

January 22, 2009

The PMBOK And Agile: Friends Or Foes?

by Mary Gerush and Dave West

for Application Development & Program Management Professionals

January 22, 2009

The PMBOK And Agile: Friends Or Foes?

Reconcile The Tension Between The Two To Achieve A Healthy Balance

This is the third document in the “Lean Software” series.

by **Mary Gerush and Dave West**
with Mike Gilpin and David D’Silva

EXECUTIVE SUMMARY

Development organizations strive to optimize software delivery. Application development leaders commonly use the Project Management Institute’s *A Guide To The Project Management Body of Knowledge* (PMBOK). They may also investigate Agile development methodologies such as Scrum or XP as their popularity — and evidence of their effectiveness — grows. And while many practitioners think that these two methodologies are mutually exclusive, smart application development professionals know that they can leverage the best of each to deliver the highest value. The PMBOK provides a well-tested project management framework and a set of strong technical practices for project management, while Agile defines a philosophy that enables teams to be more effective and benefit from improved working relationships with their customers. Adopting the life cycle of PMBOK with the Agile method’s delivery approach creates an environment that encourages project success.

TABLE OF CONTENTS

- 2 **The PMBOK + Agile = Tension**
- 4 **But Some Perceived Friction Points Aren’t Really Friction Points At All**
- 6 **Smart App Dev Pros Combine The Strengths Of Both To Optimize Outcomes**
- RECOMMENDATIONS
- 8 **The PMBOK And Agile Can Work Together, And You Need *Both***
- WHAT IT MEANS
- 9 **Combining Agile And PMBOK Can Increase Your Development Capability**

NOTES & RESOURCES

Forrester spoke with end users and vendors about their experiences with traditional project management and Agile development methodologies.

Related Research Documents

[“Make Agile Lean To Boost Business Impact”](#)
December 17, 2008

[“Lean Software Is Agile, Fit-To-Purpose, And Efficient”](#)
December 12, 2008

[“Best Practices: Estimating Development Projects”](#)
April 22, 2008

THE PMBOK + AGILE = TENSION

Modern project management has been in practice since the 1950s, and if you ask most project managers what guides their project management best practices, they will most likely refer to the PMBOK — the Project Management Institute’s (PMI) *A Guide to the Project Management Body of Knowledge*.¹ Agile, on the other hand, is much younger; it was born formally in 2001 when a group of technology leaders, searching for a better way to develop software, collaborated to form the Agile Alliance and author the Agile Manifesto, a set of guiding principles for Agile software development.²

Both the PMBOK and Agile methodologies are popular, though they often butt heads, particularly when injected into the same team or environment. Several differences in principles and processes cause this tension, leading many to believe that these two delivery approaches cannot coexist peacefully.

Project Managers Feel The Need To Lead, But Agile Empowers A Self-Managing Team

The PMBOK states that “the project manager is the person responsible for accomplishing the project objectives.”³ For this reason, companies train project managers to seek control. At the other end of the spectrum, Agile gives power to self-organizing, self-managing teams that define and direct their work and manage their roles and responsibilities *as a team*. This key difference between these approaches manifests itself in many ways:

- **Traditional project managers define roles crisply, while Agile methods emphasize the team.** The PMBOK and other traditional project management training resources teach project managers to delineate roles and responsibilities clearly; they instruct project managers to ensure that all team members know what they must do and what responsibilities belong to others. This precise role definition provides a sharp demarcation of responsibility and accountability. Agile takes a different tack, promoting a more flexible resource model in which each team member has all the necessary skills to deliver the work the project requires. This multidisciplinary approach to resource management puts responsibility and accountability in the hands of the team, not one individual.
- **Planning, organizing, and assigning project work happens very differently.** Traditionally, project managers spend significant time and energy developing and updating project schedules that define work tasks and dependencies. In Agile, self-managed teams plan the work they will undertake as a team. Agile teams use techniques such as “planning poker” to ensure that the team shares a collective understanding of tasks and commits to that understanding as a unit.⁴ And while traditional project managers assign and monitor tasks, in an Agile environment, the team assigns tasks based on who is best suited to do the work and has enough time to undertake it. Responsibility is only clear for tasks in the current iteration; different resources may undertake similar tasks in the next. This leads to a “fluidity” of task ownership as the team reshapes the task list and ownership depending on availability and knowledge.

- **Gathering information on and reporting project status takes different forms.** Traditional project managers author and distribute project status reports, and historically they have gained power because they were the only people who knew everything happening on a project. Alternatively, transparency is a key tenet of Agile projects: The Agile team collectively understands the project's status and documents its progress using easily digestible and openly shared charts such as project burn-down and velocity reports.
- **The type of interaction with business stakeholders and external partners varies.** Traditionally trained project managers take a formal approach to relationships with business stakeholders and external partners, requiring formal, documented signoffs and creating detailed project plans for those perceived to be “outside” the project team. Alternatively, Agile methods see these external individuals as part of the “team,” and they become active participants in the project, collaborating to make decisions and create timelines and plans.

Project Managers “Plan The Work And Work The Plan,” While Agile Methods Flex To Fit

While the PMBOK doesn't dictate or endorse any particular software development life cycle (SDLC), many perceive that it fits most appropriately in a traditional waterfall project, which emphasizes upfront planning, followed by signoff, and then execution. This focus contrasts that of Agile methodologies, which concentrate on continuous adaptation through incremental planning and iterative development. When comparing the PMBOK to Agile methods, app dev pros commonly see that:

- **The PMBOK appears to imply “waterfall,” while Agile is *definitely* iterative.** Looking at the PMBOK, you'll see sequentially described processes, which implies that the PMBOK's project management practices are useful primarily in the context of a waterfall project. While not necessarily true, this perception generally results in those trained in traditional project management practices taking a sequential approach to project management. Agile methods, on the other hand, teach people to develop and test software in multiple iterations, delivering working software quickly to meet business needs.
- **Agile's incremental planning poses problems for PMBOK devotees.** Most projects with traditionally trained project managers focus on upfront planning, delivering a high level of detail early. Often, the individuals creating the project estimate are not the ones performing the work, leading to a lack of buy-in from the development group responsible for delivering. Agile teams uncover scope incrementally, evolving it as more project information becomes available. In Agile projects, teams don't plan what they don't know, and they undertake estimation as a group.
- **Traditional project managers resist change, while Agile proponents welcome it.** Most project managers require stakeholder signoff on requirements before they will proceed with development; therefore, they learn to oppose post-signoff changes the business brings forth.

Agile's method of iterative development allows the team to plan each iteration independently, focusing on the highest-priority requirements at the time. Agile teams accept changes to requirements without resistance because Agile methods make it more natural to incorporate and address these changes.

Agile Versus PMBOK: How Much Formality And Documentation Does A Project Need?

Traditional project management is “formal” and generally entails a healthy amount of documentation in the form of plans, schedules, and checklists. Agile takes a different approach, emphasizing simplicity, efficiency, and “just enough” formality. Reconciling this disparity is hard because:

- **There's an art to balancing structure and flexibility.** This is a key area where traditional project management and Agile differ. The PMBOK is very structured, with five well-described process groups and nine very detailed knowledge areas. Though it doesn't necessarily *prescribe* formality, it does imply a need for it through its detailed description of project management best practices. Agile projects focus on “individuals and interactions over process and tools.”⁵ This encourages teams to forgo lengthy process descriptions, allowing them to define and evolve their own processes.
- **The PMBOK and Agile fundamentally disagree on prescribing required documentation.** Although the PMBOK doesn't specifically define deliverables in the form of documentation, it does lay out a variety of “plans” that a project manager should create as part of a master project management plan. Yet many perceive these plans as overhead — including Agilists, who value “working software over comprehensive documentation” and strive to create “just enough” documentation for each project.⁶

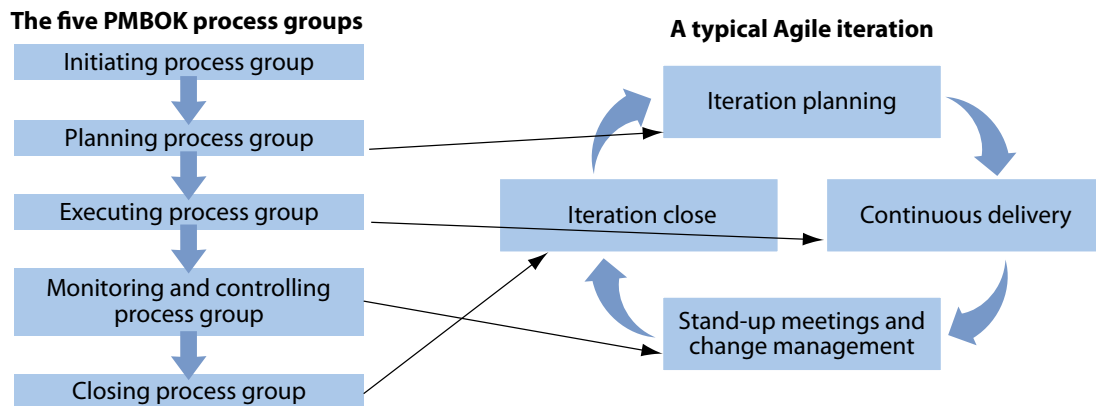
BUT SOME PERCEIVED FRICTION POINTS AREN'T REALLY FRICTION POINTS AT ALL

Most projects — whether they claim to be Agile, Rational Unified Process (RUP), or waterfall — end up as complex and chaotic events. So belaboring terminology is often a waste of time: The goal is to deliver a quality product or service in a way that meets customer expectations. In pursuit of this goal, the PMBOK and Agile both outline approaches that may *appear* to differ fundamentally but that in reality can be reconciled and combined to drive positive results:

- **Agile processes *do* align with the PMBOK process groups.** Although Agile and PMBOK have very different viewpoints on software delivery, these perspectives do complement each other (see Figure 1). The PMBOK outlines five process groups: initiating, planning, executing, monitoring and controlling, and closing. While the initiating process group lies outside the typical Agile methodology, the planning, executing, and monitoring and controlling process groups align closely with the iterative project structure that most popular Agile methods define, including the Scrum sprint. The closing process group that the PMBOK method places at the end of a project occurs at the end of each iteration in Agile — and for that reason has a slightly different scope.

- **The PMBOK’s scope, time, cost, and quality management processes *can* happen iteratively.**
The PMBOK doesn’t prescribe a sequential adherence to its process groups and knowledge areas, although many believe that it does. So while the PMBOK depicts scope, time, cost, and quality as four separate — and seemingly sequential — knowledge areas, in reality they happen at least somewhat concurrently in a non-Agile project. In Agile projects, the same practices occur, but in a more compressed time frame for each iteration (see Figure 2).
- **Both the PMBOK and Agile emphasize change management — albeit in different ways.**
The PMBOK places particular emphasis on a formal process for managing change through its integrated change control process. Agile methods also support change of two types: 1) change that happens within an iteration, which the team handles, and 2) change that occurs outside the iteration, which the team adds to the backlog and then reviews at the start of the next iteration. While this approach is less formal than PMBOK’s, the result is the same: clearly controlled change managed in a way that allows the development team to focus on its immediate work without distraction.

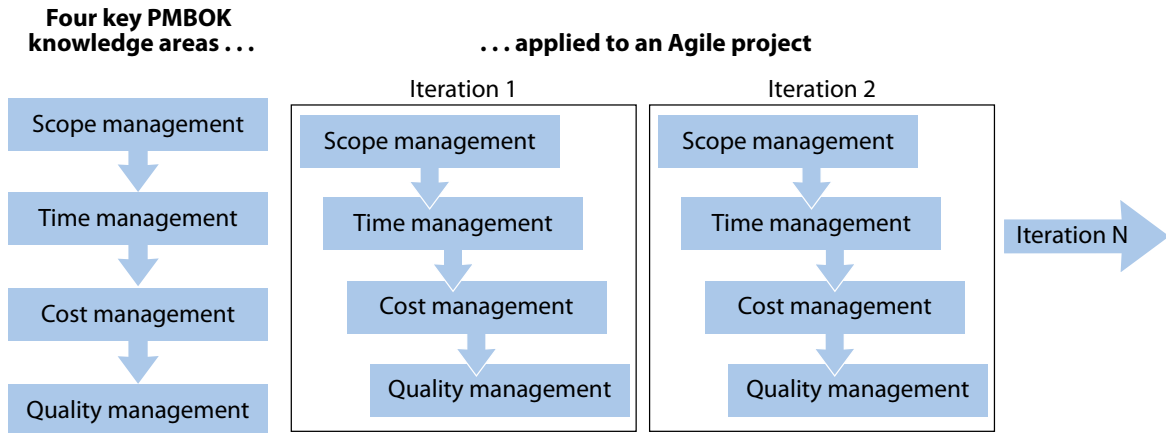
Figure 1 The Project Management Body Of Knowledge Process Groups Align With Agile Processes



48143

Source: Forrester Research, Inc.

Figure 2 PMBOK’s Scope, Time, Cost, And Quality Management Happen Iteratively In Agile



48143

Source: Forrester Research, Inc.

SMART APP DEV PROS COMBINE THE STRENGTHS OF BOTH TO OPTIMIZE OUTCOMES

The PMBOK provides a much broader view of a project than do Agile development methods. Combining the PMBOK’s perspective with Agile’s client-focused, delivery-oriented techniques equips development teams for success. Adding the PMBOK’s project management technical practices in areas including communications planning and risk mitigation allows app dev teams to effectively combine rapid, customer-focused delivery with structured program management. A project manager at a large healthcare provider emphasized this combination, saying, “I look at PMBOK and Agile as a collection of tools we can use, drawing on the right tool to solve a particular problem.”

The PMBOK Clearly Defines What Agile May Sometimes Gloss Over ...

Agile teams focus on delivering value — and can, at times, neglect some of the tasks that managers need from software projects, such as identifying key milestones where activities must be coordinated across multiple organizations. This is where, when used appropriately and with foresight, some PMBOK practices can augment Agile. Agile proponents should recognize that there *are* areas where traditional project management can supplement their practices. For example:

- **The PMBOK provides clear guidance on project initiation and closure.** These are tricky areas for adopters of Agile development techniques, who frequently ask, “when do we start?” and “when are we done?” While Agile methodologies don’t directly address these questions, the PMBOK provides clear guidance on initiating a project administratively, communicating with the right people, and building the right team. It also details project closure processes to ensure that the project team ties up loose ends, such as ensuring that all the documentation is filed, books are balanced, and timesheets are captured.

- **The PMBOK’s approach to communication ensures a common understanding for all.** Communications management and project integration management are key knowledge areas in the PMBOK for a reason: Decades of project management experience reveal that teams that focus on these areas increase their chances for success. And while Agile methodologies do foster team collaboration and describe a kickoff meeting for setting expectations and defining objectives, the PMBOK takes a more comprehensive approach by calling out *all* the relevant stakeholders — IT, business, customers, and external partners — and developing a communication plan to address their needs and expectations.
- **The PMBOK overcomes Agile’s lack of emphasis on money management.** Agile methods center on software development; their primary focus is organizing the team, allocating work, and developing code. But most managers must fund projects in the context of a budget cycle and monitor their progress in terms of cost. Agile methods don’t provide the team with any guidance in this area. The PMBOK, on the other hand, devotes an entire knowledge area to project cost management, and most traditional project managers are well versed in budget management, reporting, and forecasting.
- **The PMBOK promotes risk management in a way that can benefit an Agile team.** Managing risk is critical for project success. While risk management eventually becomes a natural input to iteration planning activities as Agile development teams mature, drawing on the PMBOK’s advice when reviewing project risk can greatly help teams assess and mitigate risk. The PMBOK provides a structured approach to comprehensive risk management through its processes of risk identification, qualitative and quantitative analysis, and response planning.

... And Agile Can Teach Traditional Project Managers A Thing Or Two (Or More)

Agile methods describe: 1) a collection of soft techniques that enable better working relationships with the customer and team and 2) a set of engineering techniques for building better software. Agile methods can add value to PMBOK-driven projects because:

- **Agile’s focus on the empowered team can increase a traditional project team’s strength.** First, by promoting cross-functional teams while avoiding focusing roles too narrowly, Agile gives individual team members the opportunity to learn from each other and share activities and tasks in pursuit of more-effective delivery. Role boundaries tend to blur as analysts define tests, developers interview customers for requirements, and testers write code. Team planning is another activity that can benefit traditional project management. In Agile, the team undertakes planning collectively, drawing on the experience of all team members; and, most importantly, the team commits to the plan. By making planning a team activity and providing visibility to every team member, Agile methods ensure that all team members are committed to the project’s outcome.
- **Agile allows for — and even encourages — adjustment.** Though the PMBOK does not explicitly describe an early, upfront planning process, the majority of traditional project

managers use that technique, believing that detailed plans developed early in the project will promote project success. But best practices in estimation advocate breaking large projects into small ones and delivering incrementally whenever possible.⁷ Agile methods take this approach and encourage accuracy rather than precision, encouraging teams to focus on detailed planning of smaller blocks of work and then using that improved knowledge to refine the team's understanding of the overall project, which influences future planning. With Agile, plans can change, but chaos still doesn't reign because Agile methods provide balance between continuous change and staying focused. So teams may add new items to the project backlog, but those items don't affect the current iteration; therefore, changes do not derail the team.

- **Agile teams work with customers in a more intimate way, building strong relationships.** Every Agile method encourages team members to foster strong, day-to-day working relationships with customers. The business owner is part of the team — involved in daily meetings, testing, and decision-making — and physically sits with the analysts, developers, and testers. So using Agile methods has the potential to improve the degree of trust between the customer and the development team, enabling more-fluid delivery of requirements and more-efficient decision-making. As an Agile team matures, the distinction between customer and team becomes less distinct as their relationship improves. This can lead to development teams building less software but making the customer happier. A representative from a large financial services software provider described this benefit, explaining that “projects finish with between 30% to 60% of their original backlog incomplete, but customers are happy, as their software is early, delivers what they want, and doesn't cost as much.”
- **Agile focuses on just the “right” amount of rigor and documentation.** Agile teams document requirements in the most appropriate format for a particular project. They avoid long documents in favor of smaller, more-focused descriptions of customer needs. The team creates these documents not to satisfy the project methodology but to generate discussion about their content and to clarify customer needs. This enables quicker and more-focused reviews and allows customers to answer the development team's questions rather than having to describe every possible answer in a long and detailed document. Teams may augment documents with photographs of whiteboards, MP3 recordings of discussions, or videos.

RECOMMENDATIONS

THE PMBOK AND AGILE CAN WORK TOGETHER, AND YOU NEED *BOTH*

Understanding the characteristics and strengths of traditional project management approaches and those of Agile development methodologies can help you focus your team's energy to obtain the most positive results while proactively managing risk. Don't think that you have to pick one approach over the other: Leveraging both delivers the most value for your organization. One 15-

year project manager recently exposed to Agile development methods stated that “the two are very much in support of each other.” When working to optimize your software delivery approach:

- **Resist the temptation to adopt only one methodology.** No two projects are alike, and no two project teams are alike; thus, there isn't one single software delivery framework that meets all needs. So, give up searching for that Holy Grail. Instead, look for best practices and strengths in a variety of methodologies and frameworks, and combine them intelligently in your environment.
- **Bring flexibility to your PMBOK approaches through iterative delivery.** Plan and deliver more frequently and in smaller chunks. By focusing on simpler planning activities, it's possible to improve the accuracy of planning without adding overhead. And delivering more frequently results in faster feedback from the customer as well as improved end user satisfaction.
- **Ensure that project managers are enabling the team.** One of the most effective ways to improve the effectiveness of a team is to give that team more control over its own destiny. Agile provides a very clear set of approaches to team empowerment that can add value to any PMBOK-oriented management approach.
- **Insert Agile processes into a PMBOK-oriented life cycle.** The PMBOK provides a defined framework that can envelop Agile development processes to provide structure, particularly in the areas of project initiation, cost management, communication, and closure.
- **Work differently with your customers.** Use Agile techniques to build stronger and more-effective working relationships with customers. Embedding your business partners in your project team encourages deep and broad partnerships that traditional project environments often lack.
- **Adopt PMBOK's stronger practices to augment Agile projects.** The PMBOK provides a set of project management best practices that managers can use in any project delivery environment. Some of them — for example, risk, cost, and communication management — can fill common gaps in Agile methodologies.

WHAT IT MEANS

COMBINING AGILE AND PMBOK CAN INCREASE YOUR DEVELOPMENT CAPABILITY

Combining Agile and PMBOK can bring strength, but it requires intelligent application. The PMBOK provides a clear process life cycle at the macro level, while Agile provides an effective way to organize the team and work with the customer. By combining the strengths of these two approaches, application development leaders can develop high-performance teams that deliver effectively. The result of the PMBOK-structured but Agile approach? A lean software development process.

ENDNOTES

- ¹ The Project Management Institute (PMI), founded in 1969, has more than 265,000 members in more than 170 countries. The PMI publishes *A Guide to the Project Management Body of Knowledge* (PMBOK) — now in its third edition — to offer a set of processes generally recognized as good project management practices. See <http://www.pmi.org>.
- ² The Agile Alliance has more than 4,000 members globally and is driven by the principles documented in the Manifesto for Agile Software Development. See <http://www.agilealliance.org> and <http://www.agilemanifesto.org>.
- ³ Source: *A Guide To The Project Management Body of Knowledge*, Project Management Institute, 2004.
- ⁴ Source: Mike Cohn, *Agile Estimating And Planning*, Prentice Hall, 2005.
- ⁵ Source: Manifesto for Agile Software Development (<http://www.agilemanifesto.org>).
- ⁶ Source: Manifesto for Agile Software Development (<http://www.agilemanifesto.org>).
- ⁷ A fundamental tenet of Agile methods is the concept of frequent delivery, which introduces a rapid feedback loop into the development process and allows the project team to gain additional insight, correct course, and change focus if needed. This enables development teams to estimate more accurately. See the April 22, 2008, “[Best Practices: Estimating Development Projects](#)” report.

FORRESTER[®]

Making Leaders Successful Every Day

Headquarters

Forrester Research, Inc.
400 Technology Square
Cambridge, MA 02139 USA
Tel: +1 617.613.6000
Fax: +1 617.613.5000
Email: forrester@forrester.com
Nasdaq symbol: FORR
www.forrester.com

Research and Sales Offices

Australia	Israel
Brazil	Japan
Canada	Korea
Denmark	The Netherlands
France	Switzerland
Germany	United Kingdom
Hong Kong	United States
India	

For a complete list of worldwide locations, visit www.forrester.com/about.

For information on hard-copy or electronic reprints, please contact Client Support at +1 866.367.7378, +1 617.613.5730, or clientsupport@forrester.com.

We offer quantity discounts and special pricing for academic and nonprofit institutions.

Forrester Research, Inc. (Nasdaq: FORR) is an independent research company that provides pragmatic and forward-thinking advice to global leaders in business and technology. Forrester works with professionals in 19 key roles at major companies providing proprietary research, consumer insight, consulting, events, and peer-to-peer executive programs. For more than 25 years, Forrester has been making IT, marketing, and technology industry leaders successful every day. For more information, visit www.forrester.com.