CARITOR™
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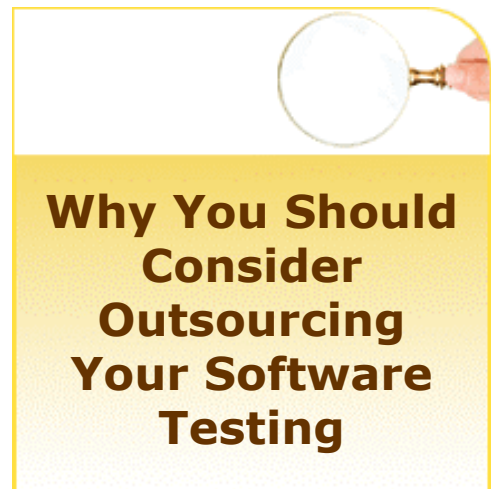# INDEPENDENT SOFTWARE TESTING

Why You Should Consider Outsourcing Your Software Testing

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Abstract

Software complexity, size, time to market and user sophistication have led to development of software testing as an independent discipline.

This white paper analyzes different testing engagement models in terms of its organization structure and interaction mechanism with the development organization. Given the increasingly specialized nature of software testing, outsourcing to organizations having an independent testing practice brings significant advantages to cost, quality, and time to market for software applications and products.

Introduction

Complex business needs, multiple delivery and computing platforms, time to market compulsions and increasing user sophistication have lead to exponential increase in software complexity and size. This trend has created avenues to examine paradigms that emphasize on software development and testing as dedicated streams in software engineering. In this context, we have analyzed three engagement models between testing and development to highlight the benefits and challenges.

Testing Engagement Models

Organizations, large and small have realized the benefits of engaging with software development vendors. Most large software engagements are executed in one of following models:

- Completely in-house software development
- Fully outsourced software development
- Partially outsourced software development (for instance, architecture and testing done in-house)
- Collaboration between in-house and vendor teams (hybrid)

In particular, software testing is executed one of the following models:

- Software development engineers allocated to testing
- Test engineers organized into a separate function within the development organization
- Testing services provided by independent testing organizations or software firms having an independent testing practice

The table lists the benefits and challenges of these testing engagement models:

Engagement Model and Benefits	Challenges
Software development engineers allocated to testing **Benefits**: - Better coordination and control with faster turnaround - Increased effort in solution building rather than testing - Improved domain familiarity, for future releases	- Conformance to requirements and performance standards is suspect - Testing loses end-user perspective - Delivery deadline pressures may result in shallow testing
Test engineers organized into a **separate function** within development organization **Benefits**: - Independent validation of requirements - Sharing of best practices across projects - Exclusive expertise, bandwidth and orientation for testing	- Conflict of interest between development and testing in acceptance criteria and certifying system for production release - Cannot scale on demand, impacting quality of testing - Specialized testing skills and expertise on tools may be unavailable and subject to budget constraints
Testing provided by **independent testing organizations** or **software firms having** an **independent testing practice** **Benefits**:	- Challenges related to multi sourcing

Engagement Model and Benefits	Challenges
▪ Improved software quality ▪ Reduced time to market ▪ Optimized cost of testing ▪ Lower lifecycle costs Additional benefit ▪ Manage HR challenge	▪ Relationship building

In the next section, we describe how firms will realize benefits by engaging with independent testing organizations or software firms with an independent testing practice. However, organizations need to handle challenges related to multi-sourcing when considering an independent testing vendor.

Benefits of Independent Testing Practice

Figure 1: Benefits of Independent Testing Practice

Improved Software Quality

The primary benefit of engaging with organizations having an independent testing practice is improved software quality. Improved quality results from:

- Management independence, which ensures adequate focus to quality, timeliness and conformance to requirements without schedule or budget overruns
- Technical and process independence which is achieved through best of breed processes, specialized resources and tools for testing the application
- Central repository of testing best practices such as mechanisms to identify defects in early release cycles and approaches for reducing test case development effort

Reduced Time to Market

Organizations having an independent testing practice ensure improved time to market by enabling faster turnaround of releases. This is achieved through:

- Expertise in test automation strategies, enabling faster testing cycles
- Optimizing staffing lead time and improving the ability to handle fluctuations in demand
- Higher degree of predictability in testing effort, enabling adherence to schedule

Optimized Testing Cost

Testing costs are a significant component of the total software project cost. Organizations having an independent testing practice allow you to optimize your testing spend since they use automation, employ specialized resources across projects, and leverage multiple assignments for resource optimization. This is achieved through:

- ROI based test automation approaches enabling reductions to testing cost
- Access to specialized resources for areas such as test automation, performance testing and functional testing. Their expertise can be leveraged across projects
- Ability to handle variability in staffing demands during the development lifecycle by leveraging on a large pool of skilled resources

Lower Lifecycle Costs

Software firms with an independent testing practice can provide exclusive focus on quality and conformance to requirements, ensuring that software is engineered for low failure rates and reduced maintenance costs. This is achieved through:

- Subjecting the software to rigorous testing cycles across testing streams such as functionality testing, performance testing, load testing and so on
- Improved focus on maintainability and scalability to address future needs

Manage HR Challenge

Independent testing practices are geared to meet the challenges of hiring, retaining, and motivating skilled testing resources. This is achieved through:

- Staffing the testing practice with employees who intend to pursue testing as a mainstream profession. On the other hand, development organizations may be staffed with personnel who are not aspiring for a career in testing

- Providing an environment for senior staff to value add, since testing is the primary line of business for the practice. This provides sufficient challenges and fosters a enriching environment for growth
- Enabling a stimulating and motivating work culture. Organizations with an independent testing practice provide the right environment for testing professionals to contribute to the best of their ability. On the other hand, development organizations having embedded testing functions provide greater prominence and visibility for software development professionals over testing professionals

Case In Point

Caritor's independent testing practice has employed unique validation strategies to provide close to 40% cost savings for a healthcare major in the US.

Further we have effected ongoing savings of around 20% in maintenance effort due to the enhanced quality of the application.

Caritor's independent testing practice has reduced the testing duration for releases by as much as 94%!

Conclusion

While organizations are deriving value from outsourcing software development, outsourcing software testing will maximize returns from their IT investments. This can be achieved by partnering with software firms having an independent testing practice. Further, this benefit can be enhanced if the outsourced vendor is an offshore end to end service provider.

The management, technical, process and resource independence of software firms having an independent testing practice leads to lower lifecycle costs through enhanced quality, improved time to market and reduced support and maintenance costs. Additional benefits accrue in the form of improved ability to address human capital management challenges and overall reduction in total costs.

About Caritor

Caritor is a global provider of leading-edge IT solutions to transnational corporations. We are a CMMI Level 5 version 1.2 organization, leveraging next-generation Global Sourcing best practices to maximize value for our customers. We have a large independent testing practice with over 1600 person years of experience in delivering testing services. In addition, our end to end service offerings include Product Engineering, Application Development and Management, Enterprise Business Applications and Network & Infrastructure Services. We serve the industry segments of Manufacturing, Healthcare, BFSI, Retail & Distribution, Public Sector, Media & Communication and Transportation.

Caritor is an ISO 9001:2000, CMMI Level 5, PCMM Level 5 and BS 7799:2002 certified organization, incorporated and headquartered in San Ramon, California.