

5 Keys to Better System & Software Design

By Naseem Mariam

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ABSTRACT: Let us see how we can ensure that the systems, the software that we design reduce the complicated to the simple. Here are 5 keys that will help you arrive at a better design - of systems, software and/or user-friendly packages.

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"Genius is the ability to reduce the complicated to the simple." ~ C.W. Ceram

Let us see how we can ensure that the systems, the software that we design reduce the complicated to the simple. Here are 5 keys that will help you arrive at a better design - of systems, software and/or user-friendly packages.

1. Understand, Visualize the whole: Ponder on the Purpose

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Before you attempt the design of any system, first of all familiarize yourself with the context, the network, the

large picture within which this product will function. For example: if you are designing communication protocol software, then you should have a very thorough understanding of Data Networks, Telecom concepts, Internetworking and the required protocol stacks.

Ask the questions: "Where else? What other purpose or use can the product be put to?" If the software is being designed for a client machine, would it make sense to have some similar functionality in the server also? Ponder on the whys and wherefores of the new functionalities being added and how it will enhance the end product.

While designing a Network Management System, you should have a thorough knowledge of the internals and external devices that can form a part of the network being managed; how do they interact amongst themselves? This top-down approach of visualizing the whole helps arrive at the modular structure and components of the system under design.

2. Define Interfaces clearly: Pay attention to Particulars

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Once we have the broad outline of the system and what it will perform, we then need to work out the particulars - the details. The interfaces between the modules have to be taken especial care of. The upper module makes use of the module under-design, this module-under-design utilizes the services of a few lower modules and the module-under-design talks to its peers.

That's it: just 3 different types of interfaces to worry about. Management entity and human interfaces can be considered upper module type of interface. Document these well and share them with the rest of the team. This helps avoid last minute surprises while integrating the system.

Ensure that you have addressed all sub-clauses in the Requirement/Business Specifications. See "10 Tips to Gather Business Requirements" for tips on requirements gathering.

## 3. List out possible scenarios: Play with your Imagination

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The test of any system lies in the fact that it can stand the strain of unexpected occurrences. Therefore to make your system robust, list out all possible scenarios in which the system will need to function, draw all the network configurations and user case studies that you can imagine.

Select the sub-set that you want to actually implement - the topic of trade-offs has to rear its ugly head sooner or later: due to cost and time constraints. However having

listed all combinations gives you a powerful overview of the system and what it can be capable of.

4. Verify accuracy of Assumptions: Pull the Plugs

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Most design rests on underlying assumptions: sometimes explicit and some implicit. Take time to bring out the explicit assumptions, clarify the truthfulness of these assumptions. A good technique to use here is to envisage the real world in which the product will operate and then derive whether the assumption can be true. This is where the key "Understand the whole" comes from.

If in doubt, ask the customers - existing or potential: maybe even do surveys to verify and validate the assumptions. The least you can do is document the assumptions so that those who use the system after you will not use the product in a wrong manner.

Also take care to identify and manage the risks to your project execution with "Risk Management Reduces Project Fires". When assumptions are well validated and risks well managed, the project is well on its way to a successful completion.

5. Call in the experts: Profit from Previous Projects

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As an extra precaution it is always a good idea to explain your design to an expert in your field. All the expert will do is ask a few questions and lead you to think up a better design. Profit from the past experience, the fund of knowledge, the gray matter existing in the experts' brains.

Document best practices, create design checklists, share tips and tricks across the company and with others in the industry to improve your own fund of design expertise.

Related Reading

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1. "10 Tips to Gather Business Requirements"

<http://www.123projectmanagement.com/project-management-gather-requirements.html>

2. "Risk Management Reduces Project Fires"

<http://www.123projectmanagement.com/project-risk-management-fires.html>

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About the Author

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Naseem Mariam is the editor of "Management that Soars" Newsletter & author of "Project Serenity - How to gain happiness and peace" . Her writings draw life from her 18 years experience managing software projects. Let her guide you towards Faster All Round Success and a Stress Free, Joyous Life. Her free ebook and Newsletter tell You How. Subscribe with mail to projectdioxide@sendfree.com Visit her at <http://www.123projectmanagement.com>

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