

## Requirements management in projects

Requirements management is a key element in project management, involving the identification, analysis, documentation and tracking and management of requirements variation within a project. The aim of this process is to ensure that the project meets stakeholder expectations and delivers a product or service that meets the specified requirements. Requirements management means understanding what the client wants to achieve and ensuring that the project team has clear and precise information about the client's expectations.

Here are the key objectives of requirements management:

- **Clarity and understanding:** one of the main objectives of requirements management is to establish a clear and shared understanding of the project objectives. This includes effectively communicating project goals, functionality and constraints to all stakeholders, including developers, designers, testers, business analysts and customers. When everyone is on the same page, misunderstandings are minimised, leading to more accurate project delivery.
- **Definition of scope:** clearly defining the scope of a project is crucial to prevent scope creep - the uncontrolled expansion of project requirements. Requirements management helps to identify and document the scope of the project, defining what is included and what is not. This objective helps set expectations and ensures that the project remains focused and achievable.
- **Documentation:** effective requirements management includes accurate documentation of all requirements. This documentation serves as a reference throughout the project lifecycle and helps prevent misinterpretations or disputes. Well-documented requirements also contribute to knowledge retention, enabling future team members to understand project history and decisions.
- **Change management:** Projects are dynamic and requirements may evolve due to changing market conditions, stakeholder feedback or other factors. Requirements management provides a structured process for managing changes to requirements. This includes assessing the impact of changes, prioritising them and obtaining appropriate approvals before implementing modifications.
- **Alignment with business objectives:** Successful projects are those that are aligned with the overarching goals of the company or organisation. Requirements management ensures that a project's requirements are aligned with the company's strategic objectives. This alignment maximises the value of the project and its potential business impact.
- **Communication:** effective communication is a fundamental aspect of requirements management. This process involves facilitating communication between different stakeholders and ensuring that their needs, expectations and concerns are captured and integrated into the project requirements. Clear communication promotes collaboration and prevents misunderstandings.

## Current trends, solutions and approaches

In order to understand how the system will behave in a real environment and what changes need to be made before proceeding to expensive full-scale tests simulation modelling is already widely used. Simulation modelling today allows not just to 'look' at the virtual prototype of the system, but also to perform the necessary cycle of tests and identify non-compliance with the requirements still in the virtual environment, and therefore cost the system developers orders of magnitude cheaper. A related product of simulation modelling is the ability to analyse system fault tolerance and safety.

An integral part of the requirements, even at the definition stage, should be the methods for determining conformance, i.e. the test methods by which conformance to the requirement will be

confirmed. Recently, the process of confirming conformance to requirements has been increasingly referred to as verification of requirements. Based on the test results, conformance to the requirements is confirmed or changes to the product are initiated. The concept of 'validation' of the product, in its turn, appeared based on the possible imperfection of the requirements themselves or methods of their verification. In other words, product validation is of a higher-level nature and is aimed at avoiding situations where tests confirm compliance with all requirements but the product cannot be used.

### **Modern IT tools that support manager's work**

Requirements management software helps project teams manage, document, analyse, prioritize, and set requirements for new products or services. It also connects development teams with relevant stakeholders and other interested parties, creating an avenue of communication about requirements and changes needed for the product or service.

**Jama Connect** : product development platform for requirements, test and risk management.

**Visure Requirements** : Requirements management tool which provides a collaborative ALM (application lifecycle management) platform, including full traceability, MS Word/Excel integration, risk management and more

**Jira**: Agile project management tool with customizable workflows, issue tracking, and integration capabilities for seamless team collaboration and project monitoring.

### **Forecasted directions of development in a given topic, opportunities, and threats.**

#### **Forecasted Directions of Development:**

- **Automation and AI Integration:** further integration of automation and AI technologies into requirements management tools. AI can help in analysing and prioritizing requirements, detecting conflicts, suggesting solutions, thus streamlining the process.
- **Integration with DevOps:** integration with DevOps practices, enabling seamless transition of requirements into development and ensuring continuous delivery pipelines.

#### **Opportunities:**

- **Data-driven insights:** utilizing the analytics and reporting features of requirements management solutions, one may obtain insightful information about the state of a project, the distribution of resources, and performance indicators. This information can then be used to inform decisions and promote ongoing development.
- **Cross-Domain Integration:** integrating several platforms and tools outside of the realm of traditional software development, like enterprise resource planning, customer relationship management, and project management, creates new opportunities for creativity and cooperation.

#### **Threats :**

- **Cybersecurity Risks:** As more data moves to the cloud and organizations rely on digital tools for requirements management, there is an increased risk of cybersecurity threats such as data breaches, unauthorized access, and malware attacks
- **Regulatory Compliance:** Regulatory requirements and compliance standards, especially in industries such as healthcare, finance, and defence, can pose challenges for requirements management. Failure to comply with regulations can lead to legal consequences and damage to reputation.