Tech-Clarity

Requirements and Validation Engineering Buyer's Guide

The Expert Guide to Requirements and Validation

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***This summary is an abbreviated version of the report and does not contain the full content. A link to download the full report is available on the Tech-Clarity website, www.tech-clarity.com.**

If you have difficulty obtaining a copy of the report, please contact the author at michelle.boucher@tech-clarity.com.

Executive Overview

Fierce global competition means companies have little leeway to bring the wrong product to market. However, today's products have gotten so complex, it has become increasingly difficult to capture customer and market needs, translate those needs to product requirements, manage them throughout a complex development process involving changes and different configurations, and then make sure the requirements are truly satisfied. A lot of work goes into the initial definition of those requirements, but we do not live in a static world. Changes are inevitable. Tracing all the impacts of those changes, notifying everyone involved, and getting everything updated, including the test case, can be a nightmare. However, with expert requirements and validation engineering practices, combined with the right technology, the process will be far more manageable.

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This guide consists of four major sections covering requirements management and validation software tool functionality, service requirements, vendor attributes, and special company considerations (Figure 1). Each section includes a checklist with key requirements to investigate when selecting software tools to support requirements and validation processes.

To set the foundation for expert requirements and validation engineering practices, companies should focus on the entire lifecycle of requirements, not just the definition. This will enable companies to ensure the product they want to bring to market, is the one they actually do. In addition, it will improve the efficiency of the entire process, with fewer errors, leading to higher product profitability.

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This guide is not an all-encompassing requirements list. It provides a high level overview for requirements and validation engineering.

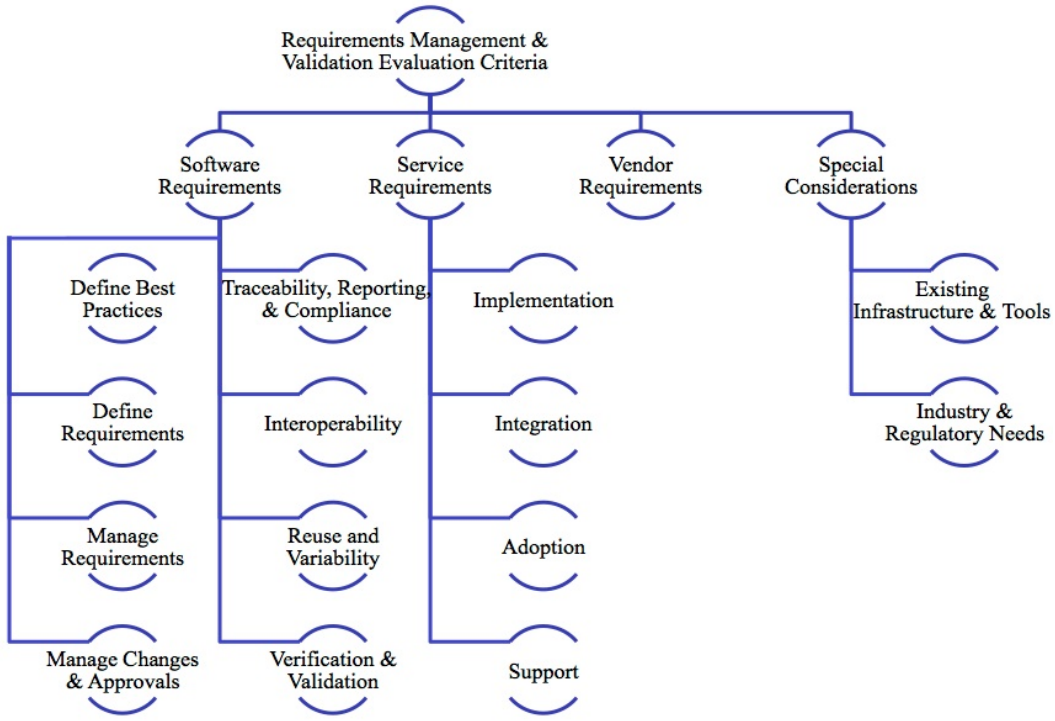

Figure 1: Requirements and Validation Engineering Evaluation Framework

Conclusion

Expert requirements and validation engineering practices are key to developing the right product to meet market needs. However, once the requirements are defined, the job is not done. Companies must be able to quickly respond to market changes, take advantage of better ideas, and efficiently manage product platforms and variants. This means that change will be inevitable. However, today's products are so complex, identifying all impacts of a change is difficult. This includes identifying who is impacted as well as all the impacted dependencies. This can be an overwhelming amount of work that is destined to have errors. Not managing this well leads to market delays, cost overruns, and lost revenue opportunities. However, with the right requirements and validation engineering practices, combined with the right technology solution, this error-prone process can be streamlined so that companies bring the right innovations to market, on time and on budget.

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However, there are so many aspects of requirements and validation engineering, it can be very difficult determining the right solution for your company. Using a high-level list of tool and process evaluation criteria such as the ones in this guide can help narrow down potential solutions by providing a quick "litmus test" to determine if a solution and partner are a good fit before conducting detailed functional or technical reviews. In the end, it's important to ensure that functionality, service, vendor, and special requirements are all considered when selecting a solution.

Recommendations

Based on industry experience and research for this report, Tech-Clarity offers the following recommendations:

- Identify software requirements based on company needs, existing applications, industry, and unique product and process requirements
- Use high level requirements such as the ones in this guide to evaluate solutions based on business fit before engaging in detailed evaluations
- Consider long-term business and process growth needs and the potential to scale across product lines, departments, and engineering silos
- Consider all aspects of requirements and validation engineering solutions from definition, management, changes, traceability, interoperability, reuse, variability, and validation.
- Select a vendor who has the ability to be a trusted partner

About the Author

Michelle Boucher is the Vice President of Research for Engineering Software for research firm Tech-Clarity. Michelle has spent over 20 years in various roles in engineering, marketing, management, and as an analyst. She has broad experience with topics such as product design, simulation, systems engineering, mechatronics, embedded systems, PCB design, improving product performance, process improvement, and mass customization. She graduated magna cum laude with an MBA from Babson College and earned a BS in Mechanical Engineering, with distinction, from Worcester Polytechnic Institute.

Michelle began her career holding various roles as a mechanical engineer at Pratt & Whitney and KONA (now Synventive Molding Solutions). She then spent over 10 years at PTC, a leading MCAD and PLM solution provider. While at PTC, she developed a deep understanding of end user needs through roles in technical support, management, and product marketing. She worked in technical marketing at Moldflow Corporation (acquired by Autodesk), the market leader in injection molding simulation. Here she was instrumental in developing product positioning and go-to-market messages. Michelle then

joined Aberdeen Group and covered product innovation, product development, and engineering processes, eventually running the Product Innovation and Engineering practice.

Michelle is an experienced researcher and author. She has benchmarked over 7000 product development professionals and published over 90 reports on product development best practices. She focuses on helping companies manage the complexity of today's products, markets, design environments, and value chains to achieve higher profitability.