



Software Development & Quality Assurance Methodology Overview

Our View of Software Quality Assurance – The Framework

We view software quality assurance (QA) as an integral part of software development process. Our QA methodology is based on Extreme Programming methodology, and known as Extreme Focused Rapid Agile QA (EFRAQA). EFRAQA methodology has been developed and enhanced over the years and covers both analytical and productive quality assurance. Analytic quality assurance consists of those QA activities that ascertain that the software meets specific predefined quality and performance standards, while productive quality assurance activities focus on improving the product in term of usability, business process, functionality, features, performance, etc. The guiding principles of EFRAQA are:

- Simple Plan and Documentation that focuses on the fast delivery of a working product
- QA as an integral part of the software development Process
- Test and QA must start early during the development process (parallel with implementation)
- Short Interaction Cycle
- Frequent Software Builds and Deliveries
- Frequent User/Customer Feedback
- Small and Knowledgeable Development Teams
- Extreme Development/QA and Customer Collaboration

From these principles, we have derived a QA Framework (Figure-1) that ensures that we don't spend our precious time on documentation and planning, but spend it on getting a software product built and working in the fastest time possible. Our primary drivers are to "keep things simple", "make it flexible", "when you build it, built it to adapt", "collaborate when developing", "make components and modules, that can work on their own", "test and QA as you go", "don't wait until the end, then start QA", "documentation and plans become obsolete, so keep them simple and usable", "the best test and QA is customer use of the software", and "customer feedback is the Optimal Quality Indicator".

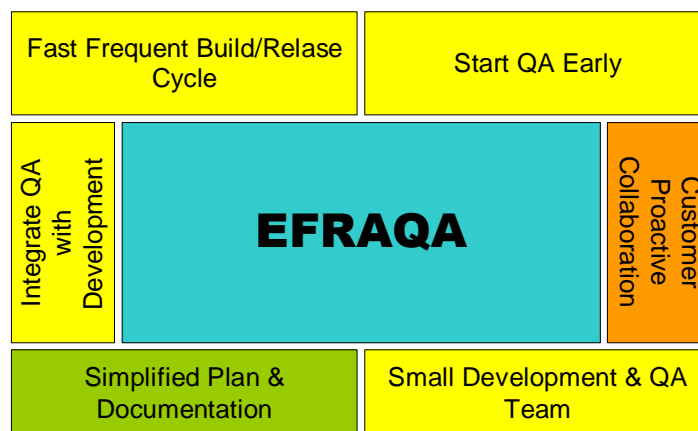


Figure-1: EFRAQA Framework



Our View of Software Quality Assurance – The Process

The QA process under EFRAQA Framework is shown in figure-2 and commences with the product vision and team. The product team consists of a product manager, development and QA team, .and selected number of customers.

The development and QA team is kept small and integrated for a high degree of collaboration and communication. The product feature list is formulated from the product vision and client/customer wish list. The product feature list is further refined through frequent work meetings between the product manager and development/QA team, as well as customers' feedback.

Once the product feature list is finalized, a product feature implementation priority list is generated. Then, a high level product architecture is prepared and reviewed by the product manager and the development/QA team. Once the architecture is solidified, then the product is divided into functional components or modules which are business process related and can be implemented, tested, and built independently. Thus dividing the product development into sub-products (product components). Subsequent to this step, an implementation plan is prepared by product component and release priority. Based on the product implementation/release plan, the specifications of the high priority product components is prepared including the test and QA Scenarios and Cases. Note that the Test/QA scenarios are used to drive the specifications of the product component(s).

Once the product component and Test/QA Scenarios and Cases are prepared, then implementation (coding), testing, and QA commence. Note here that QA is conducted in parallel with the implementation (coding) using the Test/QA scenarios and cases, and an extensive collaboration and communication between development, QA, and test staff is taking place during the implementation, so to identify and correct defects earlier in the product development life cycle. So by the time the product alpha/beta release is built, the product/component has already gone through extensive QA and most of the defects have been identified and resolved.

The focus of the QA process is to get a working product/component built as soon as possible and released to the customer for review and feedback. The principle driver here is that the "optimal QA indicator" is the use of the product by the customer and feedback from the user. The QA activities and associated scenarios encompass the following:

- Business Process Validation QA
- Functional QA
- Integration QA
- Reliability QA
- Performance QA
- Stress QA
- Consistency QA
- Usability QA

The above QA activities are conducted by product component and by product build. Note that the development/QA process is driven by frequent product builds and releases. Thus, we tend to produce a product build every two to three days. And subsequent to QA, an alpha/beta product build is generated almost every week and shipped to the participating customers for review and feedback. With this approach, our product release time is very short.

At the end of the day, the primary goal of the development and QA is to get a working product to the customer as soon as possible. This is the principle behind EFRAQA Framework and our Development/QA process approach.



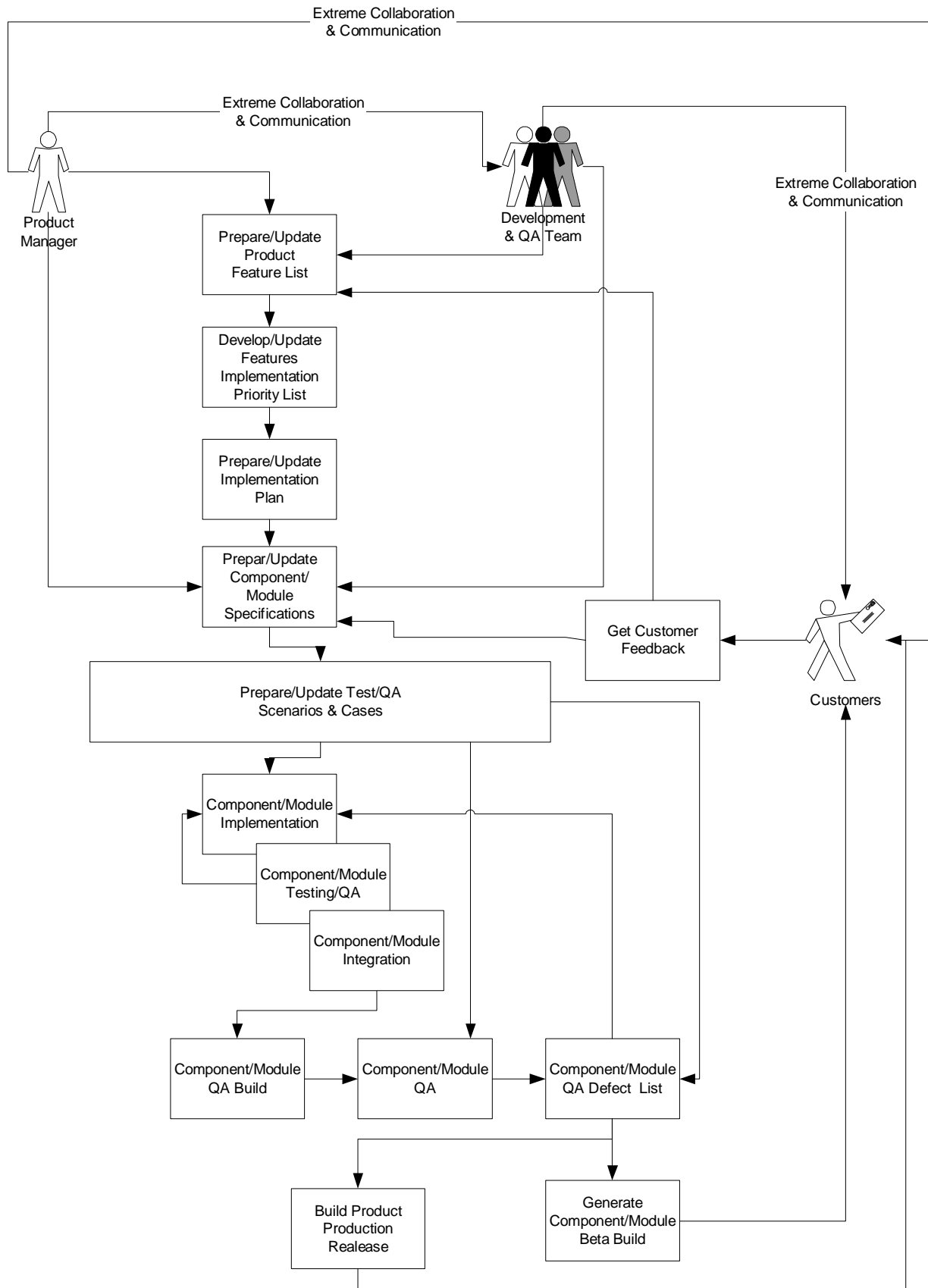


Figure-2: Development/QA Process