**Final Project Report**

1. **Executive Summary**

**Project Goals Met/Unmet**

* + 1. Goals Met:
       - NutriScope has achieved the goal of 100,000 daily active users by the end of the second year of deployment. Currently, there are 115,000 daily active users out of which 34,792 are premium users.
       - NutriScope achieved a 25% increase in user engagement within the first year of deployment. According to an analysis conducted by collecting user data, 33.27% of all users engage with other features of the app (sleep tracking and workout selection) after signing up.
       - The retention rate target of 75% on a month-to-month basis has been reached. Users that set their status to “Taking a Break” or “Goal Reached!” are not included in this calculation. The month-to-month retention rate for NutriScope is 87%.
       - NutriScope’s target of 5% increase in integration with wearable devices has been reached. In the first year, a 52% increase with wearable devices was measured. This is attributed to the successful deployment of wearOS/watchOS apps alongside the mobile and web apps and prevalent ubiquity of wearables.
    2. Goals Unmet:
       - The target of achieving a 10% improvement in all key health metrics (sleep measured, diet followed, and exercise completion) for all users after the third year of initial deployment has not been met. The health metrics have not shown the anticipated improvement within the specified time. Currently, only 7.8% improvement in key health metrics has been measured for all the daily active users. This may be because fitness conscious users often have little room for improvement.
       - The market penetration rate (total downloads of NutriScope/target market size \* 100) of 60%, 80%, and 90% for the first, second, and third years respectively remains unmet. The current market penetration rate is 47%. Efforts are being made to improve NutriScope further with the help of feedback, but it faces competition from other fitness tracking apps with premium users.

**Stakeholder Satisfaction with Project**

1. Peter Gregory, the project sponsor from HealthScope, was satisfied with the project overall. He praised the comprehensive functionality of NutriScope as well as the collaborative process used to build it.
2. Jayesh Pamnani, the project manager, was satisfied and relieved with the completion of the project. He acknowledged the communication challenges faced during the creation of NutriScope but was pleased with the team’s resilience and technical abilities.
3. Bhanu Panguluri, the DevOps/QA lead, was pleased with the team’s efforts to ensure the stability and quality of NutriScope. He emphasized the importance of continuous integration and delivery alongside the use of automated testing in the future.
4. Manav Gupta, the backend lead, was happy with the overall performance of NutriScope. He was proud of the food identification pipeline. The pipeline input of a picture of food and the output of food identification with calorie/macro information took less than 5 seconds. He identified areas where code refactoring could enhance the maintainability in the long term.
5. Kunal Haryani, the frontend lead, expressed satisfaction with the UI design and responsiveness of NutriScope. He was happy with the integration of the food identification pipeline with the frontend. He appreciated the feedback received from user representatives and incorporated it to improve NutriScope. He advocated for the addition of an automated test suite for the frontend as well.
6. William Dzialak, the scrum master, felt gratified by the team’s adherence and dedication to Scrum. He appreciated the team for their transparency, collaboration, and brevity in communication. He praised the project manager, Jayesh Pamnani, for his commitment to clear any communication issues during testing.
7. Monica Hall, the sponsor liaison from HealthScope, was delighted with NutriScope. She commended the team's efforts to align with NutriScope’s objectives and the team’s dedication throughout the project.
8. Dinesh Chugtai and Bertram Gilfoyle, the testers from TestConsul, were satisfied with the thoroughness of testing at NutriScope and the minimal number of defects identified during integration and system testing. They highlighted the importance of setting high code coverage criteria for all new code added after deployment.
9. Jian Yang and Erlich Bachmann, the user representatives from AcceptanceTest, were pleased with the usability, the UI, and the speed of NutriScope. They provided valuable feedback which was considered for further enhancements. They expressed confidence in NutriScope exceeding user needs and expectations.

**User Reactions to Quality of Deliverables**

In addition to the stakeholders being satisfied with the project overall, the users of the system were pleased with the quality of the deliverables. These reactions and reviews were gathered through multiple avenues including app store reviews, direct inquiries from within the application, post-launch surveys, and from emails sent to customer service. These deliverables include, but are not limited to, the functionality of the application and the user manuals provided as useful resources to reference. These manuals should be used whenever there are questions or confusion about how to complete certain actions within the application. The users also were delighted with the user interface of the application and stated that it was organized well and items within the app were easy to find. These statements aligned with the feedback received from workshop sessions during the final stages of testing efforts.

Not everything within the application was welcomed with satisfaction though. One user who left a review within an app store complained about the meal photo estimation feature and said their food was wrongly categorized. As a team, we recognize that the algorithms will not be correct one hundred percent of the time, and customer support responded to this individual with the necessary contact info to help assist them with their issue. It is important for the application’s continued success that we take every concern seriously and professionally respond to feedback and criticism. By doing so, we can turn something negative into a positive opportunity by improving our algorithms and hopefully retaining a user of the product once their issues are resolved.

**Final Progress Report and EVM Graph**

1. What is the cost variance, schedule variance, cost performance index (CPI), and schedule performance index (SPI) for the project?
   1. Planned Value (PV) = **$600,000**
   2. Actual Cost (AC) = **$543,457** [1]
   3. Earned Value (EV) = **$582,000** [2]
   4. Cost Variance (CV) = Earned Value (EV) - Actual Cost (AC) = $582,000 - $543,457 = **$38,543**
   5. Schedule Variance (SV) = Earned Value (EV) - Planned Value (PV) = $582,000 - $600,000 = - **$18,000**
   6. Cost Performance Index (CPI) = Earned Value (EV)/Actual Cost (AC) = $582,000/$543,457 = **1.07**
   7. Schedule Performance Index (SPI) = Earned Value (EV)/Planned Value (PV) = $582,000/$600,000 = **0.97**
2. How did the project go? Was it ahead of schedule or behind schedule? Was it under budget or over budget?
   1. The project is under budget as the CPI is more than 1 and slightly behind schedule as the SPI is less than 1.
3. Calculate Final SPI, CPI, and TCPI of your project.
   1. Final SPI = **0.97**
   2. Final CPI = **0.99**
   3. TCPI = (BAC-EV)/(BAC-AC) = ($553,457-$582,000)/($553,457-$543,457) = -$28,543/$10,000 = **-2.85**

TCPI less than 1 means that there is less work than there is budget left.

1. Sketch an earned value chart using the preceding information (Assume if you have to or calculate past EVM values needed)
   1. Earned Value Chart

Assumptions:

1. Actual Cost is $10,000 under the budgeted cost of work scheduled (BCWS/PV = $600,000) in the cost estimate as the cloud services fees cost less than estimated.
2. 97% of the work completed at the time where 100% of the work should have been completed; Therefore, the EV is 97% of $600,000= $582,000
3. **Review and Analysis**  
     
   **Project Mission and Objective**

The NutriScope project was born out of a vision to develop a comprehensive health-tracking application that simplifies the monitoring of vital health metrics while providing users with innovative features to enhance their engagement and empowerment. The project aims to revolutionize traditional tracking methods by incorporating innovative technologies such as machine learning to estimate calorie intake from photographs of meals. This unique feature set offers users an interactive and personalized way to manage their dietary habits, making NutriScope an indispensable daily companion for anyone passionate about a healthier lifestyle. By providing users with data-driven insights, NutriScope empowers them to make informed decisions and take control of their health and well-being.

**Procedures and Systems Used**

During the development of NutriScope, our team adopted a hybrid agile methodology that allowed us to strike a balance between flexibility and structured milestones. This approach provided us with a dynamic environment where we could embrace adaptive planning and evolutionary development, which in turn enabled us to respond swiftly to changes while maintaining the clarity and direction provided by traditional Waterfall methodologies. We leveraged a range of sophisticated tools to support the project, including Microsoft Azure, which provided us with robust cloud services that bolstered our development and testing phases. Additionally, we utilized JIRA to meticulously track and manage tasks, ensuring that our team remained on track and productive. To streamline communication, we employed platforms like Slack and Zoom, which allowed team members and stakeholders to stay connected and informed throughout the project's lifecycle. Overall, this approach allowed us to deliver a high-quality product that met the needs of our clients while minimizing risk and maximizing efficiency.  
  
**Organization Resources Used**

The remarkable success of NutriScope can be primarily attributed to the strategic allocation of organizational resources. The project's success was made possible by a dedicated team of highly skilled professionals with diverse talents, including software developers, data scientists, designers, and project managers. Each team member played a critical role in turning the project's vision into reality. They worked collaboratively, with a clear understanding of the project's objectives, to ensure that the final product met the highest standards of quality and functionality.

To support the development process, we leveraged advanced software tools that enabled us to move seamlessly through various development phases, from coding to testing. These tools streamlined our workflow, allowing us to work more efficiently, and ensured that the final product was thoroughly tested and free of any bugs or glitches.

Significant financial resources were allocated to conduct extensive market research, which was crucial in informing the development process. The research helped us gain a deeper understanding of our target users' needs and preferences, enabling us to develop features that resonated well with them and met market demands effectively. By conducting thorough market research, we were able to create a product that not only met our users' needs but exceeded their expectations.

1. **Recommendations**

**Technical Improvements**

In today's world of rapidly evolving technologies, NutriScope can greatly benefit from improving its data security measures. By implementing multi-factor authentication and updating our encryption protocols, we can ensure the protection of sensitive user data with greater effectiveness. Moreover, by increasing the app's compatibility with a wide range of wearable devices, we can not only enhance the user experience but also expand our market reach. Furthermore, optimizing the application's performance to handle an increased user load with greater efficiency will help NutriScope remain highly responsive and reliable even during peak usage times.

**Corrective Actions**

Throughout our experience with NutriScope, we have gained valuable insights that have highlighted several key areas for improvement. One such area is the user interface, which, while functional, could be made more intuitive and engaging through a redesign that simplifies navigation and enhances visual appeal. We have found that users are more likely to engage with an application that is visually appealing and easy to use.

In addition, we have also learned that promptly addressing technical issues as they arise is crucial for maintaining user satisfaction and engagement. Users expect a seamless experience, and any technical issues or glitches can quickly lead to frustration and disengagement.

To further enhance user engagement and satisfaction, we believe it is essential to set up a robust customer support framework. This will ensure that users have access to timely and effective support when they need it, which can go a long way in building trust and loyalty.

Overall, these changes are not just necessary but essential steps toward refining NutriScope into an application that users trust and rely on daily. We are committed to continuously improving the user experience and ensuring that NutriScope remains a valuable tool for users looking to maintain a healthy lifestyle.

1. **Lessons Learned**

**Reminders**

Throughout this project, we have learned that continuous user feedback plays a crucial role in the development lifecycle. By regularly engaging with our users through surveys and testing, we have been able to gather invaluable insights that have directly influenced the evolution of NutriScope.

This has allowed us to ensure that our product meets the needs and expectations of our users, resulting in a higher level of satisfaction and adoption.

Moreover, the project has highlighted the importance of flexibility in resource allocation. As we encountered unexpected challenges along the way, we were able to pivot and allocate resources efficiently and effectively, enabling us to stay on track and deliver an excellent product. We have found that this ability to adapt and pivot has been critical to the project's success, as it has allowed us to navigate obstacles and maintain progress toward our goals.

**Retrospectives**

During the development of NutriScope, we adopted a proactive approach to risk management, which proved to be crucial in ensuring its success. By identifying potential risks early on and taking necessary measures to mitigate them, we were able to prevent these risks from escalating into larger issues that could have had a significant impact on the project.

In addition to this, we also fostered a collaborative environment across different teams, which played a vital role in the development process. This collaborative approach allowed us to bring together the expertise and knowledge of different teams, resulting in a well-rounded development strategy that considered all aspects of the project. This helped to enhance the quality of NutriScope and align it more closely with both user expectations and business objectives.

Overall, the combination of a proactive risk management approach and a collaborative development environment proved to be a linchpin for NutriScope's success. By adopting these practices, we were able to create a high-quality product that met the needs of both our users and our business objectives, while also minimizing potential risks and setbacks along the way.

1. **Appendix**

**Backup Data**

Below is a list of documents for the development process, testing phases, and user feedback sessions. These documents are crucial for auditing purposes and as a reference for future development phases.

1. Financial Analysis for NutriScope Health Metrics Application
2. Cost Estimate

**Critical Information**Documents verifying data protection regulations along with comprehensive reports from stakeholder meetings, developers, requirement analysts, testers from a Project Manager’s perspective, providing insights into the decision-making processes that shaped the project’s direction are included with the report:

1. Scope Statement
2. WBS
3. Rationale for Selected PMLC Model
4. Requirements Breakdown Structure
5. Risk Register
6. Milestone Document
7. Communication Management Plan
8. NutriScope Health Tracker Contract Incentives Proposal
9. Stakeholder Register
10. Stakeholder Management Strategies

Apart from the above documents, all deliverables are attached as a part of the Final Project Notebook.