

Integrating BA and QA in Healthcare IT

BA/QA integration is a fundamental enabler for Agile in the enterprise, delivering better quality and faster results.

Author: Ritesh Kaul, Sr. VP, emids Client Solutions & Practices

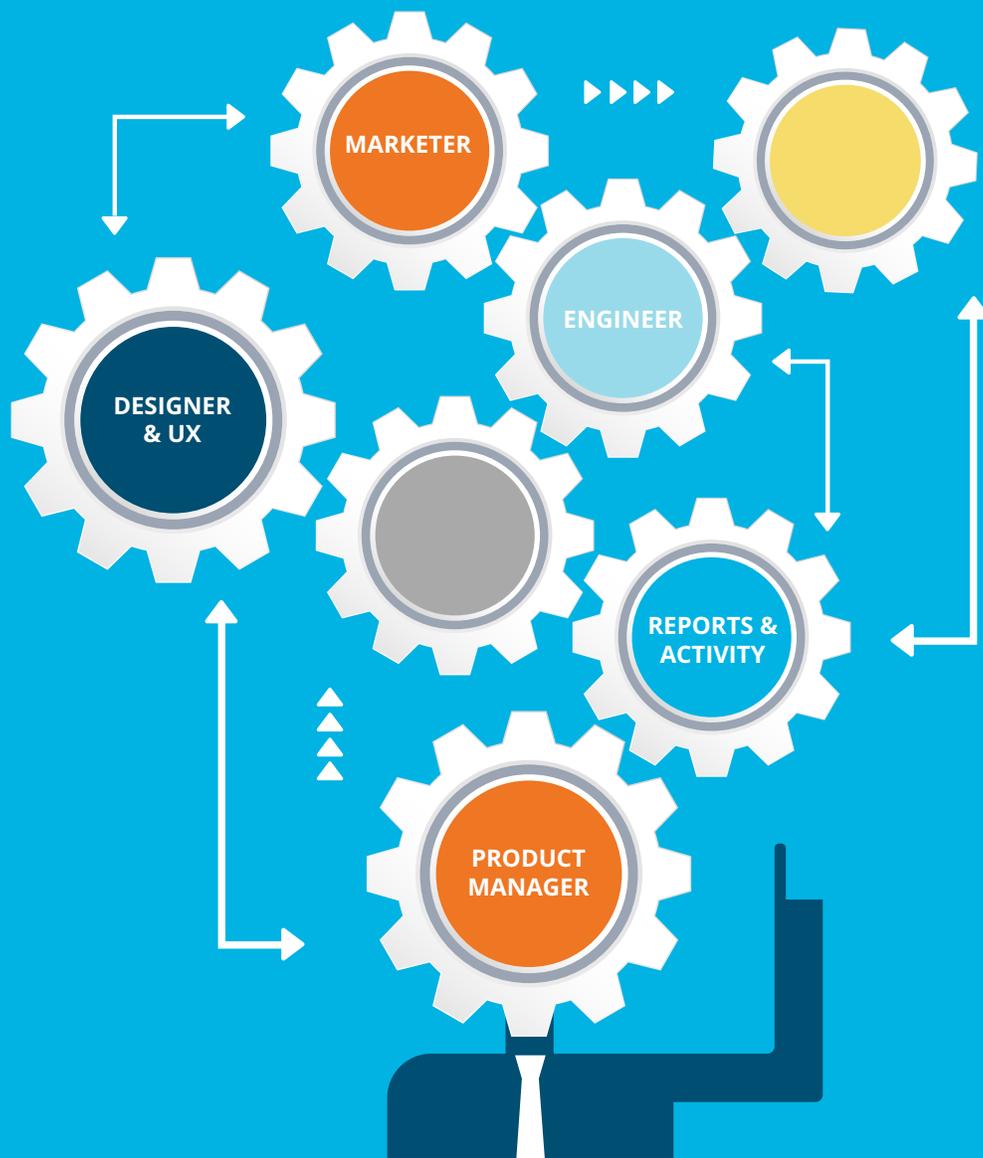


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The Challenge With Agile

The healthcare industry, a sector undergoing dramatic and evolutionary changes, is increasingly dependent on advanced information technology to meet the needs of consumers, health plans and providers. These pressures make healthcare IT organizations perfect candidates for Agile and DevOps transformation.

Healthcare is under the gun to change: Companies must respond quickly to marketplace changes, such as new reimbursement models and regulatory demands. Healthcare executives must overhaul the cost and quality of care delivered as well as the patient experience to keep costs down and stay compliant. Having the right systems and applications to collect and analyze data to help meet these goals is critical. There's no time to waste.

Yet there's a problem. Large companies have entrenched silos of people and processes in development that are hard to break. Silos do not fit well into Agile, where team members take on overlapping, cross-functional roles to design, develop, test and deploy, and where frequent

collaboration is required. This workflow becomes more accelerated in DevOps, where extreme automation comes to play and weekly or daily releases are the norm. As a result, in healthcare and elsewhere, enterprises are struggling to make the leap to Agile. The organizational structure or its culture often seem at odds with the intent.

An additional challenge for the large company is the prevalence of multi-vendor outsourcing strategies. With development and other IT functions distributed in multiple locations and time zones around the world, it's difficult to collaborate and stay on the same page. Yet without dramatic transformation of product development methodologies, scope creep and quality issues continue, deadlines slip, and companies cannot move fast enough to compete.

To improve efficiency, many companies have co-located BA and QA team members or integrated responsibilities into the same role, placing the same person on both ends of the process.



Having the right systems and applications to collect and analyze data to help meet rapidly evolving HIT needs is critical. There's no time to waste.

Introducing BA/QA Integration

A new model is gaining favor to help large companies adopt Agile more effectively and deliver business value faster: BA/QA integration. The business analyst (BA) and the quality assurance analyst (QA) have long been separate roles with little interaction. This creates inefficiencies given the traditional, linear process: The business client provides the needs to the BA, who develops solutions and turns them into requirements, after which developers execute on the requirements. Finally, QA tests, but without the background knowledge or context; they know “what” to test but often don’t know the “why.” This can mean that QA misses critical pieces of the application for testing and may not understand well enough the various use cases. When products demand frequent updates, this disconnected development process becomes even more painful and slow. The BA-to-QA model places

individuals with both sets of skills to lead both ends of the process, telling developers how to build the feature in the beginning and ensuring they did it right in the end.

BA/QA integration also supports the move to popular Agile processes such as Behavior-Driven Development (BDD) and Acceptance Test-Driven Development (ATDD). In BDD/ATDD, requirements are written as user stories expressed in terms of features and benefits, and acceptance criteria are written as events and outcomes. Traditionally, business analysts are adept at writing the user stories and communicating it to developers, while the quality assurance engineer is skilled at writing acceptance criteria. With the roles consolidated into one person, development teams get clear direction and feedback from a single source, better aligning the entire application development lifecycle.



Top benefits for BA/QA integration include:

- Higher-quality development and reduced time to market, as the product is tested according to the way it was built.
- Improved alignment with Agile processes, supporting cross-functional roles and tightly integrated development processes.
- Consolidation of deep product and process expertise into key individuals and reduction of silos to just two groups: BA/QA and development.
- Development teams can work faster, particularly when changes and new features are required at a moment’s notice.
- The BA/QA manager is in close touch with product managers and sales, and can therefore develop new requirements and validate them in a coordinated, streamlined fashion without the risk of incomplete knowledge transfer.
- In an outsourced IT environment, BA/QA integration also offers a valuable balance to development, since the outsourced group could focus on development while the in-house team or a second vendor handles BA/QA, spreading the risk and providing a checks-and-balances process to optimize quality.
- Quantifiable increase in quality metrics: Regarding critical defects, when a company integrates these two functions, they can reduce UAT leakage defects from 4 percent or higher to less than 1 percent. That translates into measurable savings in time as well as development costs.

Defining and Creating the New BA/QA Role

A BA/QA expert is a unique individual, one who possesses an in-depth understanding of the business domain and customer needs to define new software requirements yet who also has deep technical expertise in testing including the ability to write test cases and use testing automation software. The job of this individual comprises several important responsibilities, including:

1. Effectively capturing business requirements to write the user story
2. Writing the acceptance criteria in the BDD orientation of business language, per specific frameworks such as Fitnesses, Cucumber or StoryQ
3. Verifying that code meets the acceptance criteria, preferably through automated testing platforms
4. Communicating effectively with developers on explanation of user stories and validating the end implementation of the requirements
5. Communicating with product managers on product roadmap, backlog grooming, prioritization of requirements and fleshing out the sprint/release plans
6. Communicating effectively with business stakeholders to acquire user feedback and refine requirements



Case Study—Top 5 U.S. Health Insurance Provider

A diversified, top 5 U.S. health insurance provider, which began selling health insurance in the 19th century and today has 46 million members, has utilized emids for BA and QA services as they have had to shift focus in recent years.

Problem

The company developed population health applications for members, nurses and physicians to help engage and monitor patients as a means to take a proactive role in the health of its members, reduce the cost of care and improve outcomes. The mobile apps enable patients to track their own progress against health goals while giving caregivers easy tools to manage individual treatment plans and follow up with patients.

So far, these applications are monitoring 64 million patients and resulting in some impressive improvements: savings of \$1,856 per nurse-engaged member per year and a 6.1 percent reduction in highly impactable admissions for disease management participants.

The company has for many years contracted with an offshore vendor in India to support product development. To reduce risk and improve quality and time to market, the subsidiary's CIO brought on board a second offshore provider, also located in India, in 2014. Coordination between the client and multiple vendors proved to be challenging.

Solution

The CIO initially opted to split product development responsibilities between the two vendors with the original vendor doing development and emids providing BA and QA services. Instead of having three separate groups to coordinate, emids suggested integrating BA and QA roles to streamline development, co-locate two critical roles and, ultimately, improve the company's Agile development practice.

Proof of Success

Implementing the new model for development went smoothly, given a few key variables: development of a detailed transition plan and the assignment of a transition manager who was an effective mediator between the India teams and the company in the United States. The transition manager also facilitated knowledge transfer between the vendors and instituted governance processes, including daily and weekly updates to the transition team on progress and issues.

The company discovered that BA/QA integration has improved facilitation between team members around the use cases, testing strategy and working within Agile and continuous development workflows. More importantly, the integrated team has been able to identify metrics that contribute to the overall quality of the product and which can be managed effectively by this integrated model.

The BA/QA integration has also enabled the company to identify defects early in the process and remediate them much more inexpensively. There is now more contextual knowledge among the team members and they are able to propose ideas for improvement related to functionality, compliance and quality. Previously, teams worked in silos and did not understand the effects of their changes on other teams or the overall quality of the products.

- Testing coverage: Increase from 28.5 test cases written per person, per release to 310
- Test automation: From zero automation to 79% automation of test scripts resulting in 60% effort savings across three applications
- Defects leakage: Decrease in percentage of defects not caught before production from .67 percent to .23 percent
- Severe defects: Decrease in the number of Sev1/Sev2 defects identified in production from 5 to 1 per release
- User story quality: Increased the quality of user stories by 17%, as measured by client
- Team productivity: Increased the productivity of teams by 25% Q-on-Q in 2015, as measured by number of test cases executed per release

In time, the teams expect these quality metrics to improve further as processes are refined. The new development model has also resulted in far better collaboration between groups which were previously operating in silos. Both of the offshore vendors participate in regular strategy discussions with the product leadership team at the company, providing critical feedback that influences key development decisions and keeps everyone on the same page.

Considerations, Practices, Caveats

New initiatives to transform processes for the sake of customer competitive advantage may quickly gain buy-in across an organization, yet it's hard to change how people work and think overnight. The following guidelines can provide a structure for getting started.

1. Shifting from multiple roles to a single position

Retraining individuals to take on both BA and QA responsibilities can be a significant undertaking, particularly when people are coming from organizations with regimented silos and divisions. Let's consider the differences between these two roles. The traditional business analyst writes the application requirements from a functional end-user standpoint. That entails detailing a process, such as a physician ordering a test or prescription within the EMR. There are several steps that must take place before the order can be submitted, including entering the diagnosis, looking up patient records for information on allergies and other medications, and then submitting the medication to a drug database where it is validated (or not) to be safely prescribed without contraindications for the patient.

From the QA perspective, there is the need to validate that the feature works from both a functional and technical standpoint. On the latter, that means checking all of the interactions on the backend where systems must exchange data and complete processes without glitches or delays.

Consolidating these roles into one job takes some work. Naturally, for the BA to take on QA tasks, he must gain a deeper technical understanding of the product to validate the test. The QA expert must conversely understand the functional requirements and the business process. He needs to gain expertise on the industry including the various job roles and workflow supported by the application.

2. Cross-training for success

While both transitions are complex, it is more difficult for QAs to take on BA responsibilities, due to the level of domain expertise required for writing requirements and envisioning the myriad scenarios that could take place within an application and its features.

Cross-training of BA/QA roles should include:

- A series of courses for immersion learning on the industry sector (for QA to BA);
- A hands-on lab to simulate how users interact with the applications including technical training for the BA; and
- A deep-dive session to deliver perspective on the broader development spectrum including functional, technical, design and deployment considerations.

The cross-training process can take several weeks, and is best accomplished with the help of an outside consultancy or training firm. Beyond formal training, QAs should take the initiative to learn the other party's language, the business talk, while BAs seeking to convert will need to spend more time with developers understanding technical requirements. Individuals positioned for dual roles must have excellent interpersonal skills and enthusiasm to bridge the gap and work across new disciplines. The effort will pay off with respect and cooperation from other team members.

3. The caveats of integration

While BA/QA integration is ideal for most organizations moving to Agile, there are cases in which it may not be appropriate, such as for testing and validating niche features and capabilities. For example, when testing and validating features relate to security and performance, technical specialists are needed. In other scenarios, an organization might be too far away from Agile to derive much benefit from integrating roles, or else there are other cultural or leadership issues where change will be difficult. A company that is undergoing significant transition at the business level, such as through a merger or acquisition, may also choose to wait for the dust to settle before introducing an overhaul to development methods and processes.

Summary

Healthcare organizations are moving to Agile development practices to speed time-to-market and improve efficiencies across the development process with the goal of better quality software. Yet in large organizations particularly, intractable departmental silos stand in the way of Agile optimization. Multi-vendor outsourcing strategies involving teams located around the globe complicate the silos and prevent frequent and rapid collaboration.

One solution gaining traction for improved efficiency in healthcare IT product development is BA/QA integration, where BA and QA team members are co-located and, whenever possible, merged into the same role. The integrated model is far more efficient and reduces defects by placing the same person on both ends of the process. That individual tells developers

how to build the feature in the beginning and ensures that they execute correctly later. Since products are tested according to the way they are built, with no gaps in information between disconnected BA and QA groups, product quality typically goes up along with end-user satisfaction. This model also aligns much better with Agile processes, where cross-functional roles and extreme collaboration are important.

Finally, products are released faster to users when there are fewer silos to integrate. In today's environment, where new healthcare IT products and services are in constant need, this means that product teams can respond at a moment's notice to fix a problem or satisfy the demand for a new feature. Doing all of this efficiently saves money on development and makes for happy customers.

Ritesh Kaul

Ritesh Kaul, Sr. VP, Client Solutions & Practices, brings significant cross-functional experience in driving delivery and competency groups. He has successfully led large delivery organizations and has established healthcare focused technology centers of excellence at emids. As part of his current role, Ritesh focuses on creating customer-centric solutions, accelerators and value-addition frameworks across various technology stacks. His past experience includes work with Infosys and Nortel.

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