Regression Testing Process for Small Organization for Quality Software

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ABSTRACT:

Software has been component of current society for more than 50 years. There are more than a few software development methodologies in use today. This paper addresses the study in the part of regression testing. Every time a system is altered regression tests have to be run to validate these changes.

Its well prepared setup and support of its effecting is desired across small organizations developing software. The goal of this paper is to explain quality assurance and software testing domains. In this paper implementation is focused on small organizations, which develops commercial, off-the-shelf software. In this work problems are identified and information and best practices are provided to help such type of organizations with regression testing, and thereby with overall quality of their products.

Keywords: Regression Testing, *Quality Software, Testing Process for small Organization.*

1. INTRODUCTION:

1.1 Problem Definition

Producing high-quality software has been one of the maximum challenges of the enlargement market in the last few decades. The software testing is the soul of the quality assurance, but the execution of this activity is still tricky due to numerous factors.

This paper will discuss some problems faced by the organizations having only ten to twenty peoples. These people participate on testing process in organizations. They are responsible for *regression testing also*. By involving not only *test managers* we can present the wider view on real problems.

Some of the problems are

i. The resource in which the organization is functioning is insufficient. The insufficient resources may include insufficient man power,

insufficient Computational power, and also there won't be Appropriate SW tools for performing testing also.

ii. There won't be good Estimation and planning technique which was adapted in the organizations.

iii. There won't be a good Communication within development team itself within the organization itself.

iv. Since our organization is small and we may have only few testers the testing technique which we are adapting may not be up to date.

2. IMPLEMENTATION OF REGRESSION TESTING IN SMALL ORGANIZATION

We focus just on *regression testing* process implementation but we will see that this area is interconnected to other testing group activities and also to development group. presented.

2.1 Implementation of suggestions

In this part we work we help ourselves by handling *regression testing process implementation*. As the performance will differ organization-to-organization no detailed and exact information (dates, cost in money, particular mechanisms, etc.) is required in this work. We focus on organizations in which no planned regular *regression testing* is performed so far and we shortly describe all relevant parts of project plan for them.

Plan "What"

Main objective is *regression testing process implementation* in organization. To achieve that it is necessary to deal with subtasks. To imagine scope if the main tasks we provide simplified WBS (Work Breakdown Structure).

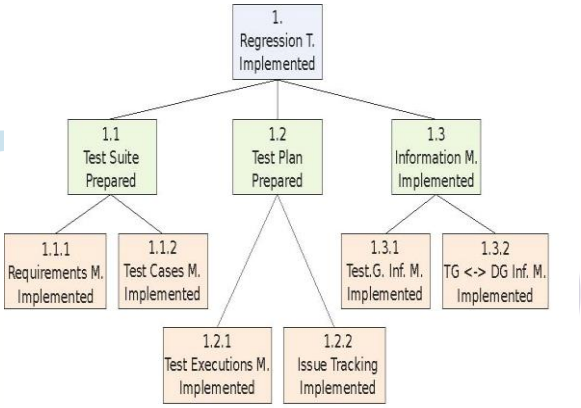

Fig 2.1 WBS of regression testing implementation

2.2 Regression Testing Implemented - Testing cluster is able to use prepared regression tests to execute regular *regression testing* of product instead of using "big-bang" approach.

A. Test Suite Prepared -Testing group has suit of tests to be used during testing. In suite tests are interconnected with product's necessities.

B. Requirements Management Implemented – Testing group is able to check and track not only tests but also product's requirements. This enables testing group also to test requirements.

C. Test Cases Management Implemented -Testing group is able to create and manage its tests. Tests might be used each time *regression testing* process is scheduled.

D. Test Plan Prepared -Testing group's work and progress is scheduled and controlled according to predefined *test plan*.

2.3 Test Executions Management Implemented -During *regression testing*, test executions are planned and part of *test plan*. Each executions can be scheduled and managed.

A. Issue Tracking Implemented -Issue reporting and tracking workflow is implemented in organization and both testing group and development group use defined approach.

2.4 Information Management Implemented -Important information and knowledge are managed and it is easy to find them when necessary.

A. Testing Group Information Management Implemented -Managing of information and knowledge necessary for testing group's effective work is implemented. Implemented solution is accessible for all members.

B. Testing g. <-> Development g. Information Management Implemented - Groups are able to communicate and collaborate. Mentioned work breakdown is not final. It is possible to divide each activity into sub-activities but explicit descriptions are not necessary to understand overall scope.

Plan "How"

Instead of detailed report of necessary activities we provide information how to achieve our objective by implementing suggestions.

2.5 Test Suite Prepared -If we want to perform *regression testing* it is necessary to have set of tests we can use. Testing group should start with this task.

- As we assumed testing group will not obtain more money we have to focus on tools (approaches) that can be used for free (or we are already allowed to use). To create test suite we suggest to use **spreadsheet application** in combination with some version control system.

- Divide functionality of product into smaller sets. According to these sets prepare documents and enable version control on them (enable e-mail notification when some change occurs).

- Each document should contain columns with -test ID, requirement, test overview, detail action description, detail expected result and status.

- When transferring requirements perform theirs review.

- When creating tests implement "pair collaboration". This reduces necessity of reviews or presence of mistakes in your tests.

  - Use exact description to minimize misunderstandings.

2.6 Test Plan Prepared -Information about *test plan* This work suggests implementing **Trac** system. We also suggest to use Trac for planning and managing all activities *QA manager* has to maintain.

  - It is also possible and advisable to use this system for planning and managing *regression testing implementation* project. If I am in position to implement regression testing process I will choose Trac for planning again (I have great experiences from previous small project).

When planning test executions prepare also *acceptance testing* performed by customers.

  - *QA manager* should integrate it in *test plan* to be able to manage it.

  - At the beginning of development process cooperate with developers to choose *issue workflow* and bugtracking system suitable for your project. Information is provided in section 4.3.

  - We do not have favorite system but suggest to try **Bugzilla** or **Mantis**.

2.7 Information Management Implemented

We suggest to use *wiki application* for important information assessment. Managers should require that all employees are collaborating.

- Establish regular meetings within groups and also between groups.

- Good experiences are achieved with short daily meetings when each employee has 1-2 minutes time slot.

- Regular weekly meeting where all topics

are not just presented but also discussed.

- Do not prevent that meeting leads to brainstorming.

Plan "Who"

Delegate (and approve) one is in charge for project (execution of regression testing process).

- In many cases *QA manager*.
- It is worth investing and invite external specialist focused on *QA* and *SW testing* domains with skills in implementation phase.

If there are testers with the same responsibilities and on the same position in organization promoting one to *QA manager* position might lead to situation that new manager is not respected within his/her group.

During project each developer and each tester has got responsibilities for some (more or less) activities he/she has to perform.

Plan "When"

As particular and detail actions are not subject of this proposal no detail time period is provided. Trac system can be suggested because of its features.

- Start with evaluation of actual state and with forming your requirements.
- Both testing and development group should start with tasks dealing with *1.3 Information Management*. This helps with further tasks.
- *QA manager* should focus on planning but he/she should at least inform testers about progress and status.
- While manager plan testers should perform activities dealing with *1.1 Test Suit*. At end of project *test plan* should be prepared by *QA manager* in cooperation with *development manager*.

Plan "How much (cost)"

For our purpose it is necessary to have overview how much whole project costs.

4. CONCLUSION:

We have dealt with regression testing process in this work. It was really difficult not to spend a lot of time by describing these domains. Quality assurance and software testing domains have been very progressive and there are a lot of interesting information and knowledge that can be found and mentioned.

Based on interviews and discussions with

people from small organizations developing iteratively the list of the most relevant and principal problems were created. There is also description of impacts on chosen small organization. Impacts that are caused by identified problems.

During working on this paper we have learned how the testing is handled in some small organizations. The organizations do not have resources to improve (or even establish) regression testing. Instead of focusing on one particular organization, this work provides list of suggested solutions that can be customized according to some organization's needs and according to some organization's actual situation.

Some of the provided suggestions have been implemented and used in chosen organization. Some problems were removed, some have been still solved and unfortunately, there are still problems that have not been handled to reduce their impacts so far.

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