

# When Agile Becomes a Quality Game Changer: What Recent Benchmark Data Says About Agile's Development Advantage

Michael Mah

QSM Associates

## Abstract

With Agile now becoming mainstream, what's happening on the topic of "Clean Code?" What patterns are being revealed, and what does this mean to teams responsible for that final lap (the testing one!)? Industry research from QSM Associates reveals varying degrees of success. Some of the best teams – whether they be XP, SCRUM, Lean, etc. – are finding significant quality implications that are literally redefining the economics of software. Others are not. What factors can make a meaningful difference? With the latest industry analysis of velocity, burndown, and quality data, we discuss productivity, time-to-market, quality, and cost patterns as this community matures. Serving as a comparison framework is the QSM SLIM industry database, with more than 10,000 completed projects (waterfall, agile, offshore, onshore) collected worldwide. This talk will describe findings that can help accelerate your success. Join us for an overview of this approach, and find out how you can assess your own patterns that could be applied to your development, and informing your executive teams.

## Biography

*Michael Mah (Twitter: @MichaelCMah), is Managing Partner of QSM Associates, Inc., which helps organizations measure, plan, estimate and control software projects. He is also the Benchmark Practice Director at the [Cutter Consortium](#), a Boston-area IT think-tank. QSM Associates uses (and offers to its clients) the SLIM (Software Lifecycle Management) Suite of tools, so managers can benchmark and forecast Agile, waterfall, in-house, offshore/multi-shore or ERP/package implementation projects.*

© 2013 QSM Associates

There's something in a name. Take Agile: does Agile development really make companies' IT projects succeed? And, more quickly? Are Agile software teams really more agile?

It wasn't so long ago that many developers, CTOs and project executives –plus a few pundits-- adopted a "wait and see" attitude about Agile. Some waited, some adopted early. And now, over the past 20 years, all have seen: as Agile development has become mainstream, interest in quality and productivity trends is escalating.

For example, the topics of high-value code and "clean code" – software that is poorly written but can nonetheless function-- are making their way into the foreground. What patterns are being revealed, and what does this mean to teams responsible for that final lap (the testing one!)?

Industry research from QSM Associates reveals varying degrees of success. Some of the best teams – whether they be XP, SCRUM, Lean, etc. – are finding significant quality implications that are literally redefining the economics of software. Others are not.

The findings can help accelerate the success of software development projects. Serving as a comparison framework is the QSM SLIM industry database, with more than 12,000 completed projects (waterfall, agile, offshore, onshore) collected worldwide.

What factors can make a meaningful difference? As this community matures –as documented by our latest industry analysis of velocity, burndown, and quality data-- productivity, time-to-market, quality, and cost patterns are all impacted.

One of the factors is cultural: where the work gets done. Following a wave of offshore outsourcing, arguably spawned –or at least encouraged—by Thomas Freidman's *The World Is Flat*, enterprises have had time to consider the impact of offshoring on quality, cost, and time to market. They are asking: "Can intellectual processes be outsourced as easily and effectively as a repetitive manufacturing one?" At one time, the answers seemed to range from "Yes" to "Maybe." Now, it seems to be "Maybe" or "No."

Outsourcing functions like application design, or even coding, is more difficult in an era when knowledge workers are trying to solve design challenges. The Agile development community in Columbus, Ohio was the first to discover data to prove that. And, while they were at it, the Agile community in mid-America learned a few things about itself, as well.

A first-of-its-kind study analyzing the Agile development practices of one programming community –in this case, Columbus— reveals a level of achievement that far exceeded expectations of both the analysts and the participants. The study allows participants to objectively benchmark the organization's performance to create an initial productivity baseline. This enables companies to identify strategic directions and goals, and to focus their improvement efforts with optimal efficiency. These early results of the Columbus Agile Benchmark Study are consistent with the experience at Nationwide, a marquee insurance company based in Columbus.

Guru Vasudeva, Senior VP and Enterprise CTO, says that the data from participating companies shows a strong pattern of productivity, fast time-to-market and low cost, along with an impressively low level of defects. "The fact that our own results are consistent with a larger community, in both quality and productivity, adds credibility to the claims of Agile's benefits," he remarked. With the success of the Columbus study becoming more widely known and understood, similar studies are now being launched in Munich, Chicago, and Boston.

Despite some initial hesitation from a small number of participants who were concerned about favorable vs. unfavorable industry comparisons, the defect data in Columbus was significantly better than industry averages. Most installations can expect an improvement in schedule when adopting new technologies like Agile, but the improvement in quality was striking.

The study, being conducted by QSM Associates in tandem with the Central Ohio Agile Association (COHAA) and the Columbus Executive Agile SIG, bodes well for adopters of Agile software development. As for offshoring, not so much.

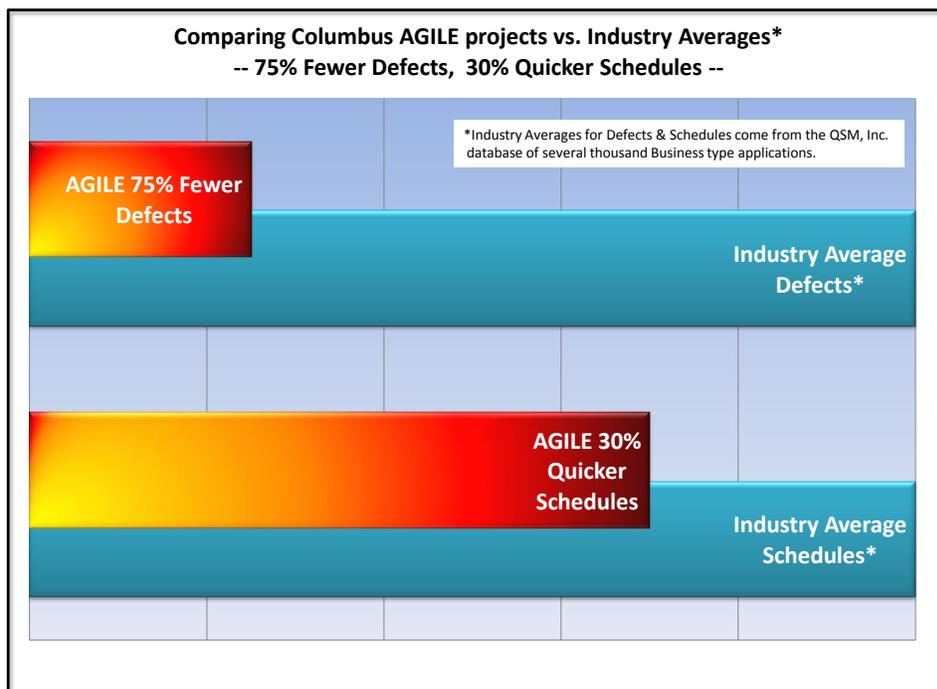
Why Columbus? There is a strong and cohesive Agile community there, and they were the first to decide that they wanted to see how good they are. And, that turns out to be pretty good: Early results from the Columbus-area participants show that a typical business system comprising 50,000 lines of code is completed 31% faster than the industry average in the QSM industry database of completed projects (4.4 months vs. 6.4 industry average). Even more remarkable is the defect rate, which is 75% lower than the industry norm.

It is important to point out that not all participants in studies like this –even if they are committed to Agile development-- may achieve such extreme results, because not all participants will have adopted all of the best practices that lead to success. Early results do show that concepts embraced by Agile deliver remarkable results in areas of compressing a schedule and reducing defects. Some of these approaches include acceptance-test-driven development (TDD), pair programming, and co-location.

But even participants that had not adopted all of these techniques achieved better-than- average results. Survey participants are able to see their own results contrasted with the industry at large; and, the Columbus community also compared the regional results in the aggregate with worldwide data.

However, participants like the idea that other companies cannot identify the individual results –other than their own-- thus protecting the confidentiality of divisions or companies involved in the study. For this reason, we have been able to confirm information that did not seem intuitive at first: for example, as will be seen below, some successful Agile development shops are reversing the trend of outsourcing or "offshoring" some of their software development efforts.

The study –which is ongoing and still attracting participants -- is providing the Columbus Agile community with valuable information on factual patterns on productivity and quality, instead of just anecdotal claims. Moreover, the data helps answer questions about addressing development projects schedules and budgets.



Aside from the value inherent in knowing the current status, the Columbus experience will be analyzed on current and future projects, says Ben Blanquera, Application Delivery Executive at Pillar Technologies. At the time of the study, Ben was Curator of the Columbus Executive Agile SIG, and he says that that that experience will be reflected in a continuous improvement process. "Participants never stop learning about their own productivity gains when compared with industry practices," he says. "The benchmark, as important as it is, is just a starting point that will help establish the Columbus community as a hotbed for knowledge and experience in all manner of Agile development."

Agile is maturing. And, as more companies increase their emphasis on Test Driven Development and perhaps Acceptance Test Driven Development, we can anticipate even greater improvements, says Vasudeva. "Within Nationwide, we are seeing significant improvement in productivity and quality thru Acceptance Test Driven Development."

The agile-vs.-offshore debate is familiar territory, and is fast becoming the central issue. The SEI model for software process maturity opened the floodgates for American development jobs to go overseas. With agile, we are reclaiming the software quality and innovation back where it started, here in North America. We know more today than we used to, about creative knowledge work (software).

Bart Murphy, Treasurer of COHAA, explains one reason why this reconsideration is taking place: "Outsourcing is proving to be an old-fashioned concept that might have worked well in old-line industries, such as manufacturing, but it is coming back to haunt some new-age industries."

I agree. But recognizing one of the main reasons that outsourcing can be so risky – the lack of assurance or common expectations on quality and productivity-- can help make outsourcing more successful. That is, measurement/benchmarking helps both sides set –and thus agree on-- more realistic expectations. Estimating is difficult at best in an outsourcing environment, and downright daunting without the proper tools, which is why studies like this are so important. They document actual practice.

The results from Columbus were aggregated into the SLIM software lifecycle management solution, which includes an industry-wide database of thousands of completed projects. SLIM allows "normal humans" to accomplish sophisticated analysis with ease. Chief among the results is the fact that programming teams that are co-located tend to be more effective than those where expertise is geographically divided. This is one of the facts that have lead to the reassessment of outsourcing software development.

Sure, outsourcing or offshoring may make sense in an Industrial Economy based in cost-effective manufacturing. And yes, as Bart says, it is harder in an Information Economy when knowledge workers are trying to solve design challenges. And, true, we have data to prove all that.

That being said, some companies may still choose to outsource. For those that do, benchmarking techniques serve a vital purpose in negotiation and relationship management. Knowing industry success factors and best practices will help the customer get the right price from the vendor. Software project history can help establish reasonable productivity targets and service levels for the client. As a vendor, measurement helps establish fair and reasonable business terms for both parties, and document fairness of goals.

Based on fact and not hyperbole, measurement helps create reasonable business terms and thus a healthy relationship, contributing to solid, proven relationship management practices.

If you do choose to outsource and it's working, you want to be able to demonstrate this with facts and figures, not just anecdotes.

Some of the best results in the Columbus study were achieved by enterprises working with Pillar Technology, developer of enterprise software solutions and consulting services. Agile has enabled Pillar to develop software solutions at a productivity and quality rate that can be up to 10x better than the industry norms.

Reflecting on the survey, the process, and on Agile itself, Bart Murphy of COHAA believes Agile development has proven itself. "In fact, we are now seeing some medium-to-large software shops actually repatriating programming resources that had been shipped to Asia or other countries, in what were considered strategic cost saving initiatives." And why is this? Although overseas development can sometimes bring dramatic schedule improvement, this often comes at a price: more defects, he says. "The cost to remediate and maintain the delivered work product outweighs the cost savings gained in the outsourced model, especially as offshore operating costs continue to rise."

Enrollments are still being accepted for companies that want to join the study, or any of the other surveys being planned for Munich, Chicago, Boston, and other locales (obtain information packet from [info@qsma.com](mailto:info@qsma.com)). As an incentive to participate, and a tool to facilitate the process, companies receive a temporary use license of SLIM, a data capture template that captures key metrics for Agile projects, including stories, story points, time, effort, defects, velocity, and backlog. Participants will receive a private, confidential analysis of their patterns along with the study results for the group.