Higher Nationals

Internal verification of assessment decisions – BTEC (RQF)

INTERNAL VERIFICATION – ASSESSMENT DECISIONS					
Programme title	HND in Computing				
Assessor	Mr. Isura Kulathilaka	**Internal Verifier**	Mr .Lakindu Premachandra		
Unit(s)	**Unit 34: System Analysis & Design**				
Assignment title	**Automated system for E-Solutions Private Limited**				
Student's name	Ranudi Gayathmie Kariyapperuma				
List which assessment criteria the Assessor has awarded.	**Pass**	**Merit**	**Distinction**		
INTERNAL VERIFIER CHECKLIST					
Do the assessment criteria awarded match those shown in the assignment brief?	Y/N				
Is the Pass/Merit/Distinction grade awarded justified by the assessor's comments on the student work?	Y/N				
Has the work been assessed accurately?	Y/N				
Is the feedback to the student: Give details: • Constructive? • Linked to relevant assessment criteria? • Identifying opportunities for improved performance? • Agreeing actions?	 Y/N Y/N Y/N Y/N				
Does the assessment decision need amending?	Y/N				
Assessor signature			**Date**		
Internal Verifier signature			**Date**		
Programme Leader signature (if required)			**Date**		

Confirm action completed			
Remedial action taken Give details:			
Assessor signature		**Date**	
Internal Verifier signature		**Date**	

Programme Leader signature (if required)		**Date**	

Higher Nationals - Summative Assignment Feedback Form

Student Name/ID	Ranudi Gayathmie Kariyapperuma /00104243		
Unit Title	**Unit 34: System Analysis & Design**		
Assignment Number	**1**	**Assessor**	
Submission Date	03.12.2023	**Date Received 1st submission**	
Re-submission Date		**Date Received 2nd submission**	

Assessor Feedback:

LO1 Evaluate the strengths and weaknesses of the traditional and agile systems analysis methodologies

Pass, Merit & Distinction Descripts **P1** ☐ **M1** ☐ D1 ☐

LO2 Produce a feasibility study for a system for a business-related problem

Pass, Merit & Distinction Descripts **P2** ☐ **M2** ☐

LO3 Analyse their system using a suitable methodology.

Pass, Merit & Distinction Descripts **P3** ☐ **M3** ☐ **D2** ☐

LO4 Design the system to meet user and system requirements.

Pass, Merit & Distinction Descripts **P4** ☐ **M4** ☐

Grade:	**Assessor Signature:**	**Date:**
Resubmission Feedback:		
Grade:	**Assessor Signature:**	**Date:**
Internal Verifier's Comments:		
Signature & Date:		

* Please note that grade decisions are provisional. They are only confirmed once internal and external moderation has taken place and grades decisions have been agreed at the assessment board.

Pearson Higher Nationals in

Computing

Unit 34: Systems Analysis & Design

Assignment 01

General Guidelines

1. A Cover page or title page – You should always attach a title page to your assignment. Use previous page as your cover sheet and make sure all the details are accurately filled.
2. Attach this brief as the first section of your assignment.
3. All the assignments should be prepared using a word processing software.
4. All the assignments should be printed on A4 sized papers. Use single side printing.
5. Allow 1" for top, bottom , right margins and 1.25" for the left margin of each page.

Word Processing Rules

1. The font size should be **12** point, and should be in the style of **Time New Roman**.
2. **Use 1.5 line spacing**. Left justify all paragraphs.
3. Ensure that all the headings are consistent in terms of the font size and font style.
4. Use **footer function in the word processor to insert Your Name, Subject, Assignment No, and Page Number on each pag**e. This is useful if individual sheets become detached for any reason.
5. Use word processing application spell check and grammar check function to help editing your assignment.

Important Points:

1. It is strictly prohibited to use textboxes to add texts in the assignments, except for the compulsory information. eg: Figures, tables of comparison etc. Adding text boxes in the body except for the before mentioned compulsory information will result in rejection of your work.
2. Avoid using page borders in your assignment body.
3. Carefully check the hand in date and the instructions given in the assignment. Late submissions will not be accepted.
4. Ensure that you give yourself enough time to complete the assignment by the due date.
5. Excuses of any nature will not be accepted for failure to hand in the work on time.
6. You must take responsibility for managing your own time effectively.
7. If you are unable to hand in your assignment on time and have valid reasons such as illness, you may apply (in writing) for an extension.
8. Failure to achieve at least PASS criteria will result in a REFERRAL grade .
9. Non-submission of work without valid reasons will lead to an automatic RE FERRAL. You will then be asked to complete an alternative assignment.
10. If you use other people's work or ideas in your assignment, reference them properly using HARVARD referencing system to avoid plagiarism. You have to provide both in-text citation and a reference list.
11. If you are proven to be guilty of plagiarism or any academic misconduct, your grade could be reduced to A REFERRAL or at worst you could be expelled from the course

Student Declaration

I hereby, declare that I know what plagiarism entails, namely to use another's work and to present it as my own without attributing the sources in the correct form. I further understand what it means to copy another's work.

1. I know that plagiarism is a punishable offence because it constitutes theft.
2. I understand the plagiarism and copying policy of Edexcel UK.
3. I know what the consequences will be if I plagiarise or copy another's work in any of the assignments for this program.
4. I declare therefore that all work presented by me for every aspect of my program, will be my own, and where I have made use of another's work, I will attribute the source in the correct way.
5. I acknowledge that the attachment of this document signed or not, constitutes a binding agreement between myself and Pearson , UK.
6. I understand that my assignment will not be considered as submitted if this document is not attached to the assignment.

ranudigk@gmail.com
Student's Signature:
(*Provide E-mail ID*)

Date: 03.12.2023
(*Provide Submission Date*)

Higher National Diploma in Computing

Assignment Brief

Student Name /ID Number	Ranudi Gayathmie Kariyapperuma KIR/X - 00104243
Unit Number and Title	**Unit 4: Systems Analysis & Design**
Academic Year	2021/22
Unit Tutor	Mr. Isura Kulathilaka
Assignment Title	**Automated system for E-Solutions Private Limited**
Issue Date	15.10.2023
Submission Date	03.12.2023
IV Name & Date	

Submission format

The submission should be in the form of an individual written report written in a concise, formal business style using single spacing and font size 12. You are required to make use of headings, paragraphs, and subsections as appropriate, and all work must be supported with research and referenced Please provide in-test citations, reference list and bibliography using Harvard referencing system. Please also provide a bibliography using the Harvard referencing system.

The recommended word limit is not less than 5000 words, although you will not be penalised for exceeding the total word limit.

Unit Learning Outcomes:

LO1 Evaluate the strengths and weaknesses of the traditional and agile systems analysis methodologies.

LO2 Produce a feasibility study for a system for a business-related problem.

LO3 Analyse their system using a suitable methodology.

LO4 Design the system to meet user and system requirements.

Assignment Brief and Guidance:

*Please note that assignment guidance is for reference only and should be more specific in detail to meet customized needs.

Assignment brief

Case study

The new automated system is designed to replace the current, manual, error-prone process of E-Solutions private Limited. The automation of existing process is to reduce the company's expenses and enhance the productivity significantly. This transformation also would support for:

1) Successful teams working

2) Completing projects on time and within budget due to a better understanding of system requirements and tasks to be completed

3) Starting projects on time through automated project scheduling system.

In the proposed system, the Project director creates a project and a "project profile" for each project. The creation of the project profile includes identification of project employee costs, the assignment of tasks to the project, and the assignment of a project manager. The project profile is consisted of project id, project personnel cost, a list of tasks assigned, and the project manager. The Project director also creates the teams for a given project, assigns employees to the teams, and assigns a team leader. The Project manager is responsible for assigning tasks to various teams working on the projects(s). The Team Leader assigns tasks to the team members.

Additional functionality includes:

- Produce and update information about different software projects, project teams, specific team member assignments and team skills.
- Perform function point analysis to identify the personnel cost of the project and provide information to generate invoices upon completion of project phases.
- Monitor projects and identify completed tasks and ongoing tasks of each project.

Activity 01

Discuss traditional and agile system analysis methodologies used in the industry by comparing and contrasting the strengths and weaknesses of them. Critically evaluate two methodologies by referring to the examples to support your answer.

Activity 2

Produce a feasibility report for the scenario given above and assess the importance of feasibility criteria used for the system investigation. Critically evaluate the strengths and weaknesses of feasibility study with relevant to the proposed solution.

Activity 3

Analyse and review the system requirements of the proposed solution given in the scenario using a suitable methodology. Functional and non-functional requirements of the system should be clearly mentioned. Assessment of the effectiveness and suitability of the chosen methodology should be provided with proper justifications.

Activity 4

Produce a system design specification for the above scenario and assess the effectiveness of your design and the methodology used with reference to how it meets the user requirements.

Your system design specification should include architectural design, interface design, database design, and program design.

ACKKNOWLEDGEMENT

At last author would like to share the experience while doing the project. Author learns many new things about the networking topics. The best thing which author can share is that author developed more interest in this subject. This Project gave author experience of how to do an event .
A very special thanks to Mr Isuru Kulathilaka who teach us this subject and Author thanks for who helped author to do this kind of project. Thank you!

Regards,
The author,
Ranudi Kariyapperuma.

Contents

Table of Figures

Activity 01

Traditional system analysis methodology

Traditional system analysis methodologies encompass organized methods for creating information systems in businesses. In order to guarantee thorough system analysis, design, and implementation, these methodologies—which include the Waterfall Model, Structured Systems Analysis and Design Method (SSADM), Information Engineering, Object-Oriented Analysis and Design (OOAD), and Rapid Application Development (RAD)—follow methodical steps. The Waterfall Model, for instance, goes step by step through phases and places emphasis on comprehensive documentation at each one, whereas SSADM divides development into discrete stages and employs data flow diagrams for system modeling. When developing a system, Information Engineering stresses the importance of strong data models, while OOAD concentrates on object properties and interactions. Rapid prototyping and iteration (RAD) is a methodology that prioritizes gathering requirements and integrating user feedback quickly.

Even while these approaches were fundamental in previous software development eras, they frequently encounter difficulties when it comes to adjusting to requirements that change or evolve over the development process. Once a phase is over, it may be challenging to accommodate changes due to its rigidity, which might impede flexibility. Agile and other more adaptable approaches came forth as a result of this restriction. Agile development approaches put an emphasis on flexibility, iterative development, and ongoing user participation. This helps teams adapt more quickly to changing needs, collaborate more effectively, and produce high-quality software solutions more quickly. This movement shows how the industry is moving away from rigid approaches and toward more responsive and adaptable procedures in order to meet shifting user expectations and dynamic business needs in a constantly changing environment.

Types of Traditional Methods

Waterfall Method

The waterfall Model is a top-down, sequential, linear software development process that uses an organized approach and moves through predetermined phases. With each step building on the deliverables of the preceding one, this model breaks the software development process down into discrete phases, including requirements gathering, system design, implementation, testing, deployment, and maintenance. Its name comes from the fact that it emphasizes a rigid order in which each phase must be finished before going on to the next, much like a waterfall. The approach is based on the assumption that requirements remain mostly constant once they are determined at the start of the project, and each stage usually entails substantial documentation.

Because of its strict, sequential structure, this technique can be less flexible to changes or evolving requirements during the project lifespan. Nevertheless, it attempts to provide a systematic and well-defined process for software development, providing for clear goals and deliverables at each phase Because the Waterfall Model presupposes a linear progression and leaves little option for alterations after the development progresses to the next stage, its rigidity makes it less flexible in tolerating modifications once a phase is complete. When a project has well-defined and stable needs from the start and it is feasible to have a clear concept of the final outcome from the outset, this sequential method can be beneficial. Its inflexibility, however, might present problems un dynamic contexts or projects where requirements are liable to change. This could make it harder to integrate stakeholder feedback into the development process or adjust to changing needs.

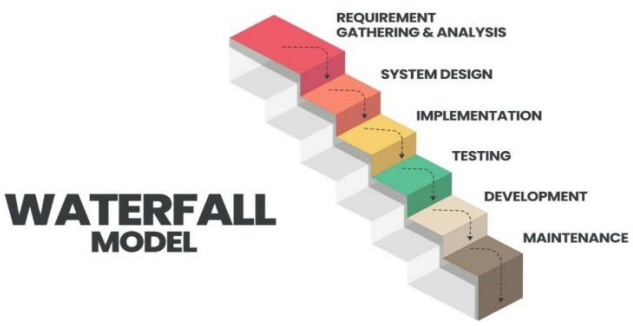


Figure 1 : Waterfall Model

The phases of Waterfall Model

1. Requirements Gathering

This stage involves a thorough investigation of the requirements of stakeholders rather than merely compiling a feature list. To get precise specifications, seminars, interviews, and documentation are used. The goal is to precisely outline the system's capabilities, limitations, and goals. Analyzing potential risks and dependencies that could affect the project's success is another step in the requirements gathering process. Throughout the project, the documentation produced here acts as a point of reference and directs all following actions.

2. System Design

System architects and designers create the software's blueprint after the requirements stage. Translating the collected requirements into a well-organized technological solution is the task of this step. It consists of a detailed design that outlines each component's functionality and an architectural design that establishes the system's overall structure. System architecture diagrams, data models, and interface designs are examples of design papers that give engineers direction and act as a reference for validating against user requirements and demands.

3. Implementation

After the design is accepted, the design documents are turned into actual code during the development stage. In order to construct the software system, this process entails developing, coding, and integrating different modules or components. Here, it's important to pay great attention to the design criteria and make sure the code complies with the established standards. It's a painstaking process that calls for accuracy and conformity to the previously mentioned design and architecture standards.

4. Testing

The goal of the testing phase is to make sure the program satisfies the requirements and operates error-free. It includes multiple testing layers, including unit testing to examine individual parts, integration testing to evaluate how modules interact, system testing to confirm the functionality of the complete system, and acceptance testing to confirm

against user requirements. Testing is essential to finding errors or inconsistencies and guaranteeing the dependability and efficiency of the program.

5. Deployment

The software is prepared for deployment following a successful testing and validation process. During this stage, the finished software is either released to end users or moved to a production environment. It can include things like data transfer, user training, and offering thorough documentation to help users seamlessly integrate the new system.

6. Maintenance

Post-deployment support and maintenance comprise the last stage. It include resolving problems found after the program has been released, taking user comments into account, and applying any necessary updates or adjustments to enhance the functionality or performance of the program. Throughout its existence, maintenance makes ensuring the software stays current and in line with changing user needs and technical improvements.

Strengths and weaknesses of Waterfall Model

Strengths	Weakness
Methodological Approach	Rigidity
The Waterfall Model employs a methodical and sequential approach that facilitates the seamless management and comprehension of various project stages.	Because of its sequential design, it might be difficult to modify once a phase is finished, which could make it tough to adjust to changing requirements.
Clear Milestones	Late Testing
Each phase includes clearly defined milestones that make it easy to monitor progress and make sure deliverables satisfy predetermined standards.	Testing takes place at the end of the cycle and may reveal problems that would otherwise be more expensive and time-consuming to fix later on.
Thorough Documentation	Limited Customer Involvement
To help with project understanding, maintenance, and future reference, each phase has to have comprehensive documentation.	When customers aren't involved as much as they should be until the very end, it might cause miscommunications or gaps between what users expect from the finished product.

Table 1 : Strengths and Weakness of Waterfall Model

Structured Systems Analysis and Design Method (SSADM)

Structured Systems Analysis and Design Method (SSADM) is an example of a systematic method for developing systems that was popular in the 1980s and 1990s. Its goal was to offer an organized framework for information system analysis and design. The development process is divided into phases by SSADM, which clearly and thoroughly outlines each stage. System design, both logical and physical, is its main area of concentration. To depict system parts and their relationships, SSADM makes extensive use of a variety of modeling tools, including entity relationship diagrams (ERDs) and data flow diagrams (DFDs). These diagrams are used as visual aids to fully document system requirements, workflows, and data flows. A step-by-step development through feasibility studies, requirements specification, logical system specification, physical design, implementation planning, and maintenance is ensured by the method's structured approach. The focus placed by SSADM on thorough documentation at every level improves stakeholder communication and ensures that system requirements and the finished product are in line.

Offering a methodical and transparent approach to system development is one of SSADM's main advantages. SSADM allows for a thorough grasp of system requirements and design by employing standardized modelling approaches and segmenting the process into well-defined stages. Its rigidity, however, makes it difficult to adjust to changes as the development process progresses. A stage that has been completed loses some of its flexibility to accommodate changes or evolving requirements, which could make it more difficult to adapt to increasing business needs or technological improvements. Notwithstanding these drawbacks, the focus placed by SSADM on comprehensive documentation and organized analysis served as a foundation for other techniques and made a substantial contribution to the establishment of systematic approaches in system development.

Strengths and weaknesses of Structured Analysis and Design Method

Strengths	Weakness
Organized and deep Analysis	Rigidity and Limited Flexibility
SSADM offers an organized method for developing systems, emphasizing the phases of design and deep analysis through the use of tools like entity relationship diagrams (ERDs) and data flow diagrams (DFDs)..	Similar to the Waterfall Model, the rigidity of SSADM may make it difficult to modify after a stage is finished, reducing its ability to adjust to changing requirements.
Thorough Documentation	Time-consuming
The SSADM, like the Waterfall Model, places a strong emphasis on thorough documentation, which helps to clarify system requirements and design.	SSADM can be a drawn-out procedure, especially for big systems due to its thorough and structured nature. This could result in longer development times.
Good Communication	Possibility of Over-Documentation
By using standardized modelling methodologies, stakeholders may communicate more easily and ensure that they have a common knowledge of the components and operations of the system.	The emphasis on thorough documentation may occasionally result in an abundance of paperwork, which could slow down and complicate the development process.

Table 2 : Strengths and weaknesses of Structured Analysis and Design Method

Information Engineering

Information engineering is a thorough method of developing systems that emphasizes the importance of data in an organization's information systems. The establishment of a strong data model is emphasized as the cornerstone of system development. This methodology emphasizes the significance of comprehending and managing data structures and relationships in order to match business operations with data resources. Information engineering prioritizes the efficient use and management of data in analyzing, designing, and implementing systems. It makes use of methods like entity-relationship diagrams, data modeling, and normalization procedures to guarantee that data is the cornerstone of creating productive and successful information systems.

Information engineering's emphasis on data-centric development is one of its main advantages. It guarantees that systems are organized around reliable data models, fostering consistency, correctness, and efficiency by putting data at the center of system design. Its focus on data, however, may occasionally result in a laborious and complicated modeling procedure, thereby delaying the development schedule. Furthermore, the method's intense concentration on data may obscure other important facets of system development, including precise functional requirements or user interface design, calling for a balanced strategy to successfully handle a range of project needs.

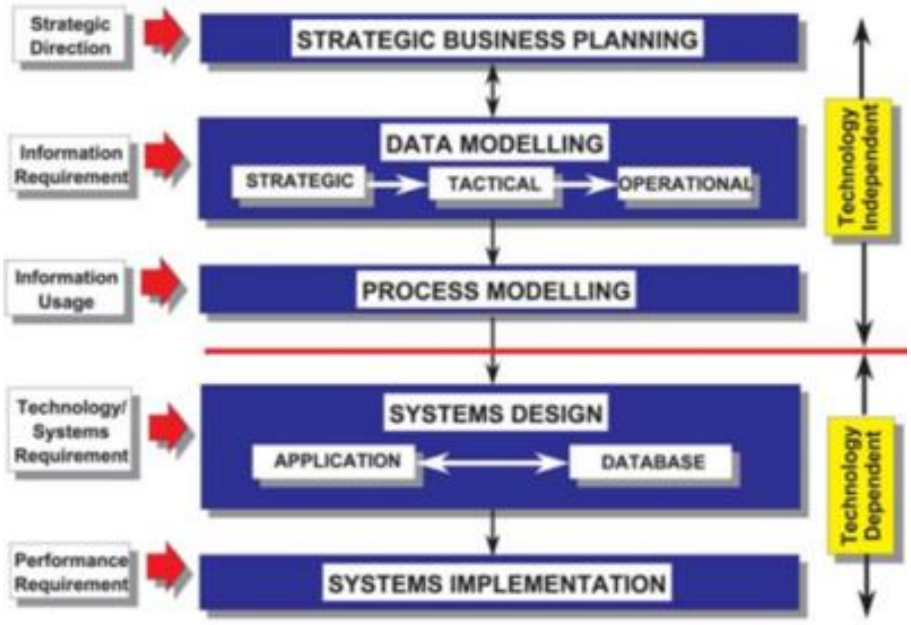


Figure 2 : Information Engineering

Strengths and weaknesses of Information Engineering

Strengths	Weakness
Data-Centric Approach	Complexity in Modeling
IE ensures a solid foundation based on an extensive data model by putting data front and center during system development. By encouraging accuracy, consistency, and integrity of data throughout the system, this strategy fosters dependable information flow inside a company.	A lengthy and complex modeling process may result from the intense focus on developing detailed data models. This can make system development take longer and need more work.
Structured Analysis	Potential Overemphasis on Data
It uses analytical methods to help make sense of data structures and their relationships, such as entity-relationship modeling, data standardization, and data dictionaries. The creation of effective and well-structured information systems is aided by this systematic study.	Because of IE's intense concentration on data, it's possible that other crucial components of system development, like user interface design or certain functional needs, would be overlooked. This exclusive concentration on data might not sufficiently cover the whole range of project needs.
Integration is Stressed	Adaptability to Changing Requirements
IE places a strong emphasis on integrating different facets of an organization's systems, data, and procedures. By bringing business processes and data resources into line, it seeks to improve internal coordination and synergy.	Because of its focus on structured data models, Internet Explorer may have trouble keeping up with the quick changes in business and technology needs. Its rigid structure might make it less adaptable to changing requirements.

Table 3 : Strengths and weaknesses of Information Engineering

Prototype Model

In order to gather input, validate concepts, and improve requirements, the Prototype Model software development technique focuses on creating an early, simplified version of the final system. With this method, a simple functioning model or prototype of the software is made, usually with the aid of tools or methods that facilitate rapid iterative development. The prototype gives stakeholders a visual grasp of the features and layout of the system by acting as a physical representation of the finished product.

The Prototype Model's capacity to enable early input and validation is one of its main benefits. Before devoting substantial resources to comprehensive development, stakeholders can see the features of the system, engage with it, and offer input by means of a physical prototype. Early in the development lifecycle, requirements and design faults can be found and addressed with the help of this iterative process of developing, reviewing, and refining the prototype, which lowers the risk of later, expensive adjustments.

But there are also certain restrictions associated with the prototype model. Stakeholders may occasionally confuse the prototype for the finished product, which could result in misunderstandings regarding the functionalities or capabilities of the system. Furthermore, the emphasis on quick prototyping may cause some architectural or design issues to be overlooked, which could cause problems when scaling or integrating the prototype into a finished system. As a result, even if the prototype model has benefits in terms of getting early input and honing needs, it must be managed carefully to guarantee that all parties involved are aware of the prototype's goals and constraints.

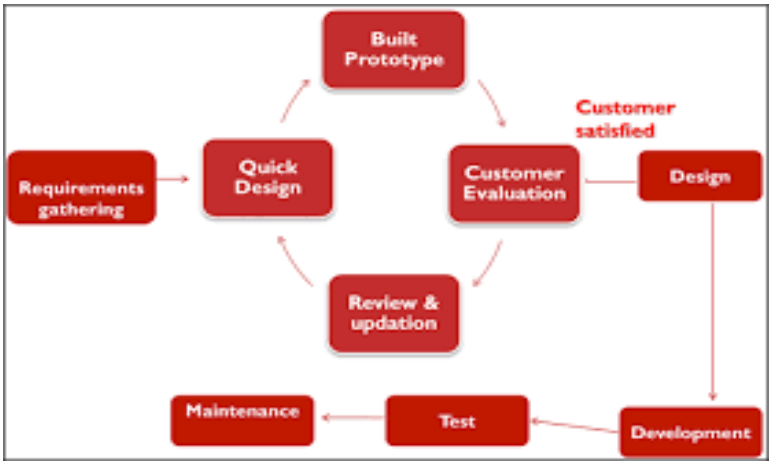


Figure 3 : Prototype Model

Strengths and weaknesses of Prototype Model

Strengths	Weakness
Early Feedback and Validation	Misinterpretation of Prototypes
One of its main advantages is that it offers a preliminary depiction of the functionality of the system. This enables stakeholders to engage with a physical prototype, obtain knowledge, and offer input prior to making substantial investments in comprehensive development. Early validation guarantees alignment with user expectations and aids in the refinement of requirements.	Stakeholders may occasionally mistake a prototype for the finished product, which might cause misconceptions regarding its capabilities. This misperception may lead to irrational expectations or discontent when the finished product looks very different from the prototype.
Improved Communication	Scope creep and incomplete design
By acting as visual aids, prototypes help stakeholders communicate more effectively. They enable a better grasp of the features and functionalities of the system by facilitating discussions. The communication gaps between technical and non-technical stakeholders are frequently filled by this visual representation.	can occur when rapid prototyping prioritizes immediate functionalities over more comprehensive architectural or design concerns. The original intent of the prototype may be compromised by stakeholders' constant requests for additions or modifications, which can result in scope creep.
Risk Mitigation	Technological Debt and Scalability
The Prototype Model assists in reducing the risks associated with misaligned requirements or design faults by spotting any problems or discrepancies early on. Early resolution of these problems lowers	Prototyping is a fast process that may result in some technological features being compromised, which can lead to technical debt. A prototype may also not have the robustness and scalability needed for a

the possibility of subsequent, expensive adjustments.	full-scale system, which might cause problems when moving from prototype to production.

Table 4 : Strengths and weaknesses of Prototype Model

Spiral Model

The Spiral Model is an organized framework for iterative software development that blends aspects of waterfall and prototyping approaches. Planning, risk analysis, engineering, and assessment are the four main stages of each iterative cycle of development that this strategy incorporates to emphasize risk management and flexibility. The model advances by a series of spirals, or iterations, where each loop stands for a stage of the software development lifecycle. The planning stage lays the groundwork for the project by identifying goals, limitations, and potential solutions. The project's possible risks and uncertainties are assessed during the ensuing risk analysis phase, with an emphasis on identifying and reducing the project's significant hazards. The engineering phase, which emphasizes gradual and iterative improvements, includes the actual software creation and testing. The assessment phase culminates with a review of the iteration's outcomes, feedback collection, and spiral planning.

Because the Spiral Model is iterative, it may be easily adjusted to changes as they occur during the development process. By tackling high-risk components early in the cycle and incorporating comments and improvements in later iterations, it prioritizes risk management. This methodology is especially well-suited for intricate projects or ones whose requirements are constantly changing, where stakeholder feedback is essential and risks are significant. Its risk-driven and iterative methodology improves the final product's quality and dependability by enabling more accurate resource and schedule estimation and adeptly handling adjustments.

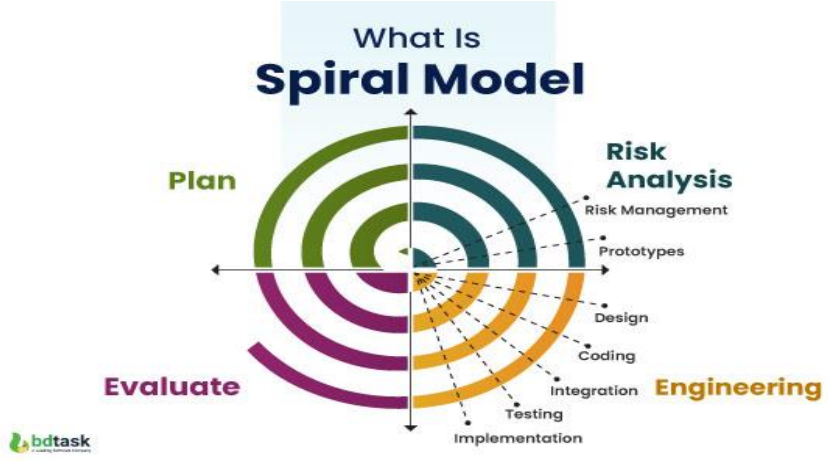


Figure 4 : Spiral Model

Strengths and weaknesses of Spiral Model

Strengths	Weakness
Risk Management	Cost and Complexity
The model's emphasis on risk management is one of its main advantages. Early detection and mitigation of high-risk aspects in each cycle are made possible by the iterative nature. The model is appropriate for projects with a high risk profile since it attempts to reduce project uncertainty by addressing risks up front.	The Spiral Model's iterative structure may result in higher costs, particularly for larger projects. Longer development timeframes and higher project costs may result from the necessity of extensive risk analysis and several iterations at every level.
Adaptability and Flexibility	Documentation Overload
The Spiral Model provides adaptability to changes that arise during the growth process. Because of its iterative process, which enables small improvements and adjustments depending on input from stakeholders, it is appropriate for projects whose needs change or are unclear.	The model's emphasis on risk analysis and iteration may result in an overabundance of documentation, which could increase project overhead. An excessive focus on documentation may take time and resources away from real development work.
Quality-Oriented	Appropriateness for modest tasks
The approach places a strong emphasis on integrating validation and verification procedures into every iteration to raise the standard of the final result. The program is gradually improved and refined thanks to the ongoing assessment and feedback loops.	For simple, modest tasks, the Spiral Model may be too complicated and time-consuming. For smaller-scale projects with fewer complexity, its extensive risk analysis and iteration cycles might not be essential or cost-effective.

Table 5 : Strengths and weaknesses of Spiral Mod

Agile Systems Analysis Methodologies

Agile systems analysis approaches, including Extreme Programming (XP), Scrum, and Kanban, differ from conventional sequential models in that they place a strong emphasis on collaboration, flexibility, and adaptation throughout the development cycle. Agile approaches are highly advantageous due to their capacity to adjust to evolving requirements. Agile methodologies place a strong emphasis on iterative development, which enables regular evaluation and adjustment in response to changing customer and market demands. Because iterative development decreases the risk of creating a product that falls short of customer expectations, teams are able to provide functional increments of the product at regular intervals and continuously solicit input from stakeholders.

Furthermore, Agile approaches promote improved teamwork and communication. Methods such as backlog grooming sessions, sprint reviews, and daily stand-up meetings encourage regular contacts across cross-functional teams, which enhances communication, increases goal understanding, and builds team chemistry. Teams are more productive and innovative when they work in a collaborative atmosphere that promotes shared ownership of project outcomes and expedites decision-making.

Agile approaches do not, however, come without difficulties. Although they are very adaptive, their adaptability may occasionally make it difficult to maintain the comprehensiveness of the documentation. This can lead to gaps in the project documentation, which would make it harder to transfer expertise and maintain it in the future. Furthermore, the focus on constant modification and adaptation may make it difficult to establish firm project objectives, which could have an impact on project budgets and schedules.

Finally, it should be noted that Agile systems analysis approaches have several advantages, such as improved teamwork, flexibility in the face of change, and speedier user requirement response. But maintaining the comprehensiveness of documentation and maintaining project goals in the face of continuous change are still important factors to take into account while maximizing the benefits of Agile approaches.

Types of Agile Systems Analysis Methodologies

Scrum

Well-known for its incremental and iterative approach to software development, Scrum is an Agile framework. It works in brief development cycles known as "sprints," which usually span one to four weeks and provide a potentially shippable increment of the product. Three key roles form the foundation of Scrum: the Product Owner, who prioritizes the product backlog and makes sure it aligns with business objectives; the Scrum Master, who helps the team and removes obstacles from the way; and the Development Team, a cross-functional team in charge of delivering the product increments.

Scrum practices give the team the framework needed for productive cooperation and communication. These rituals include the sprint planning meeting, in which the team arranges the tasks to be completed within the sprint; daily stand-up meetings, which enable team members to coordinate their efforts and pinpoint any obstacles; the sprint review, in which the team presents the finished product to stakeholders; and the sprint retrospective, in which the team evaluates its procedures and pinpoints areas for development. Scrum also tracks progress and maintains transparency throughout the project by utilizing artifacts like as the sprint backlog, product backlog, and burndown charts Scrum rituals give the team the framework needed for productive cooperation and communication. These rituals include the sprint planning meeting, in which the team arranges the tasks to be completed within the sprint; daily stand-up meetings, which enable team members to coordinate their efforts and pinpoint any obstacles; the sprint review, in which the team presents the finished product to stakeholders; and the sprint retrospective, in which the team evaluates its procedures and pinpoints areas for development. Scrum also tracks progress and maintains transparency throughout the project by utilizing artifacts like as the sprint backlog, product backlog, and burndown charts.

The framework is especially useful for projects with changing requirements because of its flexibility and emphasis on providing value early in the development process. Scrum promotes a responsive and customer-oriented strategy by placing a strong emphasis on collaboration, frequent feedback, and continuous development. This helps teams produce high-quality products and swiftly adjust to changing business needs. Because of its iterative

nature, which permits frequent review and modification, the team can foster a culture of ongoing innovation and learning.

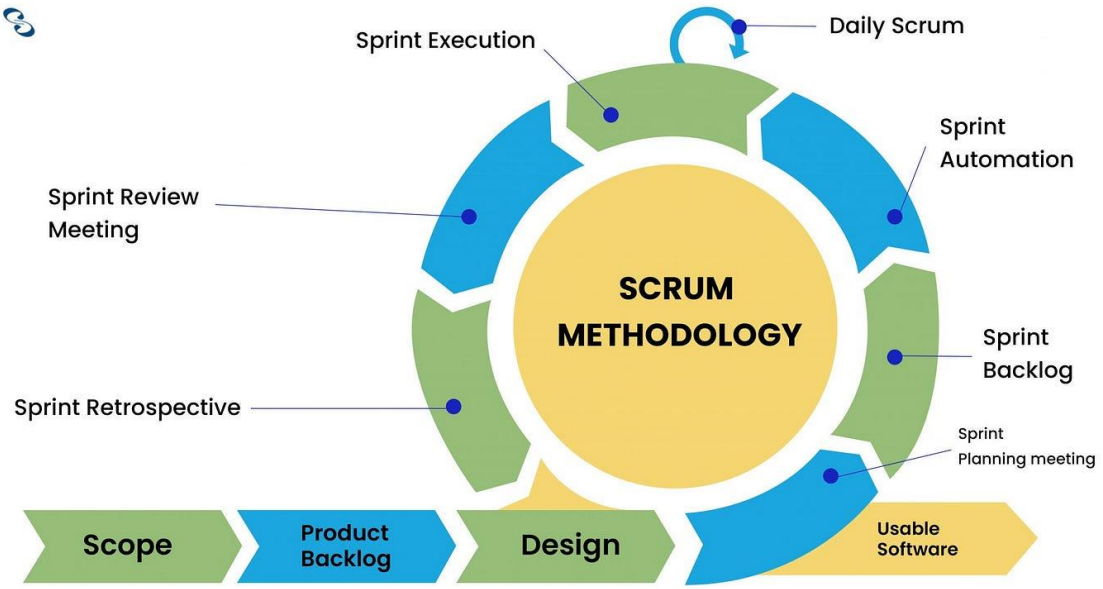


Figure 5 : Scrum

Advantages of Scrum

Scrum is an Agile framework that has gained a lot of traction in software development because of its collaborative and iterative nature. Scrum's capacity to effectively adjust to changing requirements is one of its main advantages. With the use of brief iterations termed sprints, which typically span one to four weeks, Scrum enables teams to consistently produce working product increments. Stakeholders can offer ongoing feedback through this iterative process, which makes it easier to adapt to changing user requirements or market conditions. Scrum encourages flexibility as a result, guaranteeing that the finished product closely complies with user expectations.

Furthermore, Scrum's focus on cross-functional teams' cooperation and self-organization greatly enhances project success. Through the use of specialized roles like the Development Team, Scrum Master, and Product Owner, Scrum creates a structure for efficient decision-making and communication. The implementation of daily stand-up meetings, sprint planning sessions, and sprint reviews cultivates a cooperative atmosphere

that promotes openness and responsibility among team members. This cooperation fosters a common knowledge of project objectives and priorities, which increases productivity and creativity in addition to improving team chemistry.

Scrum's transparency and visibility throughout the development process provide yet another important benefit. Real-time insight into project progress is made possible by Scrum artifacts such as burndown charts, sprint backlogs, and product backlogs. Stakeholders can identify any problems or bottlenecks early on because they have a thorough understanding of what is being built. By guaranteeing that all parties involved have a clear understanding of the project's progress and fostering confidence between development teams and stakeholders, this transparency lowers risks and raises the possibility of successful project outcomes.

Disadvantages of Scrum

Scrum has many benefits, but like every technique, it also has some drawbacks that could be problematic in some situations. Scrum's potential complexity and difficulty in execution are major drawbacks, particularly for teams who are new to Agile principles or have little experience with self-organizing workflows. Organizations must undergo a dramatic culture transformation in order to use the framework, and a lack of appropriate training or direction may result in misunderstandings about the tenets of Scrum or inefficient application of its techniques.

Because of its inherent flexibility, Scrum may have additional drawbacks. Although flexibility is a virtue, it can also make it difficult to define precise project objectives or deadlines. Estimating the precise amount of time needed for each sprint or the completion of the project as a whole may be challenging due to Scrum's iterative structure. When deadlines or defined release dates are crucial, stakeholders may find this schedule ambiguity disconcerting.

Moreover, when team dynamics are not maximized, Scrum's emphasis on cooperation and self-organization may provide difficulties. Problems with the makeup of the team, disagreements, or disparities in the members' degrees of experience might impede productive cooperation and decision-making. Furthermore, if Scrum is not handled

effectively, its emphasis on regular meetings and interactions could become tedious or distracting, which could have an effect on worker productivity.

Finally, even though Scrum promotes flexibility, projects with strict or well-defined requirements may not be a good fit for it. The adaptable nature of Scrum may be difficult for projects that require a high degree of upfront planning and thorough documentation, making it difficult to manage scope changes or keep thorough documentation throughout the development process. Because of this, even though Scrum has many advantages, its flexibility may not be appropriate for every project setting, necessitating considerable thought and modification to meet unique project requirements.

Kanban

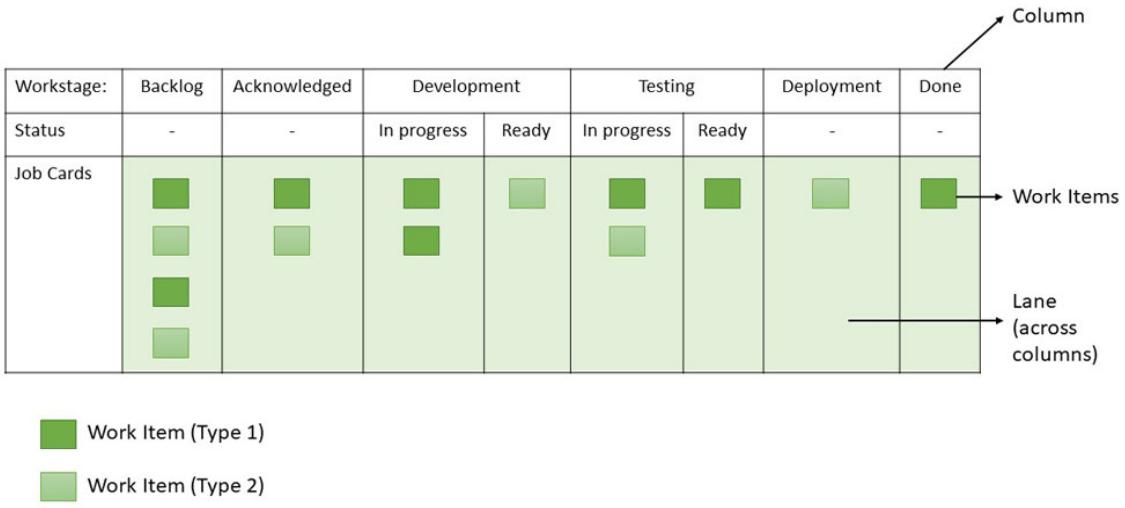


Figure 6 : Kanban

Kanban is a prominent strategy in project management and software development for increasing efficiency, reducing waste, and optimizing workflow. The term "Kanban" is of Japanese origin and translates to "visual signal" or "card." The technique began in manufacturing but has now found extensive use in a variety of sectors.time delivery, ensuring that work is pulled through the system when capacity allows, rather than being pushedinto the system on a predetermined timetable. Work items in Kanban are represented by cards on a visual board, which is typically separated into columns that

represent different stages of the process. These columns can have stages like "To Do," "In Progress," and "Done." Kanban's fundamental purpose is to visualize the work process, minimize work in progress, and continually optimize work flow.

One major Kanban idea is to monitor and optimize work flow rather than relying on set timeframes or planned plans.Kanban also promotes continuous development by holding frequent meetings to assess and enhance the process. Kanban-using teamsKanban also promotes continuous development by holding frequent meetings to assess and enhance the process. Kanban teams frequently evaluate metrics like lead time and cycle time to discover areas for improvement and make data-driven choices.In essence, Kanban promotes cooperation, openness, and continuous improvement through a flexible and visible approach to task management. It is frequently used in agile contexts and has been shown to improve productivity and provide value to customers.

Advantages of Kanban

Visual Control

Kanban displays a graphical depiction of the complete workflow. This makes it easier for team members to grasp the state of work, identify bottlenecks, and measure progress.

Flexibility

Kanban is very adaptable to many processes and industries. Because of its adaptability, it is appropriate for both big and small teams, as well as projects with fluctuating and unexpected workloads.

Efficiency

Kanban prevents overloading the team and guarantees that work progresses through the system at an ideal speed by reducing work in progress (WIP) and focuses on completing tasks before starting new ones.

Continuous Enhancement

Kanban promotes a culture of constant development. Regular meetings and data analysis assist teams in identifying areas for improvement, resulting in gradual and continual gains in efficiency and effectiveness.

shortened lead time

Kanban prioritizes reducing the amount of time it takes for a work item to go through the process. This reduction in lead time may result in speedier value delivery to consumers.

Improved Collaboration and Communication

The visible aspect of the Kanban board encourages openness and improves team collaboration. Members of the team can immediately identify who is working on what and where possible problems may develop.

Customer Service

Kanban helps teams to prioritize work based on the demands of their customers. This customer-focused strategy ensures that the most important tasks is accomplished first.

Resource Allocation

Kanban assists teams in making the most use of their resources by organizing work based on actual capacity and demand. This reduces burnout and increases team happiness.

Simple to Understand and Apply

Kanban is a reasonably straightforward concept to grasp and use. Kanban principles are frequently adopted by teams without requiring a large reworking of current procedures.

Reduced Risk

Kanban helps manage risks and avoids little problems from growing into larger ones by continuously monitoring work items and having the capacity to recognize and handle issues as they arise.

Disadvantages of Kanban

Planning is limited

Kanban is a pull-based method that promotes flexibility, which can be disadvantageous in organizations that need careful planning. A more organized technique, such as Scrum, may be better appropriate for projects that require rigorous timeframes and comprehensive prior preparation.

Absence of Timeboxing

Kanban, unlike Scrum, does not have specified timeboxes (sprints). This might result in a lack of urgency and discipline in finishing tasks within certain timescales, which can have an impact on overall project timetables.

Team Discipline Dependence

Kanban primarily relies on team members' discipline to stick to WIP limits and efficiently prioritize tasks. If the team lacks discipline or the principles are not consistently implemented, the Kanban system's efficacy may suffer.

Iterative Planning's Role Is Limited

Kanban, unlike Scrum, does not require regular, iterative planning events. Some teams appreciate these planning meetings for goal-setting and alignment, and the lack of such organized events in Kanban may be a disadvantage for those wanting a more iterative planning approach.

The Danger of Overemphasizing Flow

The emphasis on flow optimization may cause teams to ignore other critical issues like as long-term strategy planning, risk management, or architectural concerns. Teams must find a balance between delivering on time and addressing larger project challenges.

Large-scale Project Complexity

Kanban is ideal for organizing work in small teams or projects, but it may become complex and difficult to execute in bigger projects or companies. In such instances, a more systematic approach is recommended.

Extreme Programming (XP)

Extreme Programming (XP) is a software development process that arose in the late 1990s with the goal of fast and efficiently providing high-quality software. Throughout the development process, XP is noted for emphasizing client satisfaction, flexibility, and adaptation to changing requirements.

Continuous input, both from the client and from the development team, is one of the main ideas of XP. This iterative technique enables regular releases of tiny, functional increments of software, ensuring that the product is constantly demonstrable and testable. This quick feedback loop aids in the identification and resolution of difficulties early in the development process, lowering the risk of producing a product that falls short of the customer's expectations.Another distinguishing feature of XP is pair programming, in which two developers collaborate at the same computer, constantly examining and revising one other's code. This collaborative method not only improves code quality but also allows team members to share information, resulting in a more unified and productive development team.

XP emphasizes simplicity, eliminating excessive complication in both the codebase and the development process. This ease of use is designed to make the program easier to maintain and adapt to changing requirements over time. The technique also supports automated testing to assure the codebase's dependability, with a preference for building tests before writing code. In addition to these techniques, XP encourages a sustainable work pace to avoid burnout and maintain a good work-life balance for the development team. The technique recognizes that software development is a creative and collaborative process, and it aims to establish an atmosphere that encourages creativity, adaptation, and customer satisfaction. Overall, Extreme Programming offers a comprehensive and adaptable approach to software development, with the goal of delivering valuable and high-quality software in a dynamic and changing business context.

Crystal

Crystal is a collection of agile software development approaches that stress flexibility and adaptability in order to fit the specific demands and features of various projects. Crystal, created by Alistair Cockburn, acknowledges that no two projects are alike and tailors its approach based on project factors like as team size, criticality, and priority.

Crystal's emphasis on people and communication is one of its distinguishing traits. The technique recognizes that human elements are critical to project success and encourages good communication, cooperation, and teamwork. Crystal methods are available in a variety of colors or versions, including Crystal Clear, Crystal Orange, and Crystal Yellow, with each tailored to a distinct project size and complexity.

Crystal Clear, for example, is intended for small teams working on projects with minimal criticality. It stresses communication, regular delivery of functioning software, and end-user participation in the development process. Crystal Orange, on the other hand, is aimed at larger projects with a more complex structure, where communication routes may need to be more formalized and more management and documentation may be required.

Crystal methods, like other agile approaches, encourage early and frequent delivery of functioning software. This iterative technique provides for constant feedback, allowing teams to adjust swiftly to changing requirements and ensuring that the product supplied meets the demands of the client.

In conclusion, Crystal methods provide a flexible and adaptable framework for software development, stressing the human components of the process and customizing the approach to the specific circumstances of each project. Crystal attempts to increase the chance of success in a range of project situations by emphasizing the significance of communication, cooperation, and iteration.

Dynamic Systems Development Method (DSDM)

The Dynamic Systems Development Method (DSDM) is a project delivery methodology that uses an iterative and comprehensive approach to software development. Developed in the mid-1990s in the United Kingdom, DSDM stresses cooperation, flexibility, and the delivery of functional solutions within precise timescales.

The awareness of the significance of active user interaction throughout the project lifecycle is a basic premise of DSDM. DSDM guarantees that the provided solution closely corresponds with user needs and expectations by including users from the start and retaining their participation. This user-centric approach helps to the project's overall success and adoption.

DSDM also encourages iterative and incremental development. It splits the project into timeboxes of varying lengths, each of which produces a deliverable increment of the final system. This timeboxing method improves project scope, schedule, and resource management while allowing the team to adjust rapidly to changing requirements and priorities.

Collaboration is an essential component of DSDM. It promotes open communication and close collaboration among all project stakeholders, resulting in a common understanding of project aims and objectives. Furthermore, DSDM emphasizes the need of active decision-making and responsibility delegation to promote efficient progress and alignment with business objectives.

The development process is guided by eight concepts incorporated into DSDM. These principles include focusing on the business requirement, including active users, empowering teams, delivering often, integrating testing, and keeping a holistic picture of the project. These principles complement one another to form a framework that encourages adaptation, transparency, and ongoing progress In essence, the Dynamic Systems Development Method (DSDM) is an organized and collaborative approach to software development that focuses on user interaction, iterative development, and delivering business value within established timescales. This framework is ideal for projects that require flexibility, stakeholder involvement, and the capacity to adjust to changing requirements.

Feature-Driven Development (FDD)

Feature-Driven Development (FDD) is an iterative and incremental software development process that emphasizes the systematic and coordinated production of features. FDD, which was first proposed by Jeff De Luca and Peter Coad, emphasizes on providing real, functional features to fulfill the project's unique goals.

The notion of feature lists, which are thorough inventories of features that the program must provide, is at the heart of FDD. These items are selected and prioritized according to their commercial value, and development activities are organized around gradually building and delivering these features. This method gives a clear development plan, making it easy to assess progress and manage project goals.

FDD uses a model-driven approach to software development. The development process often begins with the creation of overarching system models, which are then broken down into smaller, more manageable components. These models aid in the implementation of features and give a visual representation of the software architecture, improving team members' common knowledge.

Another distinguishing feature of FDD is its emphasis on domain object modeling. This entails developing a thorough model of the business domain, with an emphasis on the major entities and their interactions. FDD guarantees that the software closely matches with the business objectives and goals by concentrating the development process around a deep grasp of the business domain.

FDD also places a high value on frequent, brief iterations. During each iteration, which generally lasts two weeks, development teams focus on specific feature sets. This enables continuous integration of new features, regular testing, and immediate feedback, ensuring that the program advances in a controlled and efficient manner.

In essence, Feature-Driven Development (FDD) is a software development process that emphasizes the methodical and gradual delivery of software features. FDD provides a disciplined and adaptive framework for producing high-quality software that closely fits with business goals by focusing on thorough feature lists, domain object modeling, and short development iterations.

Strengths and Weakness of Agile Systems Analysis Methodologies Agile System

Scrum	
Strengths	**Weakness**
Adaptability	Complexity
Flexibility and adaptability to changing requirements are made possible by adaptability.	For inexperienced teams, it may be difficult and complex to implement.
Transparency	Uncertain timescales
Through many iterations, transparently shows project progress.	Because iterative in nature, it is challenging to forecast precise timescales.
Collaboration	
Promotes effective cooperation between stakeholders and team members.	
Kanban	
Strengths	**Weakness**
Visual Workflow	Limited Structure
Workflow management is facilitated by Visual Workflow, which offers a visual depiction of the various stages of a task.	Unlike Scrum, this approach lacks defined responsibilities and time frames.
Flexibility	Dependency on process
Capable of adjusting to various project kinds and procedures.	In complicated projects, an excessive reliance on visual process may prevent scalability.
Efficiency	
Focuses on reducing work-in-progress (WIP) to facilitate a more seamless workflow.	

Extreme Programming (XP)	
Strengths	**Weakness**
Quality Focus	Needs Discipline
Prioritizes software quality by implementing techniques such as test-driven development (TDD).	Requires discipline in adhering to rigorous procedures, which may be difficult.
Customer Collaboration	Resource-Intensive
Promotes ongoing customer participation to improve alignment.	Pair programming and testing at a high level may necessitate more resources.
Adaptability	
The capacity to adjust to changes as they arise during development.	
Crystal	
Strengths	**Weakness**
Customized Method	Ambiguity
Adaptable to different project sizes and environments.	Less prescriptive, which could cause implementation to be unclear.
Communication	Resource Restrictions
Places a focus on cooperation and communication.	For successful implementation, a team with experience may be needed.
Simplicity	
Reduces project complexity and concentrates on making things simple.	

Dynamic Systems Development Method (DSDM)	
Strengths	**Weakness**
Iterative Approach	Overdocumentation
Prioritizes user participation and iterative development.	Placing too much emphasis on documentation may get tiresome.
Clarity	Complexity
Offers a precise structure and functions that are apparent.	For smaller projects or teams with less experience, it could be complicated.
Flexibility	
Enables adaptability to changing circumstances.	
Development Based on Features (FDD)	
Strengths	**Weakness**
Feature-Centric	Dependency on experienced People
Concentrates on gradually adding features.	Effective feature development depends on the efforts of experienced developers.
Clarity	Less Flexibility
Offers a well-defined structure for the creation of features.	In comparison to certain other Agile approaches, it could be less flexible to changes.
Performance	
Excellent for projects that need to provide features quickly.	

Table 6 : Strengths and Weakness of Agile Systems Analysis Methodologies Agile System

Similarities and Differences of strengths and weaknesses of traditional and Agile methodologies

Similarities

- Project Success

Although they employ different strategies, both traditional and agile techniques have the same end goal. Conventional approaches place a high value on a linear, structured strategy that starts with thorough planning and tries to closely follow predetermined plans and specifications. Agile approaches, on the other hand, place a strong emphasis on flexibility and responsiveness to change, enabling ongoing project improvement in response to changing requirements. While good project outcomes are the goal of both techniques, their approaches are very different.

- Quality Issues

Although they approach it in different ways, both approaches stress the value of quality. Conventional approaches focus on thorough end-of-cycle testing to provide a final product that is polished and refined. Agile development processes place a high priority on feedback loops and continuous testing to catch problems early and improve the product repeatedly. Although the methods are different, delivering a high-quality final result is the top priority in both systems.

Differences

- Approach to Change

Their approaches to change show a clear distinction. Because they are sequential in nature, traditional approaches find it difficult to adapt to changes once the project has begun. Changes may necessitate considerable adjustments to the original plan, which would affect budget and schedule. Agile approaches, on the other hand, are made to be flexible, accommodating changes at any point during the project's lifecycle and quickly adjusting to new demands without causing major hiccups.

- Flexibility & Adaptability

Conventional approaches might not be adaptable enough, rigidly sticking to the original plan, which could make it harder for them to deal with unforeseen problems or changing requirements. Agile approaches, on the other hand, are highly adaptive, allowing for prompt reactions to new information or modifications, flexibility in modifying the course of a project, and accommodation of changing requirements.

- Requirements management

Conventional approaches place a strong emphasis on obtaining and documenting needs in great detail up front, which may make it difficult to incorporate changes later in the project. Agile approaches place a high priority on dynamic requirements management, which enables ongoing improvement based on iterative input and guarantees alignment with changing stakeholder requirements.

- Team Collaboration and Communication

More structured communication mechanisms in traditional approaches may make it more difficult for teams to work together and respond quickly to problems that arise. Agile approaches encourage cross-functional teams to communicate and work together often, which creates a more dynamic and responsive environment for problem-solving and decision-making.

- Customer Satisfaction

If the original requirements are clearly specified, traditional approaches may be able to satisfy customers. However, they may not be able to adapt to changes in the needs as they evolve. Agile approaches place a strong emphasis on ongoing customer input and involvement, which guarantees greater customer satisfaction by producing goods that closely match evolving expectations.

Differences and Similarities of the traditional and agile systems analysis methodologies Factors

1. Project Success Rates

Traditional Methodologies

In projects with clearly defined criteria and predictable results, traditional approaches like Waterfall or the V-model have historically demonstrated stability. They frequently take a linear strategy, dividing work into discrete stages like requirements collecting, design, development, testing, and deployment. A defined plan at the outset of the project is made possible by this structured method, which improves timeline and cost estimation. As a result, traditional approaches can demonstrate high success rates in projects where the needs are consistent and well-defined up front. An excellent starting point is provided by the thorough planning and documentation, which guarantee that the project moves forward in accordance with the specified scope.

However, in projects with changing requirements or in dynamic situations, the rigidity of established techniques poses a barrier. Midway through a project, changes in requirements or scope may necessitate considerable revisions to the original plan, which may affect budgets and schedules. Lower success rates may result from this lack of flexibility, particularly when the project encounters unforeseen circumstances or developments that were not considered during the planning stage. Consequently, established techniques may find it difficult to sustain high success rates in situations where flexibility and adaptability are critical, such as quickly evolving markets or novel projects.

Agile Methodologies

Agile approaches, on the other hand, such as Scrum or Kanban, frequently show better success rates in projects that call for flexibility and responsiveness to change. Iterative development cycles, regular customer collaboration, and the capacity to accept changing requirements throughout the project are characteristics of agile methodologies. Agile provides for constant feedback and change by dividing the project down into smaller

chunks, or iterations, which helps teams deliver value rapidly. Adaptability is fostered by this iterative process, which is especially beneficial in projects when requirements are not completely known at the beginning or are likely to change. Agile approaches thus frequently produce greater success rates in these kinds of settings.

Additionally, a major factor in the success of a project is Agile's emphasis on teamwork, communication, and client participation throughout the development process. Development teams and stakeholders work closely together to ensure that the final product more closely meets customer expectations. Agile approaches are more suited for projects in dynamic and uncertain contexts because they promote a culture of flexibility and adaptability. This helps projects succeed more often than traditional procedures when handling quickly changing requirements or market conditions.

2. Flexibility and Adaptability

Traditional Methodologies

The sequential and linear nature of traditional approaches such as Waterfall or the V-model characterizes their approach to project execution. In order to create a thorough grasp of requirements prior to moving on to later stages, they rely on thorough upfront planning and documentation. Though in the beginning of the project this upfront planning provides structure and clarity, it is not flexible enough to easily adapt to changes. Implementing any new requirements or changes made to existing ones during the development process can be difficult and frequently call for adjustments over several phases. As such, being unable to adjust to change might result in project failure, higher expenses, or even delays, particularly in settings where requirements are constantly changing.

Agile Methodologies

Agile approaches, on the other hand, place more emphasis on flexibility and adaptation. Agile development frameworks, like Scrum and Kanban, accept change as an inherent component of the process. They work in sprints or iterative cycles that enable ongoing input and modifications all the way through the project lifecycle. Teams are more equipped to

react swiftly to shifting demands or market situations thanks to this iterative approach. Agile fosters a change-opening mindset, which keeps the development process adaptable to changing client needs. Teams become more skilled at managing uncertainty and adjusting to changes when they routinely reevaluate priorities, modify plans, and change course when needed.

3. Requirements Management

Traditional Methodologies

Requirements management in classic approaches, like as Waterfall, places a strong emphasis on advance preparation and documentation. At the start of the project, the focus is on developing a thorough and detailed requirements specification. Before moving on to the next stage, this material usually requires sign-offs from stakeholders and includes thorough explanations of both functional and non-functional requirements, system architecture, and design specifications.

Traditional approaches' organized approach guarantees that the project's scope is well-defined from the beginning. It may also be a limitation, though, particularly if requirements alter over time. Within this framework, changing the original requirements might be difficult because doing so could entail revising large areas of the project plan, which could cause delays and higher costs.

Agile Methodologies

The requirements management process with Agile approaches like as Scrum or Kanban is more flexible and iterative. Agile promotes a more flexible and dynamic approach to requirements rather than striving for an exhaustive and precise upfront specification. Agile teams collaborate constantly with stakeholders while concentrating on delivering high-priority features piecemeal.

Agile's iterative structure makes it possible for requirements to change over time. User stories or features are used to record requirements, which are then ranked according to how

valuable they are to the client. Stakeholders are able to modify priorities and offer input as the project moves through iterative cycles, which enables the product to adapt to changing requirements. Agile teams can adjust more quickly to new knowledge and shifting market conditions because to this flexibility.

4. Quality and Testing

Traditional Methodologies

Testing usually takes place in the latter stages of the project lifecycle, after development is finished, in traditional approaches like Waterfall. There is a set order to the procedure; every step must be finished before going on to the next. This indicates that testing takes place mostly when the system or product is built at the conclusion of the development cycle.

This method has the benefit of allowing for thorough and methodical testing of the entire system. On the basis of thorough requirements and design documentation, test plans are created. The disadvantage is that any problems found during the testing stage could necessitate extensive rework, which would affect budgets and schedules. Furthermore, increased bug-fixing expenses could arise from this delayed defect discovery, particularly if problems are discovered later in the process.

Agile Methodologies

Scrum and Kanban are two examples of Agile approaches where testing is done continuously during the development process. Testing minor, gradual modifications or new features is a part of every iteration. The goal of this strategy, called continuous testing, is to find and fix problems early in the development cycle.

Agile teams give automation of tests top priority when it comes to enabling frequent and quick testing. This ongoing feedback loop makes it possible to identify and fix flaws early on. This strategy lowers the likelihood that substantial flaws will remain until the end of the project, even though it may not offer the same level of thorough end-to-end testing as

traditional methodologies. To guarantee thorough testing of the complete system, more work may still be needed.

5. Team collaboration and communication

Traditional Methodologies

Traditional approaches, such as Waterfall, frequently have hierarchical structures for communication and teamwork. Teams usually have more structured communication channels and well defined roles and responsibilities. The project's phases are easily distinguished from one another, and information is primarily transferred top-down. While this methodical approach might help define roles and duties, it may also impede adaptability and prompt decision-making.

Teams typically work in silos, completing tasks inside their designated phases and interacting little until the following team passes along deliverables. Documentation is essential to communication, but it can also lead to information silos and slower reaction times to shifting needs or problems.

Agile Methodologies

Cross-functional teams should communicate often and honestly, according to agile approaches. Cooperation, adaptation, and flexibility are emphasized. Daily stand-up meetings are encouraged by agile frameworks like Scrum or Kanban, when team members talk about goals, obstacles, and progress. As a result, there is increased openness, faster problem-solving, and greater alignment on project objectives.

Agile methods teams collaborate extensively throughout the project, removing boundaries between various positions. Open lines of communication promote ongoing, direct communication between team members, stakeholders, and clients. The collaborative atmosphere fosters swift decision-making and enables prompt revisions in response to feedback, so augmenting the overall adaptability of the project.

6.Customer Satisfaction

Traditional Methodologies

Customer satisfaction in older techniques, such as Waterfall, is frequently based on how well the original requirements are collected and understood. The goal of the meticulous up-front planning is to produce a product that closely follows the specified requirements. Customers are more likely to be satisfied when expectations are met when requirements are clearly stated and precisely recorded from the outset.

Traditional approaches, however, could find it difficult to adapt to shifts in the needs of the client or the dynamics of the market as they occur. This may make it difficult to include new specifications or changes, which could cause a discrepancy between the finished product and the changing needs of the client. As a result, traditional approaches may have trouble guaranteeing high customer satisfaction in situations where criteria are flexible or where client wants are not fully understood up front.

Agile Methodologies

Agile development approaches place a high value on customer participation and teamwork. Agile frameworks guarantee that the final product closely matches customer expectations by including customers in regular feedback loops and iterations. Customers can offer ongoing input thanks to this iterative methodology, which enables improvements and modifications based on changing demands.

Agile approaches enable teams to quickly respond to changing consumer requirements because of their flexibility and adaptability. Consequently, Agile projects have a higher chance of reaching or surpassing customer satisfaction because they are more adaptable to shifts in priorities, preferences, or fresh customer insights.

Activity 2

Feasibility study

A feasibility study is a thorough assessment and analysis carried out before a project or system is proposed and put into action. It's a methodical investigation into the project's feasibility, viability, and potential for success. It evaluates a number of variables to see if the project fits with the organization's objectives and is worthwhile.

Numerous elements, including technological, economical, operational, legal, and social ones, are carefully examined in this study. The technical feasibility element evaluates if the proposal can be supported by the necessary technology, or if it can be developed. It assesses how well the suggested solution fits with the organization's existing architecture and technological capabilities.Economic feasibility assesses the project's cost-effectiveness. It evaluates the possible profits or returns in comparison to the expenses associated with development, implementation, and maintenance. This component entails calculating the project's long-term financial ramifications, assessing the return on investment, and doing cost-benefit evaluations.
Operational feasibility assesses how well the proposal fits into the operational procedures of the company. It assesses how well the project fits into current workflows, how it might affect day-to-day operations, and how readily staff can adopt it without causing major disruptions.

The project's legal, political, and social viability guarantees that it conforms to all applicable laws, industry standards, and social norms. To make sure the project complies with moral and legal requirements, it evaluates any potential legal or regulatory obstacles, political ramifications, and society effects.

Parts of Productive Feasibility Studies

- Project scope

  Serving as the foundation of the feasibility study, the project scope establishes the parameters and goals of the suggested endeavor. It lays forth the objectives, deliverables,

and limitations of the project and specifies its purpose. The scope provides a guiding framework for follow-up evaluations by clearly outlining the objectives of the project and the boundaries it functions inside. It guarantees understanding amongst stakeholders, averting misunderstandings regarding the goals of the project. Additionally, a clearly defined project scope helps to keep focus throughout the project lifecycle by helping to prioritize work, allocate resources efficiently, and prevent scope creep.

- The Current Analysis

Examining the systems, procedures, and processes that are currently in place that are relevant to the project under consideration is part of doing a comprehensive current analysis. It's a thorough analysis designed to find any inadequacies, inefficiencies, or bottlenecks in the current configuration. This thorough analysis aids in comprehending the underlying reasons of the detected issue or the requirement for modification. Through a thorough analysis of the current situation, stakeholders are able to identify the precise areas that need to be improved or transformed. This analysis also acts as a standard by which to evaluate the efficacy and success of the suggested remedy.

- Requirements

The requirements section outlines the fundamental characteristics, functionalities, and criteria that the proposed project must meet. It acts as a blueprint for the project. It describes the capabilities, performance requirements, and limitations of both functional and non-functional specifications. Stakeholder expectations can be aligned and the development and implementation phases can be guided by well-defined and thorough requirements. This part guarantees that the proposed project effectively handles the stated challenges or satisfies the needs of the company by outlining the scope of the solution in detail.

- The Approach

This section describes the methods, approaches, or strategies that are suggested to deal with the needs that have been defined and accomplish the goals of the project. It provides a thorough action plan with execution tactics, important benchmarks, resource distribution, and project schedules. This section outlines the approaches that will be used,

whether they are Waterfall, Agile, or a customized strategy to meet the specific needs of the project. A section on the explicit approach makes it easier for stakeholders to comprehend the project's execution plan and promotes alignment and consensus on the best course of action.

- Evaluation

Evaluation: To ascertain the viability of the suggested solution from several angles, such as technical, financial, operational, and market viability, a thorough assessment is conducted at this step. It carefully examines the suggested solution's suitability for the market, its financial and operational ramifications, and its compatibility with current systems. The objective of this comprehensive assessment is to confirm that the suggested solution is feasible and fits the organization's objectives, restrictions, and market demands. For stakeholders to decide on the project's viability and likelihood of success, the insights gained during this phase are essential.

- Review

The review section summarizes the feasibility study's results, conclusions, and suggestions. It serves as the study's capstone. It summarizes the main findings of the investigation and highlights the viability, dangers, advantages, and difficulties of the suggested project. This part provides stakeholders with a clear and complete description of the key insights obtained from the study. By giving a clear picture of the project's potential and any areas that could need more thought or adjustment, it helps decision-makers make well-informed choices.

Types of Feasibility Studies

- Technical Feasibility Study

This study evaluates the technological aspects of the project by looking at the infrastructure and technology capabilities that are currently in place. It include assessing network requirements, hardware, software, and interoperability with current systems. The availability of technical resources, such as knowledgeable staff and experience required for development and maintenance, is taken into account in this study. It also looks into possible hazards and technological limitations that could occur during implementation, like

integration difficulties or scalability problems. The technical feasibility study's ultimate goal is to determine whether the suggested solution is compatible with the organization's technological infrastructure and capabilities, guaranteeing an efficient and successful implementation process.

- Economic Feasibility Study

This entails a thorough evaluation of the project's financial sustainability. Estimating the project's overall cost, which includes development, running, and maintenance costs, is part of it. This analysis takes into account variables such as the initial investment, continuing operating expenses, possible savings, and expected income or benefits. The study uses return on investment estimates and cost-benefit analysis to see if the expected benefits outweigh the experienced expenditures. It also looks at other scenarios or solutions in order to figure out which is the most economical. Making well-informed financial decisions that respect the organization's financial limitations and guarantee the project's long-term financial viability and profitability is the aim.

- Operational Feasibility Study

This type of study determines whether or not the proposed project can be implemented within the organization's current operational structure. It assesses how effectively the project fits into the existing staff capabilities, workflows, and processes. This analysis takes into account potential effects on daily operations, training needs, and user approval. The purpose of the analysis is to find any operational difficulties or disruptions by evaluating how well the project fits in with current operations. It assists in ascertaining whether the project is in line with the company's strategic goals and can be smoothly incorporated into the organization's operations without causing major interruptions.

- Legal Feasibility Study

Legal feasibility guarantees adherence to governmental laws, industry norms, and legal requirements. It entails evaluating all applicable laws, licenses, permits, and other legal hazards related to the project. This study looks at contracts, intellectual property rights, and any other legal requirements the project might run against. The analysis reduces the risk of legal conflicts or non-compliance by identifying and eliminating legal impediments and ensuring that the proposed project functions within legal limitations.

- Market Feasibility Study

This study evaluates the project's chances of success in the intended market. It examines consumer preferences, market developments, competition, and demand. Through an analysis of potential risks and obstacles within the market environment, this study seeks to ascertain whether the proposed project has a viable market. Stakeholders may make educated judgments about the project's market entry strategy and positioning by having a thorough grasp of consumer wants and market dynamics.

- Resource Feasibility Study

This method assesses the availability and distribution of resources needed for the project. It entails evaluating the technology, equipment, materials, and human resources required for a project's successful completion. This study makes sure that the resources needed to fulfill the project's goals are accessible, available, and usable. Stakeholders can develop strategies to maximize resource allocation and manage risks associated with resource availability by detecting potential restrictions or shortages.

- Cultural Feasibility Study

This type of study evaluates the project's potential effects on society by taking into account social, ethical, and cultural ramifications. It looks at how the project fits into society ideals, how the public would see it, and what social or cultural effects it might have. The purpose of this study is to make sure that the project complies with moral principles, honors cultural customs, and advances the welfare of society. Stakeholders can address any cultural or social issues and make sure the project's goals are in line with community expectations by having a thorough awareness of social dynamics and potential effects.

Importance of Feasibility Report

A feasibility report is an extensive document that evaluates a project or initiative's viability, practicality, and likelihood of success. It functions as a thorough assessment tool, giving decision-makers insightful information about a range of project factors.

- Decision Guidance

A feasibility report is a vital resource for stakeholders, offering in-depth understanding and data-driven assessments that are necessary for well-informed choices. It gives stakeholders a comprehensive evaluation of the project's features, allowing them to assess its viability from a technical, financial, operational, and market perspective. This enables decision-makers to measure the benefits and drawbacks, comprehend possible obstacles, and decide whether to move forward with the project as is, alter its parameters, or look into other options.

- Risk mitigation

By recognizing potential risks, difficulties, and uncertainties related to the project, it plays a crucial part in risk management. By means of an in-depth examination of technological limitations, commercial feasibility, operational difficulties, and financial implications, the study aids in the early detection and mitigation of possible hazards during the planning stage. By taking a proactive stance, stakeholders can create backup plans and risk mitigation techniques, which lowers the possibility of project failures or delays.

- Resource Allocation

By giving a thorough understanding of the resources needed for the project, a feasibility report helps to optimize resource allocation. It lists the personnel, financial, technological, and other resources required for a project to be implemented successfully. This helps with effective resource allocation and planning, guaranteeing that resources are used efficiently, avoiding waste, and in line with the project's goals.

- Alignment with Objectives

The feasibility study makes sure that suggested initiatives are in line with the organization's overall strategic direction by assessing the project's alignment with organizational aims and objectives. It aids in determining whether the project under consideration positively impacts the organization's long-term strategies, mission, and vision while promoting coherence and synergy among various organizational levels.

- Investment Justification

The feasibility report is used as support by organizations thinking about investing in new projects or initiatives to explain their decision. Stakeholders, investors, or financial institutions are presented with strong evidence that supports the project's viability and possible financial rewards through a comprehensive study of costs, benefits, ROI, and potential outcomes.

- Accountability and openness for the project

By recording the evaluation procedure and results, the feasibility report encourages accountability for decisions made. It provides stakeholders with an understanding of the foundation for the findings reached by outlining the procedures, data sources, assumptions, and analyses used. The suggested initiative is supported and given more trust by stakeholders as a result of this transparency.

A feasibility study for a system for a business-related][zaproblem.

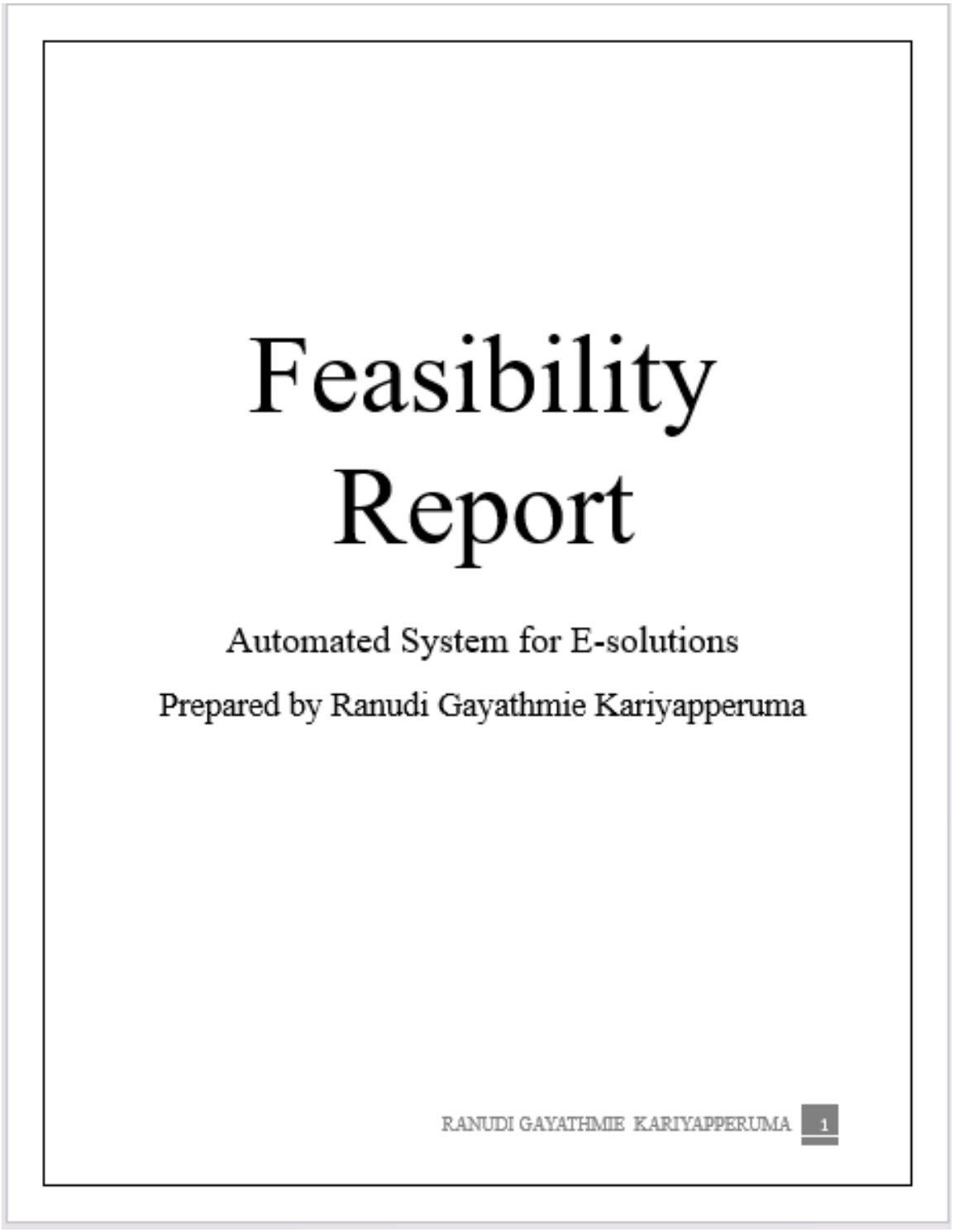
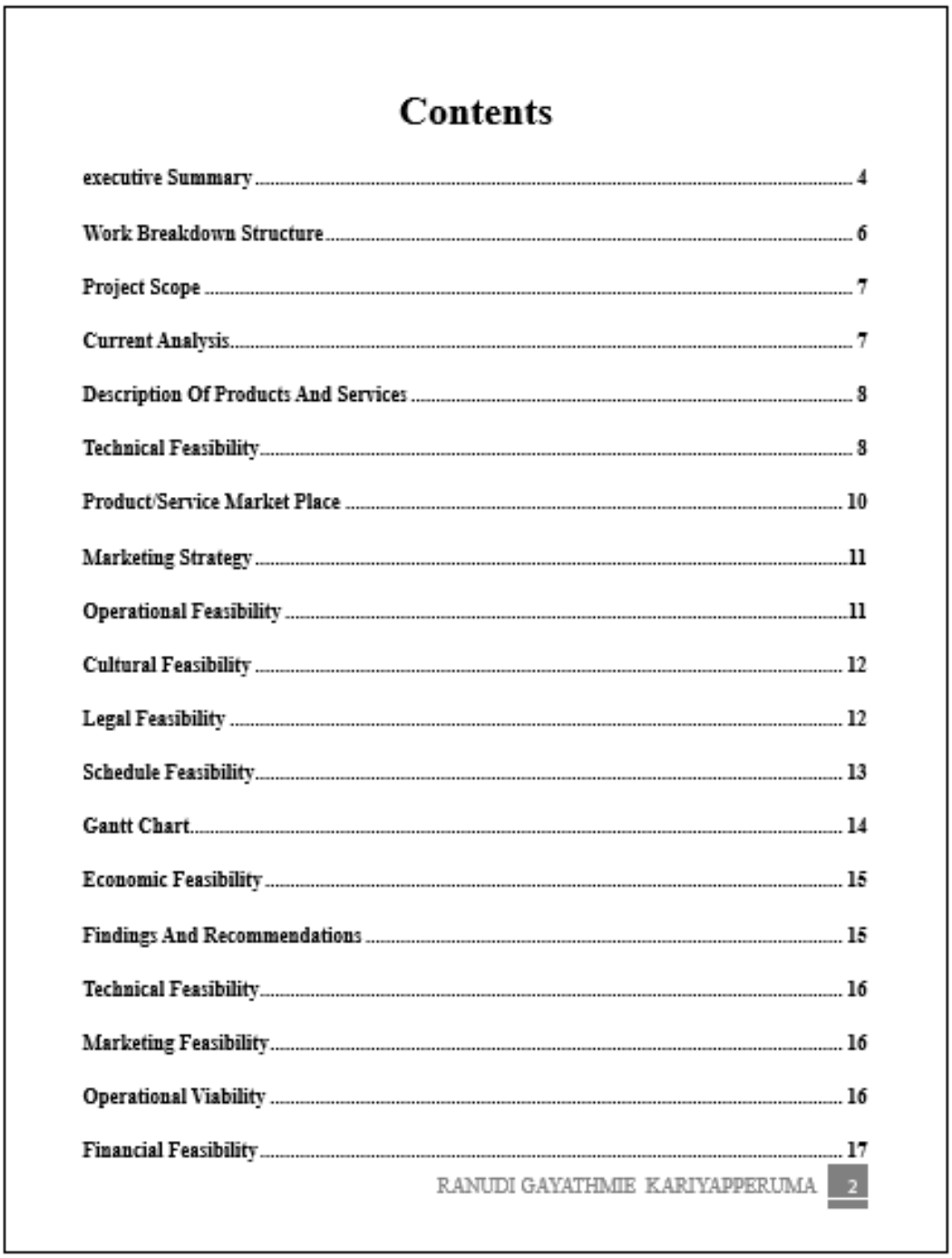
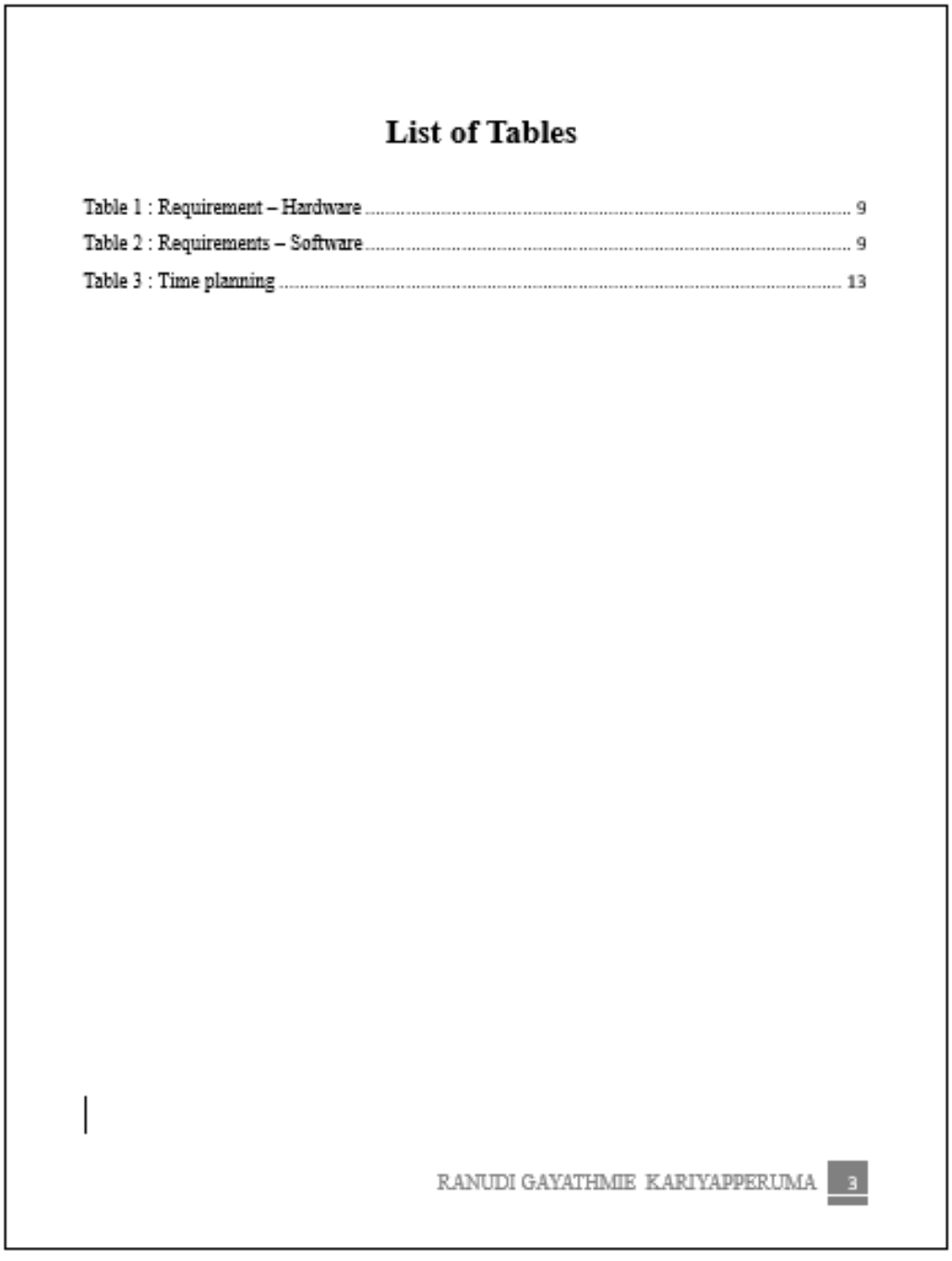


Figure 7 : Feasibility Report part 1



Contents

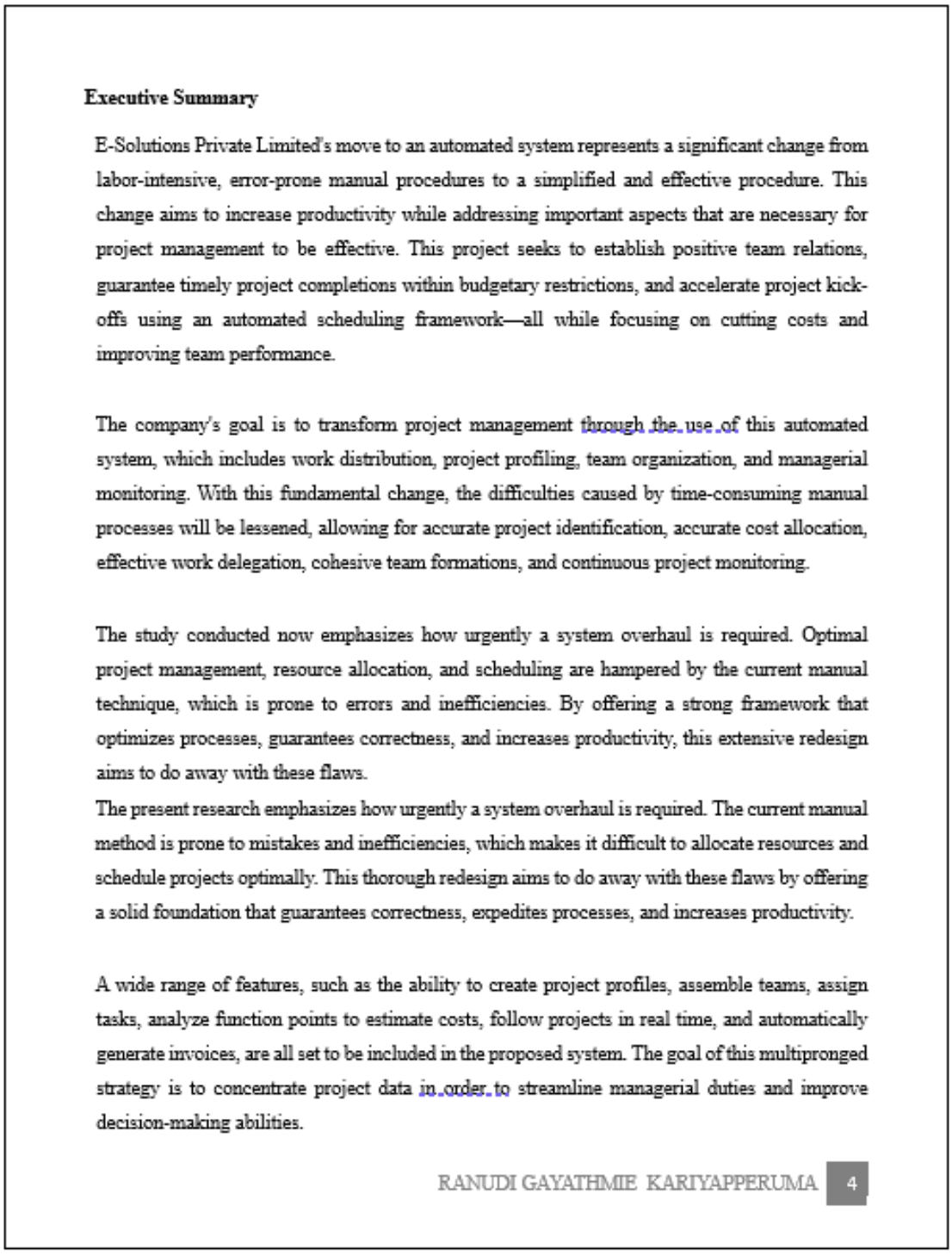
Figure 8 : Feasibility Report Part 2



List of Tables

RANUDI GAYATHMIE KARIYAPPERUMA 3

Figure 9 : Feasibility Report part 3



Executive Summary

E-Solutions Private Limited's move to an automated system represents a significant change from labor-intensive, error-prone manual procedures to a simplified and effective procedure. This change aims to increase productivity while addressing important aspects that are necessary for project management to be effective. This project seeks to establish positive team relations, guarantee timely project completions within budgetary restrictions, and accelerate project kick-offs using an automated scheduling framework—all while focusing on cutting costs and improving team performance.

The company's goal is to transform project management through the use of this automated system, which includes work distribution, project profiling, team organization, and managerial monitoring. With this fundamental change, the difficulties caused by time-consuming manual processes will be lessened, allowing for accurate project identification, accurate cost allocation, effective work delegation, cohesive team formations, and continuous project monitoring.

The study conducted now emphasizes how urgently a system overhaul is required. Optimal project management, resource allocation, and scheduling are hampered by the current manual technique, which is prone to errors and inefficiencies. By offering a strong framework that optimizes processes, guarantees correctness, and increases productivity, this extensive redesign aims to do away with these flaws.
The present research emphasizes how urgently a system overhaul is required. The current manual method is prone to mistakes and inefficiencies, which makes it difficult to allocate resources and schedule projects optimally. This thorough redesign aims to do away with these flaws by offering a solid foundation that guarantees correctness, expedites processes, and increases productivity.

A wide range of features, such as the ability to create project profiles, assemble teams, assign tasks, analyze function points to estimate costs, follow projects in real time, and automatically generate invoices, are all set to be included in the proposed system. The goal of this multipronged strategy is to concentrate project data in order to streamline managerial duties and improve decision-making abilities.

RANUDI GAYATHMIE KARIYAPPERUMA 4

Figure 10 : Feasibility Report part 4

By providing a holistic solution that streamlines project initiation, execution, and monitoring, the system targets a changing market and meets the growing demand for effective project management tools.

The system is deemed viable because to its user-friendly interface, adherence to industry standards, compliance with data requirements, and potential for cost savings, all of which enhance its operational, cultural, legal, and economic practicality. Improved project completion rates, reduced errors, increased productivity, and significant cost-effectiveness are expected consequences. Sustaining efficiency and relevance in the ever-changing world of project management solutions is imperative, as suggested by the guidelines, which emphasize user training, ongoing evaluation, and updates.

Work breakdown Structure

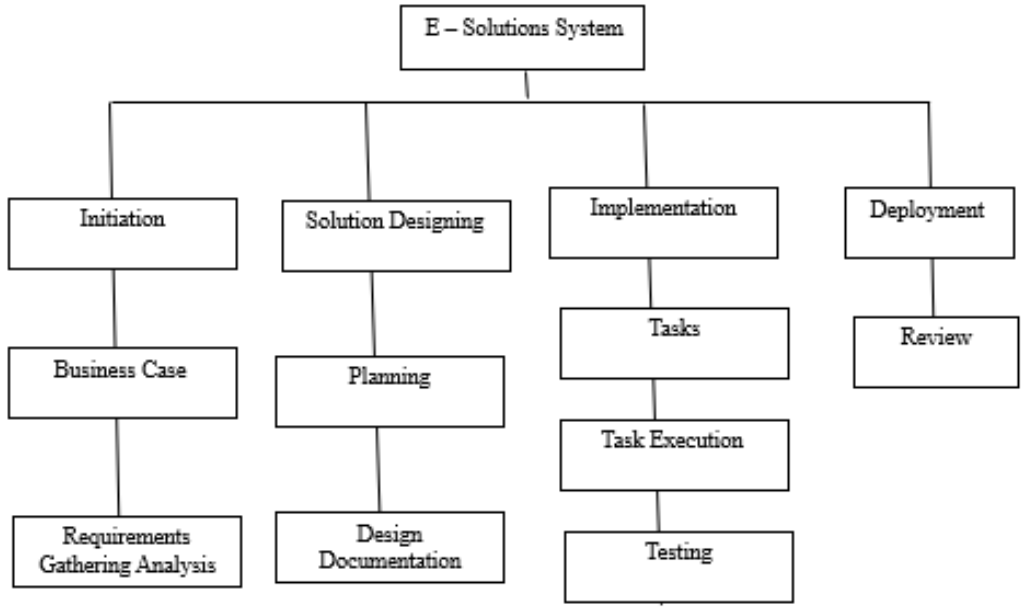


Figure 11 : Feasibility Report part 5

Project Scope

The planned project at E-Solutions Private Limited is to automate the current manual processes and revolutionize them with a focus on significant productivity gains and cost savings. By enhancing understanding of system requirements, the program In order to attain a complete scope, special focus will be placed on defining technical specifications, creating a well-defined implementation strategy, implementing stringent testing procedures, and providing extensive training and continuous support to ensure the smooth integration and best use of this automated framework. Aims to support effective team dynamics and ensure timely and cost-effective project completions. The method is based on Project Directors creating detailed project profiles that include work allocations, staff costs, project identification, and managerial oversight. It also makes it easier to build teams by assigning workers, designating team leaders, and assigning tasks more efficiently. In addition to these core features, the system will do function point assessments for cost prediction, create and maintain project-related data dynamically, and offer real-time project monitoring capabilities.

Current Analysis

At E-Solutions Private Limited, the current working environment is characterized by manual processes, which have resulted in error-prone methodologies that have affected productivity and increased operating costs. The lack of an automated system has made it difficult to comprehend system requirements, which has resulted in delays and possible overspending on project completion costs. Ineffective work distribution and insufficient project management may have reduced team productivity, which could have impacted the project's overall success. The inability to monitor in real-time makes it even more difficult to identify jobs that are continuing and completed across projects. Thus, an automated solution is desperately needed to optimize work allocation, expedite project management, increase the accuracy of cost estimation, and offer full-featured project monitoring In addition to cutting costs, this transformation will guarantee timely project completions within budgetary restrictions, promote effective teamwork, and allow projects to be started on time with the help of an automated scheduling system.

Figure 12 : Feasibility Report part 6

Description of Products and Services

E-Solutions Private Limited offers a comprehensive array of products and services focused on revolutionizing conventional business methodologies through innovative technological solutions. Central to their offerings is the development and implementation of automated systems, specifically designed to supplant manual processes. These systems are meticulously crafted to curtail operational expenses, elevate productivity, and minimize errors inherent in manual workflows. A core facet of their suite comprises sophisticated project management software, enabling streamlined project profiling, task allocation, team management, and real-time oversight. Complementing this, E-Solutions provides robust information management solutions, ensuring the continuous production and updates of project-related data, individual team assignments, and skill sets. Their specialized tools for precise cost estimation through function point analysis and seamless invoice generation upon project phase completions streamline financial workflows. Anchoring these offerings are vigilant project monitoring and reporting systems, allowing for comprehensive task tracking and project status identification. Altogether, E-Solutions' portfolio is crafted to empower businesses with efficient, technology-driven solutions, optimizing project management processes while fostering efficiency, cost reduction, and successful project outcomes.

Technical Feasibility

Technical viability of automating a system at E-Solutions Private Limited requires a thorough assessment of the company's technology resources, infrastructure, and skills. This evaluation includes a thorough analysis of the current network infrastructure, hardware, and software to guarantee that it is compatible with and has enough space for the suggested system. Scalability, security precautions, and regulatory compliance are just a few of the aspects that must be carefully considered throughout the thorough examination of the technological stack required for development, integration, and maintenance. Crucial elements also include evaluating the availability of trained staff, identifying any integration issues with present systems, and performing a cost-benefit analysis. Examining these components closely allows E-Solutions to assess the system's preparedness, spot possible roadblocks, and develop strategies for mitigating

Figure 13 : Feasibility Report part 7

them in order to guarantee a technically sound deployment that supports the organization's goals and expansion in the future.

Requirements (Hardware)	Minimum	Recommended	Description
Processor	Initial Platinum Core i5	Initial Platinum core 7i	Mid range systems are small ,powerful and easy to maintain
Ram	128GB	256GB	256GB ram is needed for a good running
Hard Disk	Samsung 500GB	Kingston 1TB	Mid range system hardware is less expensive than big-range equipment has built in maintenance utilizes which automatically monitor central processing Unit (CPU) usage and other hardware functions
Laptop	800 X 600	800 X 600	Motion resolution will be improved with a greater refresh rate ,making moving images appear shaper
Scanner Printer			

Figure 14 : Feasibility Report part 7

Ethernet Connection or wireless Connection

Table 1 : Requirement – Hardware

Requirements (Software)	Description
Operating System	Microsoft Windows 10 .windows 11 were permitted .
Anitivirus Software	Microsoft Defender ATP required

Table 2 : Requirements – Software

Product/Service Market Place

Operating in a dynamic product/service marketplace, E-Solutions Private Limited offers cutting-edge technical solutions specifically designed to optimize project management procedures. Their unique goods and services, which are carefully designed to improve operational efficiency, collaborate with others, and optimize workflows, are the foundation of what they have to offer. Their signature offering consists of automated project management tools, painstakingly crafted to supplant clumsy human procedures. Through the automation of critical processes including task delegation, project profiling, and real-time monitoring, these systems seek to dramatically lower operating expenses while increasing productivity.

Their information management systems also guarantee the constant generation and updating of crucial project-related data, facilitating well-informed decision-making. Additionally, the suite includes specialized tools for precise cost estimation and invoicing, enabling clear billing procedures and efficient cost control. Strong project monitoring and reporting solutions that give firms thorough insights into project statuses and enable resource optimization form the foundation of their offerings. E-Solutions is a marketplace that offers cutting-edge solutions for improved project management and successful outcomes to organizations in a variety of industries. It is positioned at the nexus of technology and operational efficiency.

Figure 15 : Feasibility Report part 8

Marketing Strategy

E-Solutions Private Limited launches a comprehensive marketing campaign that highlights the transformative power of their automated technology and is positioned to resonate both within and outside. Internally, the plan calls for a comprehensive awareness-raising campaign that incorporates educational workshops and engaging materials. By demonstrating how the technology improves productivity, reduces errors, and streamlines procedures, these programs hope to engage staff members. Externally, the approach focuses on developing a strong value case, emphasizing how the system lowers operating expenses, guaranteeing timely project completions within budgetary restrictions, and cultivating collaborative skills.

With the use of interactive client engagements, thought leadership content, and strategic alliances, the organization establishes itself as a pioneer in cutting-edge project management solutions. Through cultivating an environment of flexibility within the company and presenting an image of industry leadership outside, the marketing strategy creates the conditions for successful adoption within the company as well as drawing in customers looking for innovative and effective project management solutions.

Operational Feasibility

The assessment of how feasible it is to incorporate an automated system into E-Solutions Private Limited's current operations is known as the operational feasibility of the system's introduction. This evaluation includes a detailed examination of how well the suggested system fits in with the goals, workflow, and procedures of the company. The aforementioned case highlights the imperative need to improve the efficacy of project management, allocate tasks precisely, and deliver projects on schedule. Operational viability assesses how well the new system fits into the existing workflows and how well it can solve operational issues without interfering with ongoing operations. This means assessing the system's ability to minimize disturbance to daily operations while optimizing project profiling, task assignment mechanisms, team management, and real-time monitoring.

RANUDI GAYATHMIE KARIYAPPERUMA 10

Figure 16 : Feasibility Report part 9

Inconsistencies between the functionality of the system and the operational requirements may result in inefficiencies and reduce overall productivity. Therefore, it is imperative to verify that the system not only satisfies operational requirements but also optimizes processes in order to determine its viability and effective integration into the E-Solutions operating framework.

Cultural Feasibility

In order to determine whether a system automation at E-Solutions Private Limited is culturally feasible, it is necessary to assess the organization's technical readiness and adaptability. This evaluation takes into account the attitudes of the workforce, the company's current culture, and their readiness to adopt the new system. The scenario recognizes the possibility of opposition or trepidation about the adoption of new technologies and emphasizes the necessity of internal awareness campaigns and training sessions. The goal of cultural feasibility is to create an atmosphere that promotes staff acceptance, involvement, and buy-in of the automated system. In order to overcome cultural obstacles, elements including leadership support, change management techniques, and communication are essential.

A culture of technological innovation and flexibility within the firm can only be fostered by coordinating the automated system's launch with its values and vision, highlighting the beneficial impact it will have on staff roles and workflows.

Legal Feasibility

providing compliance with pertinent laws, regulations, and industry standards is a necessary step towards guaranteeing the legal viability of adopting an automated system at E-Solutions Private Limited. This evaluation takes into account security, privacy, and other legal issues that are relevant to the way the system works. The example emphasizes how crucial it is for the suggested system to include security safeguards and comply with regulations. To ensure legal viability, sensitive data must be protected by ensuring that the system's features comply with data protection legislation (such GDPR, HIPAA, or industry-specific standards). To safeguard data

Figure 17 : Feasibility Report part 10

integrity and privacy, it entails putting strong security procedures, encryption techniques, and user permissions into place.

There could be serious repercussions from breaking the law, such as fines, harm to one's reputation, or breaches that expose private information. Thus, maintaining stringent adherence to legal frameworks and keeping up with changing legislation is essential to guaranteeing the automated system's legal viability for implementation. To reduce risks and guarantee the system's legal functioning within the regulatory environment, E-Solutions must give priority to these legal considerations.

Schedule Feasibility

The assessment of the suggested timetable for system development, deployment, and integration with the business's activities is the key to determining the schedule feasibility of an automated system implementation at E-Solutions Private Limited. The case study emphasizes how crucial automated project scheduling is to the timely start of projects. Setting reasonable deadlines and benchmarks for the various stages of system implementation—development, testing, training, and deployment—is necessary to ensure schedule feasibility. Any of these stage delays have the potential to disrupt the project schedule as a whole and the system's ability to be used within the projected period. To guarantee deadline adherence, thorough planning, resource allocation, and effective project management are required. Any variation from the planned timeline could significantly damage the company's ability to meet projected milestones, disrupt workflows, and postpone intended efficiencies.

Therefore, for the suggested system to be implemented successfully and provide the expected benefits within the allotted time frame, it is imperative that it be in line with a well-structured and feasible schedule.

Figure 18 : Feasibility Report part 11

Tasks	Time
Project Initiation	2 weeks
Requirement Gathring	2 weeks
System Designing	4 weeks
System Development	8 weeks
Testing the Trials	5weeks
System Implementation	3 weeks
Total Time	24 weeks (06 months)

Table 3 : Time planning

Gantt Chart

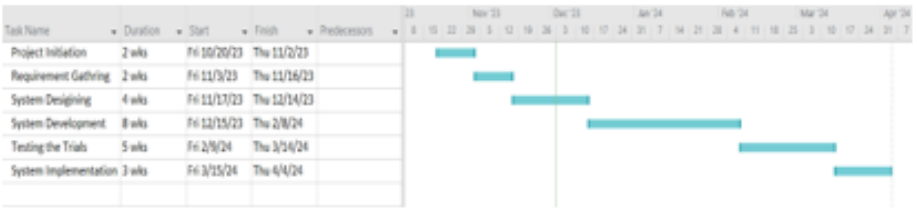


Figure 19 : Feasibility Report part 12

Economic Feasibility

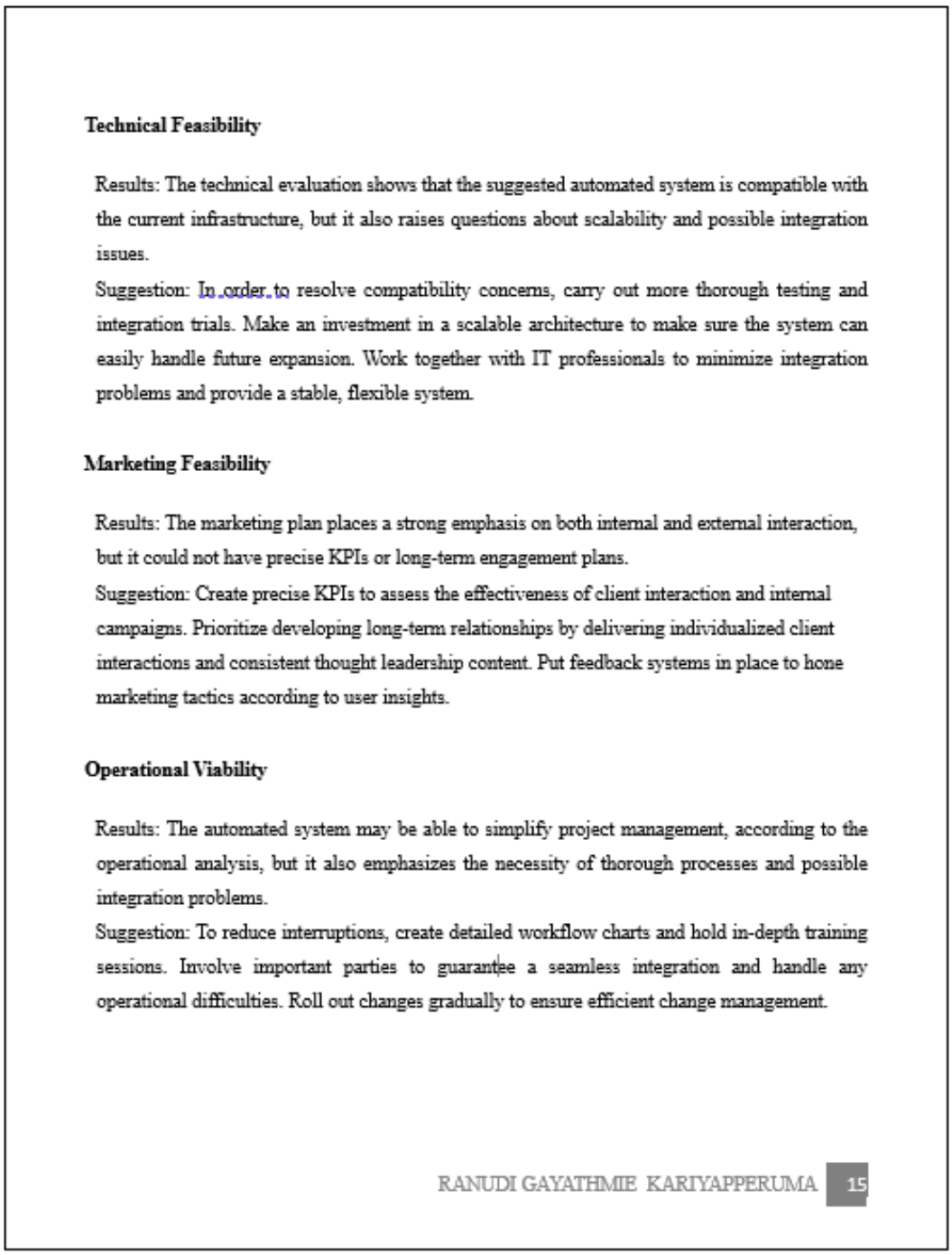
At E-Solutions Private Limited, determining the financial sustainability and advantages of a proposed automated system entails conducting an economic feasibility analysis. The scenario highlights cost containment and increased output as the main goals. It is essential to carry out a thorough cost-benefit analysis that takes into account development, implementation, training, and future cost savings. In addition to the original investment, the feasibility study takes into account the anticipated cost savings and returns from enhanced project management, less errors, and higher efficiency. If substantial cost savings or a distinct return on investment cannot be shown, this could affect the decision-making process and possibly affect the viability of the system.

Thus, a key factor in evaluating the economic viability of deploying the automated system is confirming that the expected benefits balance the incurred expenses and are consistent with the organization's financial objectives. This research supports resource allocation decision-making and provides evidence for system investment based on possible long-term economic benefits for E-Solutions.

Findings and Recommendations

Introducing a comprehensive assessment and suggestion process for E-Solutions Private Limited's planned automated system installation. Numerous important aspects are included in this assessment, such as operational readiness, marketing strategies, technical viability, and financial considerations. The assessment points out the planned transition's advantages as well as its drawbacks. The suggestions are meant to maximize these components in order to guarantee that the automated system is smoothly incorporated into the organization's structure. The present introduction lays the foundation for an in-depth examination, offering valuable perspectives on crucial elements required for the triumphant integration of this revolutionary technology into E-Solutions.

Figure 20 : Feasibility Report part 13



Technical Feasibility

Results: The technical evaluation shows that the suggested automated system is compatible with the current infrastructure, but it also raises questions about scalability and possible integration issues.

Suggestion: In order to resolve compatibility concerns, carry out more thorough testing and integration trials. Make an investment in a scalable architecture to make sure the system can easily handle future expansion. Work together with IT professionals to minimize integration problems and provide a stable, flexible system.

Marketing Feasibility

Results: The marketing plan places a strong emphasis on both internal and external interaction, but it could not have precise KPIs or long-term engagement plans.

Suggestion: Create precise KPIs to assess the effectiveness of client interaction and internal campaigns. Prioritize developing long-term relationships by delivering individualized client interactions and consistent thought leadership content. Put feedback systems in place to hone marketing tactics according to user insights.

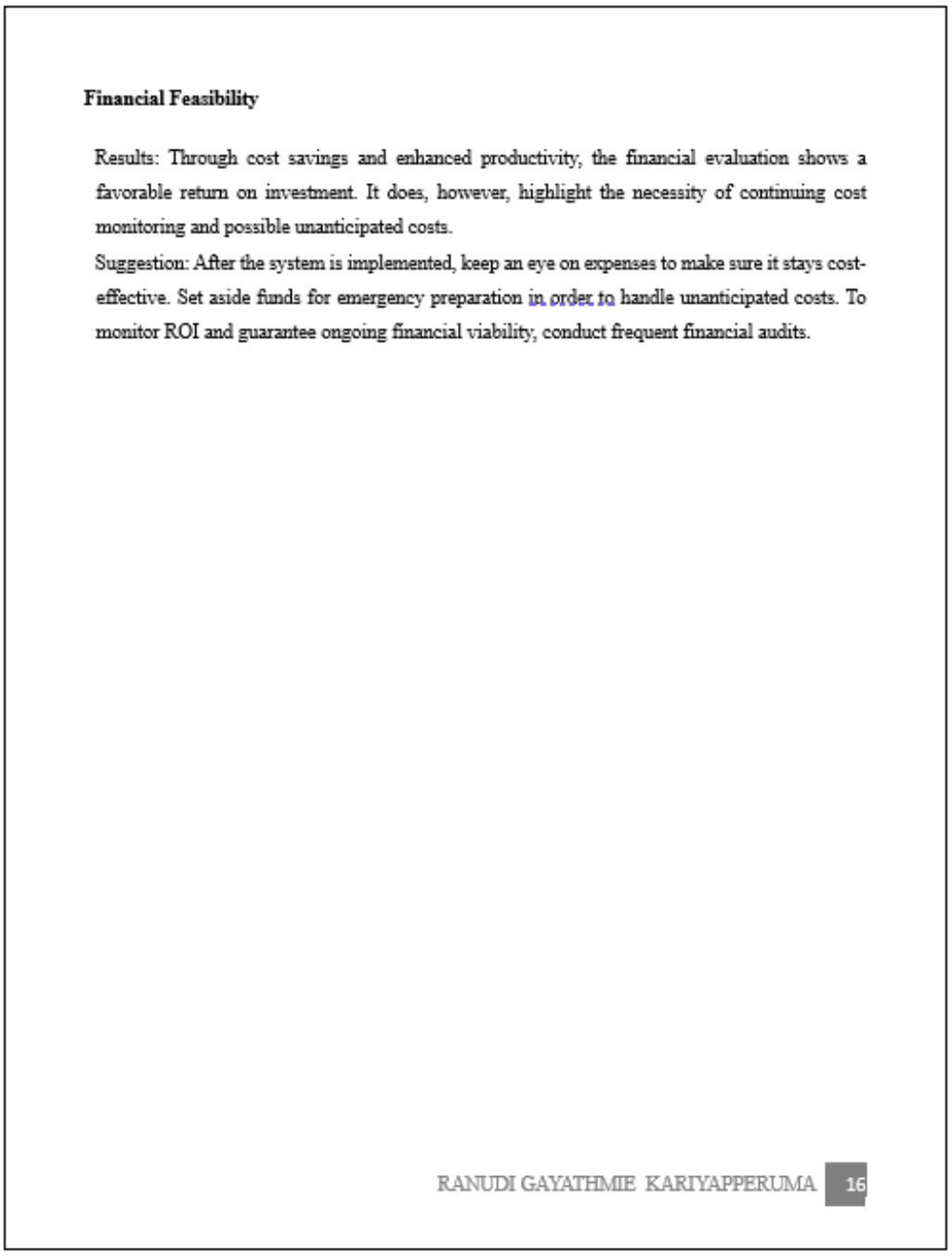
Operational Viability

Results: The automated system may be able to simplify project management, according to the operational analysis, but it also emphasizes the necessity of thorough processes and possible integration problems.

Suggestion: To reduce interruptions, create detailed workflow charts and hold in-depth training sessions. Involve important parties to guarantee a seamless integration and handle any operational difficulties. Roll out changes gradually to ensure efficient change management.

RANUDI GAYATHMIE KARIYAPPERUMA 15

Figure 21 : Feasibility Report part 14



Financial Feasibility

Results: Through cost savings and enhanced productivity, the financial evaluation shows a favorable return on investment. It does, however, highlight the necessity of continuing cost monitoring and possible unanticipated costs.

Suggestion: After the system is implemented, keep an eye on expenses to make sure it stays cost-effective. Set aside funds for emergency preparation in order to handle unanticipated costs. To monitor ROI and guarantee ongoing financial viability, conduct frequent financial audits.

RANUDI GAYATHMIE KARIYAPPERUMA 16

Figure 22 : Feasibility Report part 15

Proposed solution for E-Solutions private Limited

The scenario's suggested remedy calls for a thorough reorganization of E-Solutions' operating procedures through the implementation of an automated system. This solution's primary focus is on the methodical automation of project management duties. It provides a set of software tools to reduce manual labor and human error. These tools have features that make it possible to create project profiles, assign tasks, manage project teams, and track project progress in real time. The system also incorporates functions for function point analysis-based precise cost estimation and smooth invoicing upon project phase completion, which streamlines financial procedures. This suggested remedy represents a revolutionary change from conventional, labor-intensive procedures to a technologically-assisted strategy meant to maximize operational effectiveness and minimize expenses.

Furthermore, the system's versatile approach meets a range of project management requirements. By clearly defining roles, designating project managers and team leaders, and equipping them with effective work allocation tools, it not only makes project profiling and task assignment easier but also improves team communication. In addition, by highlighting finished projects and ongoing operations, the real-time monitoring function facilitates proactive decision-making and promotes accountability and openness in the project management process. The comprehensive design of this solution targets a number of organizational pain areas with the goals of improving project outcomes, guaranteeing project delivery on schedule, and reducing errors that are common in manual operations.

The automated approach that is being suggested is in line with E-Solutions' goals of cutting costs and raising efficiency. It is a calculated risk that could transform project management practices and enable the firm to remain flexible, competitive, and effective in a changing business environment. E-Solutions believes that by putting this system in place, they will be able to advance their operational capabilities and move toward more efficient project processes, better resource management, and stronger project outcomes.

Requirements for E-Solutions private Limited

There are a variety of system requirements for the proposed automated system at E-Solutions Private Limited, including both functional and non-functional elements.

Functional Requirements

Project Profiling: The system needs to enable the construction of thorough project profiles that include task assignments, project IDs, cost estimates, and project manager designations.

The capacity to assign tasks to projects, distribute duties among project teams, and provide project managers and team leaders with the necessary tools for job delegation and supervision.

Real-time Monitoring and Reporting: To enable efficient decision-making, the system should have real-time monitoring capabilities that allow users to keep track of current tasks, recognize tasks that have been completed, and create project status reports.

Cost estimating and Invoicing: The ability to create invoices at the end of project phases and carry out precise function point analysis for staff cost estimating.

Team Collaboration: To guarantee harmonious and productive teamwork, tools that support team formation, skill mapping, and easy team member assignments should be used.

Non-Functional Requirements

Scalability: Without sacrificing performance, the system must be scalable to handle expanding project portfolios and higher user loads.

Security: Strict security protocols to protect confidential project and customer information, guaranteeing adherence to industry norms and data protection laws.

Usability and User Interface: The system's intuitive design makes it simple to use and ensures that staff with varying skill levels can navigate and make efficient use of it.

High system reliability reduces downtime and guarantees consistent performance, satisfying the requirements of real-time project management.

To guarantee smooth operations and data consistency, there must be a seamless interface with current systems as well as compatibility across various platforms and devices.

Training and assistance: To encourage user adoption, extensive training materials and continuous technical assistance are provided.

Prioritized Requirements for E-solutions private Limited

Setting priorities for system needs is essential to ensuring that E-Solutions Private Limited's automated system is developed and implemented efficiently. This is an order of priority based on urgency and importance:

Highest Concern:
Security: Ensuring strong security measures is crucial, especially considering the sensitivity of project and client data. Setting security elements in order of importance is essential to preventing hacks and data leaks.

Task Assignment and Management Functionality: For immediate usability and efficiency improvements, task assignment, team allocation, and project oversight functionality are critical.

Real-time Reporting and Monitoring: Accurate decision-making and meeting project deadlines depend on having real-time tracking tools for projects.

Medium Concern:
Project profile and Cost Estimation: Although they are essential for long-term financial accuracy, thorough project profile and precise cost estimation can be produced concurrently.

Team Collaboration Tools: After the main functionalities are created, it is possible to address the critical task of enabling successful team collaboration through talent mapping and team member assignments.

Low Concern:

Scalability: Although important for expansion down the road, scalability issues could be resolved right away if the system is up and running well.

Usability and User Interface: Although crucial for user acceptance, usability and UI can be continuously enhanced after installation.

Compatibility & Integration: After the essential features are stable, integrating with current systems and making sure they work together can be handled later.

This prioritizing enables the team to concentrate first on important elements like security, essential features, and real-time monitoring, guaranteeing a working system that takes care of urgent needs. On the basis of user input and changing requirements, additional features and improvements can then be developed and worked upon iteratively.

Review the requirements of E-solutions Private Limited

To ensure the success of the proposed automated system implementation in the scenario given at E-Solutions Private Limited, a thorough evaluation of the system requirements with stakeholders is essential.

Setting up cooperative meetings with important parties, such as managers, project directors, IT staff, and end users, makes it easier to fully comprehend the complexities of the suggested solution. These meetings offer a chance to explain the desired functions and results by breaking down the functional and non-functional requirements in depth.

A comprehensive review is made possible by encouraging stakeholders to actively participate by providing their ideas and viewpoints. Their opinions on each requirement's importance, relevancy, and clarity are really helpful. To quickly address any issues, queries, or ambiguities brought up during these talks, open lines of communication are crucial.

It is crucial to record every piece of feedback that is given throughout these sessions. Sorting and ranking this input according to how it affects the requirements of the system facilitates a methodical and structured process for adding changes.

It is therefore essential to update and refine the system requirements in light of the feedback from the stakeholders. The agreement and expectations reached during these cooperative meetings should be appropriately reflected in the updated requirements.

A follow-up review meeting to confirm the modifications guarantees that the revised specifications meet the expectations of the relevant parties. It is imperative that all parties involved get a consensus on the finalized system requirements prior to forward with the implementation process.

By including stakeholders, obtaining input, adjusting requirements, and validating modifications in an iterative manner, E-Solutions guarantees that the suggested automated system is customized to fulfill the demands of the company.and expectations, creating the conditions for an acceptance and execution that are successful.

Suitable Methodology for system Requirements

In the case study at E-Solutions Private Limited, using the Agile methodology for system requirements analysis and evaluation could be quite beneficial.

The application of Agile concepts is consistent with the demand for an adaptable, iterative method of requirement analysis and system development. Agile provides a structured yet flexible framework, which is appropriate considering the intricacy of the suggested automated system and the dynamic nature of project management.

The Agile technique is in line with dividing the system requirements into smaller, more manageable components, or "user stories". Functionalities like work delegation, project profiling, real-time monitoring, and cost estimation may be included in these stories. Setting these user stories' priorities according to stakeholder input and urgency would enable a more concentrated and well-organized strategy.

Continuous improvement and feedback loops would be facilitated by implementing iterative sprints. Specific capabilities might be covered in each sprint, giving stakeholders a chance to examine and comment on the system's more manageable, smaller components. This encourages flexibility so that changes can be made in response to changing requirements and input received at the end of each sprint review.

Furthermore, the circumstance is ideally suited to Agile's emphasis on cooperation and frequent communication between cross-functional teams. Participating in daily stand-ups, sprint reviews, and sprint planning with project directors, managers, IT staff, and end users guarantees that everyone is on the same page about the requirements of the system.

The Agile methodology is a good strategy for examining and reevaluating system requirements in the E-Solutions scenario because of its collaborative, flexible, and iterative characteristics. Its guiding principles facilitate ongoing improvement and guarantee that the suggested automated system closely complies with the requirements and expectations of stakeholders.

Analyze the system requirements with the methodology

At E-Solutions Private Limited, the Agile methodology is being implemented through a set of organized procedures that allow for iterative development and continual improvement in the analysis and assessment of system requirements. The approach could be used in the following ways:

Sprint Planning: To start, convene sprint planning meetings with stakeholders, project managers, developers, and end users in cross-functional teams. Divide the system requirements into user stories, each of which should reflect a particular feature or area of the automated system that is being suggested. Sort these user tales according to priority, urgency, and significance.

Execution of the Sprint: Begin the first sprint with an emphasis on creating and improving the user stories that were determined during planning. Usually, a sprint lasts little more than a couple of weeks. The development team puts the functionalities described in the user stories into practice.

Organize daily stand-up meetings so team members can review goals, obstacles, and the day's progress. This guarantees alignment, promotes teamwork, and facilitates prompt problem solving.

Sprint Review and Feedback: Hold a sprint review meeting with stakeholders and end users at the conclusion of each sprint. Show out the capabilities that have been developed and get input on whether they live up to expectations. Utilize these suggestions to improve and order the next user story collection.

Sprint Retrospective: Hold a sprint retrospective meeting with the development team concurrently with the sprint review to discuss what went well, what may be improved, and how to improve the procedure for next sprints.

Iteration and Continuous Improvement: Refine the system requirements in light of stakeholder and end-user feedback. Update priorities, improve user stories, and schedule

the ensuing sprints appropriately. Iteratively constructing and improving the system in response to changing needs and input, the process keeps going.

Frequent Communication and Adaptation: Throughout the process, keep lines of communication open between stakeholders and team members. To make sure the system closely complies with stakeholder expectations, change priorities, take input into account, and adapt to changing requirements.

E-Solutions guarantees an iterative, collaborative, and adaptable approach to system requirements analysis and evaluation by putting Agile concepts into practice. Planning, executing, reviewing, and adapting in an iterative cycle promotes continuous improvement and guarantees that the final system requirements closely align with the changing needs of the company.

The relevance of the feasibility criteria on the systems investigation for the business related problem.

Technical Feasibility:

Relevance: Technical viability is important since it guarantees that the suggested automated solution will work with the organization's current infrastructure and technological capacity. It establishes if the system can be efficiently constructed, integrated, and scaled within the confines of the available technology.
Adequacy: This criterion addresses compatibility, scalability, and integration—all essential elements of a well-implemented system. Thorough compatibility testing, infrastructure evaluations, and scalability forecasts make these factors quantifiable and guarantee that they complement the organization's technological capabilities.

Marketing Strategy:

Relevance: The importance of marketing strategy is found in making sure that internal teams and external stakeholders are made aware of and accept the automated system. It seeks to raise people's consciousness, comprehension, and desire for the new system.

Sufficient coverage of both internal and external communication tactics is provided. The system's market penetration, stakeholder feedback, and user adoption rates can all be used to gauge how effective these techniques are

Operational Feasibility:

Relevance: Because it assesses how well the automated system fits with current procedures, avoiding disruptions and guaranteeing a seamless transition for users, operational feasibility is extremely important.
Adequacy: It meets the requirements for user acceptance and integration, which are essential for successful operations. Gaining significant insights regarding operational feasibility can be achieved by monitoring efficiency indicators, collecting user input, and analyzing the impact on day-to-day operations.

Financial Feasibility:

Relevance: Determining the automated system's economic potential requires an understanding of financial feasibility. It evaluates expenses, benefits, and savings to make sure the system fits the business's budgetary goals.
Adequacy: This criterion, which covers cost-effectiveness and ROI, may be measured via cost-benefit assessments, continuous financial monitoring, and transparent ROI computations. These methods offer a thorough understanding of financial viability.

Cultural Feasibility:

Relevance: Cultural feasibility assesses the organization's ability to adjust to new systems, accept change, and prepare its workforce for it. It talks about possible opposition and cultural differences.
Adequacy: To ensure successful system integration, surveys, feedback sessions, and the tracking of cultural change indicators are used to measure cultural feasibility with an emphasis on staff acceptance and flexibility.

Legal Feasibility:

Relevance: Legal viability reduces potential legal risks related to data security and industry standards and guarantees adherence to laws and regulations.
Adequacy: This criterion is essential to risk mitigation and may be measured by audits, legal compliance checks, and regulatory standard adherence, which guarantees the legality of the system and effective risk management.

Schedule Feasibility:

Relevance: Timeline alignment with project deadlines and commercial objectives depends on schedule feasibility. It guarantees the system's timely deployment.
Adequacy: With a focus on on-time delivery, schedule feasibility is measured by monitoring project timeframes, milestones reached, and schedule adherence to guarantee on-time system deployment.

All of the feasibility criteria are extremely pertinent to the automated system implementation problem statement and sufficiently address all of the crucial elements required for the system's effective implementation. They provide quantifiable criteria for assessing the system's viability, guaranteeing that it satisfies stakeholder expectations and is in line with organizational goals.

The effectiveness of the methodology used in providing a solution for a given business context.

Analysis and Review Findings

Analyzing and revising system requirements in an iterative and collaborative manner was made possible by the Agile methodology that was used. It made it possible for ongoing feedback loops and adaptation in response to input from stakeholders.

The majority of the system requirements matched well with stakeholder needs and business objectives, according to the analysis and assessment conducted against the suggested solution. Aspects related to technology, operations, finances, and culture were sufficiently covered.

During sprint reviews, stakeholders actively participated and offered insightful comments, ensuring that the system requirements changed to better suit their needs.

Nevertheless, several difficulties arose during the process, including the intricacies of connecting the system with the current infrastructure and guaranteeing the smooth adoption by the users.

Assessment of Alignment and Feasibility

The analysis confirmed that operational integration, financial viability, cultural adaptability, and technical compatibility were all addressed by the system criteria.

Technical and operational feasibility requirements were mostly satisfied, suggesting that the system can be developed and integrated successfully. Promising returns were also demonstrated by financial feasibility, which matched cost-cutting goals.

Cultural feasibility showed encouraging developments, but it also highlighted areas that required further work to improve employee buy-in and cultural adaptability.

Suggestions Derived from Analysis

Address Integration Challenges: Through specialized technical assessments and cooperative problem-solving sessions, concentrate on resolving complications in integrating the system with the current infrastructure.

Improve User Adoption tactics: Through focused training programs, change management activities, and ongoing communication, improve tactics for increasing user acceptability and cultural adaptability.

Feedback and Continuous Monitoring: After system implementation, put in place methods for continuous monitoring to assess system performance and collect user input for iterative improvements.

Construct Contingency Plans: As a precaution against unanticipated events, draft contingency plans to handle any risks or difficulties that may arise during the implementation phase.

Actionable Recommendations: These suggestions offer doable measures to improve user adoption tactics, guarantee ongoing observation, optimize integration, and create backup plans.

By taking care of these issues, E-Solutions can provide a more practical and effective solution that better fits the requirements of stakeholders and guarantees the automated system's successful deployment.

In conclusion, the Agile methodology successfully enabled stakeholder interaction and iterative development; however, certain areas, such as user acceptance methods and integration challenges, need targeted attention. A more effective and efficient solution for E-Solutions will result from putting the actionable ideas into practice, which will further refine the system requirements.

A fully functional system to meet user and system requirements for the business related problem.

User Requirements:

Project Directors: The system must enable project directors to efficiently create project profiles, allocate tasks, and designate project managers. Validation involves confirming that the interface provides intuitive tools for project details input, task assignments, and manager designation.

Project Managers: The requirement entails empowering project managers to assign tasks to various teams, monitor ongoing tasks, and generate real-time project status reports. Validation includes verifying the system's capabilities to allocate tasks, track progress, and produce comprehensive reports.

Team Leaders: Team leaders should have the functionality to assign tasks to team members and oversee team progress efficiently within the system. Validation involves checking that the tools available allow for task allocation and effective team supervision.

End Users (Employees): Employees require access to project details, task assignments, and user-friendly interfaces. Validation includes ensuring that the system provides transparent access to project information and tasks while maintaining an intuitive interface for ease of use across diverse skill levels.

System Requirements:

Compatibility: The system must seamlessly integrate with existing infrastructure and software tools. Validation involves rigorous compatibility tests and trials to ensure smooth integration without disruptions.

Scalability: Ensuring the system can accommodate growth and increased project portfolios is crucial. Validation includes confirming that the system's architecture allows for scalability without compromising performance.

Security Measures: Robust security protocols are necessary to protect sensitive project and client data. Validation involves implementing encryption, access controls, and compliance checks with data protection regulations.

Usability: A user-friendly interface is essential for users with varying skill levels. Validation requires testing user interfaces to confirm they meet usability standards and are intuitive.

Reliability: The system should demonstrate high reliability with minimal downtime. Validation includes reviewing reliability tests and uptime statistics to ensure consistent performance.

Compliance: Adherence to legal and industry standards is critical. Validation involves conducting audits and checks to ensure compliance with relevant laws and regulations.

Interfaces

Sign in Page

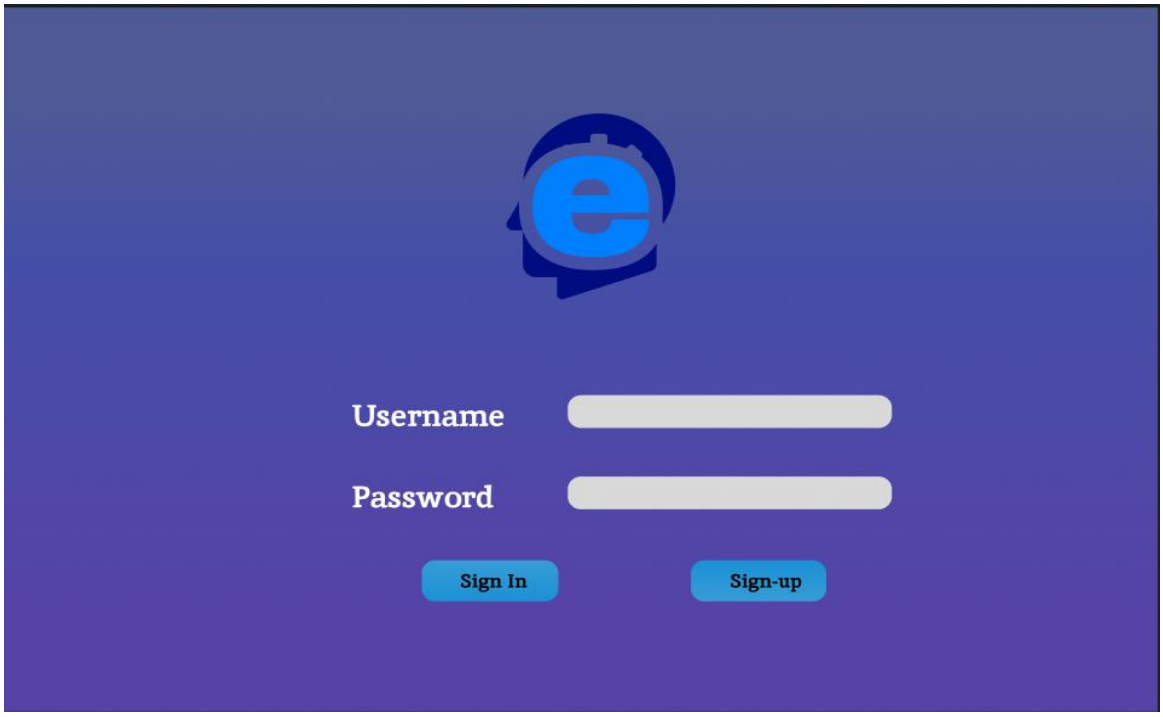


Figure 23 : Sign in page

Sign Up Page

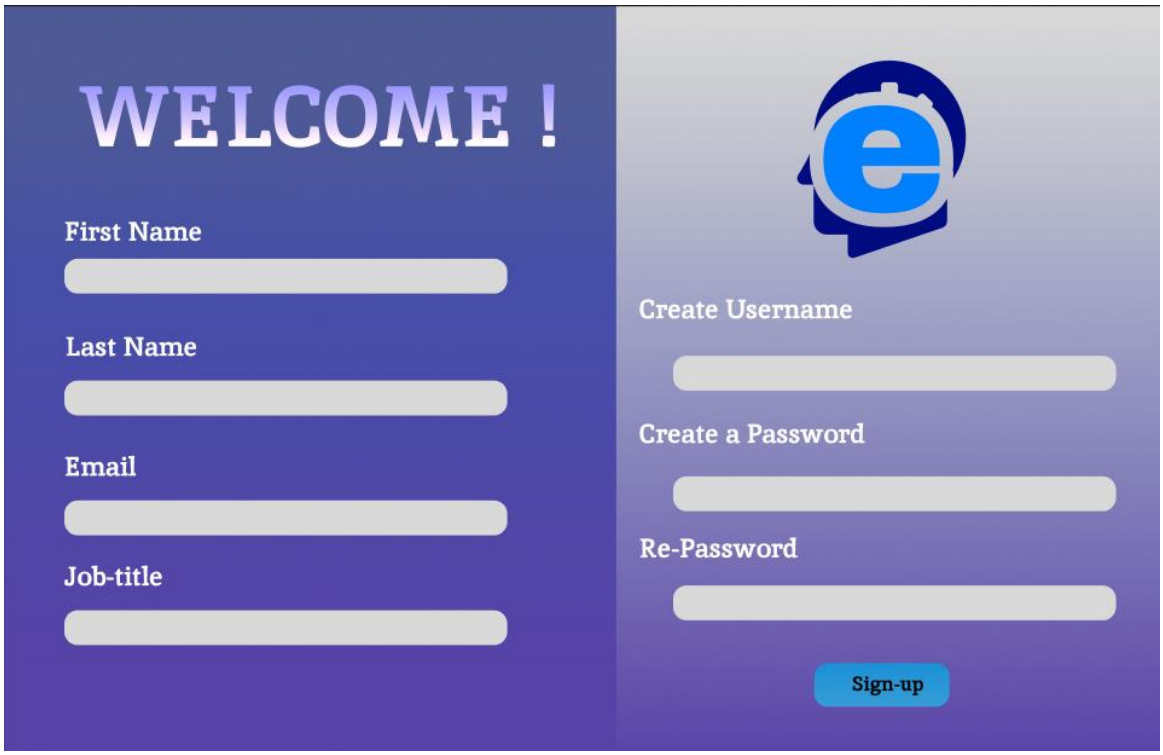


Figure 24 : Sign up page

Home page

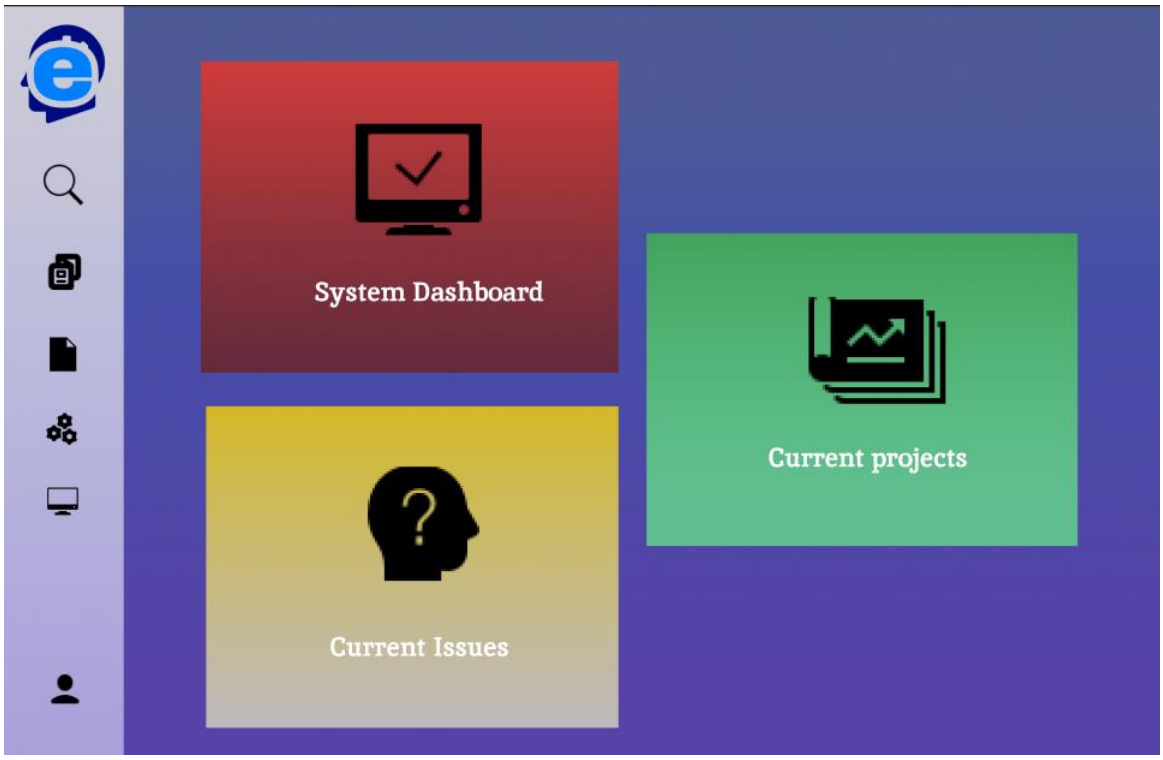


Figure 25 : Home Page

Dashboard Page

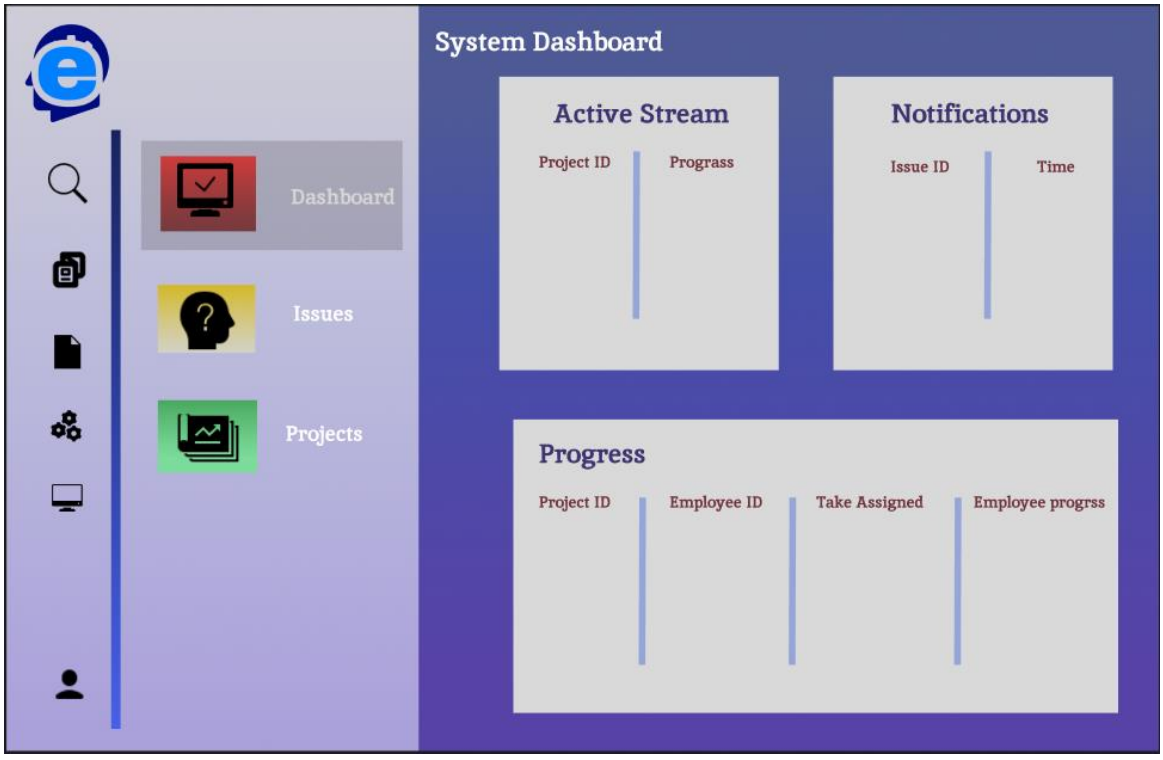


Figure 26 : Dashboard Page

Issue Page

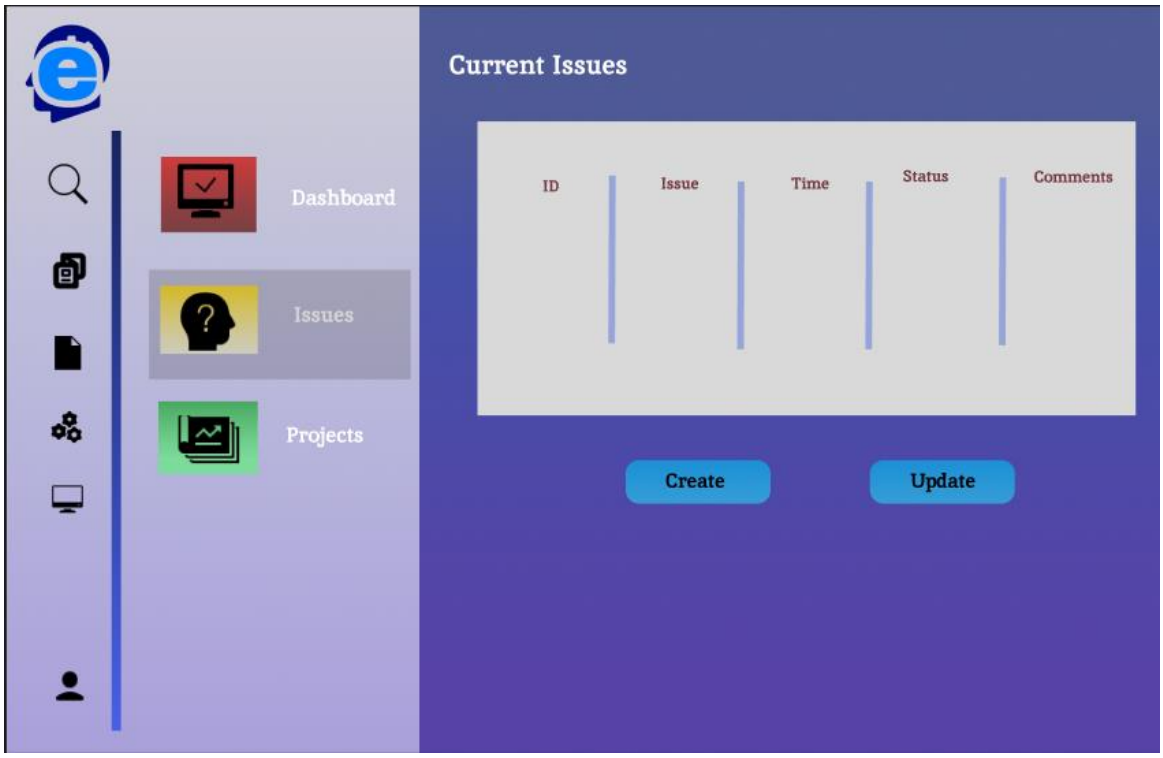


Figure 27 : Issue Page

Project Page

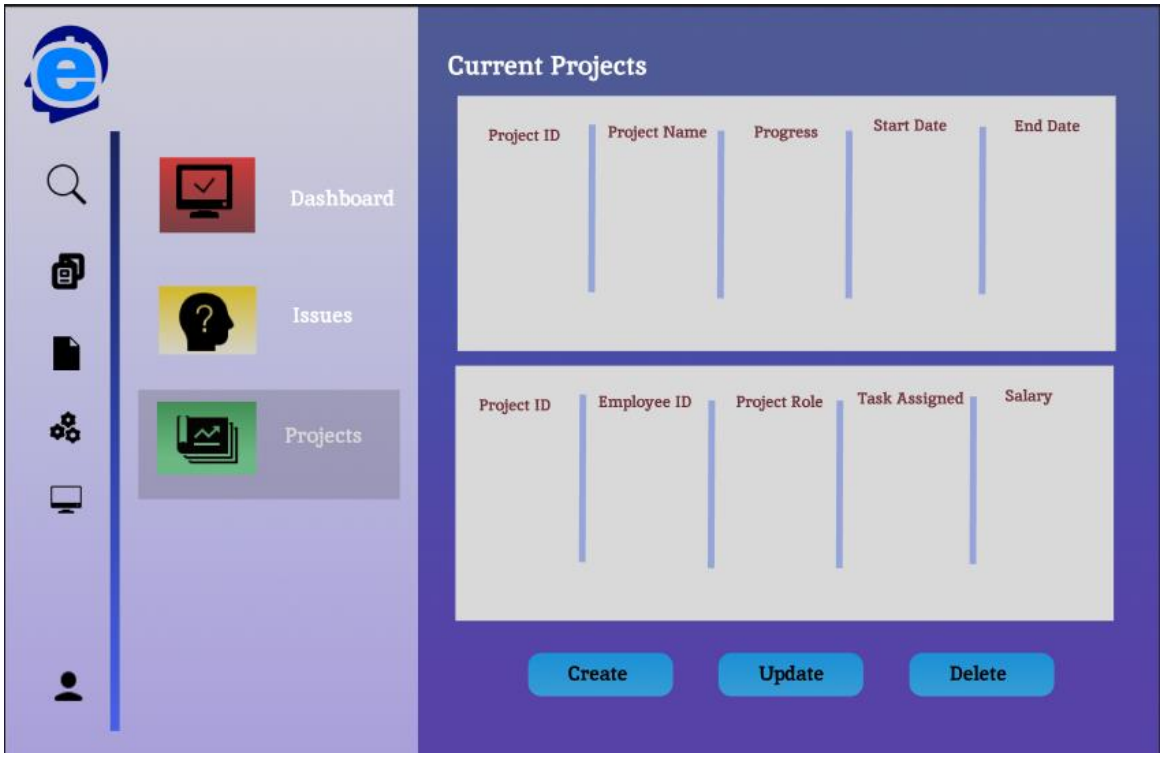


Figure 28 : Project Page

Grading Criteria	Achieved	Feedback
LO1 Evaluate the strengths and weaknesses of the traditional and agile systems analysis methodologies.		
P1 Discuss the strengths and weaknesses of the traditional and agile systems analysis methodologies.		
M1 Compare and contrast the strengths and weaknesses of the traditional and agile systems analysis methodologies.		
LO2 Produce a feasibility study for a system for a business-related problem.		
P2 Produce a feasibility study for a system for a business related problem.		

M2 Evaluate the relevance of the feasibility criteria on the systems investigation for the business related problem.		
LO1 & LO2 **D1** Critically evaluate the strengths and weaknesses of the traditional and agile methodologies and feasibility study.		
LO3 Analyse their system using a suitable Methodology		
P3 Review a system using a suitable methodology for a business-related problem.		
M3 Analyse the effectiveness of the methodology used in providing a solution for a given business context.		
LO4 Design the system to meet user and system Requirements		

P4 Design a fully functional system to meet user and system requirements for the business related problem.		
M4 Assess the effectiveness of the system design with reference to the methodology used and how the design meets user and system requirements.		
LO3 & LO4 **D2** Justify the choice of the analysis methodology used in the context of the business problem.		