

## CCT College Dublin

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### Declaration

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## Q-5

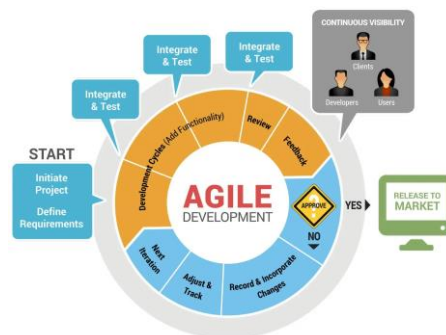
### Introduction: -

Building a small commercial website for my friend's new construction business. I have built a website in the name of BBC using the Agile method. I feel that agile software development methodology that focuses on flexibility, collaboration and efficiency allows teams to deliver quality products than plan based. This report provides an in-depth look at each phase and activity within the Agile development cycle for building a comprehensive commercial website tailored to the needs of a construction business.

### Step 1 Project Initiation: -

#### Project initiation:

In Agile development cycle the project initiation phase marks the beginning of the project. Because, it involves gathering the project team, including developers, analyst, testers, designers, and stakeholders, for an initial meeting to discuss project goals and objectives. Since the project is related to the construction website, this phase would also include the identification of key project stakeholders, such as the business owner, project manager, marketing team, and potentially regulatory authorities to get know about the project requirements and their expectations in-detail.



Ref: <https://cyberhoot.com/wp-content/uploads/2020/06/agile-development-diagram1-min.jpg>

### Requirement Gathering: -

In the requirement gathering phase, collaborating with stakeholders to get the detailed requirements is critical for a construction website. These requirements may include the types of services offered, project portfolios, regulatory compliance, contact information, and more. The Agile approach encourages ongoing communication with stakeholders to ensure that their needs and expectations are thoroughly understood.

### Initial Sprint Planning:

In the project initiation phase, the first sprint is planned. The Agile projects are typically organized into "sprints," which are time-boxed development cycles. This involves selecting high-priority user stories or features to work on initially. For this construction website, we might include defining the core functionalities, such as service descriptions, about the company and their previous works and contact forms.

### Set Up Tools:

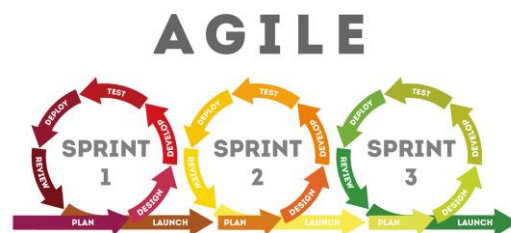
Establishing the right tools is essential to work in Agile project management. This includes selecting project management and collaboration tools (e.g., Jira, Trello), and development environments (e.g., development, staging, production servers), and communication tools (e.g., Slack, Zoom) should be set up to facilitate collaboration among team members.

## **Step-2. Planning**

### Creating User Stories and prioritizing user stories:

Agile project planning User stories are fundamental. We have broken down the requirements gathered in the initial phase into user stories. In this construction website, user stories might include "As a user, I want to view the company's portfolio of completed projects" or "As a user, I want to contact the company through a web form."

Prioritizing user stories is essential to ensure that the most valuable features are delivered first. In this construction website, the high-priority user stories might include showcasing services, project portfolios, and contact information. Prioritization is typically done collaboratively with input from both the development team and stakeholders.



Ref: <https://www.radview.com/wp-content/uploads/2021/04/agile-performance-testing-sprint.png>

### Sprint Planning and Estimation:

Sprint planning involves selecting a set of user stories to work on during the upcoming sprint. The selection is based on the priorities defined earlier. The sprint planning process also includes estimating the effort required for each user story, often using story points. In this construction website, estimation might involve assessing the time and resources needed to implement specific features.

### Step-3. Execution:

#### Development and designing: -

The execution phase is where the development team starts building the website's functionality incrementally and works on implementing the user stories selected for the sprint. For this construction website, this phase would involve coding features such as service descriptions, project galleries, and interactive contact forms. After the development stage, we focus on creating or refining the website's visual elements. This includes designing layouts, graphics, and branding that align with the construction business's identity using html and CSS in vscode. We Designers also ensure that the website is visually appealing and user-friendly, which is crucial for engaging visitors.



Ref: [https://img.freepik.com/premium-vector/illustration-vector-graphic-cartoon-character-business-idea\\_516790-856.jpg?w=1480](https://img.freepik.com/premium-vector/illustration-vector-graphic-cartoon-character-business-idea_516790-856.jpg?w=1480)

#### Regular Stand-up Meetings:-

In Agile teams hold daily stand-up meetings, often referred to as "daily scrums." These brief meetings serve to discuss progress, address any issues to ensure team alignment. In this construction website project, stand-up meetings help the team stay on track and quickly resolve any development or design challenges.

#### Testing: -

Testing is an ongoing activity throughout the execution phase. Testers perform continuous testing on new features to identify and report bugs promptly. In the construction website, testers may focus on ensuring that service descriptions are accurate, project galleries display correctly, and contact forms function as intended.

#### Documentation: -

Documenting the code and functionality as it's developed is essential for knowledge sharing among team members. In this construction website, documentation might include guidelines for updating project portfolios, adding new services, or making changes to contact information. Documentation ensures that team members can collaborate effectively and maintain the website in the future.

## **Step-4. Review and Feedback**



### **Sprint Review: -**

At the end of each sprint, a sprint review meeting is conducted with stakeholders. During this meeting, the development team demonstrates the completed features and gathers feedback. In this construction website project, stakeholders can provide input on how well the website showcases services, presents project portfolios, and facilitates contact with potential clients.

### **Sprint Retrospective and Feedback Incorporation: -**

Following the sprint review, a sprint retrospective meeting is held to reflect on the sprint's outcomes. The team discusses what went well, what could be improved, and any potential process adjustments. For this construction website project, the retrospective could lead to refinements in how project portfolios are organized or how user feedback is incorporated. It is essential to incorporate this feedback into the project's backlog for consideration in future sprints. For example, if stakeholders express a desire for additional project information on the website, the development team can prioritize and plan for those enhancements in upcoming sprints.

## **Step-5. Incremental Delivery**

### **Iterative Development: -**

Agile projects embrace iterative development, where each sprint builds upon the work of the previous sprint. For a construction website, this means continuously adding new features and functionality while refining existing ones. This iterative approach allows for the gradual enhancement of the website to meet evolving business needs.

### **User Acceptance Testing (UAT): -**

Involving stakeholders in user acceptance testing ensures that the website aligns with their expectations. Construction business stakeholders can validate that the website accurately represents their services, showcases projects effectively, and offers seamless contact options. UAT is an integral part of ensuring that the website meets business objectives.

## Step-6. Quality Assurance and Testing: -



### Functional Testing and Usability Testing: -

Functional testing ensures that all features and functionality of the website work correctly and meet the specified requirements. For a construction website, functional testing would involve verifying that service descriptions are accurate, project galleries display images properly, and contact forms submit data without errors. Usability testing assesses the website's user experience. In this website, usability testing evaluates how easily visitors can navigate the site, access project information, and utilize contact features. It helps identify any issues with user interface design, layout, or interaction flow.

### Security Testing and Performance Testing: -

Security testing involves conducting assessments to protect the construction website from potential vulnerabilities. This includes identifying and addressing potential threats such as SQL injection, cross-site scripting (XSS), and other security risks. Ensuring the website complies with industry-standard security practices is crucial. Performance testing evaluates the website's responsiveness and scalability. For a construction website, this involves assessing how quickly pages load, especially image-heavy project galleries. It also examines how well the website performs under various conditions, such as heavy traffic. Ensuring optimal performance is vital for providing a seamless user experience.

Accessibility Testing: - Accessibility testing ensures that the construction website is accessible to all kinds of users.

## Step-7. Deployment

### Production Deployment: -

The production deployment phase involves making the completed website accessible to users. For this construction website, this means going live and allowing potential clients to access information about services, view project portfolios, and contact the company.

### Monitoring: -

After deployment, it's crucial to set up monitoring tools to track the website's performance, errors, and user behavior. In this construction website, monitoring ensures that the site remains accessible and



responsive to visitors and Monitoring helps identify issues, such as slow page load times or broken links, and allows for timely interventions.

#### Backup and Disaster Recovery: -

Implementing backup and disaster recovery procedures is essential to safeguard data and functionality. Regular backups of the website's content and databases should be performed, and plans for rapid recovery in case of unexpected events, such as server failures or data loss, should be in place.

### **Step-8. Maintenance and Ongoing Enhancements**

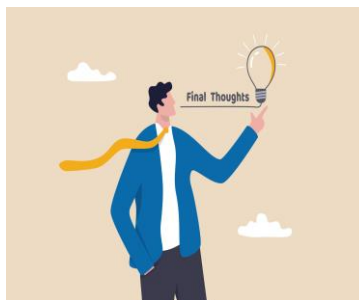
#### User Support and Bug Fixes: -

Providing ongoing user support is vital to address issues and questions that may arise after the website's launch. For this construction website, this includes responding to inquiries from potential clients, resolving technical issues, and helping as needed. Post-launch bug fixes are a common part of website maintenance. Regular testing and monitoring may uncover issues that were not apparent during development.

#### Content Updates and Feature Enhancements: -

Keeping the website's content up to date is crucial. In building the Construction businesses may frequently update project portfolios with new completed projects or revise service descriptions. Content management systems (CMS) can facilitate content updates while maintaining the website's overall structure and design. As the construction business evolves and user feedback accumulates, there will be a need for feature enhancements. Agile allows for planning and implementing these enhancements in subsequent sprints. For example, the business may decide to add a blog section or integrate a client portal for project collaboration.

### **Conclusion**



The Agile development cycle for building a comprehensive commercial website for a construction business is a structured and iterative process. Each phase and activity plays a crucial role in delivering a website that meets the business's objectives, provides a positive user experience, and maintains security and performance standards. The Agile approach allows for adaptability to changing requirements and continuous improvement, making it well-suited for dynamic projects in the construction industry and beyond. By following these phases and activities, construction businesses can successfully leverage Agile methodologies to create an effective online presence that meets their needs and the expectations of their clients.

## Q-6

### Introduction

The Waterfall development methodology is characterized by its sequential and linear approach to project management. In this report, we explore how a Waterfall approach differs from the Agile methodology for building a comprehensive commercial website to the needs of a construction business.

### Step-1. Requirements Gathering

#### Agile (Iterative):

In Agile, the requirement's gathering phase is flexible and ongoing. Initial high-level requirements are gathered at the start, and detailed requirements are progressively refined as the project progresses. Stakeholder feedback is continuously incorporated, allowing for adaptability.

#### Waterfall (Sequential): -

In the Waterfall approach, requirements gathering is an extensive and critical phase that occurs at the project's outset. All the requirements for building the construction website must be collected, analyzed, and documented comprehensively before moving to the next phase. This phase is often time-consuming, involving extensive documentation of user stories, use cases, and functional specifications.

### Step 2. System Design

#### Agile (Iterative): -

In Agile, design work begins early but is flexible and evolves iteratively. High-level design is initially considered, and detailed design activities are performed as development progresses. Design changes can be accommodated based on emerging insights.

#### Waterfall (Sequential):-

The Waterfall approach mandates a comprehensive system design phase following requirements gathering. This phase produces detailed design specifications of the construction website, including architecture, data models, and user interface layouts. Once the design is finalized and approved, it serves as a blueprint for the subsequent development phase.

### Step 3. Implementation (Development)

#### Agile (Iterative): -

In Agile, development occurs iteratively in short cycles known as sprints. Developers work on subsets of functionality in each sprint, often two to four weeks in duration. Features are developed incrementally, and changes can be made as the project evolves.

#### Waterfall (Sequential): -

Implementation or development in Waterfall follows the completion of requirements gathering and system design. Development is a lengthy phase where all features and functionality for this business are built according to the detailed specifications. Changes to requirements or design at this stage can be difficult and costly to accommodate, since the construction website usually has a lot of things to update like the projects and gallery it will be d.to accommodate in this method.

#### **Step 4. Testing**

##### Agile (Iterative):

Testing is integrated throughout the development process in Agile. Each sprint includes testing activities to ensure that new features meet quality standards. Testers work closely with developers to identify and address issues promptly.

##### Waterfall (Sequential):

In the Waterfall approach, testing is a distinct phase that occurs after development is complete. Testers verify that the entire system functions according to the specified requirements. Defects discovered during testing must be documented and resolved before moving forward. This method is very time consuming.

#### **Step 5. User Acceptance Testing (UAT)**

##### Agile (Iterative):

UAT can be performed iteratively in Agile, with stakeholders participating in testing during each sprint. Feedback is incorporated into subsequent development cycles.

##### Waterfall (Sequential):

In the Waterfall approach, UAT typically occurs after the testing phase is complete. Stakeholders review the entire system to ensure it aligns with their requirements and expectations. Any changes or issues identified during UAT may require revisiting earlier phases.

#### **Step 6. Deployment**

##### Agile (Iterative):

Agile projects allow for incremental deployment, with features or subsets of functionality being deployed as they are completed. This may enable earlier delivery of value to stakeholders.

##### Waterfall (Sequential):

Deployment in Waterfall happens after all development, testing, and UAT activities are finished. The entire system is deployed at once, which may result in a longer time-to-market and a delay in realizing benefits.

## **Step 7. Maintenance and Support**

### **Agile (Iterative):**

Agile projects typically include ongoing maintenance and support as part of each sprint. This includes addressing bugs, making minor updates, and providing user support throughout the project.

### **Waterfall (Sequential):**

In the Waterfall approach, maintenance and support are considered post-launch activities. Once the system is deployed, a separate maintenance phase begins, focusing on addressing issues, making updates, and providing user support.

## **Step 8. Project Documentation**

### **Agile (Iterative):**

Agile documentation evolves iteratively. High-level requirements and design documentation are initially created and refined as the project progresses. Detailed documentation may be produced as features are developed.

### **Waterfall (Sequential):**

Waterfall places significant emphasis on comprehensive documentation at each stage. Detailed requirements, design specifications, and testing documentation are generated before development begins. Documentation is often extensive and serves as a reference for the entire project.

## **Conclusion**

The Waterfall development cycle for building a construction website differs significantly from the Agile approach. Waterfall is characterized by its sequential, highly structured phases, with extensive upfront planning and documentation. While it may offer a clear roadmap and detailed specifications, it can be less adaptable to changing requirements, client feedback, and evolving business needs, especially in dynamic industries like construction.

The choice between Agile and Waterfall should align with the specific project's requirements, the construction business's preferences, and the degree of flexibility needed. While Waterfall may have advantages in situations where requirements are highly stable and regulatory compliance is paramount, Agile's iterative and client-focused approach is often better suited for construction website projects that require adaptability, ongoing client involvement, and the ability to respond to evolving market conditions and user feedback. Ultimately, the choice of methodology should be made with careful consideration of the project's unique characteristics and objectives.

