

Software Development Practices within the Commercial Software Industry

2007 Report Published By



*QAVantage
33 Drummond Place
Red Bank, NJ 07701
1-800-573-1983
www.qavantage.com*

Acknowledgement

Our goal in leading this industry survey is to keep abreast of the current state of the commercial software industry software development process with respect to both tactical and strategic challenges and relate that to the effectiveness of practices, resources, tools and techniques applied to meet those challenges. QAVantage acknowledges and thanks the many participants and companies who provided input for the findings of this report. We hope that the information and analysis in this report will assist software companies in assessing their operations by supplying a window into common industry practice.

The Survey Process

- The survey responses contained within this report reflect surveys taken from August 1 through October 25, 2007.
- All 40 companies that completed the survey are commercial software companies
- Responses were provided by the following roles within these companies: QA/Product Management and Development Directors and Managers as well as various software company Executives
- Not all respondents answered every question in the survey.

About QAVantage

QAVantage is a software and consultative services company headquartered in Red Bank, NJ, USA and makers of RTIME™. QAVantage's RTIME™ is a unique Requirements Management and Delivery Assurance system recognized for its ease of use, speed of installation and adoption, affordability, performance and ease of maintenance. Some of the most demanding large enterprises have relied on RTIME™ to help Product Managers, Project Managers, Business Analysts, Developers and QA team members contribute and collaborate on the same set of prioritized requirements.

RTIME™ helps teams:

- Synchronize development with business needs
- Streamline the software development lifecycle
- Plan, prioritize, schedule, track, audit, trace, and report on the status of requirements and the deliverables they generate
- Improve decision support and agility

Table of Contents

Report Summary	1
Key Findings	1
About the Respondents	2
Detailed Survey Results.....	4
Resources	4
Outsourcing.....	6
Tools and Methods	7
Challenges	11

Report Summary

Key Findings

1. **Challenges-** The majority of companies (86%) cited resource constraints as one of their top 3 strategic challenges with Organizational Alignment (49%) and Time To Market Agility (43%) following. This was consistent across companies regardless of the number of employees, revenues or number of products being sold.
2. **Tools-** While over 75% of companies use a bug tracking tool, less than 20% use a tool specifically designed to aid in the software development process such as an SDLC tool.
3. **Outsourcing-** 47% outsource some development while 36% outsource some QA. A majority of companies that do outsource development are happy or somewhat happy with these services (60%), but only 48% rated similarly with outsourced QA .
4. **Defects-** Post release defects were reported as an issue by 70% of companies using a ratio based testing method while only 20% reported this as being a issue when a requirement driven testing technique was utilized.
5. **Methodologies-** Hybrid development methodologies are used by the majority of companies (56%) alone or in conjunction with other methods. From the data in this survey, no specific methodology appears to be significantly better in terms of delivering the agility and quality companies are seeking.

Advisements-

1. **Efficiencies-** Looking at top tactical challenges in combination with strategic challenges may also provide insight. The top ranked strategic challenge as was in finding 1 above was resource constraint issues (86% of respondents). The first and second ranked tactical challenges were requirement prioritization (86%) and rework (58%) respectively. Other studies ¹show that 70% of rework is related to requirements. Given the overarching nature of resource constraints that so many companies face we think it's quite safe to infer that most companies could free up scarce resources by improving in the following areas:
 - requirement prioritization tools and techniques that ensure the right requirements go into development in the first place
 - more frequent deliverable reviews throughout the software lifecycle to ensure requirements are being met
 - software tools and techniques that specialize in improving requirements management, collaboration and team visibility to aid in reducing miscommunications and rework
2. **Cost reductions** 53% of companies site post release defects as a top challenge. Considering defects can cost anywhere from 60 - 110 times² the cost to correct post release, it would appear that companies should consider requirements based over ratio

¹ Dean Leffingwell, Calculating Your ROI from more effective requirements management

² Pressman, Roger S., Software Engineering, A Practitioner's Approach, 3rd Edition, McGraw Hill, New York, 1992. p.559

based testing methods and consider other tools and techniques to catch defects as early in the cycle as possible.

The remainder of the report provides the responses to the following survey areas that our respondents provided input on

About the Respondents

All the companies surveyed for this report develop and sell commercial software selling one or more products. Figure 1 shows the breakdown of respondents by the number of products they sell.

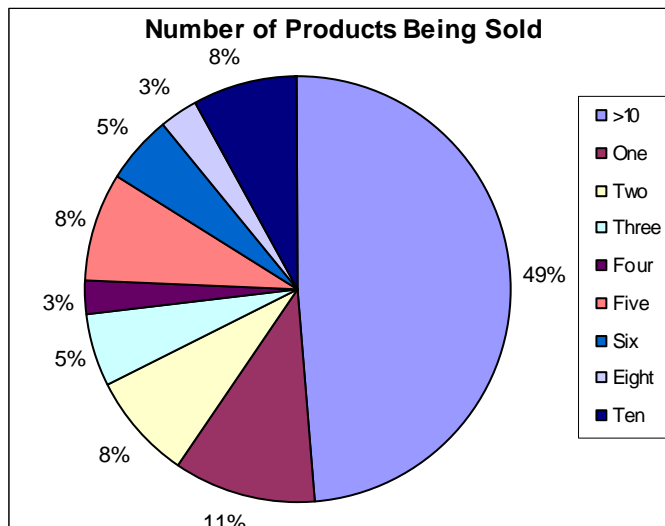


Figure 1

Figure 2 shows the breakdown of respondents by revenues, M representing millions of dollars.

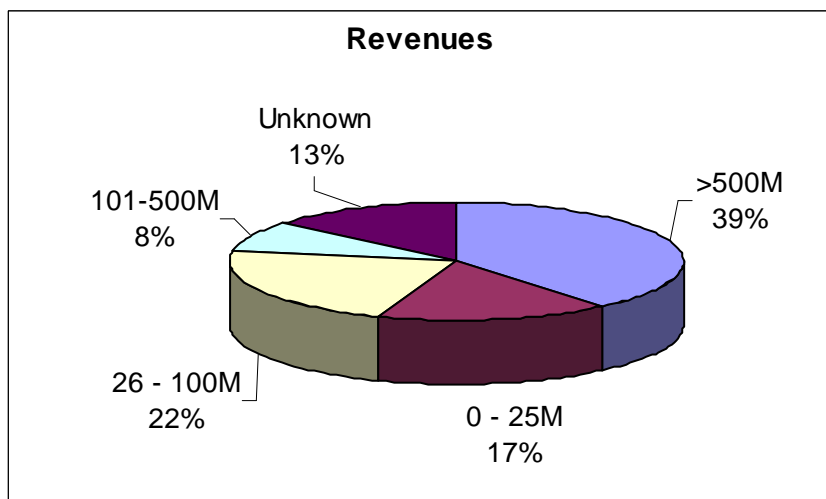


Figure 2

Figure 3 illustrates the number of employees.

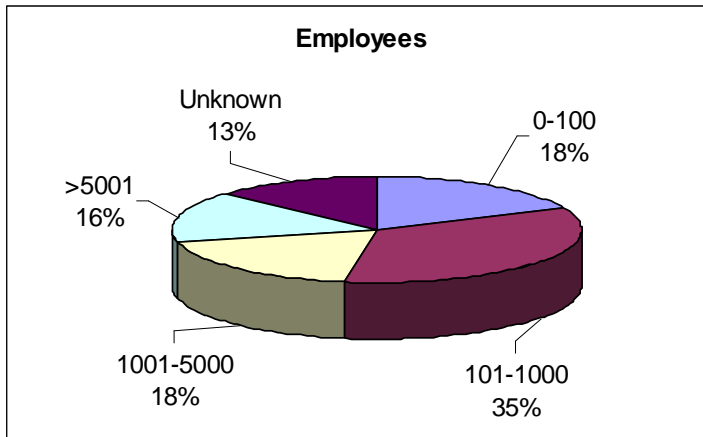


Figure 3

Figure 4 represents the functional area each respondent is a member of within their organization while Figure 5 shows each respondents position within the organization.

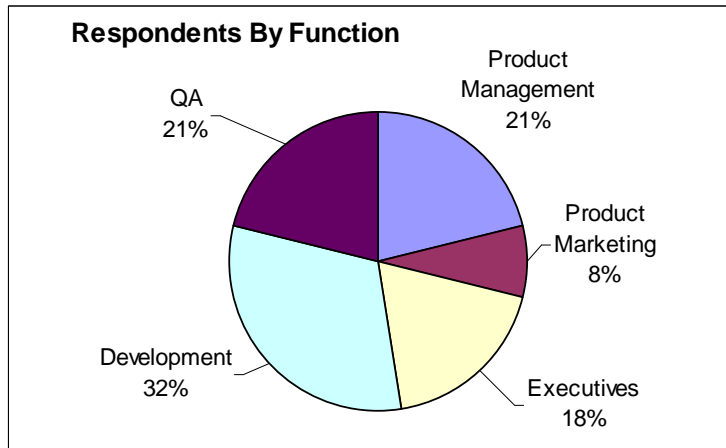


Figure 4

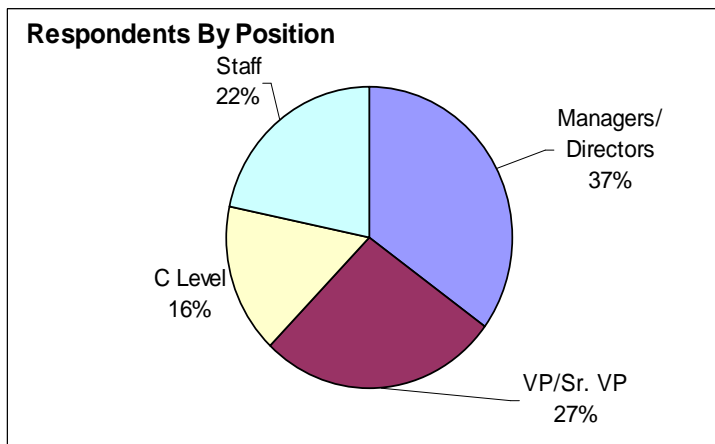


Figure 5

Detailed Survey Results

Resources

- How many product managers are there in your organization?

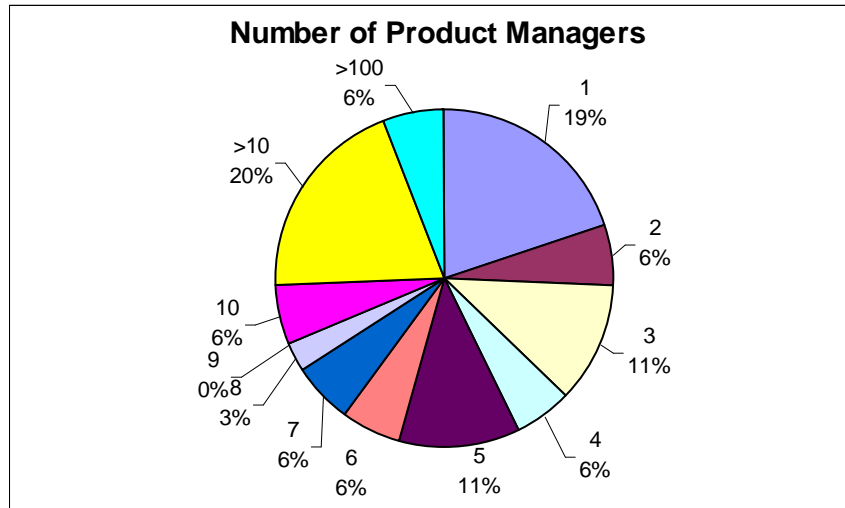


Figure 6

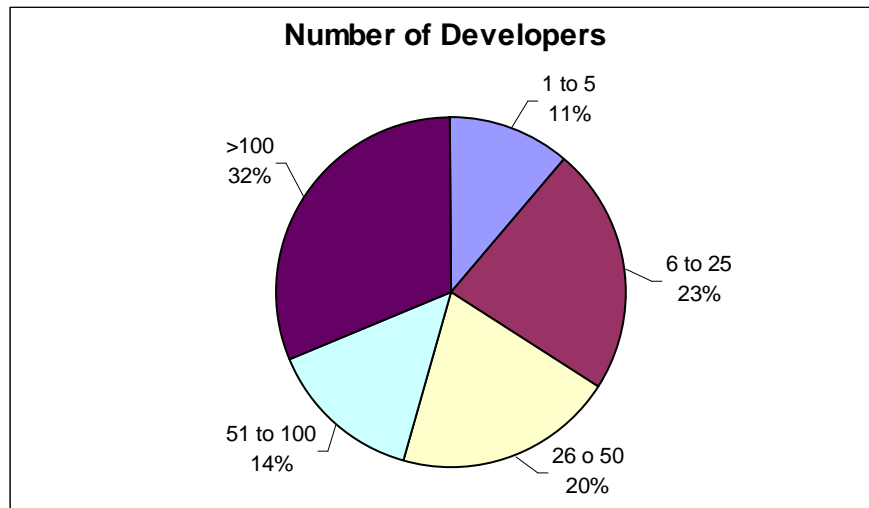


Figure 7

The average number of product managers to developers was 1 product manager to 7.3 developers with the highest ratio at 1 to 20 and the lowest at 1 to 3.5. Clearly product complexity, maturity and other factors determine this ratio. As a point of comparison, the 2006 Annual Product Management and Marketing Survey³ shows a ratio of 1 to 5 in

³ Steve Johnson 2006 Annual Product Management and Marketing Survey *The Pragmatic Marketer*, Volume 5, Issue 1, 2007, <http://www.productmarketing.com/publications/survey/2006>

the 2006 survey. It is probably reasonable to raise this slightly as Pragmatic Marketing's survey also sites an additional average .8 development lead and .4 architect personnel in addition to the 5 developers. If that is taken into consideration as part of the less fine distinction we make in our data collection, a 1 product manager to 6.2 'developers' ratio is getting closely approximate.

- How many QA members are there in your organization?

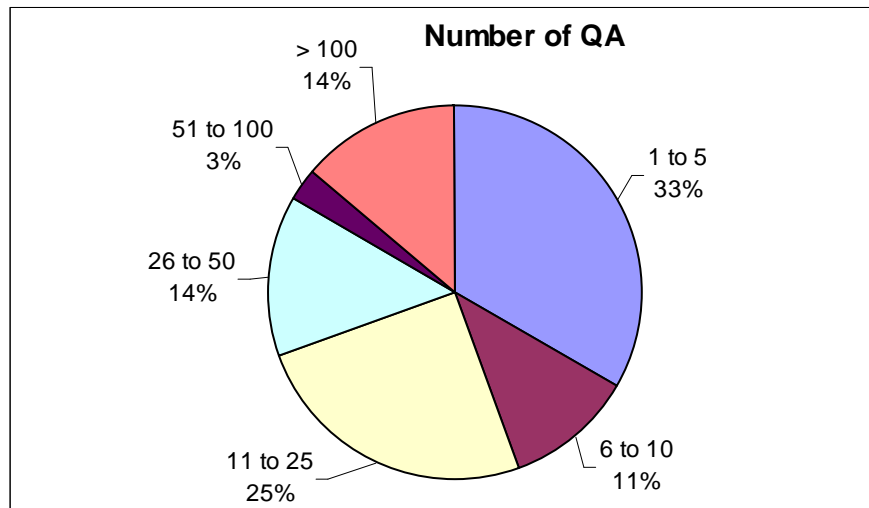


Figure 8

There was a very broad ratio range between the number of developers and the number of QA staff ranging on average from 1 to 1 to 10 to 1. Again, product complexity and numerous other factors likely affect this ratio.

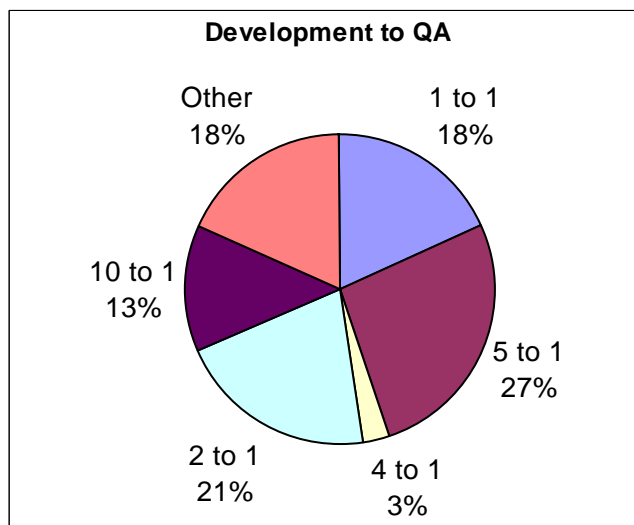


Figure 9

Outsourcing

- Do you outsource development?
- If yes, were you happy with the quality of work products delivered?

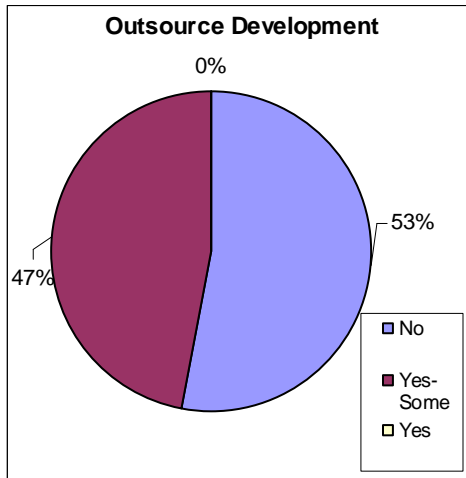


Figure 10a

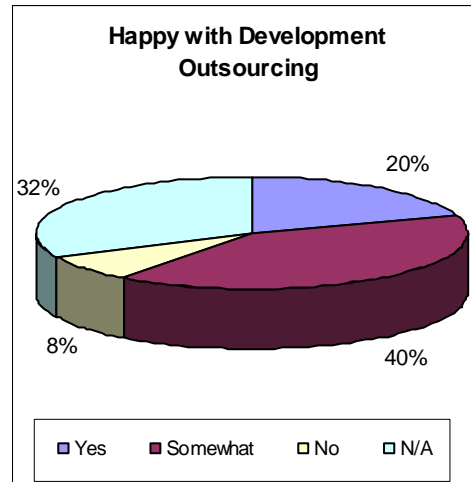


Figure 10b

- Do you outsource QA?
- If yes, were you happy with the quality of work products delivered?

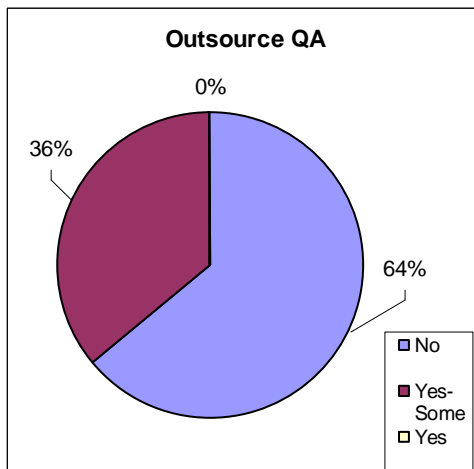


Figure 11a

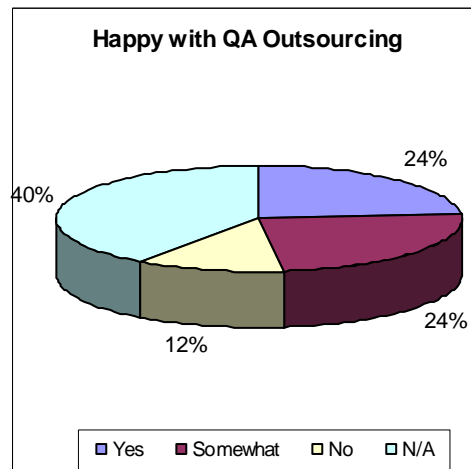


Figure 11b

Tools and Methods

- What methodology(s) do you use to manage your development lifecycle?
More than one response could be selected.

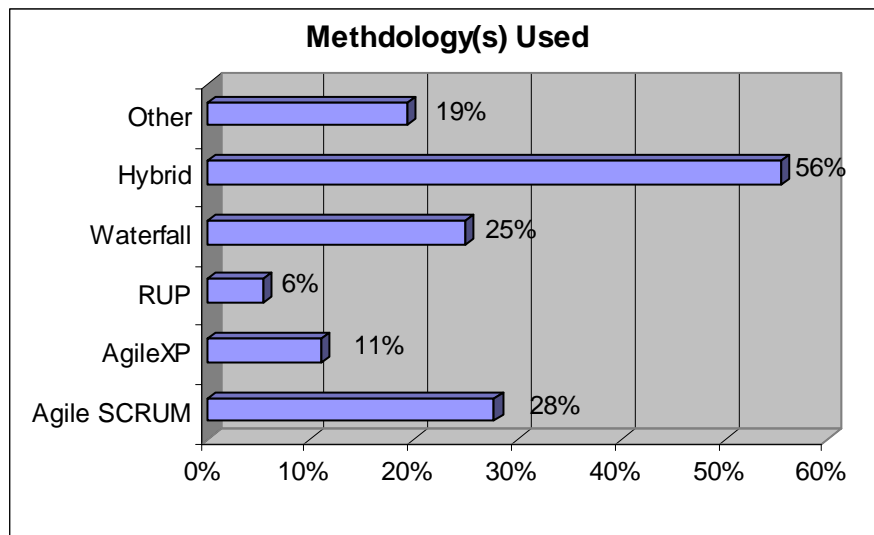


Figure 12

- Does the methodology you use provide the level of agility and quality you are looking for?

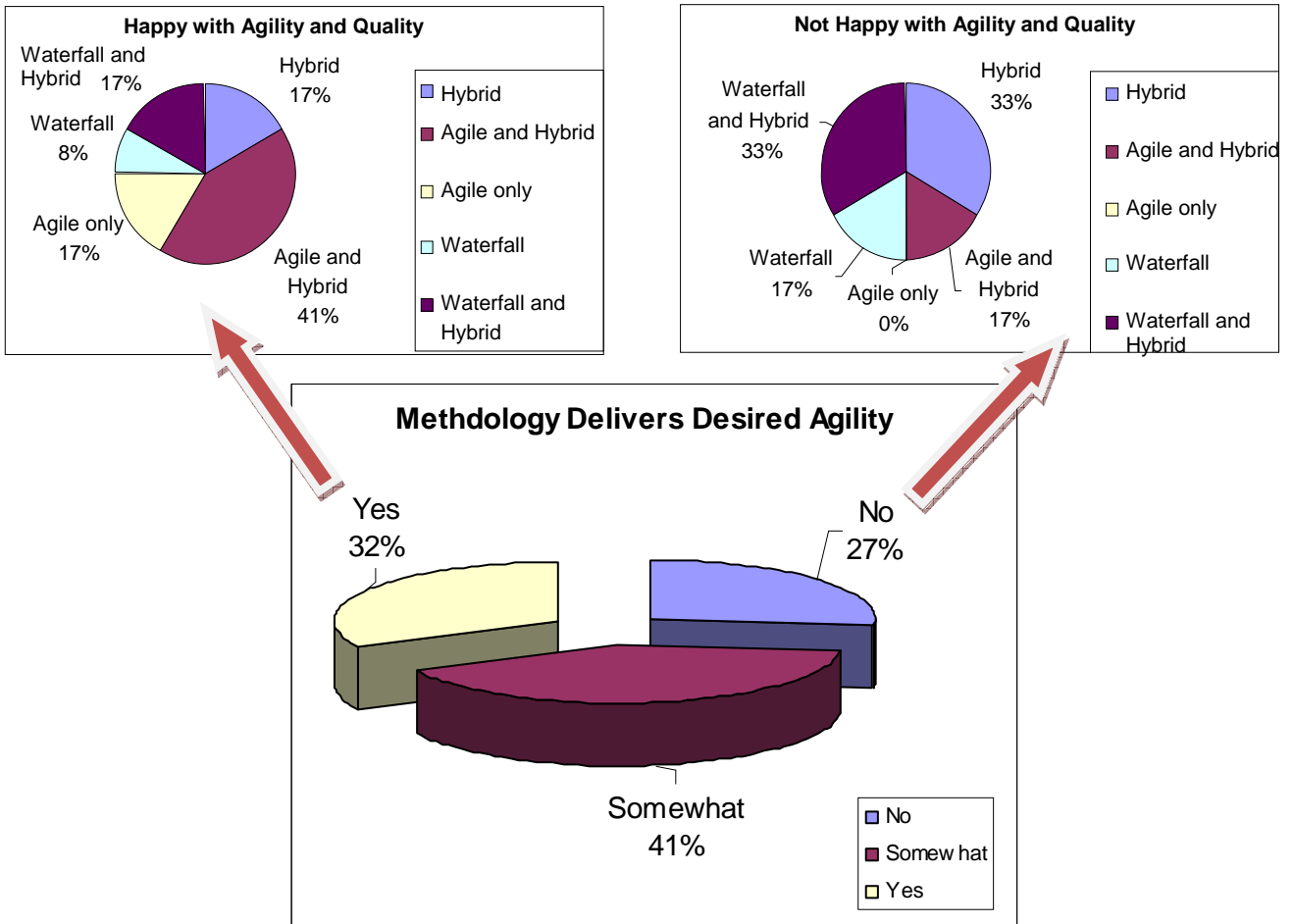


Figure 13

There was no clear indication that one methodology was superior in delivering the agility and quality companies are looking for as can be seen by the breakdown of the responses to this question.

What method do you use for testing? (Ratios are Development to Testing).

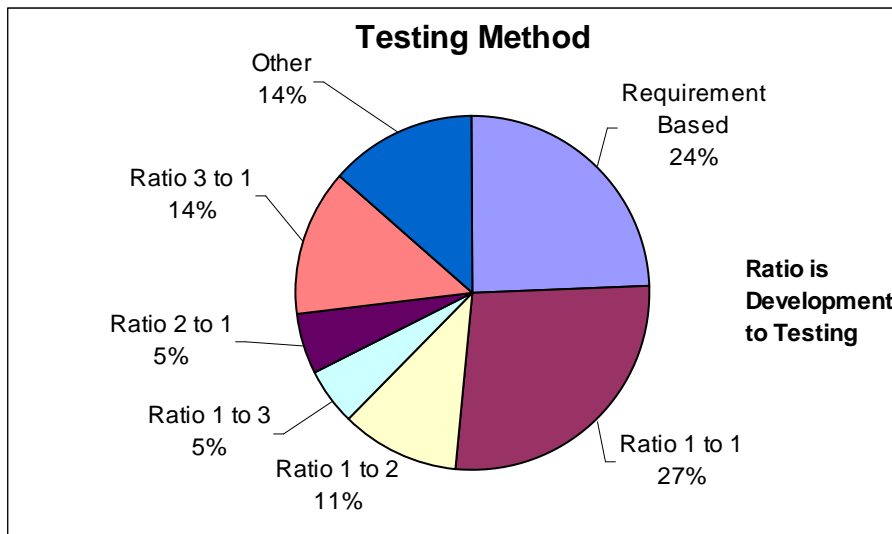


Figure 14

What tools do you use to manage your software lifecycle? More than one response could be selected.

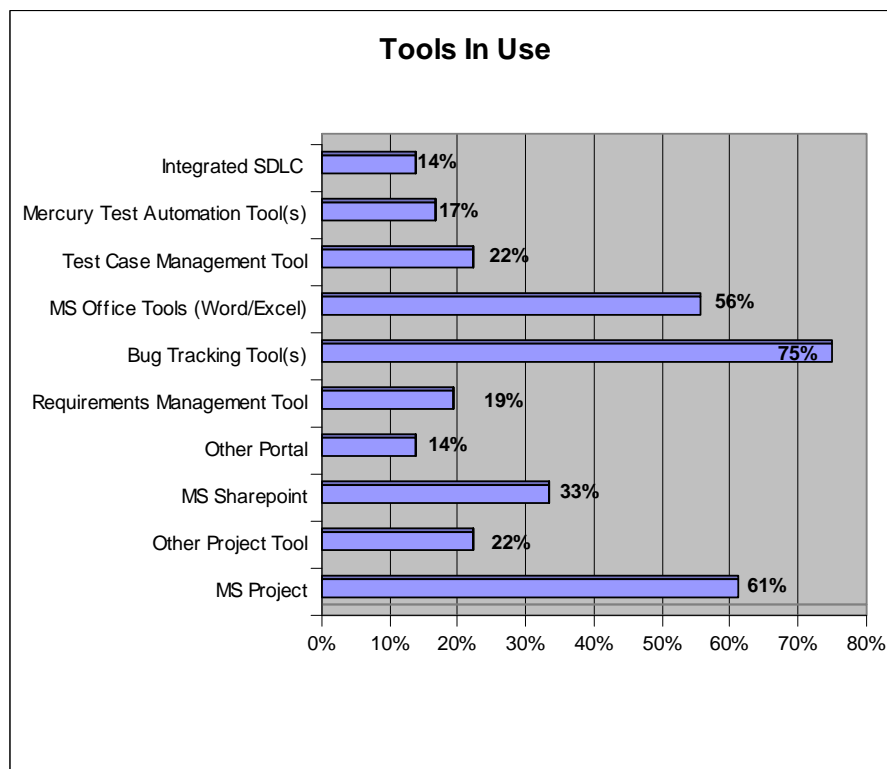


Figure 15

Other tools mentioned included: Parasoft test automation tools, SilkTest, Ruby and Wikis

Do the tools you use provide the level of visibility and collaboration you would like?

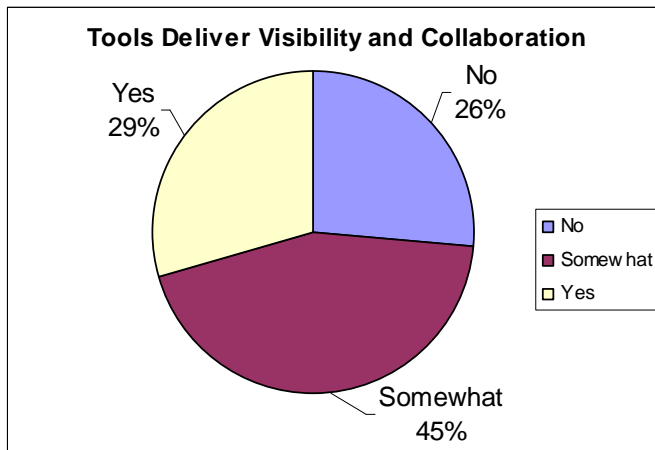


Figure 16

- Do the tools you use provide the level of requirement traceability you would like?

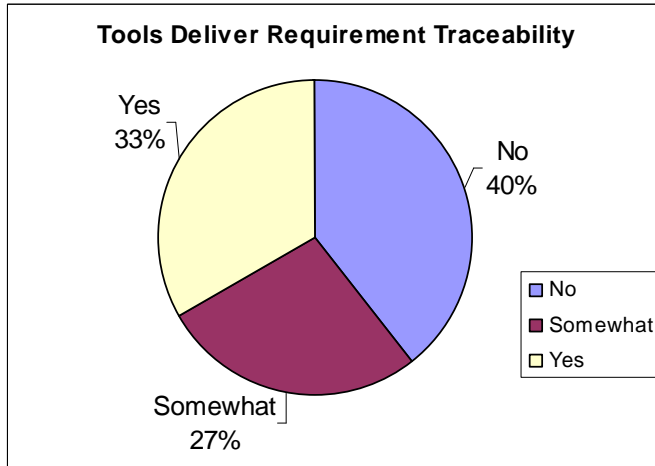


Figure 17

- Do the tools you use provide adequate reporting?

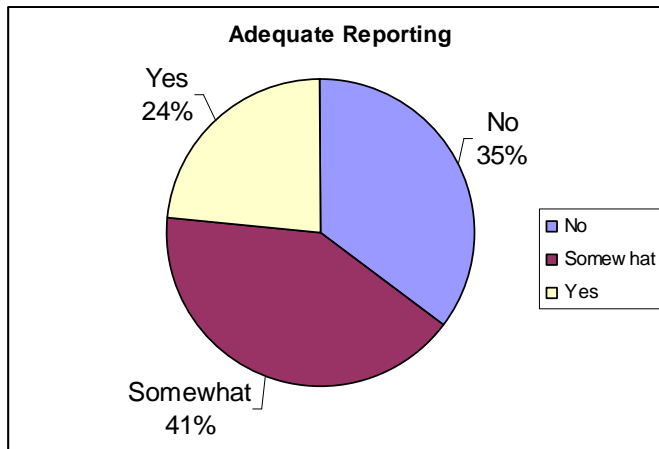


Figure 18

Challenges

- What are your top strategic challenges (select 3)

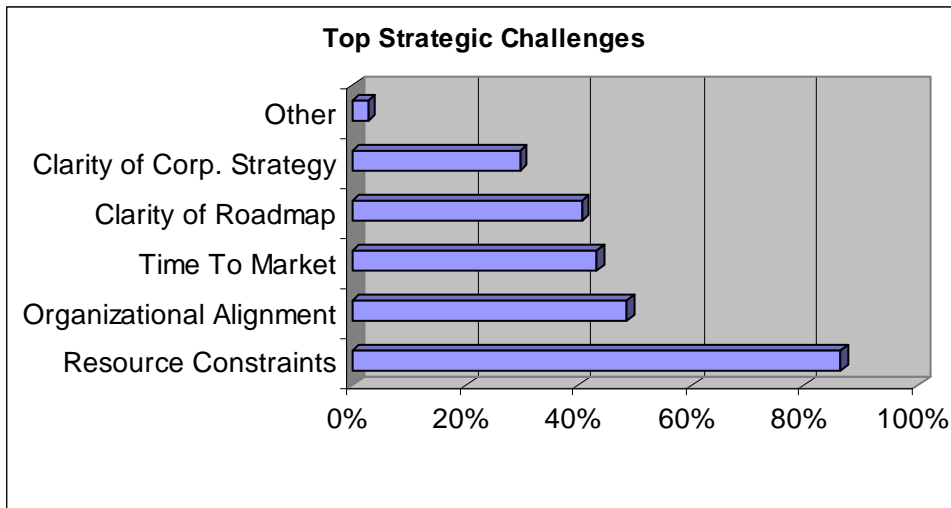


Figure 19

- What are your top tactical challenges (select 3)

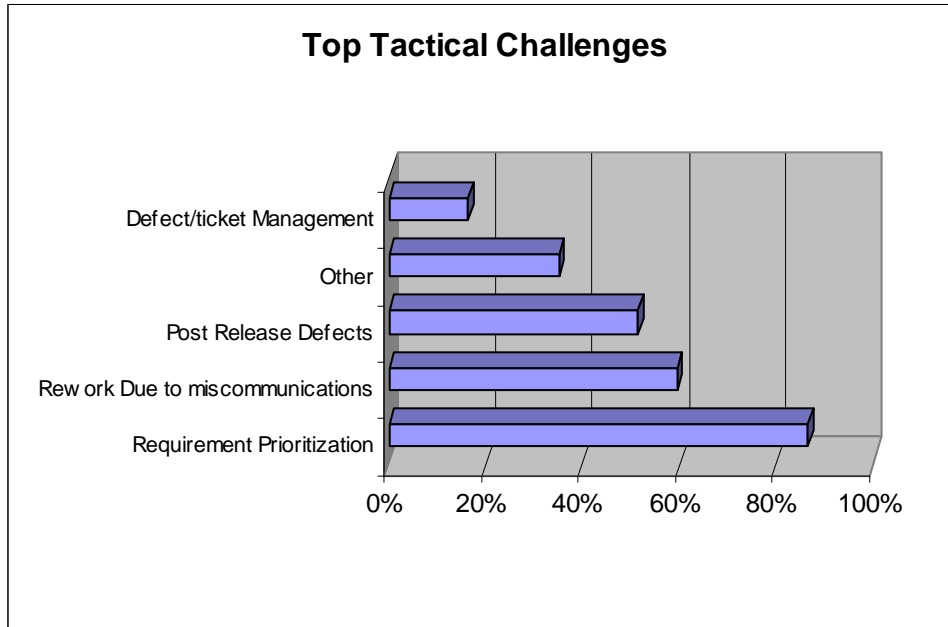


Figure 20

Other tactical challenges sited included: upstream process issues, missing requirements, unclear requirements, context switching between too many projects, knowledge silos, resource assignment changes, market paradigm shifts, test automation, offshore efficiency, aligning implementation with tested paths, market requirement and specification development, meeting release timelines, development quality.