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1.0 Project Planning

1.1 Introduction

As a team of experienced software development consultants, we have been engaged by CyberNex Solutions to guide the enhancement of their operational framework through the adoption of advanced technological solutions. CyberNex Solutions, a dynamic and innovative software company, is experiencing rapid growth, necessitating a robust information system capable of supporting its expanding operations and facilitating future scalability. Our primary task is to assist in the planning, analysis, design, and development of a prototype system that meets the company's diverse needs, from vendor management and client project initiation to team collaboration and quality assurance. By integrating advanced tools and methodologies, we aim to streamline processes, improve efficiency, and ensure the seamless execution of software development projects. With a dedicated budget of RM100,000 and a five-month timeline, our objective is to deliver a comprehensive and scalable system that enhances CyberNex's capabilities and prepares it for sustained growth and success in the competitive software development industry.

1.2 Problem Statement

Manual Partnership Verification

CyberNex Solution collaborated with external vendors to allow development teams to implement more functions into client projects. However, partnerships with vendors need to be verified before their services can be incorporated into the software development process. If the number of external vendors increases, manually checking all agreements will be labor intensive and time consuming. Project timelines and delivery schedules may be impacted by delays in integrating new vendors into the software development process.

Lack of Scalability

The current system of CyberNex would not be able to keep up with the growth of the company. The workload on CyberNex Solutions' systems rises as they expand and take on more projects, clients, and partnerships with outside vendors. Higher data volumes, more users accessing the system at once, and higher processing demands for operations like code compilation, testing, and deployment could all be examples of this.

Data Security Concerns

The implementation of an information system means that sensitive information such as project data or client data will be stored inside a database, but without proper protection these data could easily leak or be stolen. According to Semlambo et al. (2022), every day more information system risks are posted online; these risks include supply chain attacks, phishing, social engineering, zero-day and polymorphic attacks, Internet of Things, and infrastructure attacks. ICT usage policies will give the organization the strong administrative foundation it needs to meet these challenges.

Lack of Resources Utilization

Whenever a project is approved CyberNex solution will assign a suitable team for that project. However, without an information system, the Human Resource department in CyberNex could only estimate the abilities and skill level of each employee. This could lead to misfit personnel to task or unfair allocation of work. While Human Resource Management (HRM) has been implemented in businesses from back in the days, there is some significant issue with its functionalities. In the research conducted by), allowing organizational culture values to guide the company's HR strategy which includes selection and placement policies, promotion and development processes, and reward systems, HR professionals can indirectly affect staff retention. This method of human resource allocation is risky due to the difference in value and perspective of individuals.

Limited Visibility and Reporting

The communication between client and development teams is an important factor of creating a product that satisfied client needs. An ongoing project without any discussion with the customer has a high risk of deterring from the purpose and objective of the software. The

existing provide the product to the client only after the project completion, clients have no way to know the actual state of the project and have to trust the words of the teams. Although clients have the option for regular meetings for updates while the project is being developed, limited visibility to the software could lead to misunderstanding between the two sides. Other than that, the development process is void of any documentation and reports simplified complicated codes and functionality to the clients.

1.3 Suggested System

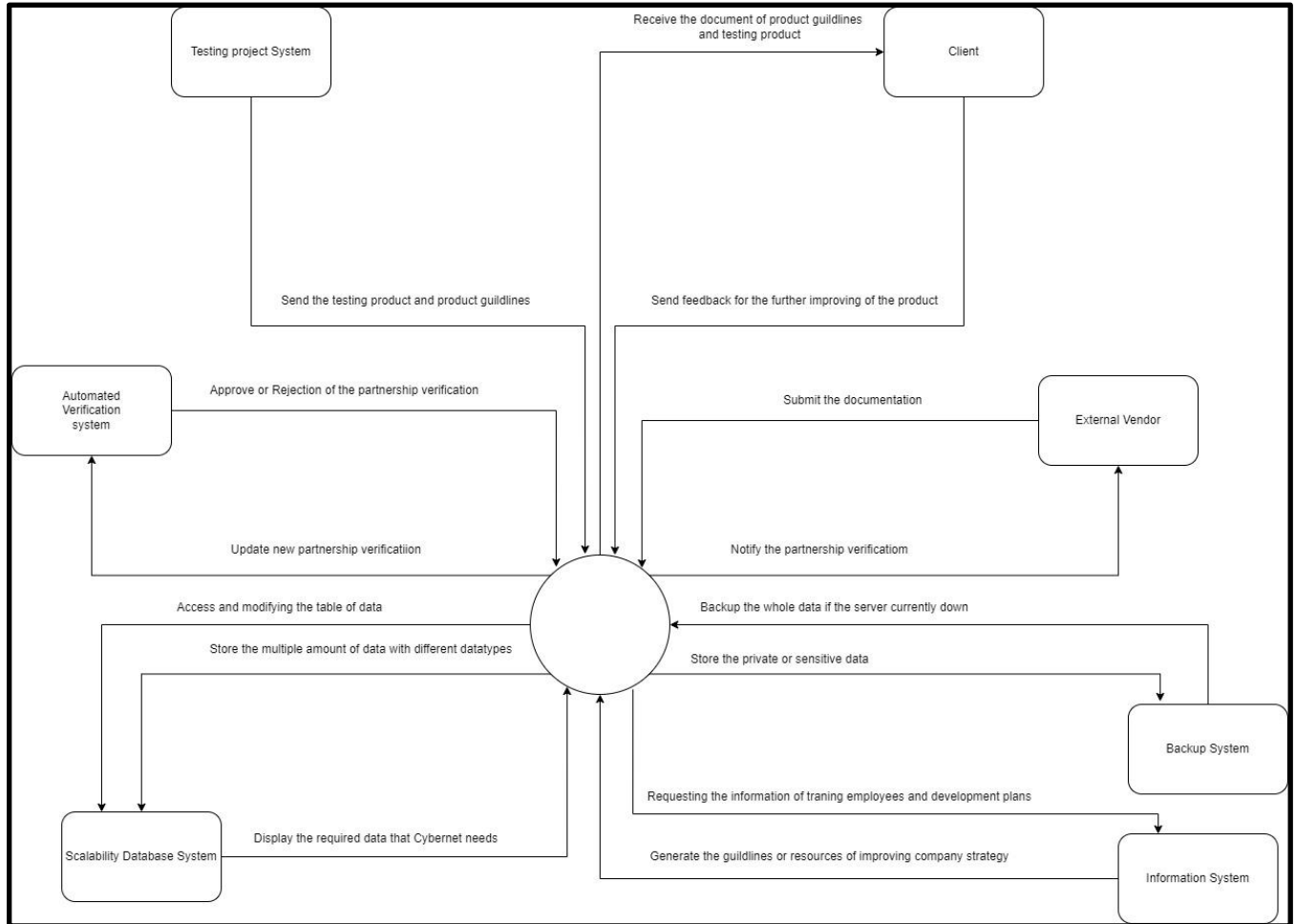


Figure 1.1: Diagram of Suggested System

Automated Verification System

An automated verification system is a system that can verify the partnership agreements of the external vendor. This system helps CyberNet Solution to improve the process of verifying vendor documentation and notify the partnership verification vendor which will lead to the best satisfaction for the vendor while the vendor does not need to wait much longer working days to get the notification of whether their documentation is approved or not (Emadamerho-Atori, 2023). During the verification session, an external vendor needs to submit their documentation to the system to get approval from the system. After the system has received the documentation from the vendor, the system will check the documentation and update the documentation with approval or rejection. At last, the system will notify the vendor about the status of the partnership

agreement verification which reduces the duration of CyberNet Solution's need to take part in the verification session.

Testing Project System

Implementing a testing project system can solve CyberNet Solution's Limited Visibility and Reporting problem. A testing project not only shows the product to the client it also allows the client to give some feedback on improving the product after testing the product from CyberNet Solution which can reduce the conflict between the client and the developed teams. In every stage of the product, the developed team will put the product into the testing project system. The system will send the product and its product guidelines to the client to more a basic understanding of the functioning of the product. After the client receives the testing product and its guidelines, they can give a test of the product with the guidelines given and send the feedback to the system for further improvement. This system will make sure that the client can test the product at any time after the system gives the notification to the client to make sure the client can get the latest information and updates on the product.

Scalability Database System

The Scalability Database System allowed expansion by adding more servers as demand grows. This ensures that CyberNex can accommodate spikes in workload and user activity without experiencing downtime or having bad experience. CyberNex can effectively scale its database infrastructure to meet the demands of company growth, project expansions, and increased partnerships. This ensures uninterrupted operations, improved performance, and enhanced user experience, positioning CyberNex for continued success in the evolving digital landscape.

Information System

Information System facilitates comprehensive data collection and analysis regarding employee skills, qualifications, and performance. This enables HR departments to make informed decisions regarding team assignments, ensuring that the right personnel are matched with suitable projects based on their experience. Additionally, the system can provide

recommendations for training and development to enhance employee capabilities and address skill gaps. CyberNex can streamline its HR processes, improve the accuracy of team assignments, and reduce the risk of inappropriate personnel or unfair work assignments. Additionally, by aligning HR strategies with organizational values and culture, information systems can help improve employee satisfaction, it could improve teamwork within the company.

Backup System

By implementing a Backup System , it will make CyberNex Solutions' data more secure, safeguard sensitive information and lower the chances of cyber attacks causing harm. Backup System serves as a safety net, ensuring that critical data stored within the information system is regularly copied and stored securely in a separate location. This extra backup is really important against data loss due to cyberattacks, hardware failures, or human error. In the event of a data breach or system failure, we can use the backup copies of our data to get everything back to normal. This helps us keep working without too much delay and reduces how much we might lose. Taking action ahead of time not only keeps CyberNex's reputation and financial assets, but also makes clients and stakeholders feel sure that their data is kept private and secure.

1.4 Scopes, and Objectives

Scopes: CyberNex project encompasses the design, development, and implementation of a comprehensive information system tailored to support and optimize the company's software development services. This includes creating functionalities for client project initiation and management, vendor registration and verification, team assignment and scheduling, as well as feedback collection and payment processing. The system will integrate project management tools, development environments, testing frameworks, and deployment solutions to ensure a seamless workflow.

Objectives: Enhance operational efficiency, improve collaboration among internal teams and external partners, ensure timely and quality delivery of software projects, and provide a scalable platform that can accommodate future growth. By achieving these objectives, CyberNex aims to bolster its reputation for delivering cutting-edge software solutions and maintain its competitive edge in the industry.

1.5 Project Scheduling

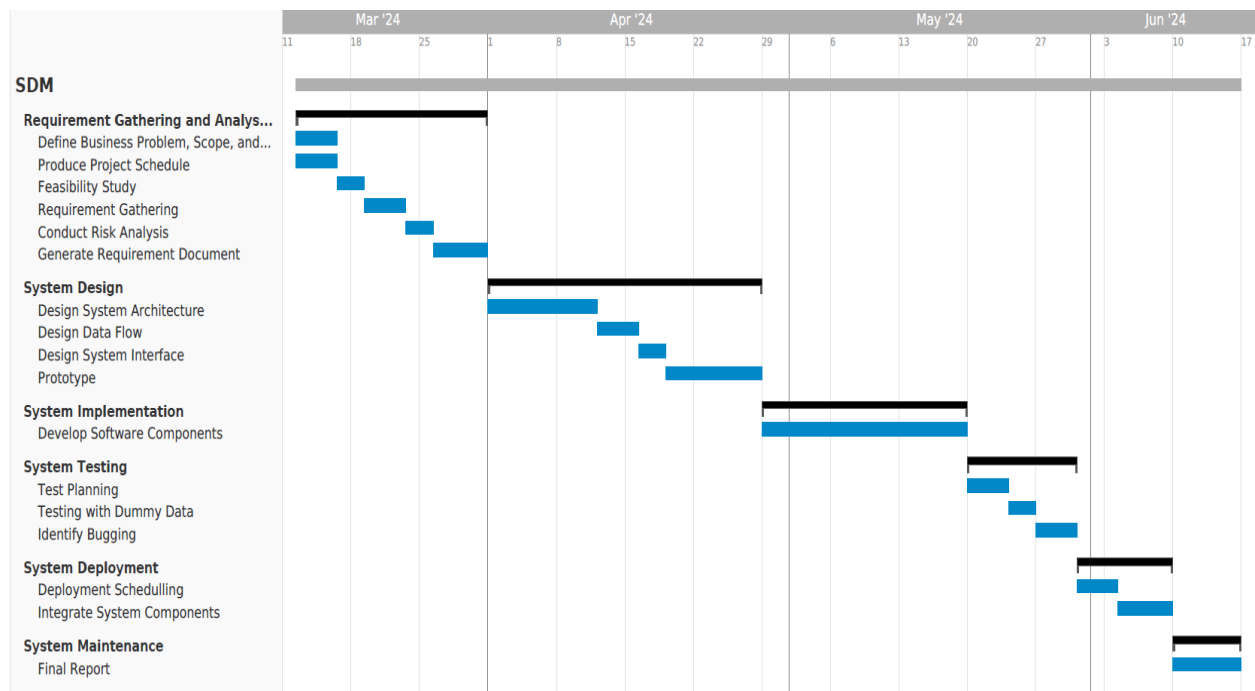


Figure 1.2: Gantt chart for project scheduling

2.0 Agile Principles and IS Methodologies

2.1 Agile Principles

1. Customer satisfaction by early and continuous delivery of valuable software (Terence Lim Dao Liang)

One of the strategies to implement this principle is deliver the system as soon as it can fundamentally work, with the basics user interface and functionality. Early access to a software prototype can give an idea of what the software will end up like, from there customers can give feedback or ask to continue the development if they are satisfied with the direction of development. A weekly or monthly schedule of prototype deliverance can be arranged so that clients would not be overwhelmed with new functionality. This agile principle divides complex tasks into smaller, easier-to-manage pieces, its interactive design will enhance both project development and service delivery (Buehring, 2023).

For example, break down the project into small manageable increments or sprints (typically 2-4 weeks each). At the end of each sprint, deliver a functional piece of the software that adds value to the client. Clients can see the progress early and frequently, reducing uncertainty and allowing them to provide timely feedback. This helps in making necessary adjustments before too much time and resources are invested.

Working with the client to identify the most valuable features and prioritize them in the development process, a backlog can be used to manage and prioritize these features. Delivering the most critical features first ensures that the client receives the most value early on, which can improve satisfaction and trust in the development process.

2. Welcome changing requirements, even in late development (Terence Lim Dao Liang)

When developing the system for CyberNex, there is no point if the product is irrelevant by the time it is completed. It is unpredictable what the customer looks for by the time the product is finalized, which makes the static development plan highly risky. The method to implement this principle is to utilize agile methodology like Adaptive Project Framework (APF) or Adaptive Software Development (ASD). The agile methodology is a framework for project management that divides work into multiple, flexible stages, or sprints. Iterative methodology is what the Agile framework uses. Teams review and analyze their performance at the end of each sprint to identify areas for improvement and modify their plan for the following sprint (Laoyan, 2024). Unlike traditional methodology, planning is done after each mini cycle of the development completed, resources and tasks can also change during the cycle.

For example, building a development process that is inherently flexible. Use short development cycles (sprints) and iterative planning to accommodate changes in requirements at any stage. By being adaptable, CyberNex Solutions can respond promptly to new client needs or market changes, ensuring the software remains relevant and competitive.

Next, delivering the product incrementally, allowing for continuous integration of feedback and new requirements. Each increment can be reviewed and adjusted based on the latest client input. This approach reduces the risk of developing features that may become obsolete or misaligned with client needs, as adjustments can be made continuously.

3. Delivering Frequently (Tay Jun Long)

Define Clear and Manageable Sprints

The need of providing functioning increments of the product at regular, brief intervals is emphasized by the notion of often delivering workable software. This method keeps the project in line with stakeholders' needs and expectations by enabling them to see measurable progress and offer timely input.

Our first step in putting this idea into practice will be to create distinct, doable sprints. These project sprints, which usually run two to four weeks, will divide the work into smaller, more doable tasks. The project is set up in these brief, iterative cycles so that we may concentrate on providing features and functions in each sprint. This method not only improves project management but also enables ongoing evaluation and modification in response to stakeholder input.

Implement Continuous Integration/Continuous Deployment (CI/CD)

Pipelines for continuous integration and continuous deployment, or CI/CD, are going to be put into practice. By automating the testing and deployment procedures, these pipelines make sure that every software increment is possibly shippable. We may automate the software construction, testing, and deployment process by setting up continuous integration/continuous delivery (CI/CD) solutions such as Jenkins, GitLab CI/CD, or GitHub Actions. The team may contribute code more frequently thanks to this automation, which promotes continuous integration and reduces integration problems. (Remya Mohanan, 2022)

4. Daily Co-operation (Tay Jun Long)

The principle of daily cooperation between business people and developers emphasizes the importance of continuous and close collaboration throughout the project. This approach ensures that any issues are identified and addressed quickly, and that the development process remains aligned with business goals and stakeholder expectations. (Agile Principle 6, 2015)

Daily Stand-up Meetings

First, we will have daily stand-up meetings to put this idea into practice. Teams will be able to talk about their plans for the day, their accomplishments from the previous day, and any obstacles they are encountering during these quick sessions, which usually run no longer than fifteen minutes. These stand-ups are scheduled at a set time every day, generally in the morning, so that we can guarantee regular communication and prompt resolution of any problems. (Patch, T,2024)

Involve Stakeholders in Daily Updates

Then, it is also important to include stakeholders in daily updates. Stakeholders can stay updated about the project's progress and give timely input if they are encouraged to participate in daily updates or get daily recaps of the meetings. Establishing a mechanism that enables stakeholders to swiftly resolve any difficulties will improve cooperation and guarantee that the project stays in line with their requirements. (Dupont, F,2024)

Co-located Teams or Virtual Co-location

Lastly, building a virtual co-location environment or co-locating teams will improve teamwork. It will be easier for team members to communicate and work together if they are physically present in the same place. Keeping lines of communication open and utilizing video conferencing solutions can enable remote workers to replicate a co-located setting. We can make sure that everyone feels connected and a member of a cohesive team by setting up the workspace to encourage collaboration and by utilizing the appropriate technologies. (Alcor,2024)

5. Motivated individuals (Jeff Hong)

In line with Agile principles, motivated individuals contribute to fostering a positive environment for team members and a project manager during project planning. A project manager plays a crucial role by offering suggestions and guiding team members, while also entrusting them to make decisions, which can enhance project outcomes and provide valuable insights when challenges arise. Effective communication among project members ensures a clear understanding of the project's status and facilitates adaptation to new changes in the environment or project plan. If an uncomfortable environment is brought into the team, the project team members will not be effective in doing their tasks because they will feel pressure and stress when their tasks do not achieve the best results. This problem will lead to the development, implementation, and deployment of the proposed system, it will cause the actual project scheduling will be affected and the achievement of the system.

Management of each member's task plays an important role in this agile principle to assuming that project member has their own goals and self-discipline to work on their task. Scheduling a timetable or making a workload matrix will easily distribute each of the jobs to the team members to ensure that they have their objectives to complete the task and make sure that the work requirements will be sustainable and satisfied to their working status for developing the system. Failure management will cause team members to hurry the development, implementation, and deployment of the system and make the system not meet the user requirements and not achieve the expected performance.

In conclusion, motivated individuals prioritize collaborative teamwork (Kontorovych, 2023), fostering successful progress and enabling swift resolution of conflicts between project managers and team members. In my opinion, motivated individuals can create freedom and non-pressure in the environment for project team members to develop and think the solutions at solving the problems with more discussions and ideas provided by each team member for better understanding and cooperation as a teamwork strategy.

6. Face-to-face conversation is the best form of communication (co-location) - Angelina Leanore

Face-to-face communication is an important key to the effective and efficient way to share information with the Cybernext Solution development team. this idea highlights the value of face-to-face engagement and promoting successful communication (Moghe, 2022). there are important advantages, strategies, and drawbacks in implementing this face-to-face communication in the agile concept. rapid feedback, nonverbal clues, quicker decision-making, improved teamwork, and decreased misunderstanding are some of the advantages and factors that need to be considered. on the other hand, there are drawbacks to face-to-face communication such as financial implications, geographics limitations, and reliance on physical space. finally, there are some crucial steps in putting face-to-face communication as the strategies for the Cybernext Solution for example, by putting daily stand-ups, co-located, teams, collaboration tools, pair programming, and regular reviews (Moghe, 2022).

With several benefits, face-to-face communication is an essential Agile methodology. It facilitates quick input, allowing queries and problems to be resolved instantly and cutting down on the amount of time needed to solve problems and make decisions. Nonverbal clues that decrease the possibility of misunderstandings include body language, tone of voice, and facial expressions. In a fast-paced Agile setting, where talks take place in real-time, face-to-face communication speeds up decision-making. Furthermore, being physically close to one another strengthens bonds of companionship and collaboration, boosting morale and productivity on the whole. Lastly, direct communication ensures that everyone understands each other and reduces the possibility of misinterpretation that might arise with written communication (PremierAgile, n.d.).

There are several ways to include in-person communication into Cybernext. Daily stand-ups are quick meetings held every day to review ideas, obstacles, and progress. This helps the team stay in sync and resolve problems quickly. Teams that are physically present in the same location as one another are more likely to communicate on the spur of the moment and form stronger ties. Open workspaces promote impromptu conversation and provide easy communication among team members, but if not adequately managed, they can also result in noise and distractions. Collaboration tools such as video conferencing may replicate in-person interactions for remote teams, facilitating real-time communication. Pair programming, in which two developers

collaborate, improves communication, knowledge sharing and the quality of the code, but if done repeatedly it can become tiresome. Lastly, regular reviews and retrospectives guarantee ongoing development and alignment with project objectives, but they can be time-consuming if improperly directed and coordinated (PremierAgile, n.d.).

CyberNex Solutions may improve their Agile processes by utilizing these tactics to facilitate efficient face-to-face communication. This will lead to greater collaboration, quicker decision-making, and improved project outcomes overall. They should, however, carefully consider the possible drawbacks and strike the right balance for their situation.

7. Working software is the principal measure of progress - Eraliev Suimonkul

CyberNex Solutions is integrating an innovative software development management system into company operations to streamline processes and get ready for future expansion. Within a five-month timeframe and a RM100,000 budget, the work entails developing a strong system to support the company's diversified personnel, vendor communication, and client project management. The emphasis will be on iterative development with regular releases, according to the Agile concept that "Working software is the principal measure of progress," and making sure that each increment produces useful and functional features.

In order to prioritize high-value features and create an MVP (Minimum Viable Product) that covers essential elements like customer registration, project initiation, and team assignments, the project will be divided into brief iterations, such as two-week sprints. Software quality will be maintained through the use of automated testing and continuous integration, along with frequent customer needs alignment demonstrations and feedback meetings.

Included in the iterative plan is:

Sprint 1: Set up user registration, the CI/CD pipeline, and the development environment.

Sprint 2: Automatic creation of the project plan and comprehensive project specification input.

Sprint 3: Assignment to teams and planning of meetings.

Sprint 4: Payment processing, service specifications, and vendor registration.

Sprint 5: Business reporting and client feedback system.

Frequent delivery of functional software results in early value delivery to clients, risk mitigation, and sustained stakeholder involvement. This strategy makes sure the system adapts to user needs and provides additional value, which is in line with CyberNex Solutions' objectives of enhancing reputation and trust.

8. Sustainable development - Ooi Yin Yao

At CyberNex Solutions, putting the idea of sustainable development into practice requires a thorough strategy that incorporates Agile approaches. The Scrum framework adoption will be crucial first. The collaborative and iterative nature of Scrum ensures continual and flexible development. CyberNex will be able to maintain a flexible yet structured development process with the establishment of positions such as Scrum Master, Product Owner, and Developers. Regular sprint planning and review sessions will be conducted to set realistic goals and evaluate progress. By following the principles of sustainable development, this iterative strategy guarantees that the speed of development is steady and adaptable to changes. Additionally, through automated testing and smooth code integration, continuous integration and deployment approaches will be used to improve product quality, decrease bottlenecks, and streamline operations (Paula, n.d.).

The second step involves utilizing user stories and maintaining a well-prioritized product backlog. User stories will help CyberNex align development efforts with customer needs and organizational objectives. In order to maintain the backlog current and useful and to guarantee that every sprint produces the most value possible, the Product Owner will supervise frequent refinement sessions. Facilitating communication among developers, designers, product managers, and stakeholders will promote cross-functional collaboration. By ensuring that different viewpoints and levels of experience are integrated into the development process, this collaboration fosters creativity and reduces risks. CyberNex is able to efficiently strike a balance between the pace and quality of their software solutions by fostering such a comprehensive and inclusive development environment (Paula, n.d.).

CyberNex Solutions will gain a great deal from putting these sustainable growth strategies into effect. A sustainable work environment leads to team members feeling valued and supported, which directly improves team morale and engagement. This increased involvement results in better teamwork and a more resolute commitment to the project's success. Another significant benefit is improved product quality, since agile methods concentrate on regularly providing high-quality features, minimizing errors, and guaranteeing that products live up to

client expectations. CyberNex can better respond to market changes and seize new opportunities if it stays away from scope creep and overcommitment (Paula, n.d.).

9. Continuous attention to technical excellence and good design - Angelina Leanore

Cybernex Solutions maintains a high degree of technical quality and effective design via the creation of Software creation Management, with a continuous focus on technical excellence and excellent design. There will be an explanation of the benefits of this approach and how to use it. (Guimaraes, 2023)

First things first, there are implementation tactics to think about. First, use automated deployment to expedite the release process and guarantee consistency. This will help find flaws early and save the expense and time of fixing them. Secondly, use continuous integration or continuous deployment to make sure that code changes are merged and tested frequently. Secondly, create a system with a clear, modular architecture that will aid in scalability, maintainability, and flexibility. This will make it simpler to add new features and make modifications the system without interfering with its current operation. Thirdly, create automated tests like acceptance, integration, and unit test to make sure the system's dependability, effectiveness, and confidence are confirmed. Moreover, encourage frequent refactoring as well to enhance performance, lower technical debt, and improved design. (GeeksforGeeks, 2024)

Certain implementation tactics, such streamlining operations, fostering development, improving service quality, and sticking to a budget and schedule. Will be in accordance with CyberNext Solution. By minimizing manual errors and delays and employing a scalable and maintainable system design, this will enable the company's future growth and handle projects with a higher degree of complexity. Furthermore, Using excellent code quality may increase customer satisfaction and trust, resulting in more seamless and effective project management by minimizing manual mistakes and delays and promotion long-term partnerships. Additionally, adhering to the five-month timeframe and RM100,000 budget is made possible by effective development practices.

CyberNext Solution is able to build a scalable and maintainable software development management system by applying excellent design agile principles together with constant attention to technical quality in the development process. Provides for the operating requirements as well as the development and success of the business in the future by guaranteeing high-quality service delivery and client

10. Simplicity - Ooi Yin Yao

At CyberNex Solutions, the idea of simplicity will be implemented by prioritizing comprehension of the intended results over strict specifications. Development teams need direct access to real customers to fully grasp the "why" behind each requirement. This encourages innovation and adaptability by allowing teams to compromise on different approaches to achieving the goals. Teams can come up with the simplest solutions by focusing on the goal and developing the least amount of code required to achieve it (Davies, 2018).

Next, the practice of writing minimal code will be embraced. This method makes debugging and maintenance easier while also lessening the possibility of mistakes and faults. The simplest solutions will be given priority during development, and input will be gathered frequently to enhance and expand the product gradually and iteratively. By ensuring that the codebase stays small and effective, this iterative approach improves scalability and maintainability (Davies, 2018).

There are various advantages to designing systems with simplicity. It fosters a virtuous cycle where fewer bugs lead to easier and faster fixes, thereby improving overall product quality. The more straightforward the solution, the easier it will be for new team members to get up to speed on the codebase and collaborate with it. A lean codebase also improves efficiency and lowers technological debt, which puts CyberNex Solutions in a better position to react quickly to changes in the market and client demands. CyberNex can produce high-quality software effectively and sustainably by concentrating on optimizing the amount of work not done (Davies, 2018).

11. Best architectures, requirements, and designs - Eraliev Suimonkul

To remain competitive and meet the advancing needs of clients, CyberNex Arrangements must receive the best structures, necessities, and plans that back enterprise-wide flexibility, vigorous security hones, effective asset utilization, and upgraded client communication. Actualizing an adaptable and secluded engineering, such as microservices, will empower quick reaction to client criticism and changing necessities, permitting for the improvement and sending of free components that can be upgraded or supplanted without influencing the whole framework. Leveraging cloud-based arrangements will guarantee a versatile foundation, empowering energetic asset allotment to handle expanded workloads. (Berman, 2023)

The necessities for Agile Security, moreover known as DevSecOps, are basic in today's fast-paced advanced environment where solid security measures are vital. Conventional models have regularly seen security as an unmistakable and inactive arrangement of improvement, driving to bottlenecks and delays. Oppositely, Dexterous Security consistently joins security into each stage of the program advancement lifecycle. This decreases the chance of security breaches and minimizes the taking a toll of inescapable security issue fixes by finding and tending to vulnerabilities early in advancement. Center standards of Dexterous Security incorporate collaboration over confinement, early and ceaseless testing, a risk-based approach, adaptability and versatility, and a culture of progressing learning and advancement. These standards guarantee that security is respected as an inalienable angle of the whole advancement handle or maybe as a separate concern.

The plan of dexterous asset administration emphasizes ceaselessly observing asset utilization levels all through the extended lifecycle. It includes frequently following asset utilization, advance, and execution to recognize deviations or issues. By observing asset utilization, organizations can distinguish potential bottlenecks, underutilized assets, or overburdened group individuals. This permits venture supervisors to make opportune alterations and reallocate assets as required, guaranteeing responsiveness to changes in venture prerequisites, needs, or imperatives. This approach optimizes asset utilization and encourages convenient conveyance of extended points of reference, adjusting assets with the project's advancing needs.

Agile techniques to emphasize collaboration and visit communication between the advancement group and the client. This open line of communication empowers clients to give criticism, share bits of knowledge, and effectively take part in the decision-making handle. By setting up standard input circles and straightforward communication channels, clients can remain educated around the project's advance, challenges, and triumphs, diminishing the hazard of misalignment and upgrading generally fulfillment. Instruments such as Kanban sheets, day by day stand-ups, and iterative arranging encourage this continuous collaboration and guarantee that client needs are persistently met. (Trapani, 2023)

By coordination the best models, prerequisites, and plans through versatile spy systems, strong security hones, proficient asset administration, and upgraded client communication, CyberNex Arrangements can viably oversee cross-team conditions, foresee conveyance timelines, and center on accomplishing the right trade goals. This comprehensive approach will upgrade client fulfillment, keep up showcase competitiveness, and drive economical development. Through nonstop learning and adjustment, CyberNex Arrangements can guarantee that its advancement forms stay spy, secure, and responsive to the ever-changing requests of the advanced scene.

12. Regularly team reflection (Jeff Hong)

Although the project work status and environment will often change it will affect the whole project team's working progress and their attitude. Becoming a project leader in the project planning status needs to be good leadership to the member. A project leader always participates in the process of project development and asks about the values of the team reflection. Team members are required to share their working experience and their insufficient so that each of the team members can depend on what work they are good at. This will create an empathetic environment for the whole team with less conflict and the project status will be improved and succeed (Gottanka, 2023). Project team members continuously improving their organizations will lead to the growth of market values and the collaboration between other vendors will be increased. Due to the improvement, CyberNext Solution will increase its finances and the system will keep operating and provide the best functions to the user although the environment keeps changing.

Feedback is quite important for the project team because they can collect client and user feedback with some fact-finding techniques like interviews, questionnaires and surveys to improve the quality of the project. From the findings of the feedback, the project team will know the exact requirements and expectations needed from the users. Then, the project team will have better ideas or decisions to make a wide objective to develop the system. The reflection process allows the team to quickly know the issues and provide a better quality of product to the end users (Team, 2023). It will cost the effort and time of the project team but the environment of change is kinda of worth compared to others does not make any additional changes and updates the system will get disqualified in the end.

2.2 IS methodology

Web Information System Development Methodology System - Angelina Leanore

The term Web Information System Development Methodology (WISDM) often refers to an organized process that includes a number of web application planning, analysis, design, implementation, and maintenance steps for creating a web-based information system. WISDM, which combines both Process Oriented and People Oriented approaches, may be used to efficiently create an information system for CyberNex. These approaches can be applied in many ways depending on the needs of CyberNex Solutions.

First off, there are a variety of approaches to software development, including the agile-based methodology and process-oriented approach. Because it is flexible enough to accommodate evolving needs and involves clients all the way through, CyberNex Solutions may benefit from this. Gathering requirements and planning involves meeting with stakeholders to learn about their expectations and requirements, ranking users to determine which should be developed in the next sprint, and presenting finished features to clients at the end of each sprint to get their input. The development team should then have daily meetings to make sure everyone is on the same page. Additionally, an automated test should be created to make sure that new additions don't interfere with already-existing functionality. In conclusion, offer continuous assistance and upkeep while resolving any emerging problems (Holzer, 2024).

The next approach is people-oriented, which stresses user experience, communication, and teamwork in the context of interactions with clients, stakeholders, and team members. Stakeholder involvement comes first. To obtain all the requirements and comprehend the demands and pain points of the clients and stakeholders, do workshops and interviews (Gibbons, 2023). In addition, interact with vendors to learn about their capabilities. User-centric design is the second. Make an effort to design an interface that is easy to use and fits the requirements of all user types, including developers, project managers, and clients. This involves making it simple for clients to set up meetings, start projects, and offer feedback. Thirdly, corporation within the team. To guarantee that different viewpoints and areas of expertise are taken into account, form cross-functional teams with software engineers, project managers, QA specialists, and designers. Finally, set up a support system and help to users with any problems they run across (Holzer, 2024).

While a people-oriented approach guarantees that the requirements and experiences of all stakeholders, including customer, developers, and suppliers, are prioritized throughout the development process, incorporating the WISDM methodology permits flexibility and ongoing improvement.

Extreme Programming - Jeff Hong

The methodology that requires CyberNex Solution to implement many heavy codings on some systems, such as information systems, backup systems, structured database systems, and others, CyberNet Solution needs to ensure that the system development works with a smaller team because the communication between each project team member will get better at discussing their roles and codes. During system development, they can improve their system coding by receiving meaningful feedback from the users. A team leader needs to maintain the work progress and replace each of the members to fix the bug or the error codes around the system (Raeburn, 2024). Extreme Programming will need to have the courage to face some serious problems when the codes of the system do not work functionally or the whole bad codes need to be thrown away and start to write new codes again. If the project members do not have courage, they will become very stressed to face the serious problems of many bad codings of the function of the system and they will shirk their responsibilities in doing their coding part.

In my opinion, extreme programming is a very important methodology that CyberNet Solution needs to include. It is because they need to ensure that the system is functioning well and being tested before release for users to test the user interface and programs. Extreme programming can ensure the systems operate well and functionality and meet the user requirements when the system is ready to deploy to the users or customers after the system has been tested.

V model – Terence Lim Dao Liang

The V-Model methodology, also known as the Verification and Validation model, is a software development process that emphasizes a step-by-step execution of processes in a linear and sequential manner (Oppermann, 2023) . Each phase must be completed before moving on to the next. The V-Model is structured such that the development activities (on the left side of the V) are mirrored by corresponding testing activities (on the right side of the V).

For CyberNex Solutions, adopting the V-Model methodology can provide a clear pathway from initial requirements gathering through to final deployment, ensuring thorough verification and validation at each stage. Suppose CyberNex Solutions is developing a new client portal. Initially, requirements are gathered and documented. A high-level design outlines the portal's architecture and user interfaces. Detailed designs are created for subsystems like user authentication, project management, and feedback collection. Each subsystem is developed and individually tested. Once unit testing is complete, subsystems are integrated and tested together. The entire portal undergoes system testing to ensure it meets all requirements.

Finally, selected users perform User Acceptance Testing, providing feedback for final adjustments before the portal is deployed. This ensures a high-quality, user-friendly client portal.

SCRUM - Eraliev Suimonkul

Scrum is an agile framework that encourages software projects to be developed incrementally and iteratively. Key positions like the Product Owner, who represents the interests of the client, and the Scrum Master, who facilitates the Scrum process, are involved in CyberNex Solutions' Scrum implementation. The development team, which is made up of cross-functional personnel, works together to produce work in increments during time-boxed iterations known as sprints, which usually run two to four weeks.

Sprint planning is the first step of each sprint, during which the team chooses tasks from the Product Owner-managed, prioritized Backlog. Regular stand-up meetings guarantee coherence, openness, and prompt settlement of problems. Each sprint concludes with a sprint review, which presents finished work to stakeholders, and a retrospective, which considers how to improve for subsequent sprints.

CyberNex Solutions benefits from Scrum in a number of ways. It enhances team communication and client satisfaction by encouraging cooperation, flexibility, and openness. Scrum helps CyberNex Solutions to respond to changing customer needs, provide high-quality products, and keep a competitive edge in the market by offering incremental value and continuously improving processes.

Rapid Application Development (RAD) – Tay Jun Long

Rapid Application Development (RAD) is an effective methodology for the CyberNex Solutions project due to its emphasis on speed and flexibility through iterative development and continuous user feedback. This approach is particularly suitable given the project's tight timeline and budget constraints. (Kiss flow, T,2024)

Comprehensive stakeholder meetings happen during the requirements planning phase to collect specific requirements for financial operations, project management, vendor management, and client interactions. The project's goals, parameters, and restrictions—including its RM100,000 budget and five-month schedule—are all well-defined. Prioritizing requirements allows us to concentrate on delivering high-value items first. (Kiss flow, T,2024)

In the highly iterative User Design phase, prototypes are created and refined in accordance with requirements collected. Prototypes are updated to reflect user expectations and business requirements through workshops and feedback sessions with users (developers, project managers, and customers included). Early in the design phase, this continual feedback loop aids in finding and filling any gaps. (Kiss flow, T,2024)

The system is created in short, achievable steps during the construction phase. Every iteration produces a fully tested feature that is operational. Building, testing, and deployment are all automated via a Continuous Integration/Continuous Deployment (CI/CD) pipeline, which guarantees frequent and seamless integration of new code. Frequent user feedback enables the system to be continuously improved and adjusted. (Kiss flow, T,2024)

The system is put into production during the Cutover phase. Final testing verifies that the system satisfies all specifications and is error-free. Sessions for user training acquaint users with the features of the system, guaranteeing efficient use. After that, the system is put into a live environment, and post-deployment support is given to handle any problems and get more input. (Kiss flow, T,2024)

Implementing RAD for the CyberNex project offers several benefits. The speed and efficiency of RAD help meet the tight five-month timeline, while continuous user involvement ensures that the system aligns with user needs and expectations. The flexibility of RAD allows

for adjustments based on feedback, making the development process more responsive to changing requirements. Additionally, frequent testing and validation reduce the risk of major issues during deployment, ensuring a smoother and more successful project completion.

By adopting RAD, CyberNex Solutions can develop a robust, user-centric information system that supports their operational needs and accommodates future growth, all within the specified budget and timeline. The iterative and collaborative nature of RAD ensures that the final product is of high quality and delivers significant value to all stakeholders involved. (Kiss flow, T,2024)

Waterfall - Ooi Yin Yao

The Waterfall methodology is a linear and sequential approach to project management, where each phase must be completed before moving on to the following. Gathering requirements, designing, implementing, testing, deploying, and maintaining represent a few of the stages. This method brings out thorough planning, clear documentation, and a structured progression through each phase(Adobe Communications Team, 2022).

For CyberNex Solutions, start by gathering comprehensive requirements from stakeholders to ensure clarity and completeness. The crowd would then draft comprehensive design documents that described the user interfaces and system architecture. The software would be developed in accordance with the design during the implementation phase, and any problems would be found and fixed through extensive testing. Lastly, the product would be put into use and receive continuous maintenance and support.

The Waterfall methodology helps CyberNex by providing clear project timelines and well-defined milestones, making sure each phase is carefully documented and reviewed. By addressing any problems early in the project lifecycle, this method lowers uncertainty and risks, making it appropriate for projects with stable requirements and well-understood goals (Adobe Communications Team, 2022).

3 System analysis

To guarantee a solid and user-centered system design, data gathered during the Requirement Elicitation stage must be analyzed. Analysis techniques support determining the root causes of problems, comprehending stakeholder requirements, and establishing a project's clear course. SWOT and Fishbone analysis will be used in this system analysis. While SWOT analysis is useful for identifying threats, opportunities, and weaknesses, Fishbone analysis is more useful for determining the underlying causes of issues.

SWOT Analysis

A strategic planning tool called a SWOT analysis is used to find and comprehend the internal and external aspects that can have an impact on the project. A SWOT analysis gives a wide perspective on prospective obstacles and possibilities by providing a strategic assessment of both internal and external elements. This method involves assessing the strengths, weaknesses, opportunities, and threats related to the project(Peterdy, 2023). Opportunities and threats are external elements like market trends and rivalry, whereas strengths and weaknesses are internal factors like resources and competencies. CyberNex can ensure a well-rounded approach to system development by utilizing SWOT Analysis to harness its strengths, address weaknesses, capitalize on opportunities, and minimize dangers.

Fishbone Analysis

Fishbone Analysis is used to identify the root causes of problems. Fishbone Analysis delves more deeply into certain problems, locating the underlying reasons and facilitating focused problem-solving. This method involves categorizing potential causes of problems into groups such as people, processes, equipment, and materials(“How to Use the Fishbone Tool for Root Cause Analysis,” n.d.). To identify particular problems that are contributing to the issue, each category is further examined. Fishbone Analysis will assist CyberNex in determining the root causes of system failures or inefficiencies, allowing the team to resolve the issues and enhance system performance as a whole.

4 Design

Use case modelling – Terence Lim Dao Liang

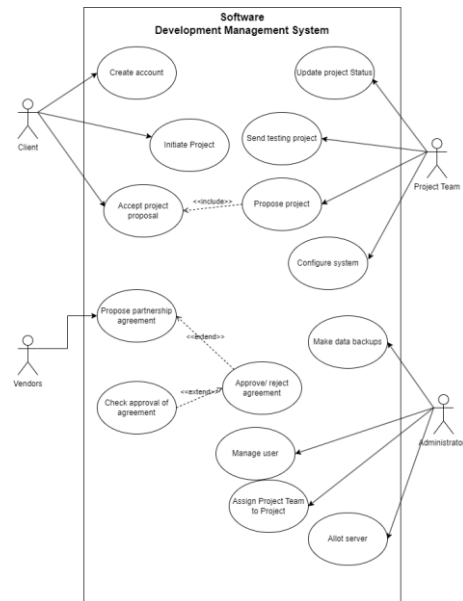


Figure 4.1: Use case model

For the CyberNex project, use case modeling would be a valuable technique relevant to the V-Model methodology. Use case modeling involves identifying the different roles (actors) that interact with the system and defining the specific actions (use cases) each actor performs to achieve their goals within the system. This technique aligns well with the V-Model's emphasis on detailed requirement gathering and validation processes. In the context of CyberNex Solutions, actors such as clients, vendors, project team members, and administrators would be identified.

Each actor's use cases would include tasks like initiating projects, providing feedback, managing users, configuring the system, and generating reports. These use cases provide a clear understanding of the system's functionality from the user's perspective, helping in defining requirements, designing system interactions, and guiding testing activities at each stage of the V-Model. Additionally, use case diagrams can visually represent these interactions, aiding in communication and ensuring that all stakeholders have a shared understanding of the system's behavior and capabilities.

Sequence Diagram - Angelina Leanore

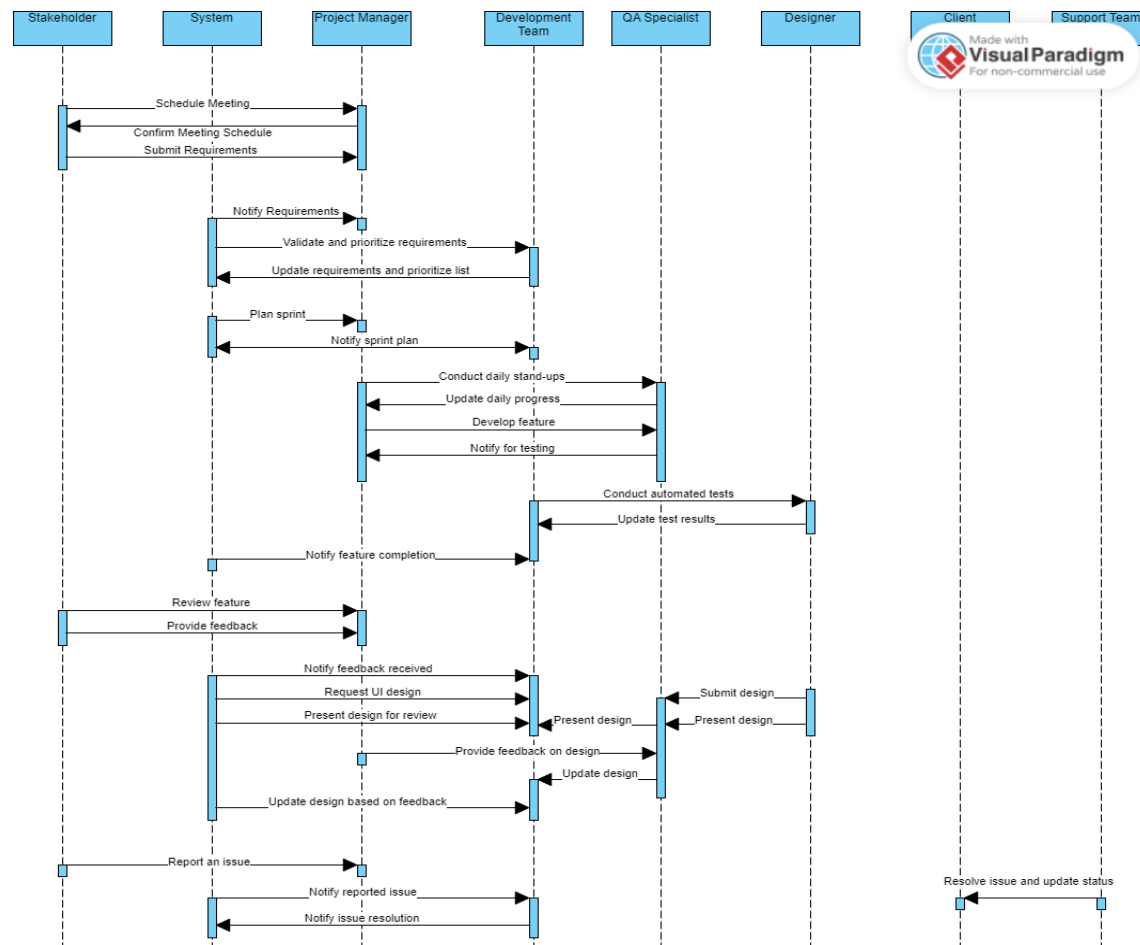


Figure 4.2: Sequence Diagram

The above graphic illustrates the process, which begins with requirement collection and planning. Meetings are scheduled, needs are submitted, and the requirements are validated and prioritized inside the system. The project manager schedules the sprint, tells the development team, and updates the system while it is underway. Next are the development sprint and daily stand-ups. After that, QA specialists will test the system as developers work on the functionality. Clients must evaluate finished features and offer input, which will be updated and sent back to the development team. In addition, the designer will produce user interface designs that are modified in response to customer input. Finally, the support staff will take care of all user concerns.

Rapid Application Development (RAD) – Tay Jun Long

Rapid Application Development (RAD)

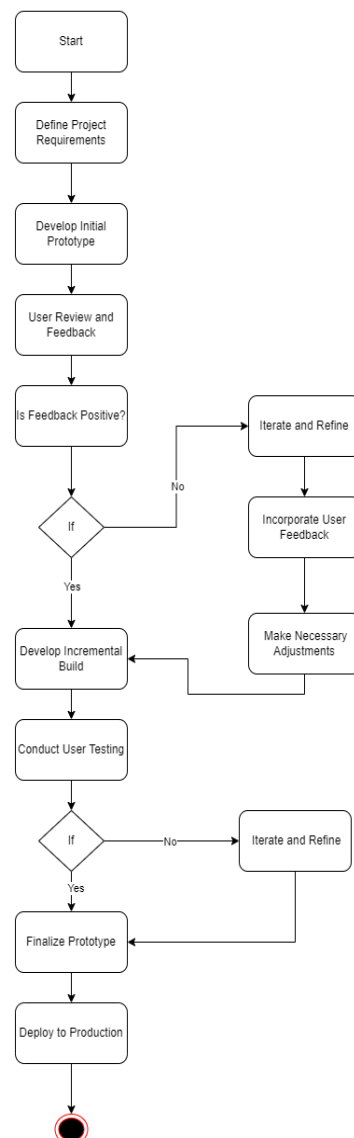


Figure 4.3: Activity diagram

This activity diagram shows how to use the RAD technique to design a vendor registration module. Stakeholder meetings are used to define project requirements, which are then documented at the start of the process. After that, a preliminary prototype is created, tested on real people, and improved repeatedly. To make sure the prototype satisfies user demands, incremental builds and user testing are a part of every iteration. The module is deployed to the production environment once it has been finalized.

CyberNex Solutions can effectively create a vendor registration module that satisfies user expectations and business objectives by employing an iterative and user-centric approach. This will ensure the module is successfully implemented within the RAD framework.

Class Diagram Modelling - Jeff Hong

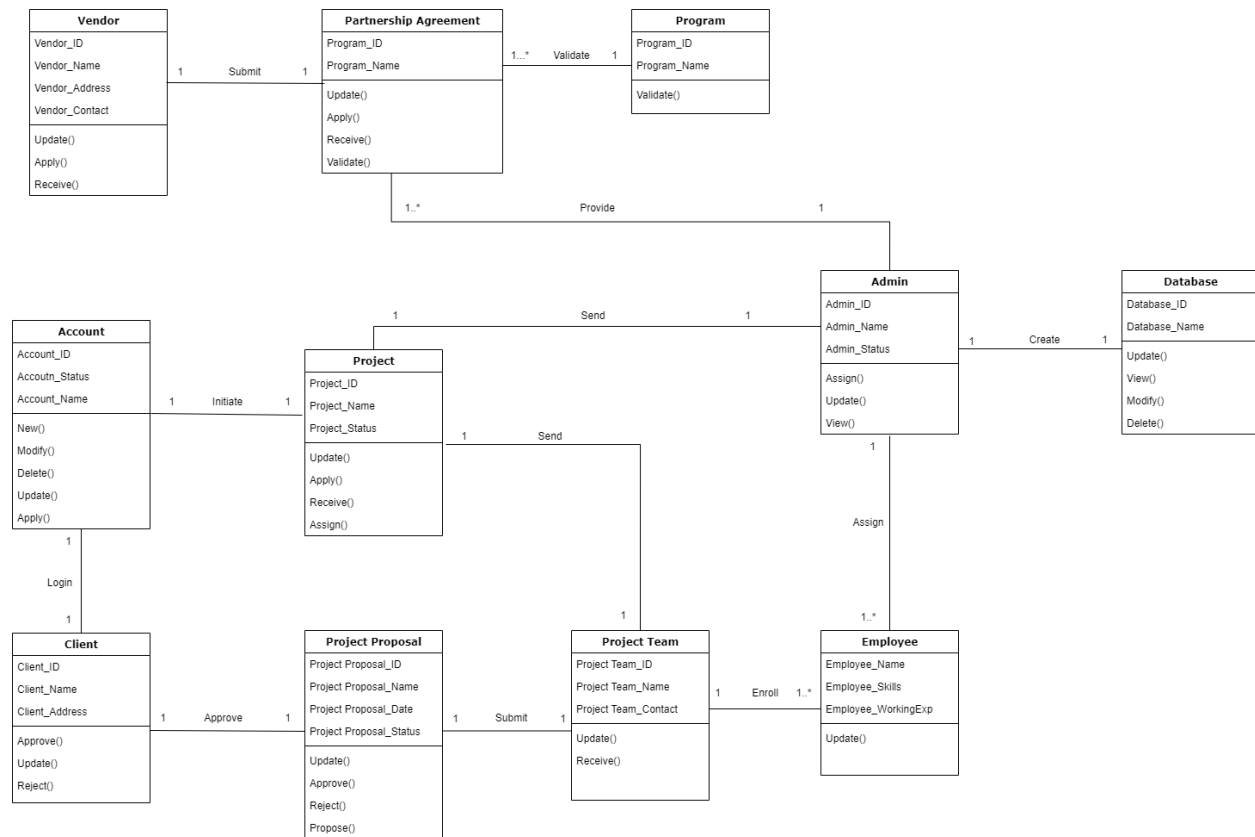


Figure 4.4: Class Diagram

Based on the class diagram, extreme programming methodology is allowed for building many functions, additional features, and web pages with implemented codings. During the automated verification system, the workload of codings should added heavily and ensure that the system does work functionality. The database and the information allow a few codings that contain many functions for the admin to use when the admin is assigning the employee to the project team based on their working experience, skills, qualifications and others. Creating a database system also needs to code heavily on the dataset and ensure the dataset security is protected and the firewall is stronger.

Each relationship between classes is provided in the diagram as to how the system functions or how the people interact with each other. They have some attributes like update, modify, delete, and others which provide the classes that have these functions. For example, a client can approve or reject the project proposal and update the latest status of the project proposal or a vendor needs to apply and update the partnership agreement to the program to

validate the process. Conclusion, a class diagram will define clearly in the extreme programming methodology because this diagram shows about the each role function or interact in the system so it provides a strong vision and objective for guiding the project team to develop or code the system. This diagram also can serves as a blueprint for CyberNex Solutions for understanding each functions and interactions at the overall development process.

State Machine Diagram - Ooi Yin Yao

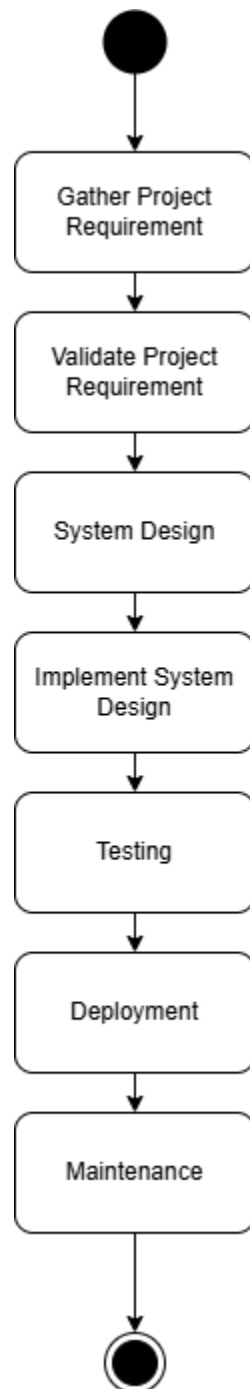


Figure 4.5: State machine diagram

The above picture shows a state machine diagram for the CyberNex project, following the Waterfall methodology, is designed to illustrate the different states the system goes through during its lifecycle. Since the the Waterfall methodology is a simple, well-defined approach to project management, this diagram is easily shown. The state machine diagram starts with the

“Gather Project Requirement” state during which time the first steps of requirement collection and preparation are taken. Since it determines the project's final result, this state needs to be handled seriously. Once the project requirement is gathered, the project now move to “Validate Project Requirement” state. This state will validate and finalized the system requirement. The project now moves to the “Design” state, during which time comprehensive system architecture and design documents are produced. The project moves onto the “Implementation” state after design approval, where actual programming and coding are done. The system moves to the “Testing” state following implementation, during which extensive testing is carried out to find and address flaws. After testing with success, the system is deployed to the production environment during the “Deployment” state. The system goes into the “Maintenance” state after deployment in order to receive continuing support, updates, and bug fixes. The system then went to an end state signifies the completion of the project where the system is fully operational and maintained.

CyberNex can guarantee a structured and sequential approach to system development by employing a state machine diagram and the Waterfall methodology. This contributes to maintenance of reliability, openness, and complete documentation at every turn, which eventually results in a strong and trustworthy system.

Entity-Relationship Diagram - Eraliev Suimonkul

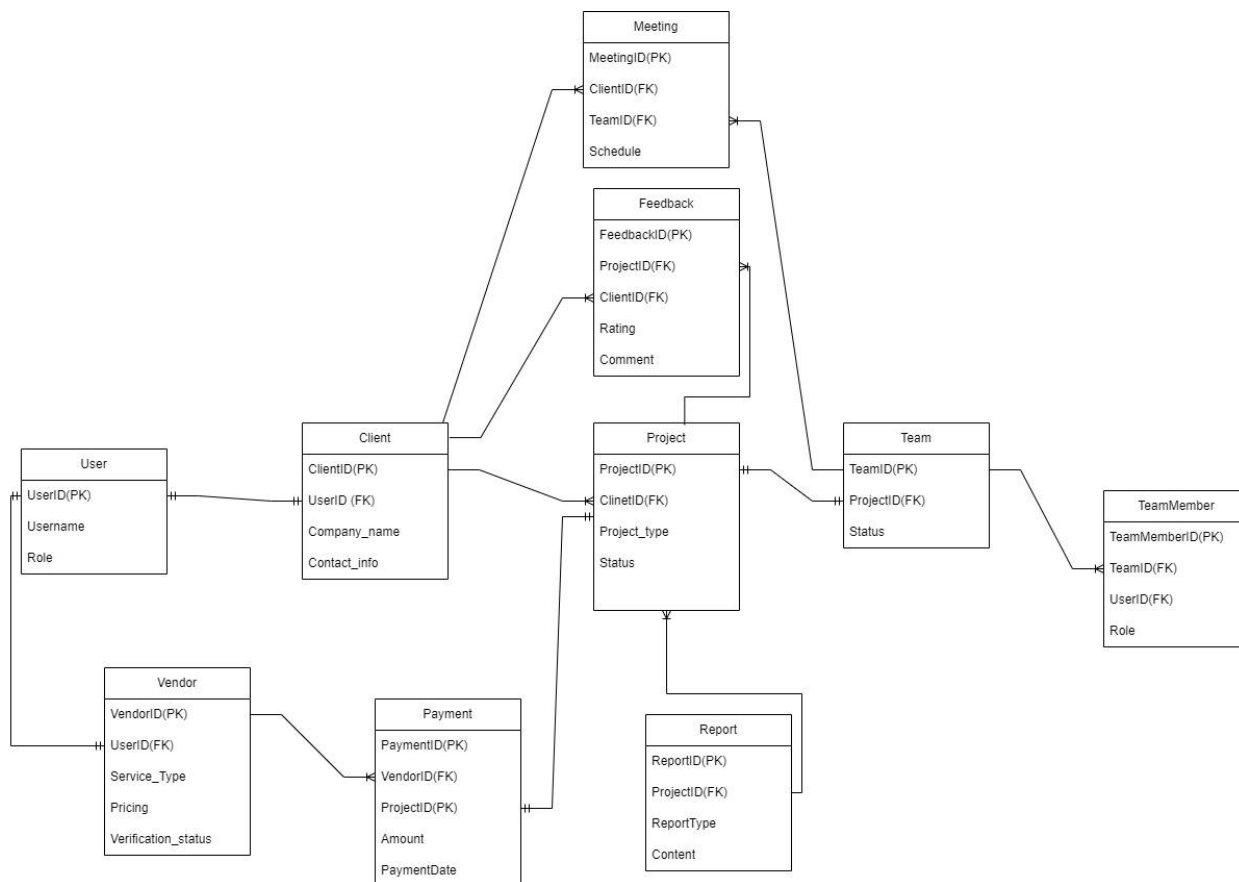


Figure 4.6: Entity Relationship Diagram

CyberNex Solutions' Entity-Relationship Diagram (ERD) offers a thorough structural blueprint of the software development management system. This diagram is essential for recognizing and illustrating the important components of the system, their characteristics, and the complex connections that exist between them. User, Client, Vendor, Project, Team, TeamMember, Meeting, Input, Payment, and Report are the main entities.

The ERD provides key information about each entity and describes how various users communicate with the system and with one another. It highlights information unique to each client, vendor services, project specifics, team responsibilities, and meeting schedule. It also records customer comments and oversees vendor payments, giving a comprehensive rundown of all the software's functionalities.

With its accurate and obvious depiction of data flow and relationships, this diagram is essential for database designers. In addition to assisting in the creation of a coherent and

effective database structure, it guarantees correct data representation. The ERD makes it possible to comprehend the connections and interactions between different system components, ensuring that all data operations are appropriately in line with business needs.

The ERD gives stakeholders a visual depiction of the system, which promotes better decision-making, communication, and alignment. It helps them plan and allocate resources more effectively by allowing them to see how the many components of the system work together. The ERD facilitates the development of a scalable and reliable information system, which is necessary for CyberNex Solutions' present operations and future expansion, by thoroughly describing entities and relationships. This strategy emphasizes how crucial a well-organized database is to providing a dependable and successful software development management system, which in turn enhances the business's success and flexibility in meeting evolving demands.

5 Implementation and deployment

5.1 Construction

List of software	Purpose
Jira	Help in organizing and prioritizing tasks, managing sprints, tracking the progress of software development, and ensuring that all project requirements for CyberNex Solutions Are met on time.
GitHub	Provide CyberNex with repository hosting, issue tracking, continuous integration/continuous deployment (CI/CD) pipelines, and project management tools.
Selenium	Selenium will be used at CyberNex for functional and regression testing of web applications
Kubernetes	Kubernetes will manage the deployment and scaling of Docker containers at CyberNex. It ensures high availability, load balancing, and automated management of application states, which is essential for maintaining the performance and reliability of CyberNex's services.
Confluence	Confluence will be used to create, organize, and share project documentation at CyberNex. It provides a central repository for all project-related information, ensuring that team members have access to the latest documents, meeting notes, and knowledge bases.

5.2 Proof of Concept

The ‘Throw-away prototype’ for this project is created using wix.com and under the assumption all system is managed using the website.

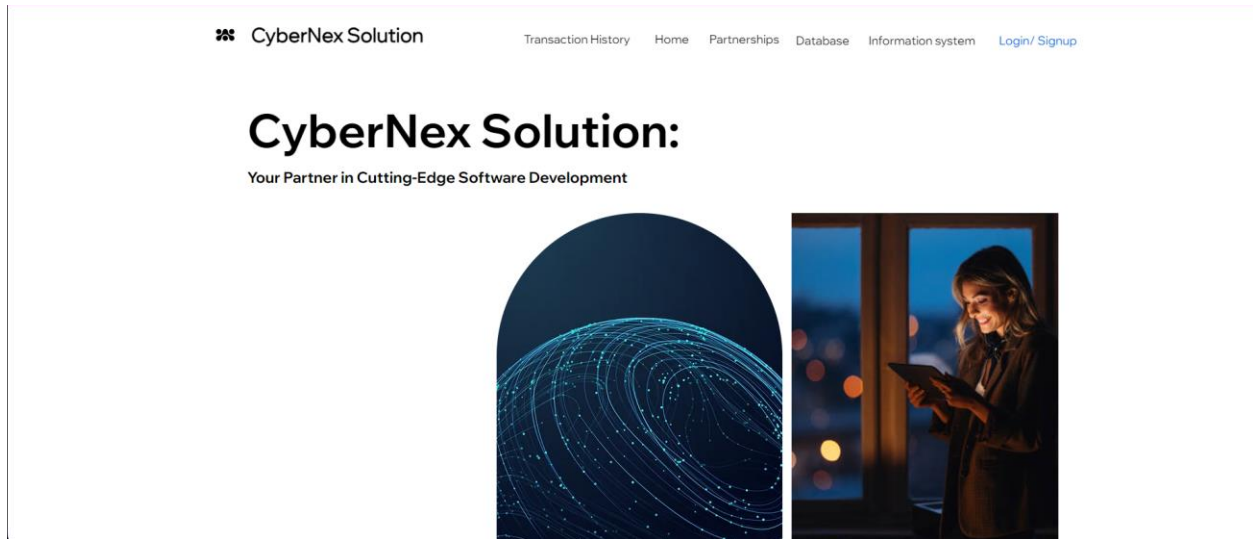
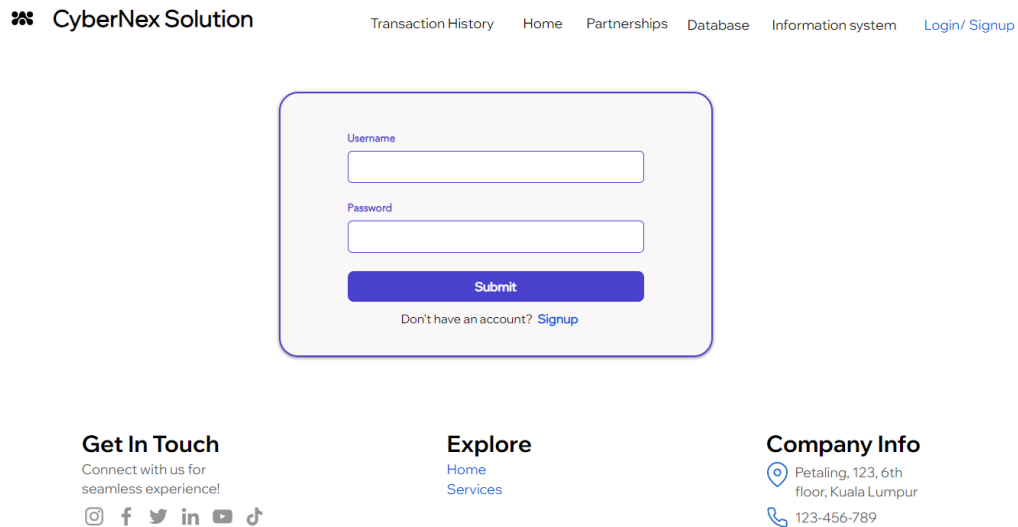


Figure 5.1: Main page for CyberNex Solution

Figure 5.1 shows the main page for CyberNex solution, where clients can choose which project they want to initiate.



CyberNex Solution

Transaction History Home Partnerships Database Information system [Login/ Signup](#)

Username

Password

Submit

Don't have an account? [Signup](#)

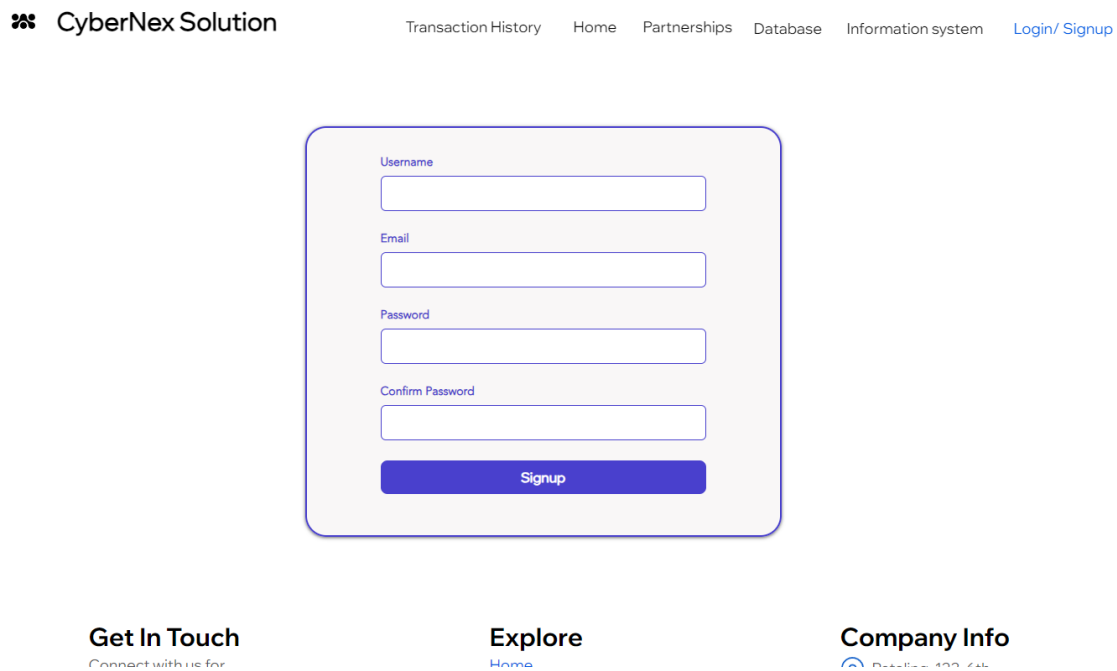
Get In Touch
 Connect with us for seamless experience!
[Instagram](#) [Facebook](#) [Twitter](#) [LinkedIn](#) [YouTube](#) [SoundCloud](#)

Explore
[Home](#)
[Services](#)

Company Info
[Location](#) Petaling, 123, 6th floor, Kuala Lumpur
[Phone](#) 123-456-789

Figure 5.2: Login page

Figure 5.2 shows the login page where clients can login into their account to see their ongoing projects.



CyberNex Solution

Transaction History Home Partnerships Database Information system [Login/ Signup](#)

Username

Email

Password

Confirm Password

Signup

Get In Touch
 Connect with us for seamless experience!
[Instagram](#) [Facebook](#) [Twitter](#) [LinkedIn](#) [YouTube](#) [SoundCloud](#)

Explore
[Home](#)
[Services](#)

Company Info
[Location](#) Petaling, 123, 6th floor, Kuala Lumpur
[Phone](#) 123-456-789

Figure 5.3: Signup page

Figure 5.3 shows the signup page for new clients. All client must have an account to start a project, this is to make sure CyberNex solution can keep track the projects status for each client.

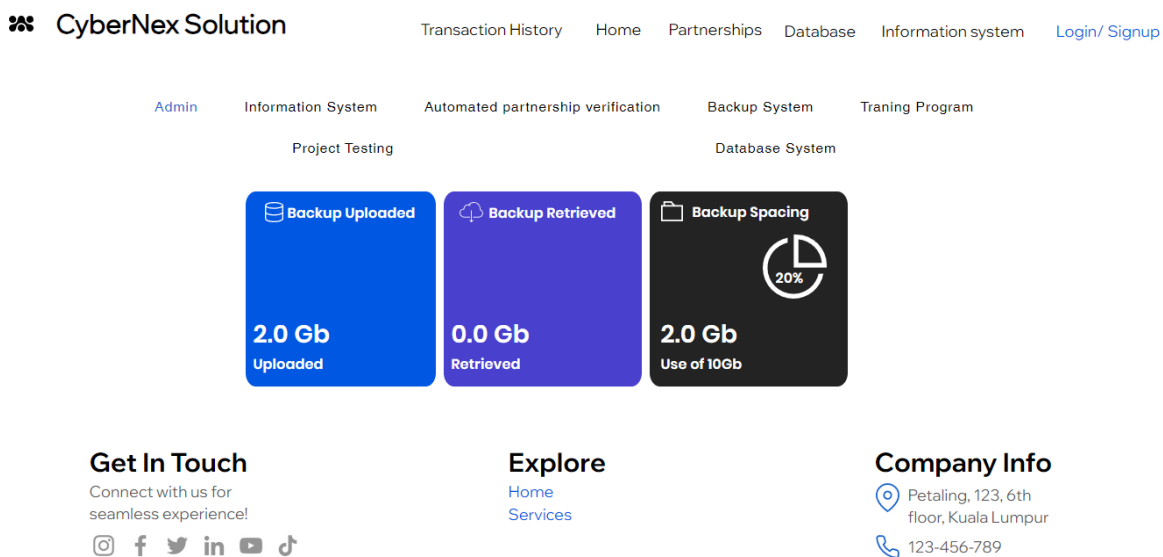


Figure 5.4: Admin page

Figure 5.4 shows when the admin login into the website. The admin page will be different from the client side and there is more action they can perform.

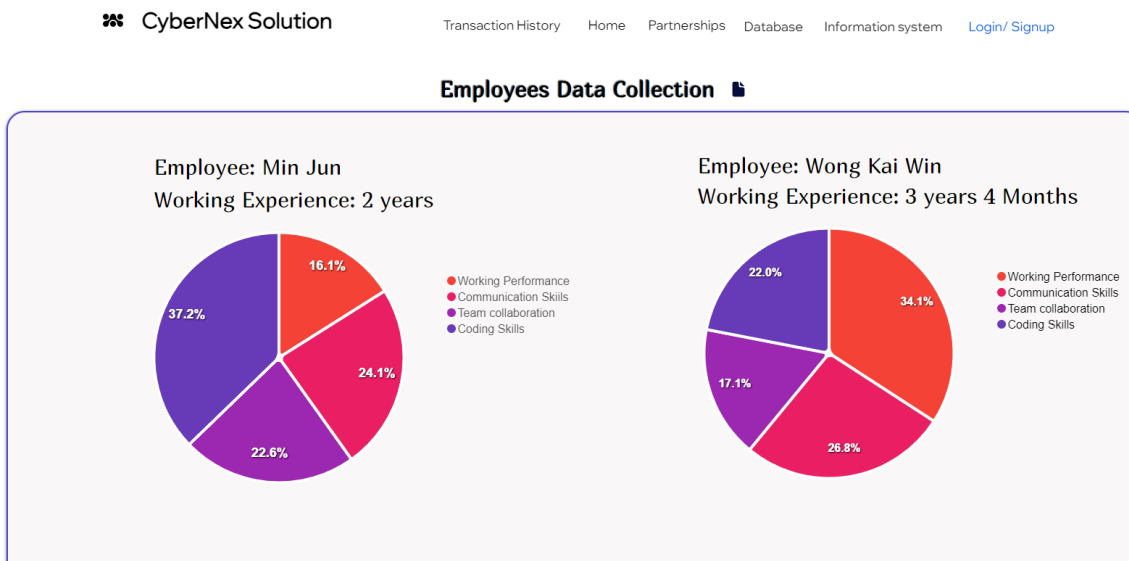


Figure 5.5: Information system page

Figure 5.5 shows the Information system page that admin can access, admin can make informed decisions regarding team assignments for different projects while looking at suitable employees here.

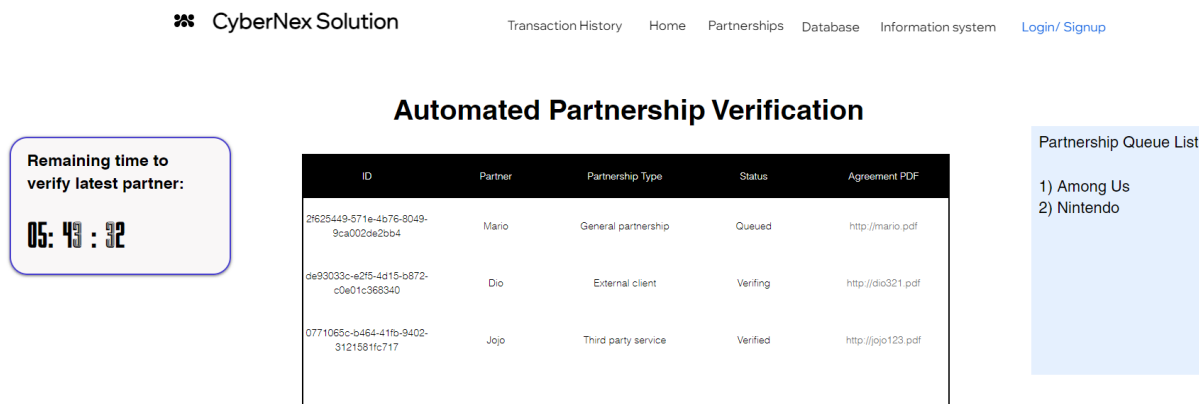










Figure 5.6: Partnership verification page

Figure 5.6 shows the page where ongoing partnership verification between external corporations and CyberNex Solution. Admin can check the remaining time left for the automated verifying bot to verify the latest partnership in this page.

Account Detail Database
 Employee and Customer Account Data
 Date Created : June 1 2024
 500MB

 June 15 2024 18:09
**Last Backup Succeeded**
337MB in two hours ago
[Show This Backup](#) [Manual Backup](#)
Next Auto Backup In: 1 day 1 hour and 40 minutes

Project One Database
 Project One System Design*
 Date Created : June 2 2024
 1GB



 June 8 2024 9:00
**Last Backup Succeeded**
1001MB in a week ago
[Show This Backup](#) [Manual Backup](#)
Next Auto Backup In: 10 minutes

Figure 5.7: Backup System page

Figure 5.7 shows the backup system page where the admin can access and modify the backup system implemented in the new CyberNex Solution system. Admin can change the setting of backup such as backup interval or type of data to be backup

i Training Program has be updated 2 hours ago

Enter Employee Name *

Choose the recommend training session *

What Type of training for the employee

Which date will been planned for training *

06/17/2024

SELECT THE EMPLOYEE PROFILE

+ UPLOAD

☐ I'm not a robot

SEND




Figure 5.8: Employee Training Page

Figure 5.8 shows the page where admin can set training for employees. After an admin have deem an employee lack of skill or in need of training he can assign different type of training suitable for the employee to make sure all employees are skilled enough to handle projects.

CyberNex Solution

Transaction History Home Partnerships Database Information system [Login/ Signup](#)

Solution

Test Your Project In - CyberNex

Functional Test Browser Test Continues Test Virtual Test AI Test

Functional Test

- ◆ Build end-to-end automated tests without writing code
- ◆ Use plain English statements to create tests
- ◆ Reuse test steps across different projects with step groups
- ◆ Reduce test maintenance with stable, self-healing tests

[Read More](#)

Validate Application Login

1. Launch Application via Login
2. Loop over data set Login data from Set Name Username #1 to Username #10
 - 2.1 Enter @([Username]) in the Username field
 - 2.2 Enter @([Password]) in the Password field
 - 2.3 Click on Continue Login
3. Element search is visible
 - 3.1 Click on search
 - 3.2 Enter fan in the search field
4. ELSE
- 4.1 Verify that the current page displays an element home

Test

Figure 5.9: Project testing page

Figure 5.9 shows the page where the client can test the project mid development. After Client initiated a project in the website, he can request a prototype of the project in any stage of the development to ensure the direction of the project matches his vision.

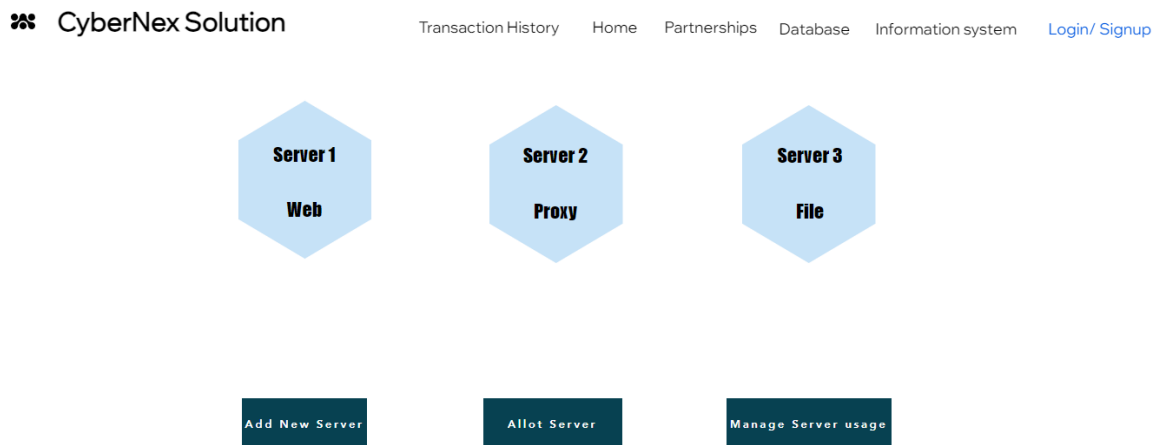


Figure 5.10: Database management page

Figure 5.10 shows the page where the admin can manage the database server in use. Admin can connect more servers to the system and using the system, admin can allot different purposes for the server. This is to ensure the system has high scalability.

5.3 Testing

Unit Testing

CyberNex Solution offers several approaches for implementing software testing, particularly for unit testing. To start, unit testing is used to test individual software components to make sure they function as intended. One approach to use unit testing is to use technologies like Github to integrate tests into continuous integration pipelines, which guarantee that tests are executed with every code contribution. Another example of how to use unit testing is to create project timelines depending on the method's return of the right timeline. The most crucial step is to develop unit tests before creating the real code. After that isolate the unit being tested to make sure the test is only verifying the logic of the unit and not external systems (Sarma et al., 2016). Unit testing has several benefits that should be taken into account, including the ability to identify problems early in the development cycle, which lowers the time and expense associated with bug fixes. Developers may rewrite code with confidence when there are thorough unit tests in place because they protect the functionality that already exists and serve as a kind of documentation outlining how different units should behave. Finally, unit tests may be coupled with continuous integration to guarantee code stability over time and offer quick feedback on changes to the code (Codefresh, 2024).

Writing automated tests for specific people is a necessary step in establishing unit testing in CyberNex Solutions. While unit-testing has many benefits, like early problem identification, high quality code, and comprehensive documentation, it also has drawbacks, including setup time, maintenance costs, and possible integration gaps.

System Testing

The purpose of system testing is to verify that all integrated software satisfies the necessary specifications. System testing may be done in a variety of ways. For example, CyberNex Solutions' software testing involves developing a test strategy and setting up an environment. A thorough test plan that creates an environment as near to the production environment as feasible and describes the goals, resources, deliverables, and scope of the system testing phase. Second, create test cases that address nonfunctional needs including usability, performance, and security as well as functional requirements listed in the project documentation.

lastly, use automated testing tools and manual testing techniques like UI/UX to carry out time-consuming, repetitive tests (GeeksforGeeks, 2024).

To persuade that CyberNex Solution would benefit from using system testing instead of software testing. System testing tests the system as a whole to make sure all of its parts function as intended and verifies completed workflows to make sure the system satisfies all user needs. System testing can address integration difficulties early in the development cycle to avoid future concerns. Moreover, it aids in finding and fixing flaws that could go undetected during unit testing; all of this guarantees that the finished product satisfies user needs and expectations. Finally, system testing verifies that the system meets industry standards and criteria and operates effectively under a range of circumstances (GeeksforGeeks, 2024).

System testing is essential to guaranteeing CyberNex Solutions's software development management system's performance and usefulness. System testing has many benefits, such as increased quality and reduced risk, but it also has drawbacks, including complexity, expense, and time commitment. CyberNex Solutions is able to establish a successful and reliable software development management system by using this testing technique.

5.4 System Development

The system changeover methods we will be comparing are the direct cutover method and the parallel running method. The direct cutover method involves switching from the old system to the new system at a specific point in time. This method is quick and cost-effective as it eliminates the need for running two systems simultaneously. However, it carries significant risks because if the new system encounters issues, there is no fallback option. For CyberNex Solutions, adopting the direct cutover method would mean transitioning all operations to the new system at once, requiring the team to be fully prepared to handle any immediate issues that arise during the changeover.

The parallel running method, on the other hand, involves operating both the old and new systems simultaneously for a period of time. This allows for verification and validation of the new system's performance against the old system, ensuring that it meets all requirements without disrupting business operations. Although this method is more expensive and resource-intensive due to the need for duplicate data entry and management, it significantly reduces risk by providing a fallback option if the new system fails. For CyberNex Solutions, this would involve running both systems side-by-side, comparing outputs, and gradually transitioning to the new system as confidence in its performance builds.

Considering the nature and requirements of the CyberNex project, the parallel running method is best suited. This method provides a safety net, allowing CyberNex to validate the new system's functionality and performance without compromising ongoing operations. The transition would begin with both systems running in parallel, where data and processes are entered into both systems. This allows the project team to compare outputs and performance metrics, identifying any discrepancies or issues that need addressing. Over time, as confidence in the new system increases and any teething problems are resolved, reliance on the old system can be gradually reduced, eventually leading to its complete phase-out.

Conclusion

In conclusion, the comprehensive overhaul of CyberNex Solutions' information systems, incorporating the Automated Verification System, Testing Project System, Scalability Database System, Information System, and Backup System, marks a significant milestone in the company's growth trajectory. This project is poised to transform CyberNex's operational framework by automating critical processes, enhancing the quality and efficiency of software development, and ensuring robust data management and security. The seamless integration of these systems will not only streamline internal workflows and improve client and vendor interactions but also provide a scalable foundation to support future expansion. By addressing current challenges and anticipating future needs, CyberNex Solutions is well-equipped to maintain its competitive edge and continue delivering cutting-edge software solutions in a rapidly evolving industry. This strategic initiative underscores CyberNex's commitment to innovation, excellence, and sustainable growth.

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