STOCK MANAGEMENT WEBSITE REPORT

FOR: FARM CENTRAL

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EXECUTIVE SUMMARY

I am writing to you on behalf of Varsity College to formally present our proposal for developing a stock management website for Farm Central. We are thrilled about the opportunity to work with Farm Central and assist in establishing an efficient system to track incoming and outgoing stock, as well as trace the items back to the respective farmers.

At IIE's Varsity College, we specialize in designing and developing customized web-based solutions that cater to the unique needs of businesses. Following our previous report submitted to, we have added a few more answers to your follow-up questions.

Project Overview:

Our proposed stock management website aims to provide Farm Central with a centralized platform to track and manage the inventory of all products sold in the brick-and-mortar store. The website will facilitate seamless tracking of incoming and outgoing stock, while also associating each item with the respective farmer to ensure complete traceability.

STOCK MANAGEMENT WEBSITE CREATION

I am delighted to inform you that our team has successfully developed a prototype stock management website using Visual Studio and C#. The website includes the following key features:

- Database of Farmers and Associated Products: The prototype website incorporates a database that stores information about farmers, including their names and associated products.

- User Roles: Two user roles have been implemented: "Farmer" and "Employee." This ensures that each user has the appropriate level of access and functionality based on their role.

- User Authentication: To ensure data security and privacy, the prototype website requires farmers and employees to log in using their unique credentials before accessing user-specific information. We have implemented authentication mechanisms using ASP.NET Identity, ensuring secure access to the system.

- Farmer Profile Management: Logged-in farmers can add new products to their profiles in the database. This functionality allows them to maintain an accurate inventory of their products.

- Employee Functionality: Logged-in employees have the ability to add new farmers to the database, facilitating the growth of Farm Central's network. Additionally, they can view the list of all products ever supplied by a specific farmer.

- Filtering Capabilities: Employees can filter the displayed list of products supplied by a specific farmer based on the date range or product type. This feature enhances the search and retrieval process, improving efficiency in stock management.

1. HOW CAN THE PERFORMANCE OF THE PROTOTYPE BE OPTIMIZED? WHAT GUIDELINES SHOULD BE FOLLOWED WHEN THE FINAL SOFTWARE IS DEVELOPED TO ENSURE ITS ACCEPTABLE PERFORMANCE?

To optimize the performance of the stock management website prototype and ensure acceptable performance in the final software, the following guidelines should be followed:

A. A well-structured database schema: this effectively organizes and maintains incoming and exiting stock data should be implemented. Improve query speed by normalizing the data to get rid of duplicate information.

B. Simplified User Interface: Create a user-friendly interface with the fewest possible clicks and actions needed to complete typical activities. Improve user efficiency and experience by implementing responsive design and straightforward navigation (ALTEXTSOFT, 2018).

C. Data Indexing: To increase the speed of data retrieval, use appropriate indexing strategies in the database. To improve query performance, determine which data fields are used the most frequently and establish the corresponding indexes.

D. Caching Mechanisms: Use caching techniques to cache frequently requested data and eliminate the need for repeated database queries. Response times and overall system performance may be enhanced by doing this.

E. Asynchronous Processing: For time-consuming or computationally complex activities, use asynchronous processing techniques. You may avoid delays and provide a responsive user experience by offloading these operations to background processes or by using asynchronous APIs.

F. Performance optimization and load testing: Run load tests to imitate actual user scenarios and spot performance bottlenecks. Utilize profiling tools to assess

resource utilization, spot potential improvement areas, and enhance crucial code portions (ALTEXTSOFT, 2018).

2. WHICH SOFTWARE DEVELOPMENT METHODOLOGY WOULD YOU RECOMMEND FOR THIS DEVELOPMENT EFFORT? MOTIVATE CLEARLY WHY.

RECOMMENDED SOFTWARE DEVELOPMENT METHODOLOGY: AGILE

For the development effort of Farm Central's stock management website, I recommend the Agile software development methodology (Sacolick, 2022). Agile methodologies are well-suited for projects with evolving requirements, close collaboration with stakeholders, and iterative development cycles. Here's why Agile is the right choice:

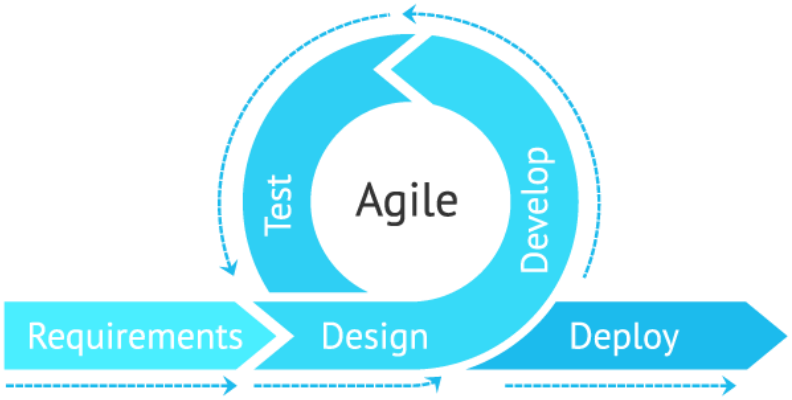
A. Flexibility and adaptability: Agile approaches accept shifting requirements, enabling the development team to swiftly address the changing demands of the farmers. This guarantees that during the development phase, the stock management website will continue to meet client expectations (Sacolick, 2022).

B. Iterative Development: Agile encourages an iterative strategy in which the project is divided up into smaller units called sprints. The system is functionally delivered as part of each sprint, enabling the farmers to offer ongoing input and make sure the solution satisfies their needs (Sacolick, 2022).

C. Collaboration with Stakeholders: Agile approaches place a strong emphasis on close coordination with Stakeholders, including the farmers of Farm Central. Regular meetings, presentations, and feedback sessions encourage participation and guarantee that the resulting software accurately reflects their requirements (Sacolick, 2022).

D. Early Value Delivery: Agile focuses on producing usable software frequently and early. Farm Central may benefit sooner from the capability of the stock management website by prioritizing critical features and offering them piecemeal, and by doing so, it can also provide input for future improvements (Sacolick, 2022).

E. Continuous Improvement: Retrospectives, a component of agile techniques, promote continuous improvement. The development team may enhance their procedures and offer a high-quality stock management solution by reflecting on what went well and what can be improved (Sacolick, 2022).



3. WOULD YOU RECOMMEND IMPLEMENTING DEVOPS? WHY AND HOW DOES IT FIT IN WITH THE CHOSEN SOFTWARE DEVELOPMENT METHODOLOGY?

IMPLEMENTATION OF DEVOPS

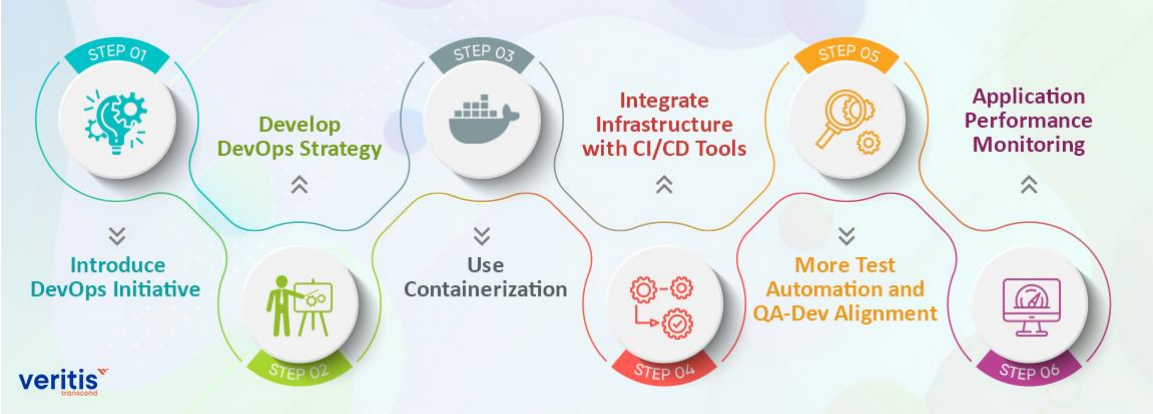
Yes, I would recommend implementing DevOps in conjunction with the chosen Agile methodology. DevOps practices can significantly enhance the development, deployment, and maintenance of the stock management website (Kalinin, 2023). Here's why DevOps is beneficial:

A. Continuous Integration and Delivery (CI/CD): DevOps provides automation of the build, test, and deployment processes, guaranteeing easy and frequent integration of new features and problem fixes into the production environment. CI/CD pipelines aid in reducing manual mistakes, speeding up development, and maintaining software quality (Kalinin, 2023).

B. Fostering Collaboration and Communication: DevOps promotes collaboration and communication among stakeholders involved in the lifecycle of the stock management website, including development, operations, and other parties. This ensures that needs are understood by all parties, that problems are resolved quickly, and that value is delivered to Farm Central more quickly (Lipnitsky, 2019).

C. Infrastructure as Code (IaC): DevOps encourages the management of infrastructure resources using IaC principles. Farm Central can reliably and effectively provision, configure, and manage their server infrastructure by treating infrastructure settings as code, minimizing human mistakes and assuring consistency (Kalinin, 2023).

D. Feedback and Continuous Monitoring: Continuous monitoring of the production stock management website is a key component of DevOps. Monitoring tools give useful insights into user behavior, performance, and availability, allowing for the early detection and quick resolving of problems (Lipnitsky, 2019).



4. WOULD YOU RECOMMEND USING ITIL, THE ZACHMAN FRAMEWORK, TOGAF, OR A COMBINATION OF THESE? MOTIVATE CLEARLY WHY.

FRAMEWORK RECOMMENDATION: TOGAF

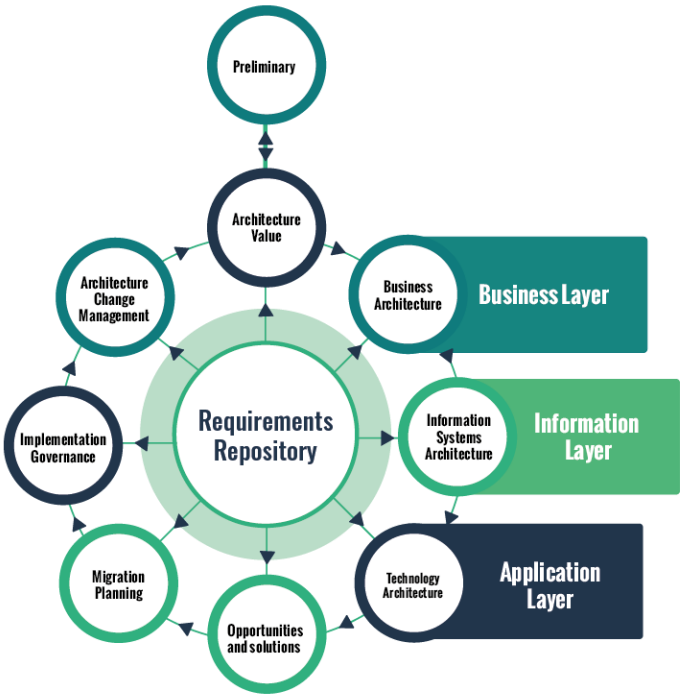
For the development of Farm Central's stock management website, I recommend utilizing the TOGAF (The Open Group Architecture Framework) framework. TOGAF offers a structured approach to enterprise architecture development and aligning IT solutions with business goals (White, 2022). Here's why TOGAF is a suitable choice:

A. Comprehensive Approach: The stock management website may be designed, planned, implemented, and administered using the TOGAF framework. The technological solution is in line with Farm Central's business goals thanks to its Architecture Development Method (ADM), which guarantees a planned and methodical development approach (White, 2022).

B. Industry Best Practices: For the creation of enterprise architecture, TOGAF includes industry best practices. It provides a plethora of recommendations, models, and templates that may be customized to meet Farm Central's unique needs. Utilizing these best practices guarantees a solid and well-designed solution (Reselman, 2020).

C. Stakeholder Alignment: TOGAF places a strong emphasis on collaboration and stakeholder participation throughout the architectural development process. By involving important parties, such as the farmers of Farm Central, TOGAF makes sure that the technological solution satisfies their requirements and is in line with their business objectives (Reselman, 2020).

D. Scalability and Flexibility: TOGAF offers a framework that is flexible and scalable to meet a range of project sizes and complexities. As a result, the stock management website is scalable, extendable, and able to change as Farm Central's demands change since it enables the integration of various architectural views (White, 2022).



5. THE MARKETERS HAVE ALSO ASKED FOR A SHORT DESCRIPTION OF THE TECHNICAL SOLUTION YOU IMPLEMENTED IN YOUR PROTOTYPE, SO THEY KNOW HOW TO EXPLAIN IT DURING THE DEMONSTRATION. FIND A GOOD BALANCE BETWEEN TECHNICAL DETAILS AND BUSINESS VALUE.

TECHNICAL SOLUTION DESCRIPTION

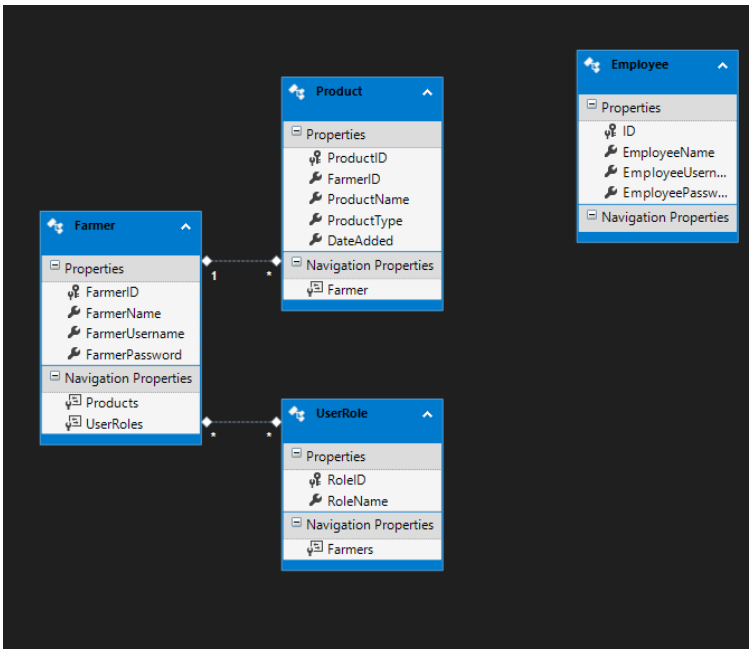
The technical solution we implemented in the stock management website prototype is a web-based application built on a robust and scalable architecture. The website provides the following key features to facilitate efficient stock management for Farm Central:

- A user-friendly dashboard that gives an overview of arriving and exiting merchandise is available on the stock management website. Product levels, farmer information, and transaction history are all displayed in real time.

- Tracking and traceability of cattle is possible thanks to the website, which links each item to its corresponding farmer. As a result, Farm Central can precisely account for product ownership and streamline inventory management. This assures comprehensive traceability.

- Inventory Control: The website provides complete inventory control features, such as product classification and quantity monitoring. It makes it simple to identify surplus, assisting Farm Central in maximizing their sales and purchasing plans.

- Farmer Collaboration: The website makes it easy for farmers and Farm Central to work together. It enables farmers to enter information about their inventory, change availability, and request replenishment. This encourages openness and promotes the collaboration between Farm Central and the nearby farms.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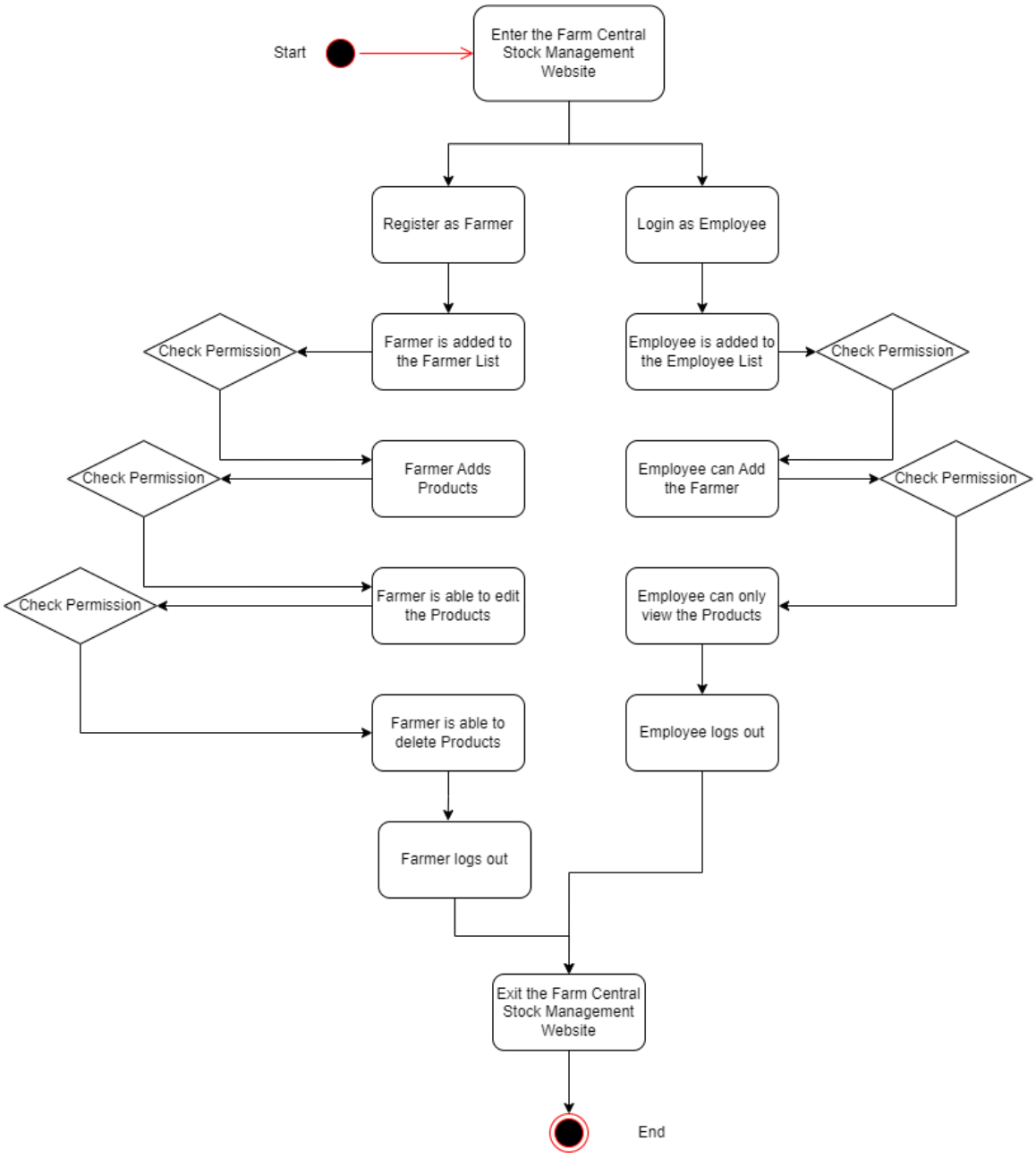
Start
Enter the Farm Central Stock Management Website
Register as Farmer
Login as Employee
Farmer is added to the Farmer List
Employee is added to the Employee List
Check Permission
Check Permission
Farmer Adds Products
Employee can Add the Farmer
Check Permission
Check Permission
Farmer is able to edit the Products
Employee can only view the Products
Check Permission
Farmer is able to delete Products
Employee logs out
Farmer logs out
Exit the Farm Central Stock Management Website
End

CONCLUSION

We believe that our proposal addresses your organization's needs comprehensively and presents a compelling case for choosing IIE's Varsity College Waterfall as the development partner for your stock management website. Our commitment to delivering high-quality solutions, adherence to project timelines, and exceptional customer service sets us apart from our competitors.

We would be delighted to discuss our proposal in more detail and answer any questions you may have. Please let us know a convenient time for a meeting or call, and we will be happy to accommodate your schedule.

Thank you for considering Varsity College Waterfall for this important project. We look forward to the opportunity to collaborate with Farm Central and contribute to the success of your stock management initiatives. Should you require any further information or clarification, please do not hesitate to contact us.

References

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