

Agility In Mobile Testing

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Abstract:

More and more today, we see companies adopting a “virtual” or “mobile” employment strategy where workers need not be present at the company offices. Indeed, we have had mobile sales and service personnel for a long time. This is just an extension of the situation to include analysts, financial planners, strategists and others who must have access to critical business intelligence information. Mobile BI is becoming an important part of the BI environment for forward-thinking corporations who see that wireless networks eliminate the physical constraints of wired networks by using radio frequency technology

Most BI users are empowered to access, analyze, and share information if they are sitting at their desks or lucky enough to access data from a hotel room using dialup connectivity. Most IT support personnel who manage the BI environment must also be sitting at their desks or gain access through dialup connections at home. Once either unplugs, he or she is virtually put in trouble. We now need to apply wireless technologies to our BI environments. Without these new technologies, we are still chained to our wired environments and become blind to critical business changes once we unplug.

Keywords:

1 Agility - Definition

Agility represents nimbleness, resourcefulness, and adaptability. In the world of testing, agility is synonymous with the testing team’s resourcefulness and ability to respond quickly to changing contexts. Organizations need to catch the ‘window of opportunity’ when releasing a product to remain profitable. At the Same time, we, as customers only want to use ‘quality’ products.

2 Importance of Business Intelligence

The ability to use mobile devices for business intelligence is not new. We have had the ability to broadcast BI results to pagers, cell phones and PDAs for years. But the ability was very limited in that it was usually a push form of technology. The BI results were sent out either on a scheduled basis or when some trigger caused them to be broadcast. The recipient could not control when these broadcasts would occur. Also the amount of data sent was limited and the ability to do any kind of analysis was also restricted.

The problem was not with the BI technology but rather was with the limitations of the telecommunications infrastructure. We could have done much more than just broadcast if

the networks permitted more than just unconfirmed broadcasts. What was really needed was some form of two-way dialog with the BI environment. Once one received a piece of BI data, the natural next step was to ask why and for more information. This was not possible in the broadcast environment. This limitation cast a pall on the excitement surrounding mobile business intelligence. The limitations were very frustrating and the users shrank to small numbers. To add to the frustrations, the push technology required the business user to identify what they wanted before they wanted it. Not many users can precisely identify what data they will need and when!

3 Solutions for the past frustration

Over the years though, the network infrastructure has matured and become much more sophisticated in its capabilities. Today, it has truly overcome many of the earlier limitations of push technology. In addition, the mobile devices have also gained in their level of sophistication, ease of use, storage capability, etc. We now have wireless Internet with wireless application protocol (WAP), sophisticated receiving devices (PDAs, cell phones, etc.), and the ability to plug in, sync up, unplug and go – with the ability to perform all the traditional “plugged-in” analytics as well.

Some industries are further ahead than others in terms of their mobile BI requirements. Retail, financial institutional, healthcare, and manufacturing industries seem willing to push the edge of mobile technologies and business intelligence to give their mobile workforce access to critical data. Companies with a high number of mobile sales and service personnel are also embracing this technology.

The ultimate goal is for the mobile user to have a similar analytical experience as their wired peers – a back and forth “conversation” in which the mobile user can query, then drill up, down, around, etc., within the BI application. To this end, it is useful to qualify the various mobile business users.

IDC has defined four such groups as:

- **Display Mavens:** individuals who deliver large number of presentations while mobile and use, to a moderate degree, entertainment applications during periods of idleness;
- **Mobile Elite:** early adopter segment that adopts latest devices, applications, and solutions, and uses broadest number of them;
- **Minimalists:** opposite of the Mobile Elite, these individuals employ just the basics for their mobility needs; and
- **Voice and Text Fanatics:** more communications-centric group of individuals who tend to be focused on text-based data and messaging.

4 Need for the Business Intelligence

The need of the business community for mobile Business intelligence is obvious, but there is another important group of mobile users in the enterprise – the mobile IT worker. In the rush to get mobile technology in the hands of the business community, we should not forget that IT implementers also need wireless capabilities to implement, maintain and sustain the BI environment. IT has been thrust into limelight as a key element in advancing strategic business objectives and certainly mobile business intelligence plays a major role in achieving these objectives. Therefore, IT must have its own set of mobile BI capabilities to maintain and sustain the overall environment.

For mobile business intelligence to be feasible in the enterprise, we must have a solid basis from which to grow these new capabilities. Many environments just don't have sufficient applications up and running yet or they don't have sophisticated business users who truly depend on the BI applications to do their jobs.

5 Architecture of the BI

The BI architecture must be mature enough to allow the perturbations that mobile business intelligence will inevitably bring to it. Changes will have to be made such as new skill sets, roles, responsibilities, as well as new technologies incorporated into the architecture, before one can take advantage of the mobile BI world.

Immature or poorly designed BI architectures will almost surely spell disaster for mobile business intelligence. The complexity of the mobile BI architecture requires a solid BI architecture behind it – one that is flexible enough to accommodate these new technologies and yet is mature in the data and capabilities it offers. It describes and categorizes the information stores that are used to operate and manage a robust decision support infrastructure.

These information stores support three high-level organizational processes:

Business operations,

Business intelligence, and

Business management.

Taken as a whole, the CIF (Corporate Information Factory) can be used to identify all of the information management activities that an organization conducts. It is just such an architecture needed for your mobile BI initiative. Understanding how all the various components in the BI environment interconnect with each other and having the data flows mapped out will give you a tremendous advantage when beginning the implementation of the mobile BI capabilities. The tendency is to implement the capability without really understanding what it will do for the business or the BI environment itself. The mobile devices do make it easy to send short, naïve queries in rapid succession which may place an unexpected burden on your BI technology to keep pace.

6 Mobile testing

The test on mobile devices is divided into several phases:

- R&D test,
- Factory test,
- Certificate test
- User trial test.

7 R&D test:

R&D test is the main test phase for mobile device, and it happens during the developing phase of the mobile devices. Usually, as same as software testing, we will also have some main test phase, such as unit test, feature test, integration test, system test, and field test. But the object of these testing is not limited within software. Each of the mobile devices is a small system, just like a PC, and it is made up of hardware system, software structure and also the mechanical design. So our test should cover all of the components.

In Summation Our R&D test will contains HW testing, SW testing, and Mechanical testing. Meanwhile, every test phase will also contain every kinds of test, such as basic function test, performance test, interaction test, interoperation test, boundary test, stress test, and so on.

Firstly, as a communicate equipment, there are many standards made for the mobile devices. We must do many related test to ensure the mobile products meet the requirements of the standards. Normally, the HW test contains RF testing, EMC testing, Antenna testing, Safety and Health testing, Audio testing, I/O connector testing, Power consumption testing, and Accessory testing. Here, we will give out a brief object of every test topic.

8 RF testing:

RF testing is divided into two parts

- Transmitter test
- Receiver test.

The purpose of the RF testing is to ensure that the transmitter/receiver of mobile devices can meet the requirements from standards or governments whenever in normal conditions or in extreme conditions, such as high temperature and high pressure. To do the RF testing, we need some test equipments to assist our testing and analysis, such as TS8950G from ROHDE&SCHWARZ Company.



EMC is the logogram of electromagnetic compatibility that means the mobile devices should not interfere other devices. So there are two parts need to be tested related to EMC. One is electromagnetic interference, named EMI also, that is divided into Radiated interference and Conducted interference; the other is electromagnetic susceptibility, named EMS also.

Antenna of the mobile devices may be integrated in the mobile, or the antenna is separated from the device. And the antenna part will impact on the mobile devices with which bands the mobile will work on. The testing will focus on the sensitivity of the antenna, and some of the test will combined into RF performance testing, such as frequency stability.

As mobile devices are used by people, the impact on human health of mobile devices is always the hot topic. Many organizations and governments also made lots of standards to ensure this. Safety test and SAR value are two significant items to control the impact. SAR is the Specific Absorption Rate which is a measurement for the amount of RF energy absorbed by the body or the head when using a mobile device.

Since voice call is the main function for people to use a mobile device, the test on voice call performance can not be ignored. The standards from 3GPP have many requirements on the audio quality and test. So the audio test is absolutely necessarily item during R&TTE and GCF certificate. The test also needs special test equipment.

All of mobile devices have the I/O connector to communicate with outside. Also this makes the mobile devices support many kinds of accessories, such as charger, car kit, headset, and so on. To ensure the usage of the accessories, we need do the test on I/O connector of the device, and also the accessory itself.

Of course, there are also other kinds of hardware testing, such as Bluetooth related or WiFi related testing. Those are special items for devices to support related functions. We can talk about them in specific posts.

The software testing is another category during the R&D phase. According to different layer of the SW, our test can be divided into MMI testing, applications testing, and protocol testing.

9 Mechanical test:

Mechanical test is maybe thought as a part of hardware test. But the object of the test is totally different. The hardware test normally is focused on the electric performance and PCB functions.

10 Factory test:

Factory test is also important and necessary for the manufacturer to deliver the qualified mobile devices. The factory test is a small set out of the R&D test. And the test methods are also different in factory test. The test should be simplified and automated. The main reason is that the factory test should be fittable to the pipelining procedure. The RF

performance, environment test, and other hardware checking are the main contents of factory test.

11 Certificate test:

The purpose of the Certificate test is to ensure that the product can meet the standards requirements. Usually, this kind of test should be performed by third party qualified test lab. The test results and report will be used to apply the certificate from government or public organizer. The test cases and test environment are all defined in documents that are published to all of the mobile device manufacturers. Of course, the test in third party test lab will raise some cost. So, pre-certificate test will be planned inside of development team before the certificate test to ensure the pass rate. Certificate test focuses on protocol, RF conformance, Audio, EMC, SAR, and so on.

12 User trial Test:

Before the mobile devices are put into market, there may be the user trial activities available. The manufacturer chooses a special group people to perform the user trail test. People just use the mobile devices with their own custom. If they found any bugs, they would report them to the manufacturer.

13 Steps to adapt frequent changes:

1. Define your Test Strategy
2. Define your team and assign responsibility
3. Do not wait for a formal process of release
4. Keep doing the testing as soon as build is ready for testing
5. Always keep in mind that tester and developer are working as a team and your objective is to deliver a quality product on schedule.
6. Communicate the defects to developer and help him in understanding the defect.
7. Test each unit once developer finished the work.
8. Make your seating arrangement near to developer.
9. Communicate verbally as much as you can and do not always communicate formally
10. Always remember that you have a limited time for everything and if you start creating problem, and then it is going to waste every one time in meeting and discussion.
11. Do the meeting and discussion only when you are trying to find a technical solution for defect or functionality.
12. If possible release the application to your customer for sneak peak. This is just to save the time and defect when you release the build formally. This also helps in raising the confidence of your customer in the product.
13. If there is dependency on 3rd party, then have a solution ready for doing the testing in case 3rd party is not able to provide the services on time. This can be one of your major risks and should be handled in your test strategy.

14. Keep your motivation high as many a times you feel low on energy due to agile nature of execution.

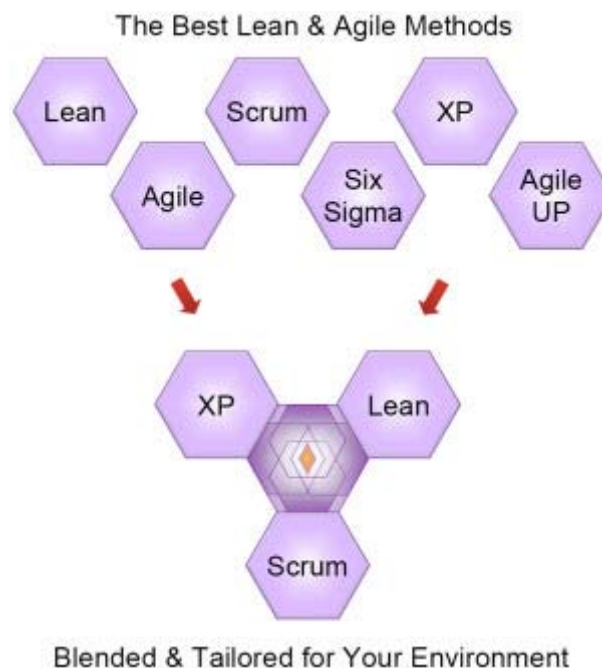
14 The Absolute Agile Approach

Absolute Agile is not another agile methodology. It is our approach for building agile software development capabilities. Using principles and practices from a broad range of lean and agile disciplines. Our Absolute Agile approach does not mandate proprietary methods or tools.

With more than six years of assisting our clients through successful agile transitions, the Absolute Agile toolkit draws from our extensive experience with a wide variety of processes, including Lean Software Development, Scrum, Extreme Programming, Design for Six Sigma, the Agile Unified Process and others.

Knowing the interrelationships of all these practices, and with our first-hand knowledge of the common risks and potential pitfalls, work to design a tailored approach that selects tunes and scales agile methods to meet the distinct challenges of our unique environment.

Our plan is promptly set into action with our Organizational Scrum seminars, innovative leadership workshops and our highly regarded team training and coaching. All of these services are carefully targeted to quickly gain momentum, measure progress and ensure a solid footing for your ongoing success.



15 Enterprise Scalability

Enterprise-class software development can be very challenging. Outsourcing, distributed teams, multiple product portfolios, complex architectures and large project communities all demand unique adaptations to standard lean and agile practices.



The effectiveness of our Absolute Agile approach is rooted in extensive real world, hands-on experience that spans the full range of enterprise development, from single team adoption of Extreme Programming practices to the coordination of multiple, interdependent Scrum teams across time zones and geographic locations.

16 Benefits

The Absolute Agile approach specifically identifies and targets the benefits that are most important to your organization:

- Faster Release Cycles
- Adaptability to Change
- Higher Quality
- Satisfied Customers
- Greater Visibility
- Sustainable Delivery
- Increased Productivity
- Energized Teams

17 Sustainable success

Ensuring the sustainability of your agile capabilities is a key objective of the Absolute Agile approach. There is an inherent danger that an organization can slip back into non-agile practices or otherwise fail to maintain the momentum of an agile transition. Our Organizational Scrum framework is specifically designed to address these risks, enabling you to realize the long-term benefits of a successful lean and agile transition.

18 Organizational scrum

As a process improvement strategy, Absolute Agile embraces assessment, planning, skill building and measurement of results. A framework should be created to help to steer the agile transition. We call this framework Organizational Scrum.

Organizational Scrum is a higher-level activity that implements tracking and steering for your agile transition and process improvement initiative.

Running separately from the development team Scrums, Our Organizational Scrum is a proven, effective mechanism for ensuring that you maximize the ongoing benefits from your transition to lean and agile methods.

19 Continuous improvement

Agile Logic primes your organization for sustaining a culture of continuous improvement. The Absolute Agile approach reduces risk, maximizes your benefits and generates immediate results. Each step of the way, your incremental investment produces measurable improvement in your agile capabilities, and tangible progress towards your successful agile transition.

Periodic reassessment of your lean and agile capabilities provides the standardized feedback needed for your Organizational Scrum and to steer your transition through continuous improvement. Either way, we should increase the ability to avoid risk and to target new opportunities for ongoing innovation and improvement.



20 The absolute agile cycle

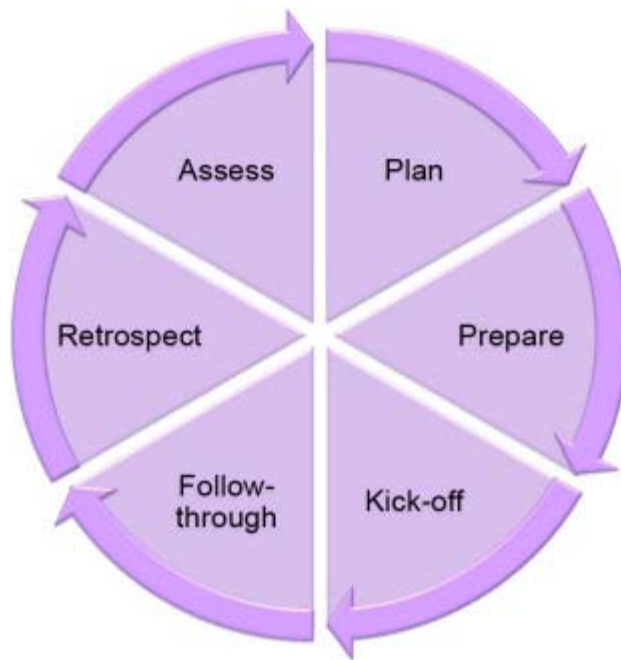
20.1 Assess

The key to successfully adopting an agile process starts with a thorough understanding of the unique needs and circumstance within your organization.

20.2 Assessment and planning

Services ensure that your organization has sufficiently identified and considered crucial issues prior to initiating the adoption effort. Our

Organizational-readiness assessment measures your existing capabilities and profiles potential challenges.



20.3 Plan

Just like our organization is unique, with its own combination of challenges and circumstances, the most effective plan for your transition to agile processes will also be unique. Our planning services develop a

customized implementation approach based on the lean and agile methods most appropriate for your specific situation.

20.4 Prepare

To effectively initiate an agile transition effort, a solid foundation of knowledge and skills is essential for your entire team. Successful agile transitions require careful preparation through a combination of training in a variety of agile principles and



practices, targeted for each aspect of your team—software engineering, quality assurance, project and product management and organizational leadership.

20.5 Kick-Off

The first week of a new agile project is the most critical. It is in this first week that your team will gain valuable feedback and encounter the most challenges. Agile Logic's hands-on kick-off coaching services provide your team with the support and guidance to quickly overcome obstacles and gain proficiency in their agile practices.

20.6 Follow-through

Our experienced coaches will work side-by-side with your team, mentoring and leading them through activities such as release and iteration planning, daily stand-up meetings and detailed technical practices. Through the crucial initial iterations we help your teams quickly identify and solve issues as they arise.

20.7 Retrospect

Our iteration wrap-up services ensure definitive closure to your iterations, from the critical final days of development and testing, through the important practices of iteration reviews and retrospectives. The insight and issues that emerge from team retrospectives are selectively shared with the Organizational Scrum to ensure they receive appropriate attention.

21 Conclusion:

Software testing is an art. Most of the testing methods and practices are not very different from 20 years ago. It is nowhere near maturity, although there are many tools and techniques available to use. Good testing also requires a tester's creativity, experience and intuition, together with proper techniques.

Testing is more than just debugging. Testing is not only used to locate defects and correct them. It is also used in validation, verification process, and reliability measurement.

Most IT support personnel who manage the BI environment must also be sitting at their desks or gain access through dialup connections at home.

The crucial initial iterations should be identified by the teams and solve issues as they rise. Without these new technologies, we are still chained to our wired environments and become blind to critical business changes once we unplug.

Thus the lean and agile discipline approaches and its extreme programming are best suited for agile concepts in mobile technology. This approach is sure to bring a revolution in the Telecommunication field and Business Intelligence Environment.

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Biography

D.Kalaivani B.E., MBA, is servicing as Marketing Head in the esteemed concern **IIST** (Indian Institution of software Testing).

TamilNadu, India since June 2008. She had previous experience as a lecturer in Coimbatore Institute of Information Technology for two years. She was working as a Marketing Executive in **Fat Infotech Inc.** who is the master franchisee of SCTL integrated Solutions Pvt. Ltd. She was working in MetLife India Insurance as financial Advisor and was engaged in corporate trainings.

She consults regularly with executives from a variety of fields to help create synergistic solutions to world-impacting problems in the testing field. Prior to her current position, she created and led the Team motivated in Fat Infotech Inc. & IIST. She heads the marketing department of the whole state of Tamilnadu and meanwhile she will excel in the technical knowledge in IT (software development & Testing)

SP.Nidya B.Com, MBA, is servicing as Instructor in the esteemed concern IIST (Indian Institution of software Testing).

TamilNadu, India. since June 2008. She born and brought up in Coimbatore city. She formly worked in Karaikudi city as a lecturer in a Subramanian polytechnic for 2 years. She was working as a Instructor in Fat Infotech Inc. who is the master franchisee of SCTL integrated Solutions Pvt. Ltd. She is handling Manual Testing and Automated Tools. She is interested in reading Books and hearing music.