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MÜHENDİSLİK FAKÜLTESİ

Bilgisayar Mühendisliği Bölümü

İŞLETMEDE MESLEKİ EĞİTİM ARA RAPORU

ENM Teknoloji Sanayi ve Ticaret Anonim Şirketi

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NİSAN 2024
MANİSA

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İŞLETMEDE MESLEKİ EĞİTİM DOSYASI
ARA RAPOR

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1.1 Introduction of the Organisation

ENM Digital, founded in 2021, is a dynamic software company based in Manisa, Turkey. With a focus on integrating education and digital-based learning strategies, ENM Digital has carved a niche in the competitive technology market. The company offers a broad spectrum of services, including project shaping, grant consultancy, and the provision of training seminars and incentive mechanisms. These services are designed to enhance business efficiency and foster educational advancements.

ENM Digital is dedicated to helping clients navigate the complexities of the digital landscape through customized software development, web and mobile application design, data analytics, and cloud computing solutions. Additionally, the company extends its expertise to digital marketing, enabling clients to broaden their reach and impact in the digital space. By leveraging cutting-edge technologies and innovative approaches, ENM Digital continues to contribute significantly to the technological and educational sectors.

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1.2 Work and Workplace Safety, Standards

At ENM Digital, maintaining a safe and secure work environment is paramount. The company adheres to stringent safety standards and protocols to ensure the well-being of all its employees and visitors. Safety measures are integrated into every aspect of the workplace operations, reflecting the company's commitment to health and safety.

Workplace Safety:

ENM Digital ensures that all working areas are equipped with necessary safety equipment and that all machinery and software used are up to date with the latest safety standards. Regular safety drills and emergency response training sessions are conducted to prepare staff for any unforeseen incidents.

Health Standards:

The company promotes a healthy work environment by maintaining clean and well-ventilated office spaces. Regular health check-ups are encouraged, and resources are provided for mental and physical well-being. ENM Digital supports a balance between work and life, recognizing the importance of mental health alongside physical safety.

Regulatory Compliance:

ENM Digital strictly complies with local and national safety regulations. Regular audits and inspections are carried out to ensure that the workplace meets all required safety norms and legal requirements. Compliance with data protection laws is strictly enforced, safeguarding client and company data against breaches.

Training and Awareness:

Continuous training programs are designed to keep all employees up to date on the latest workplace safety protocols and standards. New hires undergo thorough orientation sessions to familiarize themselves with the company’s safety policies. Regular updates and workshops keep the team informed and compliant with evolving industry standards.

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1.3 Organisation Chart

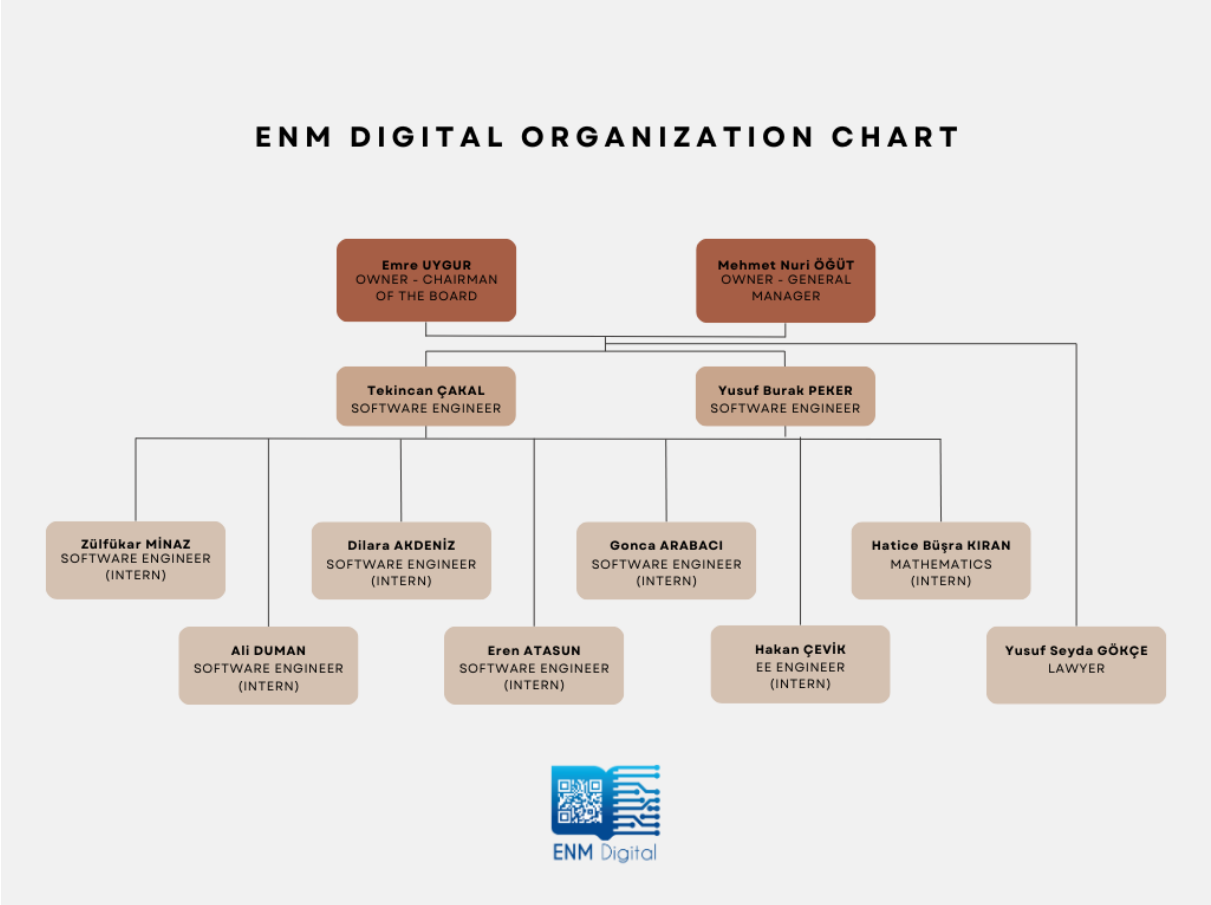

Figure 1 ENM Digital Organization Chart

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1.4 Description of Tasks

During my internship at ENM Digital, I was involved in a pivotal project aimed at developing a web-based project evaluation system. This system is designed to streamline the submission and evaluation of project documents, enhancing the efficiency of the review process.

Project Evaluation System Development:

- **PDF Submission Interface:** I contributed to the design and implementation of a user-friendly interface where users can upload project documents in PDF format. This interface is intuitive, ensuring ease of use for all clients.
- **PDF Processing Backend:** I developed backend functionalities using Python. This involved writing scripts to extract data from uploaded PDFs, analyze the content, and assess the project's compliance with specified criteria.
- **Report Generation:** I was responsible for coding the logic that automatically generates a summary report on the first page of the evaluated PDF. This report includes key insights and feedback on the project, which is crucial for both the project team and stakeholders.
- **Testing and Debugging:** Rigorous testing and debugging were essential parts of my responsibilities to ensure the reliability and accuracy of the system. I engaged in both unit testing and integration testing to identify and resolve any issues.
- **Documentation and Reporting:** I maintained comprehensive documentation of the development process and reported weekly progress in team meetings, ensuring transparency and consistent updates on project milestones.

Collaboration and Learning:

- **Team Collaboration:** I worked closely with a team of software developers, UI/UX designers, and project managers. This collaboration helped integrate various elements of the project seamlessly.
- **Skill Enhancement:** Throughout my internship, I enhanced my skills in Python programming, problem-solving, and system design. I also gained valuable insights into web application development and data handling techniques.

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2. WEEKLY TASKS

2.1 Week 1: Orientation and Introduction

Introduction to Company Culture and Goals:

- I attended several introductory sessions where senior management outlined ENM Digital's mission, vision, and strategic goals for the upcoming years. These presentations gave me insights into how the company integrates educational strategies with digital technology to enhance learning and business processes.
- I participated in workshops focused on the company's core values and work ethics, which are designed to foster an innovative and collaborative work environment.

Training on Software Development Tools and Processes:

- I received comprehensive training on the technical tools and software that are pivotal to the company's operations. This included tutorials and hands-on sessions on Python, JavaScript, and various frameworks and databases we use in our projects.
- I was introduced to the company's software development lifecycle, learning about the different stages from planning and development to testing, deployment, and maintenance. This training was essential for me to understand how projects are managed from inception to delivery.

Introduction to the Project Evaluation System Development Team:

- I met with the project team members, including software developers, project managers, and UI/UX designers. Each team member explained their role, which gave me a clear picture of the project infrastructure and how each role contributes to the project's success.
- I was assigned a mentor from the development team, who gave me an initial overview of the ongoing project aimed at developing a web-based project evaluation system. We discussed the scope of the project, expected outcomes, and my role as a contributing intern.

Familiarization with Workplace Environment:

- I took a tour of the workplace facilities, including the development labs, meeting rooms, and recreation areas. This tour helped me understand the layout of the office and the resources available to support our productivity and well-being.
- I was introduced to various department heads and colleagues, which helped establish initial contact points and gave me an understanding of inter-departmental collaboration at ENM Digital.

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2.2 Week 2: System Design and Planning

Collaboration on System Architecture:

- I actively collaborated with the project team to develop a comprehensive outline of the system architecture for the new project evaluation platform. We used various modeling tools to visualize and iterate on the structure, ensuring that it would support both current needs and future scalability.
- Together, we explored different technical approaches and architectures, eventually selecting one that optimized for efficiency and maintainability. This involved discussions on server choices, data storage solutions, and the deployment of microservices to handle different functionalities of the system.

Defining Requirements and Specifications:

- I participated in multiple brainstorming sessions aimed at defining the precise requirements and specifications for the PDF submission and report generation features. We focused on creating a detailed list of functionalities that the end users would need, such as uploading PDFs, automatic data extraction, and real-time feedback on submissions.
- I helped document the technical and user requirements in a formal specifications document, which served as a guideline for the development phase. This document outlined critical features such as the format of reports, security measures for data handling, and the user interface requirements.
- We also discussed the legal and compliance aspects related to handling user data, ensuring that our system would adhere to GDPR and other relevant data protection regulations.

These tasks were crucial in setting a solid foundation for the development phase of the project evaluation system, and they provided me with valuable insights into the planning and design stages of a software project.

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2.3 Week 3: Development of PDF Submission Interface

Beginning of Interface Coding:

- I started coding the PDF submission interface, which involved writing clean and efficient HTML, CSS, and JavaScript. My goal was to create a robust front-end that could handle file uploads smoothly and interact seamlessly with our backend systems.
- I used HTML to structure the web page, ensuring that it included all necessary elements such as form inputs for file uploads and user instructions. CSS was employed to style the interface, aiming for a professional and approachable look that aligns with ENM Digital's brand guidelines.

Focus on User-Friendly Design:

- The design phase was particularly important as I focused on creating a user-friendly interface that allows easy navigation and interaction for users. This included designing intuitive layout and controls, making sure that users could easily understand how to upload documents and receive feedback.
- I implemented responsive design principles to ensure that the interface was accessible and functional across different devices and screen sizes. JavaScript was used to enhance interactivity, such as providing real-time feedback when a file is successfully uploaded or when an error occurs.
- I also set up client-side validations to check the file type and size before submission, which prevents the server from receiving incompatible files and provides a smoother user experience.

During this week, I worked closely with the UI/UX design team to get feedback on the interface design and make iterative improvements based on user testing and best practices in web development. This collaborative effort helped refine the product's functionality and aesthetic appeal.

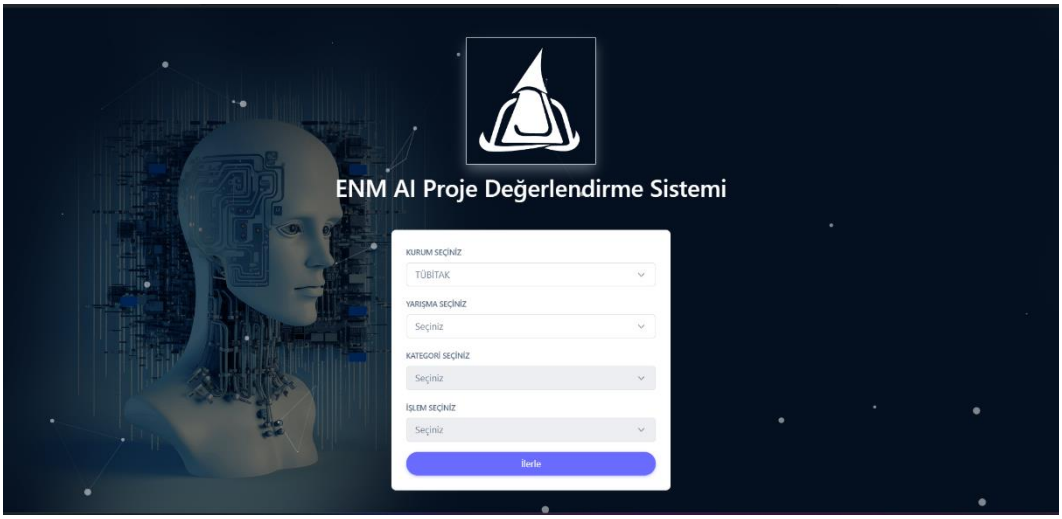

Figure 2 ENM AI Project Evaluation System

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2.4 Week 4: Backend Development for PDF Processing

Initiation of Backend Development:

- I began developing Python scripts to manage the backend processing of the PDFs uploaded through our interface. The goal was to create efficient and reliable scripts that could handle large volumes of documents without compromising performance.
- The development involved setting up a Python environment and selecting libraries that could assist in PDF manipulation and data extraction. I chose libraries like PyPDF2 and PDFMiner for their robustness and flexibility in handling different PDF structures.

Data Extraction and Content Evaluation:

- I implemented methods to extract text and other relevant data from the PDFs. This involved writing functions to parse the documents and retrieve information necessary for the evaluation process.
- Once the data was extracted, I wrote algorithms to evaluate the content based on predefined criteria set by our project managers. These criteria were designed to assess the quality, completeness, and compliance of the project submissions with our standards.
- I also developed a system to flag documents that did not meet the criteria, providing specific feedback that could be used to generate reports for the users.

Testing and Iteration:

- After implementing the initial scripts, I conducted a series of tests to ensure that the data extraction and evaluation processes were accurate and efficient. I used sample PDF files to simulate various scenarios and adjusted my code based on the outcomes.
- I regularly synchronized with the front-end team to ensure seamless integration and to fine-tune the system based on the interface's capabilities and limitations.

During this week, I heavily focused on the technical aspects of our project, enhancing my skills in Python and learning more about handling and processing complex PDF documents. This week was crucial in laying the groundwork for the upcoming features of report generation and further integration.

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2.5 Week 5: Integration and Testing

Integration of Frontend and Backend:

- This week, I focused on integrating the PDF submission interface with the backend processing scripts I developed in the previous week. I ensured that the system architecture supported seamless communication between the frontend and backend, allowing for efficient data transfer and processing.
- I worked on configuring the server settings to handle requests and responses effectively. This included setting up appropriate endpoints for PDF uploads and ensuring that the backend scripts could retrieve and process the files once they were uploaded through the frontend interface.

Initial System Testing:

- After integrating the components, I conducted initial system testing to ensure that the entire process, from file upload to data extraction and evaluation, functioned without any issues. I used a variety of PDF files to test the system under different scenarios, including files with complex layouts and large data sets.
- I identified and fixed several bugs related to file handling and data parsing. This involved debugging the code to pinpoint issues that caused failures or incorrect data processing.

Performance Optimization:

- During testing, I noticed some performance bottlenecks when processing larger PDF files. I optimized the code by refining the data extraction algorithms and improving the handling of asynchronous tasks within the backend. This significantly reduced the processing time and improved the user experience.

Collaboration with UI/UX Team:

- I collaborated closely with the UI/UX team to adjust the frontend design based on the technical requirements and limitations identified during the integration phase. We made tweaks to the user interface to provide better feedback during the file upload process, such as progress indicators and success/error messages.

Feedback Loop and Adjustments:

- At the end of the week, I set up a feedback loop with the project management team to discuss the current state of the project. We reviewed the integration and testing results and planned adjustments to enhance system reliability and user satisfaction.

This week was critical in bridging the gap between the theoretical design and practical implementation of our project. The successful integration and rigorous testing set a solid foundation for the subsequent phases of the project.

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2.6 Week 6: Report Generation Feature Implementation

Development of Report Generation Functionality:

- I developed the functionality to automatically generate a summary report on the first page of each evaluated PDF. This required me to write Python scripts that not only assess the content of the PDFs based on the predefined criteria but also compile the evaluation results into a coherent and informative report.
- The challenge was to design the report layout dynamically within the PDF, which involved programming scripts to manipulate PDF content. I utilized Python libraries like ReportLab to create and embed the summary report within the existing PDF documents without altering the original content of subsequent pages.

Inclusion of Key Insights and Feedback:

- It was crucial that the reports included key insights and actionable feedback clearly and concisely. I designed the summary to highlight the most critical points of compliance and areas for improvement, using bullet points and structured formatting for easy readability.
- I implemented a system to categorize feedback based on priority and relevance, ensuring that the most important issues were prominently displayed. This helped in making the feedback more useful for project submitters, guiding them on how to improve their submissions in future iterations.

Testing and Refinement:

- I conducted thorough testing of the report generation feature to ensure accuracy in the data presented and to verify that the layout was correctly formatted on various types of PDF files. This involved generating reports for PDFs with different structures and content types to see how the system handled diverse data.
- Based on the initial testing results, I refined the report generation scripts to handle edge cases, such as PDFs with minimal text or unusual formatting, ensuring the robustness of the feature.

Collaboration and Iterative Improvement:

- Throughout the development process, I collaborated with the QA team to receive feedback on the functionality and presentation of the reports. Their insights were invaluable in making iterative improvements to enhance the readability and effectiveness of the generated reports.
- We also held a mid-week review with project stakeholders to demonstrate the progress and gather additional feedback, which was then incorporated into further development of the feature.

The completion of the report generation functionality marked a significant milestone in the project, as it allowed us to start providing tangible outputs to users. This feature was particularly praised for its potential to add value to the user experience and improve the overall quality of project submissions.

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2.7 Week 7: System Testing and Debugging

Comprehensive System Testing:

- I dedicated this week to conducting comprehensive system testing to rigorously assess every component of the project evaluation platform. This involved using a variety of test cases to cover all possible use cases and ensure that each part of the system, from PDF upload to report generation, functioned as expected.
- I implemented automated tests using frameworks like PyTest to systematically check for functionality, reliability, and performance under different scenarios. This helped identify any discrepancies in how the system handled edge cases or high loads.

Identification of Bugs and Issues:

- During the testing phase, I identified several critical bugs that affected the system's performance and user experience. These included issues with file handling when multiple users uploaded documents simultaneously and errors in report formatting in certain types of PDF files.
- I also noticed problems with the responsiveness of the user interface on mobile devices, which was crucial since many of our users access the platform via smartphones or tablets.

Debugging and Enhancing Functionality:

- I spent considerable time debugging the identified issues, revising code, and optimizing processes to resolve the bugs. For example, I improved the file management system to handle simultaneous uploads more efficiently and modified the PDF processing scripts to better manage document formatting.
- Enhancements were also made to the user interface to improve responsiveness and ensure a seamless experience across all devices. I made sure to apply CSS fixes and JavaScript optimizations that contributed to a faster and more responsive interface.

Collaboration with Other Teams:

- Throughout the debugging process, I worked closely with the UI/UX design team and backend developers to ensure that all fixes were integrated smoothly without affecting other functionalities. We held daily stand-up meetings to update each other on progress and challenges, which facilitated faster resolution of issues.
- I also collaborated with the quality assurance team to verify that each bug fix improved the system without introducing new issues. Their feedback was critical in ensuring that my fixes had the intended effect on the system's stability and usability.

This week's focused efforts on testing and debugging were essential in moving the project closer to a reliable and effective launch. The improvements made significantly enhanced the functionality and overall user experience of the project evaluation system.

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2.8 Week 8: Documentation and User Feedback

Documentation of Development Process:

- I dedicated a significant portion of this week to documenting the entire development process of the project evaluation system. This included creating detailed documentation that covered the system architecture, codebase, and the functionalities of each component. My aim was to ensure that future developers and maintainers of the system could easily understand and work with the setup.
- I produced user guidelines that explain how to navigate the platform, upload documents, and interpret the feedback reports generated by the system. These guidelines were designed to be user-friendly, incorporating clear instructions and visual aids like screenshots and diagrams to assist users in making the most of the platform.

Collection of User Feedback:

- I also implemented a feedback collection process where initial users could provide their insights and suggestions on the system. This involved setting up feedback forms within the platform and conducting brief interviews with selected users to gather in-depth comments.
- The feedback covered aspects such as the ease of use, performance of the PDF processing, clarity of the generated reports, and overall satisfaction with the system. I systematically categorized this feedback to identify common themes and potential areas for improvement.

Analysis of Feedback and Planning Improvements:

- After collecting the feedback, I analyzed the responses to identify critical areas where the system could be improved. This analysis helped pinpoint specific functionalities that users found challenging or inadequate.
- I planned a series of improvements based on this feedback, which included enhancing the PDF upload process, refining the report generation feature to include more detailed insights, and improving the mobile responsiveness of the interface.

Updating Documentation:

- Based on the feedback received and the improvements planned, I updated the existing documentation to reflect the changes and new features that would be implemented. I also added a section on troubleshooting common issues, which was suggested by several users.

This week was pivotal in refining the project evaluation system through user feedback and comprehensive documentation, ensuring both the current effectiveness and future maintainability of the platform.

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2.9 Week 9: Final Review and Presentation

Comprehensive System Review:

- This week, I conducted a comprehensive review of the entire project evaluation system with the project team. We meticulously went through each component to ensure that all technical and business requirements were met. This review process included verifying the integration of all functionalities, ensuring the system's stability, and double-checking the user interface for usability.
- We also ran several scenarios to test the system's performance under peak loads and assessed the accuracy of the report generation feature. This was crucial to guarantee that the system could handle real-world use without any issues.

Preparation for the Final Presentation:

- I spent significant time preparing for the final presentation of the project. This included creating a detailed slideshow that outlined the project's scope, the challenges we faced, the solutions we implemented, and the benefits of the system. I made sure to include key metrics and feedback from the user testing phase to demonstrate the system's effectiveness and potential impact.
- I rehearsed my presentation multiple times to ensure clarity and confidence in delivering the material. I aimed to not only inform but also engage the senior management team by highlighting how the system could enhance our company's project evaluation processes.

Delivery of the Presentation:

- I presented the project to the senior management team, explaining the technical details and the operational benefits of the system. I focused on how the system simplifies the project submission and evaluation process, improves accuracy in feedback, and ultimately saves time for both users and administrators.
- During the presentation, I also discussed potential future enhancements and how the platform could be scaled to handle additional features or larger volumes of submissions. This was aimed at showcasing the long-term value of the project.

Feedback and Approval:

- The presentation was well-received, with positive feedback from the senior management on both the execution of the project and its presentation. Their questions mainly focused on potential integration with other systems and the scalability of the platform.
- Following the presentation, I received formal approval and commendation for the project, with requests to begin planning for the next phases of expansion based on the initial success.

This final week was not only a culmination of my efforts over the internship but also a pivotal moment where I demonstrated the impact of my work and the potential future directions for the project evaluation system.

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