[**Note:** If you are not yet participating in the various NPD SIG Yahoo! Group discussions, let me encourage you to sign up and jump into any discussion that interests you. If you don't find a discussion group that interests you, start one! To sign up, simply go to <http://groups.yahoo.com/> and apply to join the PMI_NPD_Sig group.]

My company has six major business groups with new product development team activities spread out all over the world in ten major development sites and numerous satellite sites. Within each major business group there are between five and twelve related product groups. We are very focused on New Product Development since the vast majority of our approximately 10B USD in revenue comes from products released to market in the last three years. Each of the different

business groups uses a phase gate development process. Each one of the processes is a slightly different tailored version of the PACE™ process, with each version having between 4 and 7 phases and associated phase gates reviews.

This is not to say that these phase gate reviews are the only reviews utilized in the various processes. Within each phase there are project technical reviews, technical peer reviews, management status reviews, team status reviews, and special purpose project reviews (e.g. risk management reviews, manufacturability reviews, project boundary agreement reviews, etc.) What we have found is that it is very important not to intermix these various other reviews with the phase gate reviews and to keep the purpose of the phase gate review firmly focused and controlled.

The phases, and hence the phase reviews, are set up to correspond to the hand-off of the major project responsibility from one group of specialists on the project team to another. Examples of such handoffs for our projects are marketing to product feature definition, product feature definition to project planning, product design to prototype manufacturing, and prototype characterization to full scale manufacturing. For any given business group these handoffs occur a limited (and predictable) number of times, resulting in a limited (and predictable) number of phases. Within the phases, however, the other types of reviews can vary from product group to product group and sometimes from project to project within a product group.

The major reason for the differences between product groups in the number of phases, then, is due to differences in the way that the groups organize their new product development teams. For those teams that are organized in

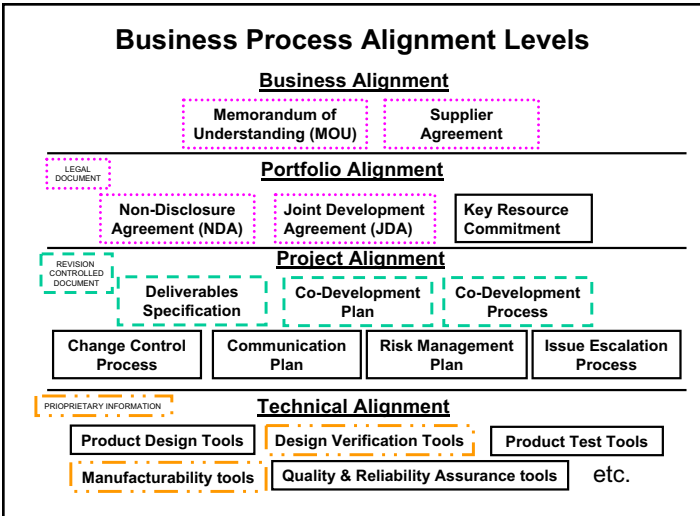
the way that the handoff between groups corresponds to that of the traditional PACE™ template, the number of phases comes out to the five traditional PACE™ phases. These phases are **Concept Evaluation** (phase 0), **Planning & Specification** (phase 1), **Development** (phase 2), **Evaluation** (phase 3), and **Product Release** (phase 4).

However, if the development teams are arranged so those handoffs between groups of specialists occur less often or more often, the number of phases decrease or increase accordingly. For example, if the product is being developed for a specific customer, the first two phases (Concept Evaluation and Planning & Specification) generally become combined into a single phase that includes customer negotiation. Another example occurs when the Evaluation phase includes significant sampling of prototype product to customers. If different groups of specialists do the internal and external evaluations, the single evaluation phase gets split into two sequential evaluation phases.

Regardless of the number of phases, however, the purpose of each phase review is to make a management decision on whether or not the project should continue to the next phase. If the review determines that the project is not ready to move to the next phase, then the outcomes of the review are to identify the corrective actions needed to move to the next phase, to redirect the project before moving to the next phase, or to kill it entirely. Thus, for example, you don't want a major technical review as part of the phase review. If you do, you tend to end up talking about whether you did things right, rather than whether you did the right things. The results of the various technical reviews should be included in phase review, but not the reviews themselves.

Business Process Alignment *continued*

There are many tools and techniques available to assess and align the business processes at the four fundamental levels. The figure below gives examples of some of the common tools appropriate to each level, although no attempt will be undertaken to discuss any of them in detail since they are all fully covered in PM literature.



However, I have indicated that for most partnerships, some of the tools and techniques are often implemented as legal or revision controlled documents, or treated as proprietary

information. Which of the tools and techniques should be implemented in any of these ways depends on the scope and nature of the co-development engagement.

The more legal documents, revision controlled documents and proprietary information controls there are, the more predictable will be the outcome of project, but at the cost of speed and flexibility.

The PM for each partner generally has very little say in what legal documents to use, since their respective legal departments generally specify them. However, the PM usually has a great deal of influence on what is to be revision controlled and what is to be controlled proprietary information. Here, a thoughtful tradeoff needs to be made between predictability and flexibility in choosing the degree of control to be exercised through revision control or proprietary information control. A rule of thumb that I use is that if you feel that you need to have a large amount of revision control and proprietary information control to “protect” yourself from your partner, you probably have misalignment at the business or portfolio levels. In this case, it is often more effective in the long run to work at increasing the alignment at the two upper levels instead of applying extra control at the lower levels to try to make up for it.

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Reprinted from *PMI® Friday Facts*

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Applications are now being accepted from individuals interested in presenting at PMI Global Congress 2004–Europe, being held in Prague, Czech Republic on 19-24 April 2004. By sharing your knowledge and expertise with others, you not only earn the respect and admiration of your peers, you also make a significant contribution to the future of the project management profession. SeminarsWorld offers congress attendees proven and successful programs that address topics of the greatest interest to the worldwide project management community. Ten to 12 seminars, which can be one or two days in length and accommodate 30 to 35 participants, will be selected for presentation preceding the congress. To request a copy of the proposal application, please contact the PMI SeminarsWorld Planner at rita.pagan@pmi.org. All submittals must be received by 1 October 2003.

PMI's eighth official *PMBOK® Guide* is now available!

Together with the Chinese, Spanish, Brazilian Portuguese, French, German, Italian and Japanese translations already in print, the Korean translation will be a tremendous aid to global practitioners preparing to take the Project Management Professional (PMP®) Certification Exam. All translations are available in soft cover only (paperback) and can be easily purchased at the PMI Online Bookstore (www.pmibookstore.org).

Meet, mingle and make career-boosting decisions at the PMI Global Congress 2003–North America SIGReception!

One of the many benefits of your PMI membership is the wide variety of industry- and interest-specific groups that are available for you to join. You can learn more about these groups at a special reception being held during the upcoming PMI Global Congress 2003–North America, September 20 - 23 in Baltimore, Maryland, USA. This fun and casual reception, scheduled for Monday, September 22, from 5:30 to 7:00 p.m., provides congress attendees with an invaluable opportunity to share information and experiences about their industries, roles, responsibilities and areas of interest. You can also browse the information tables of participating specific interest groups (including the NPD SIG) to learn more about the different groups and what they are doing from their leaders and members. Circle the date and time now, and plan to attend!

NPD SIG 2003 Board of Directors

Here are your NPD SIG officers for 2003 and their email addresses. As your representatives, they need and welcome your insight. They are a great way to start networking in the NPD SIG.

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