AUTOMATION ON THE GO - ICT

PREPARED BY : KUMARAGURU BALAN

TABLE OF CONTENT

1   Introduction

In today's software industry, major chunk of work approximately 70% is related to maintenance and enhancement of the existing software. As features are getting added incrementally, carrying out of manual regression tests becomes unfeasible. This urges project management to bring in the concept of automation. With several emerging methodologies how do we pick the right process for each of these? Especially how do we keep up with the fast pace of Agile? Traditional way of automating is to develop scripts after the build is deployed in production. When it comes to Agile with its iterations, business expects testers to deliver faster, to detect defects early, to participate in every development process, etc. Through effective automation of tests we can achieve greater test coverage. It also gives human testers to explore more with the application and trying out newer test scenarios.

To meet the growing business needs, 'In Cycle Testing' ICT can be a smart and easy solution. Test Early Test Often - is not a new phrase to many of us. The idea behind ICT is to save time by automating the test cases in parallel to the current release rather than doing at a later stage.

2   Industry Expectation from Automation

- With the word 'instant' being used everywhere from food to technology, imagine how this would impact automation which already boasts of time saving! Everything is to be delivered quickly.
- The success of any automation project lies in picking the right tool / framework. Every business team's need is a resource who is technically sound and who understands several automation tools. This way he can be trusted to conduct a clean tool assessment from the various tools available in the market, pick the right tool to meet every methodology and carry out good test case feasibility. If such a resource can be made part of the entire project life cycle it would help ease out several issues.
- Similarly a smooth transition from release to regression testing and minimal backlog is a dream come true. Handling backlog in parallel to release is quite a big challenge. If this is handled efficiently how smooth transitioning from one release to another would be?

3   Automation in Agile Environment

Quick turnaround time required for frequent releases means product changing every minute and testing becoming strenuous. Here is a diagram that helps understand current automation in the agile process.
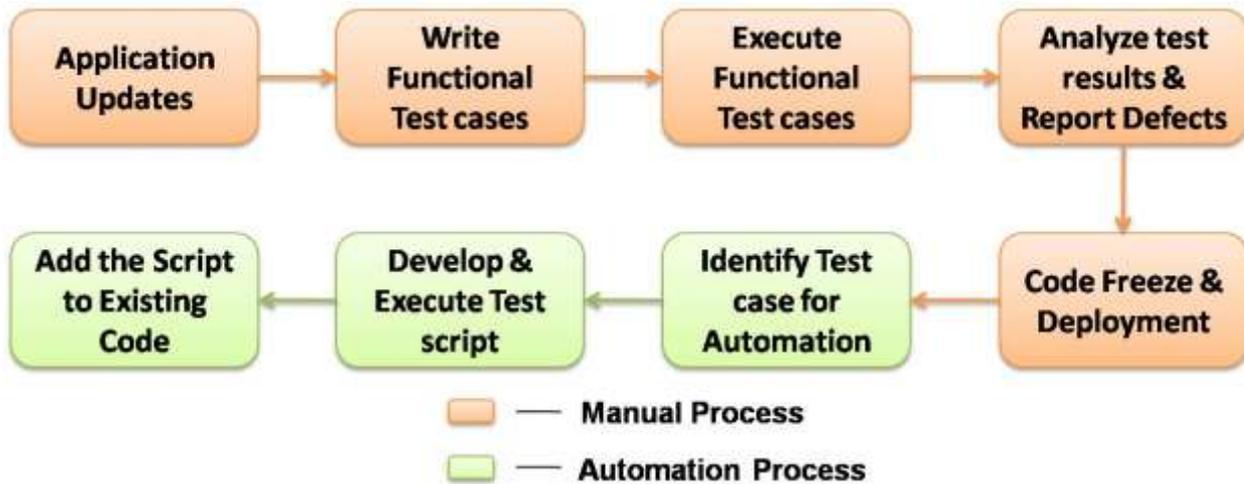

Fig. 1 – Testing in Agile

As per the above diagram, automation happens at the end of the release. Same is the case when automation is used for any maintenance - the system is updated with new changes, the manual test cases are written and executed; If all of this goes well then happens the code freeze and deployment. Only after all this does the automation phase begin - the test cases are identified for automation, then automated and added to existing regression suite.

4   The ICT Approach

How 'In Cycle Testing' differs from the usual automation process? If you look at the usual flow there is a phase where the manual team is involved in executing test cases. We were initially identifying test cases for automation after a complete round of manual testing. But why not automate as soon as the test cases are identified and written? Since automation is part of the current release in ICT the backlog is reduced drastically. The idea behind ICT is to save time by automating the test cases in parallel to the current release rather than doing it in later stage.
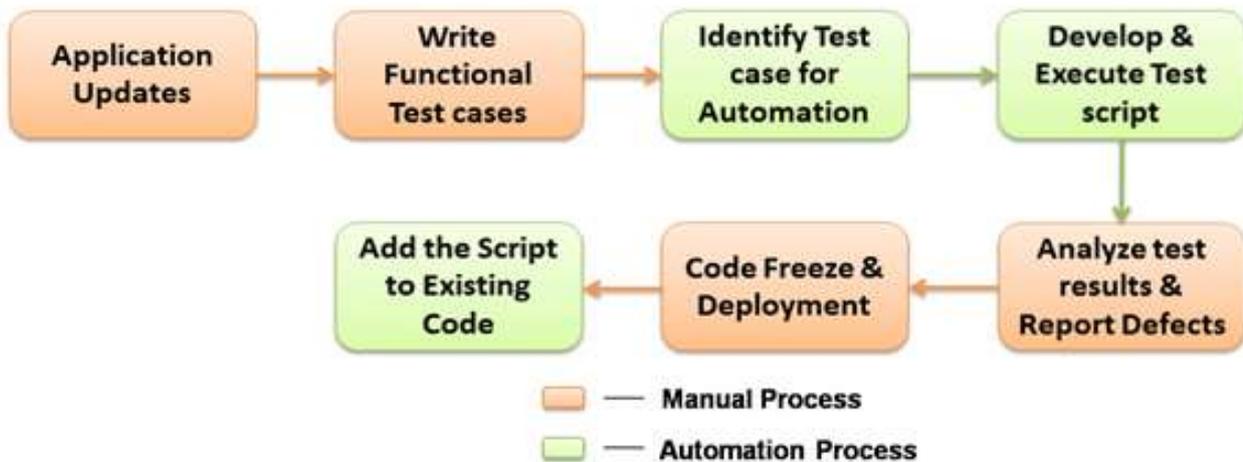
Fig. 2 – ICT Process

Kick Off

- BA and Iteration Manager prioritize cards.
- ICT QA assesses the prioritized cards and decides which ones can be made part of ICT based on a defined set of criteria such as important scenarios, major functionalities, feasibility, etc.,

Effort Estimation & Schedule

- ICT QA provides estimation for the automation effort.
- QA lead lays out the schedule targeting to complete the ICT cards before the end of the iteration.
- IM prioritizes development of ICT cards to enable completion on time.

Planning

- ICT QA begins work on their cards by creating manual tests (System level test and edge cases are handled manually).
- ICT QA attaches the manual tests to the card and notifies the BAs and Devs for approval.

Functional Verification

- BA approves documented test and ICT QA performs adhoc testing to verify stability.
- Defects identified by the ICT QA go through the usual life cycle.

Script Development

- ICT QA scripts the tests flagged for automation.
- Any deviation in schedule is to be notified to the QA lead immediately.

Sign-Off

- A functional review is conducted to ensure test coverage.

- Code review is conducted by automation peers.

Script Execution

- Scripts are initially executed in the BA environment.
- Once the build is deployed in the QA environment the ICT scripts are executed again prior to the regression suite.

Script Integration

- ICT scripts are integrated to the existing automation regression suite.

5 Value Additions

This section summarizes the client's need and advantages in our approach to meet them.

Client Need: Speedy delivery

Automation which is already a solution for rapid delivery, how do we make it even better? Going back to the drawing board to sketch out an approach, if we would have to choose to eliminate a stage to make things move faster which one would you chose? An answer to that question would be, why two sets of testers calling themselves differently ("manual" and "automation") do the same thing? Why not these two become one? This way we save time and resource by eliminating a manual execution phase. This gets directly translated as scripts and execution becomes less tedious and time saving.
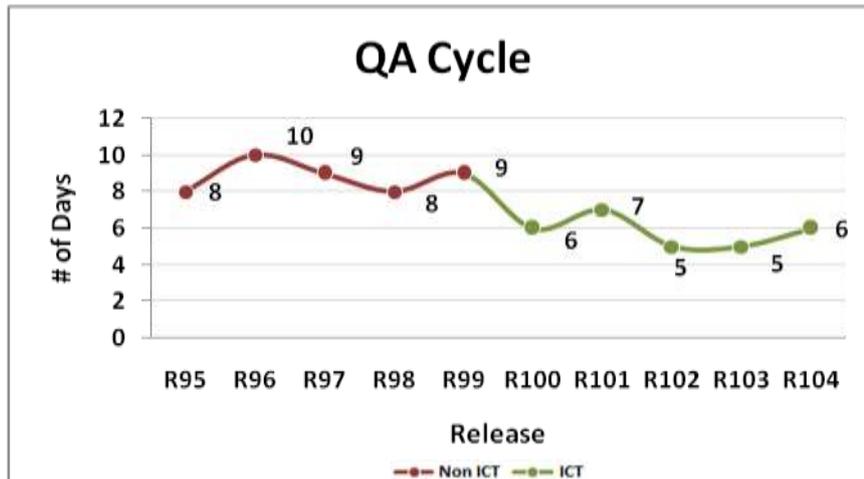

Fig. 3 – QA Cycle – Non ICT vs. ICT

Inference: From our case study above, an 8 – 10 days QA cycle is reduced to 5 – 7 days. This results in faster delivery cycles. On an average the Test Execution has become faster by 30%.

Client Need: Automation engineer plays a dual role

When a resource thinks both as a tester and a developer it would be the best possible solution to a lot of our problems. Proudly to say no one thinks of a customer better than a tester. When also made to think from a quick automation tool angle we hit two birds with one stone. The same tester writes manual test cases, scripts/executes them saving money and energy. This also encourages an automation tester to be directly involved with the various business teams. This increases his confidence in the product therefore yielding better quality results.

Client Need: Reduced backlog

A stitch in time saves nine. Keep fixing as you see them. Correct and tweak scripts as the product changes. With frequent releases how do we handle backlog? Everything seems to be a crunch, between release and maintenance effort. Reducing backlog proportionality increases quality because we are not way behind with our regression suite. Scripts that are developed in parallel to the manual tests serve a dual purpose.
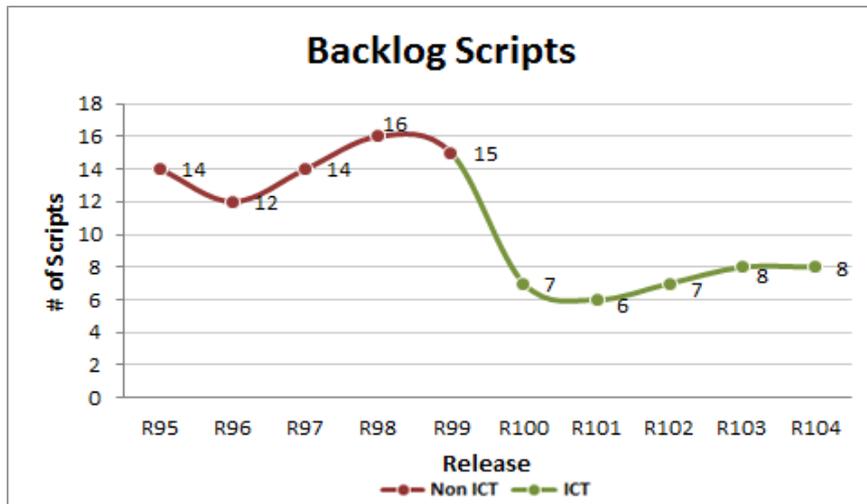

Fig. 4 – Backlog Scripts – Non ICT vs. ICT

Inference: From our case study above, a backlog of 12 – 14 scripts have been reduced to 6 – 8 resulting in 50% reduction in backlog thereby increasing productivity.

Client Need: Early defect detection

Prevention is better than cure. Early defect detection leads to cost / time saving and increased quality of the product. In this ICT approach, we find a defect directly in the BA environment therefore the developer fixes the defects in an earlier stage. When it comes to the QA environment the product has minimal defects.
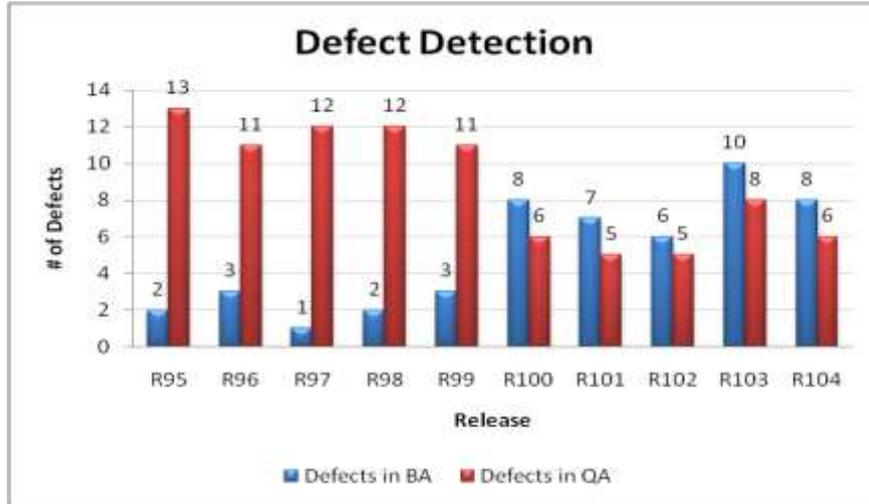
Fig. 5 – Defects Detection in BA vs. QA

Inference: From our case study above, defects in the QA phase is reduced drastically as they are discovered in the BA environment. The defect catch rate is faster by 60% that is 11 – 13 defects have been reduced to 5 – 8 defects. This eventually helps in saving cost.

Client Need: Minimal effort

We all know that delay in any phase always impacts the QA life cycle. With ICT the manual tester always has some buffer and does not end up in a crunch. Also this unblocks his hours that can be utilized for the next release.
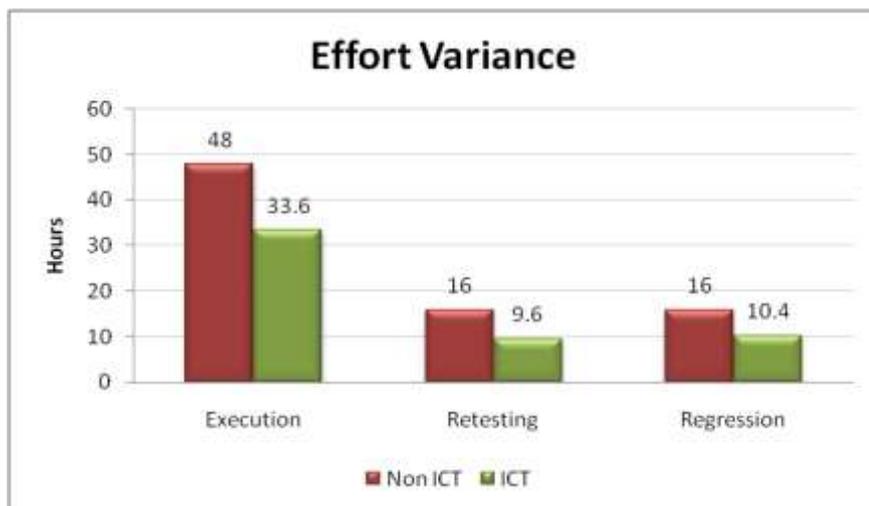

Fig. 6 – Effort Variance

Inference: From our case study above, an average of 35% (Execution - 30%; Retesting - 40%; Regression - 35%) of QA time is reduced by ICT.

Client Need: Increased bottom line

Time is money. Every client's dream is a quality product built at low cost. With this approach when we save time we in turn save cost. Every phase's effort in the QA life cycle is reduced with ICT.
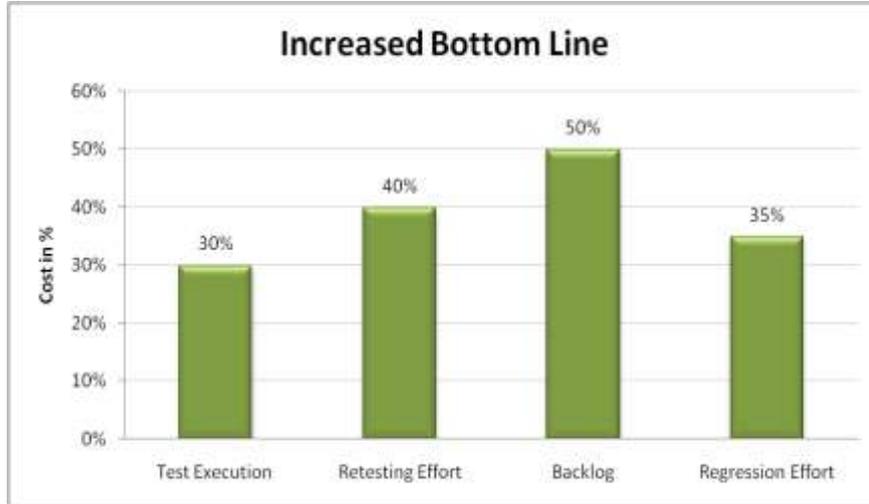

Fig. 7 – Increased Bottom Line

Inference: From our case study above, an average of 40% cost is saved as in each phase of testing we save a considerable amount of effort in hours.

A quick snapshot: The below table summarizes the above value additions.

Table 1 – Value Additions

Key Levers	With ICT	Value Additions	Before	After
Test Execution	Faster by 30%	Delivery ahead of schedule	8 – 10 Days	5 – 7 Days
Retesting Effort	Decreased by 40%	Multiple execution of automation scripts	2 – 3 Days	~ 1 Day
Backlog	Decreased by 50%	Increased productivity	12 – 14 Scripts per Release	6 – 8 Scripts per Release
Regression Effort	Decreased by 35%	Instant Sign-Off Stable Code	3 – 5 Days	1 – 3 Days
Defect Catch Rate	Faster by 60%	High quality service delivery	11 – 13 Defects in QA	5 – 8 Defects in QA
Cost	Reduced by 40%	Low cost delivery with high quality Saving in post-production cost	NA	NA

6 Challenges and Mitigations

Thus far spoken about the merits of ICT it is only right to say just as in any other process there are a few challenges in this process too. The following are a few challenges in implementing ICT and ways to overcome those.

Table 2 – Challenges and Mitigations

Challenges	Mitigations
Right Resource	Identify resources with dual skill set well ahead of the project kick-off. Train promising resources to play dual role.
IM Prioritization	As part of schedule freeze dates to pick ICT cards. Defer lower priority cards.
Cards with several edge cases	Break cards further. Identify the right ones for ICT.
Requirement Change / Scope Creep	Participate in BA reviews and estimations. Don't hesitate to raise QA concerns if any.
Patch Releases	Understand customer need. Be updated with requirements in the pipeline.

7 Conclusion

Testing tools can help test almost anything a manual tester does like data verification, GUI interactions, etc. In spite of using efficient tools that are becoming popular in the market, why is there a delay in delivery at times? We all know that a good framework, clean coding standards, reusable code, etc. are keys to easy maintenance and scalability but the process one uses has a huge impact on what is being delivered too. ICT can be the solution for maintenance issues that is in other words better control over current features. ICT also helps in better test coverage, since it runs in parallel with the release and does not trail at the end.

We would therefore like to conclude that practicing ICT will do complete justice to the word automation.

About Indium:

Indium Software is exclusively focused independent software testing services firm since 1999. Over the years, Indium mastered objective methods that minimize the risk of failure of applications and software products. With a global headcount of over 300 employees, Indium works for   a mix of marquee Enterprise and ISV clients spread across the globe. Indium is aggressively pursuing the Social, Mobile & Cloud agenda to make these the core of our next wave of service specialization.

Contact us:

USA - Indium Software Inc.   INDIA - Indium Software (India) Limited

Corporate Office
California
Suite 210, 1250 Oakmead Parkway
Sunnyvale, CA - 94085.
Phone: +1(408) 501-8844
Fax: +1(408) 501-8808

Global Delivery Headquarters
Chennai
VDS House
41, 2nd Floor
Cathedral Road
Chennai - 600 086.
Phone: +91-44-2811 6330
Fax: +91-44-4210 4033

Bengaluru
Salarpuria Adonis, 2nd Floor
Binnamangala, 3/1, Old Madras Road
Kadiranapalya, Indira Nagar
Bengaluru – 560 038.
Phone: +91-80-6784 7500

Atlanta
Crown Office Suites,
1870 The Exchange, Suite 100,
Atlanta, Georgia 30339. USA
Phone: +1(770) 989-7302,
+1(678) 608-0809

Prince Arcade Building
22-A, 3rd floor
Cathedral Road
Chennai – 600 086.
Phone: +91-44-4347 7200

New Delhi
F-1/5 Okhla Industrial Area,
Phase-I,
New Delhi – 110 020.
Phone:+91-11-6613 0400

Steeple Reach,
Old No. 25, New No. 39,
Cathedral Road, Chennai –
600 086.
Phone: +91-44-4347 7122

Sales Inquiries
americas.sales@indiumsoft.com
apac.sales@indiumsoft.com
emea.sales@indiumsoft.com
india.sales@indiumsoft.com
sales@indiumsoft.com

General Enquiries
careers@indiumsoft.com
info@indiumsoft.com