Project Scope Statement

Project Name: SmileScan White
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Project Justification	Amidst the thriving dental aesthetics industry, we acknowledge the concerns associated with prolonged use of teeth whitening kits—unwanted side effects like tooth sensitivity, inflammation, enamel erosion, and tooth discoloration. To address these issues and provide a safe and effective solution, we introduce the innovative "SmileScan White" initiative. By harmoniously merging a tooth whitening kit with an integrated shade scanner, our mission is to elevate both oral health and aesthetic appeal while ensuring user satisfaction. "SmileScan White" aspires to be the epitome of a brighter, healthier, and more confident smile for everyone.
Project Description	The SmileScan White project entails a comprehensive exploration of optimal tooth-whitening agents and sensor technologies. It involves the development of a functional prototype, synergizing advanced materials and methodologies. Furthermore, we are aiming to incorporate real-time progress monitoring and early cavity detection features. Structured into three key phases: initiation and strategic planning, meticulous execution, and conclusive project closure, this project is poised to redefine dental aesthetics by amalgamating empirical research, technological innovation, and precise project execution, ultimately yielding a radiant smile while ensuring user satisfaction and safety.
Product Deliverables	1. Thorough research report on whitening agents and sensors. 2. Functional prototype of the SmileScan White device. 3. Integrated microcontroller for smart features. 4. User-friendly interfaces for real-time progress tracking and cavity alerts. 5. Complete testing and evaluation of 100 devices.

Out-of-scope Items	1. Mass production of devices beyond the initial 100 units. 2. Getting required approvals for selling the product in market 3. Distribution and marketing of the SmileScan White device. 4. Long-term user support and maintenance.
Project Objectives	**1. Whitening Agent and Sensor Research:** • Research and evaluate potential materials and sensors for teeth whitening. • Determine cost-effectiveness and quality of essential components. • Allocate time and resources for comprehensive research. **2. SmileScan White Prototype Development:** • Design and build functional prototype device. • Ensure compatibility and usability. • Allocate time and budget resources to assist the development phase. **3. Integration of Smart features:** • Incorporate a microcontroller to enable intelligent features. • Implement user-friendly interfaces for progress tracking and cavity alerts. • Ensure effective testing and user feedback.
Cost Objectives	1. Anticipated project cost: $138,800. 2. Phase-wise budget allocation: Initiation and planning ($7,200), Execution, Monitor, and Control ($98,000), Project Closing ($33,600).
Schedule Objectives	Three phases with specific start and end dates: Initiation and planning (September 14th to October 1st), Execution, Monitor, and Control (October 1st to November 20th), Project Closing (November 20th to December 1st).
Acceptance Criteria	1. Successful completion of whitening agent and sensor research with documented findings. 2. Functional prototype of SmileScan White device with integrated shade scanner. 3. Working microcontroller with real-time progress tracking and cavity detection alerts. 4. Positive feedback from testers regarding device features and usability.

Constraints	1. Limited number of people in the team. 2. Time constraints with defined project phases and deadlines. 3. Compliance with safety and quality standards.
Assumptions	1. Availability of necessary resources involving materials, components, physical labor, and required platforms. 2. Cooperation from testers and timely feedback. 3. No unexpected bans on any components or materials involved in this project.

References:

Bersezio, C., Martín, J., Herrera, A. C., Loguércio, A. D., & Fernández, E. (2018). The effects of at-home whitening on patients' oral health, psychology, and aesthetic perception. *BMC Oral Health*, *18*(1). https://doi.org/10.1186/s12903-018-0668-2

Sirintawat, N., Leelaratrungruang, T., Poovarodom, P., Kiattavorncharoen, S., & Amornsettachai, P. (2021). The Accuracy and Reliability of Tooth Shade Selection Using Different Instrumental Techniques: An In Vitro Study. *Sensors*, *21*(22), 7490. https://doi.org/10.3390/s21227490

Kothari, S., Gray, A., Lyons, K., Tan, X., & Brunton, P. (2019). Vital bleaching and oral-health-related quality of life in adults: A systematic review and meta-analysis. *Journal of Dentistry*, *84*, 22–29. https://doi.org/10.1016/j.jdent.2019.03.007