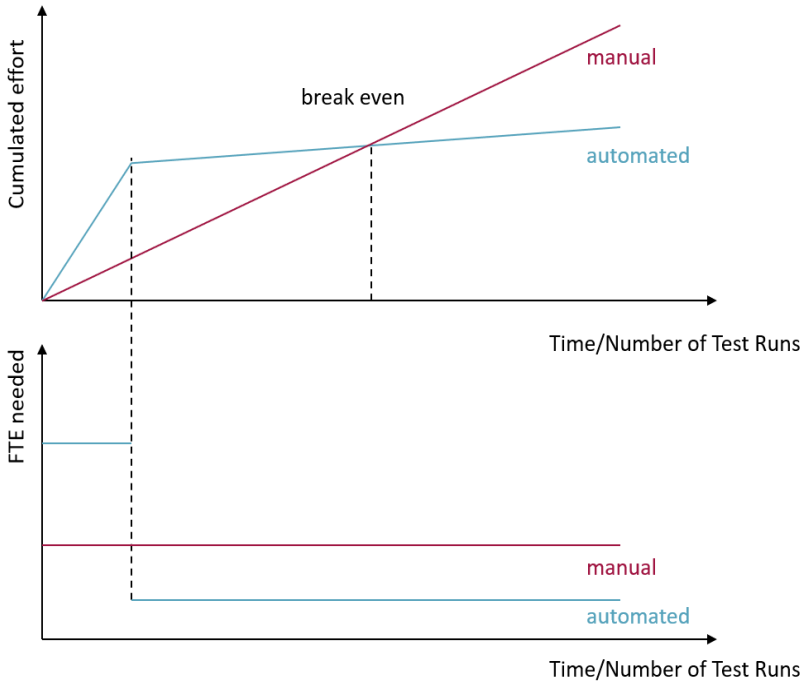
Test Automation – Why and How?

Testing is essential for success in development and operation of software applications. This is common sense but in many cases the magic triangle of project management and general cost reduction schemes interfere here. So project managers and application managers may be seduced to neglect testing in order to fulfil budget constraints. Automation is one of the ideas for escaping from this dilemma. But how to do this and how to avoid the pitfalls?

An article from Dr. Stefan Jobst

Benefits of test automation

- Reduction of manual test capacities
- Reliable and consistent execution of test cases
- Independency from office hours
- Frequent execution of test cases



Not only cost but also considerations on hidden efforts trigger questions on more efficient testing. A typical trigger for thinking about introducing test automation is that domain experts or heavy users are recruited for testing and their capacity is missing in the business process. In this case we apply our well-tried, proven and successful approach which will be illustrated in the following paragraphs.

Suite of test cases

As a first step we focus on the test case portfolio. Target here is to arrange a repository with well documented and prioritized test cases, which is highly complete and redundancy-free. Dependent on the initial situation a suitable set of actions has to be designed in order to achieve this goal. Examples are

- identifying test basis and relevant stakeholders from business and technology
- conducting workshops for risk-based identification of the relevant test cases
- finding out and defining the right place and form for documentation of test cases
- setting up guidelines and templates for test case documentation
- training domain experts in test case creation methods

Automation tool

Second we concern ourselves on technology and tools which should be used for test automation. Goal here is to find out the most efficient way for doing test automation considering cost and effort. Actions here are typically

- doing a market research and setting up a list of relevant tools
- comparing functional capabilities, license cost and support promise
- identifying the technical skills of the internal staff

The outcome of these actions will be a well argumented decision for the most suitable tool.

Technical framework

In a third step we work out a test automation framework which saves us from ending in maintenance hell. Actions for setting up the framework are

- defining the overarching principles for structuring the test cases, derived from business needs
- setting up guidelines for the design of test automation code
- building up libraries of reusable test case components

Automation process

Beside the technical framework also the test automation process has to be addressed. Usually in this context we concentrate on following actions:

- Defining the role of test automation engineers within the project/product team
- Finding the right domain experts and assigning test automation engineers
- Setting up regular meetings with domain experts for test case clarification
- Ensuring information flow between software developers and test automation engineers

These preliminary steps are essential and have to be elaborated to high extent. Otherwise test automation will be moribund and no gains will be received from the invest because test efforts are still comparable to manual testing.

After all these preparations regular automated testing can start. Test automation experts change between test case implementation, execution and maintenance while continuously improving the automation framework and processes.

Summary

Critical success factors for gaining the benefits of test automation (see figure 1) are

- risk based approach for defining the collection of automated test cases
- cooperative interface between domain experts and test automation staff
- tight integration of test automation engineers in the software development process

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