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Functional requirements examples for web application

We can divide software product requirements into two large groups. Let us see what the difference between them is and consider a few examples of each of these categories. We will start with definitions and try to explain everything in simple terms. Functional requirements describe what specifically needs to be implemented in a particular system or product and what actions users have to take to interact with the software. They determine what the system should do. Non-functional requirements show what properties and features a particular solution has, namely, how the system will work and why. As a whole, these requirements describe the features the product has to have in order to meet the needs of all parties concerned, both business and end users. What do Functional Requirements Include? An example of a functional requirement: The system is to send an email whenever a certain condition is met. For example, a user has added merchandise to a cart in an online store but did not complete the order. We can highlight three main groups of functional requirements: Business requirements. These define the high-level goals set by the customer's company that is ordering the software development and stipulate what the system is to solve in terms of their business. Example: an application allowing potential customers to browse through the company's product catalog and to purchase products. User requirements. These describe the system goals/objectives the users may reach when using the create system (UseCases). Simply put, this is what a user can do: sign up, view certain content, recalculate data using a specific algorithm, and other functions. Functional requirements. These define a list of actions the system has to perform. In addition, they have to specify how the system responds to various input data, how it behaves in particular situations, and so on. This group also includes system requirements describing hardware and software environment features necessary for correct operation. Functional requirements are documented in a software requirements specification (SRS) describing the expected system behavior. Non-Functional Requirements in Simple Words Based on the previous paragraph, here is an example of a non-functional requirement for the system described by us, which sends a letter when a certain condition is met: Letters are to be sent 3 hours after the user leaves the website. If the purchase is not complete, a second letter is sent one day after the cart is abandoned. As a rule, the non-functional requirements primarily include various product quality attributes determining system quality features, most often as listed below: Availability - requirements for app continuous running, for example, 24/7, minimum idle time, etc. Reliability - app behavior in case of alarm status, for example, automatic restart and operation recovery. Scalability - ways to expand the system and avoid adversely affected performance. Performance - how many simultaneous users or transactions the system is to service and its response time. Security - app operation and use of safety requirements related to access control, private data processing, and external attack risk reduction. Usability - ease of use and user-friendly interface, that allow users to seamlessly interact with the product. Extensibility - requirements for app extensibility in case there is a need to add new functional requirements. A more comprehensive list of non-functional requirements can be found on Wikipedia. Summary Functional requirements describe the task that the company or user is to fulfill using the software product. For example, a mobile banking app is to be able to create a new account, add and remove bank cards, make payments, receive account statements, etc. Non-functional requirements for such a product will be related more to product usability. In the case of the aforementioned banking app, it is the capability to receive data and carry out transactions online at any time of the day or night. Software requirements' specifications are a valuable instrument used to optimize the development process. Software developers get all the data necessary to get started, and thus the customer is sure to receive the exact product they need. Imagine that you want to build a house. It should be two-stored, have a red roof, and several windows. But what about the number of rooms, the color of the walls and the style of the house? Should it be mid-century modern or even Scandinavian? You need to clarify many aspects to make the result meet your requirements. The same applies to mobile app development. A detailed vision of the project helps business analysts and project managers create better product documentation in the short term. On another hand, if the team needs to clarify information during the development stage, development time and costs might increase, as well as the probability that the project may fail. How can you avoid this? Simply by defining functional and non-functional requirements for the project. While functional requirements might be quite clear, some of the non-functional requirements are hard to specify. For instance: How do we know what acceptable "performance" should look like? Or How can we define "maintainability" before any code has been written? If you want to decrease the project's cost, increase the development of team productivity, and develop a successful and cost-effective project, read on. Below, we share information on what requirements you need to clarify with a business analyst, functional and nonfunctional requirement examples, and handy tips on how to specify non-functional requirements. How requirements impact the software development process? As mentioned, clearly defined requirements are the key to project success. These requirements also help the development team and client to ensure they are working to reach the same goals. Failing to define requirements may cause miscommunication between the team and client, and increase the chances of the project failing. But wait - there's more: Detailed functional and nonfunctional requirements in software engineering help the team to complete the following tasks: Define the terms and roles. Requirements help to ensure that the development team and stakeholders are on the same page to avoid misunderstandings in the future. Reduce communication time. Close cooperation with BA ensures much clearer requirements and less development time. Such an approach reduces the time required for communication during the development stage, as well as the project's cost. Make the project estimation more precise. Detailed requirements help us to estimate the development time and cost more accurately. See the possible mistakes beforehand. When the team visualizes the project details during the discovery (inception) phase, they may identify errors in the initial stage of development. Therefore, they save your time and budget. Create more predictable projects. High-quality requirements and wireframes help to predict the result and develop the project that meets your expectations. To conclude, detailed requirements help developers and stakeholders to find a common language, save money and time for development, as well as create a project that meets business needs and expectations. Now we'll move on and learn more about project requirement types. Classification of requirements To turn your business idea into a working solution, you need to clarify the following: Business requirements include high-level statements of goals, objectives, and needs of your project. Stakeholder requirements help to find what you expect from a particular solution. Solution requirements describe the product characteristics that will meet your expectations and business needs. They include: Functional requirements describe ways a product must behave Nonfunctional requirements, also known as quality attributes, describe the general software characteristics Functional Vs Non-Functional Requirements: The Comparison Table If you still have a question about the difference between functional and non-functional requirements, check the table below: Parameters Functional Requirement Non-Functional Requirement Requirement It is mandatory It is non-mandatory Capturing type It is captured in the use case. It is captured as a quality attribute. End-result Product feature Product properties Capturing Easy to capture Hard to capture Objective Helps you verify the functionality of the software. Helps you to verify the performance of the software. Area of focus Focuses on user requirement Focuses on the user's expectation and experience. Documentation Describe what the product does Describes how the product works Product Info Product Features Product Properties Functional requirements Such requirements describe system behavior under specific conditions and include the product features and functions which web & app developers must add to the solution. Such requirements should be precise both for the development team and stakeholders. The list of examples of functional requirements includes: Business Rules Transaction corrections, adjustments, and cancellations Administrative functions Authentication Authorization levels Audit Tracking External Interfaces Certification Requirements Reporting Requirements Historical Data If your team uses Agile methodology, they will design most of the requirements in written form. Still, to present some requirements more clearly, the team can visualize them. The functional requirements may appear in the following forms: Functional requirements specification document The documentation includes detailed descriptions of the product's functions and capabilities. These could be a single functional requirements document or other documents, such as user stories and use cases. As well as the form, the specification document must consist of the following sections: Purpose. This section includes background, definitions, and system overview. Overall description. The description document consists of product vision, business rules, and assumptions. Specific requirements. The requirements might be database requirements, system attributes, and functional requirements. Here is a project definition example: "Admin dashboard - a web portal allowing Admin to view and manage Applicants and Customers, Drivers, vehicles, manage car models, prices, and review statistics from both mobile platforms." Use cases Use cases describe the interaction between the system and external users that leads to achieving particular goals. Each use case includes three main elements: Actors are the users who will interact with your product. Example: "Applicant - a person who wants to use the App and applies for registration. Customer - a person who was approved for registration and can use the App. Driver - a person, who was registered in the Driver app and fulfills ride orders for Members received from the App." System functional requirements describe the intended behavior of the product. Example: "Payment System charges Customer for the ride." Goals describe all interactions between the users and the system. Example: "When the journey is over, Driver marks it has ended in their app." User stories User stories are documented descriptions of software features from the end-user perspective. The document describes scenarios of how the user engages with the solution. Example: "As a Customer, I want to select a car from the carousel so that I can complete the order." . If the development team uses Agile methodology, they will organize user stories in a backlog, an ordered list of product functions. Functional decomposition A functional decomposition or work breakdown structure (WBS) illustrates how complex processes and features break into simpler components. By using the WBS approach, the team can analyze each part of the project while capturing the full project picture. Example: Image source: Batimes Mobile app prototypes By using prototypes, stakeholders and teams clarify the project vision and complicated areas of products in development. The development team also uses prototypes to represent how the solution will work and give examples of how users will interact with it. There are two types of prototypes: Throwaway prototypes that can be cheap and fast visual representations of requirements Image source: Justusdesign Evolutionary prototypes, more complex ones, that can later even become the early versions of the product or the MVP. Image source: The App Solutions Non-functional requirements examples What is a non-functional requirement? The definition of non-functional requirements is quality attributes that describe ways your product should behave. The list of basic non-functional requirements includes: Usability Usability is the degree of ease with which the user will interact with your products to achieve required goals effectively and efficiently. Legal or Regulatory Requirements Legal or regulatory requirements describe product adherence to laws. If your product violates these regulations, it may result in legal punishment, including federal fines. For example, look at legal requirements for our recent project, a mobile taxi platform: "To operate in London, the platform should be licensed by the local transport authority - Transport for London." Reliability Such a metric shows the possibility of your solution to fail. To achieve high reliability, your team should eliminate all bugs that may influence the code safety and issues with system components. Performance Performance describes how your solution behaves when users interact with it in various scenarios. Poor performance may lead to a negative user experience and jeopardize system safety. Example: "The application shows cars nearby for three seconds." As we said, some non-functional requirements are not so distinct and might be missed by the team and stakeholders due to: Subjective nature. Different users can view, interpret, and evaluate Nonfunctional characteristics in different ways. Integrated nature. The goals of one non-functional requirement may conflict with another since they typically have a broad effect on systems. Don't know what they [NFRs] are. Unclear terminology, confusing definitions, and the absence of a universally accepted classification scheme make understanding of non-functional requirements a challenge. Assuming that "Everybody knows." During the discovery (inception) phase, both the client and the team might forget about some non-functional requirements because some of them are hard to define from the perspective of a business idea. Therefore, they might arise only after the project release. Still, non-functional requirements mark the difference between a development project's success and its failure. How to define non-functional requirements To determine the majority of non-functional requirements, you should: Use a defined classification and classify them into three groups: operation, revision, and transition. In this way, the stakeholders and the development team build a consistent language for discussing non-functional needs. With a list of pre-defined elicitation questions, you may increase the development teams productivity. Besides, you can save time when preparing for elicitation interviews and workshops. Engage with the development team during the requirements definition to ensure that you are on the same page with the development team. Use 'Invented Wheels' and reuse the requirements written for other systems, since software systems have a lot in common when comparing nonfunctional requirements. Use automated testing tools such as Selenium, TestComplete, and Appium. Such tools will help to check your product performance faster and reveal more non-functional requirements. Final words Precise functional and non-functional requirements are essential to reduce development costs because, when the requirements are clear, the team can develop the project much faster. The difference between functional and non-functional requirements is as follows: Functional requirements are easy to define because the business idea drives them. They include all the features of your future project and the ways users engage with it. Experience drives Non-functional requirements. In order, to identify them, you need to analyze the product's performance and make it convenient and useful. Such requirements may appear when the product is being used on a regular basis. In this way, while functional requirements describe what the system does, non-functional requirements describe how the system works. To receive assistance from business analysts and define your project requirements, contact us. What our clients say Related articles: HOW TO ESTIMATE BASIC EXPENSES FOR ANDROID OR IOS APP DEVELOPMENT HOW TO USE MACHINE LEARNING IN MOBILE APP? CROWDFUNDING FOR YOUR APP DEVELOPMENT SHOULD YOU HIRE APP DEVELOPERS NEAR ME OR OUTSOURCE OVERSEAS?

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