

Requirements Simulation- Analyst's Perspective

Requirements Simulation is a technique used to visually define and model business, user and technical requirements. The value proposition of most tools in the marketplace today is to bridge the communication gap between business and IT by empowering the Business Analyst to completely, and clearly define application requirements.

Since specialized simulation (or prototyping) tools are gaining momentum and visibility in the requirements definition arena, all Business Analysts should understand the pros and cons of using such a tool to automate their (rather manual) work.

Before I get into the pros and cons of using a simulation tool, it's important to keep in mind that no tool can replace the need for conducting and facilitating requirements workshops with your stakeholders. Tools should be treated as an aid to the collaborative and iterative elicitation and validation requirements process. Also, no tool should be implemented without considering how the tool will be used within your organization.

Ability to identify requirements

The first benefit of a simulation tool is the tool's ability to identify requirements as part of the simulation building process. Tools allow means for stakeholder review and instant input. By simulating future system behavior, the requirements discovery phase becomes more interactive and lends itself well to identify requirements. Furthermore, since the process is interactive, it helps promote collaboration between different groups in your organization.

With this first benefit also comes the first disadvantage- focusing primarily on screens and Graphical User Interface (GUI). The BA should focus on getting a meaningful discussion of the underlying business process rather than distracting comments on screens and GUI details. As a BA, you should try to avoid using simulation tools for the sole purpose of designing the interface. It may be tempting, but focusing primarily on screens and GUI, sets expectations in user's minds as to what screens will look like, and ultimately puts design constraints on your development team. As a best practice, the requirements phase should be independent of any design and implementation specific details.

Requirements communication

Your requirements models are the principle media of communication between business and IT. According to the Geek Gap (Bill Pflieger & Minda Zetlin, 2007), "Poor communications between business and technology professionals is the root of a large percentage of costly failures in business. No, this problem is right out in the open". It's no secret that the most difficult part of the requirements elicitation process is requirements communication. Many critical business needs could be 'lost in translation' between business and IT. This issue is inherent in how the two groups (business and IT) communicate. Many articles and books describe the "communication gap" and how this gap is widening as business and technology are evolving and becoming more complex. This leads me to the second benefit of simulation tools- communicating requirements visually.

Simulation tools can ease the communication gap by visualizing the future behaviour of IT business applications. Every time a requirement changes, you could re-simulate and visualize the effect of this change. Most business users relate better to the visual as opposed to a typical long Business Requirements Document (BRD). Unfortunately, very few of my clients will read the BRD end to end. The visual representation of a 'to be' business process, for example, is a

powerful way to communicate the business requirements as well as reaching agreement/consensus about scope.

While communicating requirements visually is an effective way, the BA must be fully trained on using a simulation tool as well as being a good facilitator. The tool by itself will not automate the soft skills required for the job.

Structured requirements

Most projects are still using 'low tech' tools (Word, Excel and Visio) for capturing and managing requirements. A simulation tool will help you capture the information you need in a structured format. Most tools capture requirements as use cases, enabling you to add or link business process, data, business rules, workflows and GUI and then automatically generate the documentation required. Some tools also have inherent traceability to navigate requirements and identify impacts. If your requirements change (and they will), you can easily re-generate your documentation showing these changes. Using a tool can reduce the many hours spent on updating and managing requirements changes.

There are many benefits to documenting your requirements in a structured manner, but the important thing to remember is that a good tool will enforce best practices and ensure consistency in your approach and generated documentation.

High and low fidelity simulations

The fidelity of a simulation can be characterized as high or low. The higher the fidelity, the more involved the simulation is in terms of business logic, interactions, and GUI screens. I have seen entire applications (end to end) being simulated where the final developed product looked exactly like the simulated one. This is a good example of high fidelity simulations whereas the simulation is as close to the final product as possible. High fidelity simulations do take longer to develop but can definitely cut your re-work in the development stage. As indicated earlier, the BA will have to be cautious not to jump into GUI interactions before understanding the business process and logic leading to it.

Requirements validation

Another benefit for using a simulation tool is the ability to validate and refine the requirements. After all, your requirements models are the only model upon which rigorous and automated analysis can be carried out before development begins. Validating your requirement early in the process is very valuable for any organization thriving to implement a disciplined and repeatable approach to the development, maintenance and updating of requirements and tests. Some tools (not just simulation) have the ability to automatically generate tests (user acceptance tests, system-level tests, regression tests, etc.) based on your requirements. This is also known as requirements based testing. This will guarantee requirements are "testable" as they are written. This feature also assists the Quality Assurance team by providing a head start to your testing cycles. The only thing worth mentioning, and it might be obvious, is that the quality of the tests are based on the quality of your requirements- it's the classic 'garbage in, garbage out'.

Integrations with other SDLC tools

Having a stand alone tool that cannot be easily integrated into the other phases of the SDLC will eventually become an issue. The requirements models developed in the tool should be the blueprint for the system to be developed (or bought). Most vendors today offer some or all of the following integrations:

1. *Requirements management*- transition all requirements to requirements management solutions such as IBM-Rational RequisitePro and Telelogic DOORS (now part of IBM)
2. *System development*- transition requirements models to IBM-Rational Rose/RSA/Modeler or to Borland Together.
3. *System testing*- transition all requirements and test content to test management solutions such as HP Quality Center / Test Director.

Summary

Simulation tools gain visibility in the marketplace. This article highlighted some key advantages and disadvantages around the tool's ability to identify, communicate, and validate business requirements. The use of a simulation tool should highlight the underlying business process and not focus on 'pretty' screens. Your requirements are the structural foundation upon which design and implementation depend. Tools are an aid not the solution.

Authors Bio

Joel Benayon is an independent business systems analyst and the founder of People Process Technology (PPT) Consulting. PPT Consulting is an innovative company specializing in the application definition phase of a software development project. We help our clients define, model, verify, simulate and test requirements of complex business applications. Please visit our website at www.pptconsult.com or email us at info@pptconsult.com