**Portfolio Milestone: System Planning and Process**

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CSC501: Management for the Computer Science Professional

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**Module 1 – System Selection**

**AI-Enhanced Implantable Eye for Glaucoma Treatment**

For my Portfolio Project, I’ve chosen to focus on the creation of an AI-Enhanced Implantable Eye designed specifically for glaucoma treatment. This innovative system would combine advanced bioengineering with AI technology to monitor and manage intraocular pressure in real-time, while also offering the potential to restore vision through regenerative capabilities. The implant would interface with the optic nerve, providing continuous monitoring and autonomous adjustments to prevent glaucoma progression. Additionally, the system could be equipped with augmented reality features to enhance or restore the patient’s vision. I’m excited to explore this visionary concept, as it merges my interest in ophthalmology with cutting-edge technology, pushing the boundaries of what might one day be possible in medical science.

**Module 2 – Engagement Level Diagram**

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**Case Studies**

**New Employees:**

Junior employees may be unaware of the project because they are not directly involved in the development process or strategic planning meetings. To increase awareness, the company could organize internal communication sessions or workshops to inform all employees about the new technology and its potential impact.

**Senior Medical Staff:**

These stakeholders resist the new technology due to concerns about its safety, lack of long-term data, and how it fits with established medical practices. To address their resistance, the company should provide detailed safety studies, case studies from early trials, and engage them in discussions about integrating the new technology into traditional care models.

**Finance Department:**

The finance department remains neutral because they require comprehensive cost analyses and forecasts to determine the project’s financial viability. They could be persuaded to support the project through detailed cost-benefit analyses and projections showing potential returns on investment and cost savings over time.

**Research & Development Team:**

The R&D team is supportive because they are directly involved in developing the technology and believe in its potential to transform glaucoma treatment. They are enthusiastic advocates for the project, conducting experiments, refining the product, and presenting positive findings to other stakeholders.

**Executive Leadership Team:**

The project manager is a leading stakeholder because they manage day-to-day operations, coordinate cross-departmental efforts, and ensure alignment with the company’s strategic goals. They provide leadership, motivate teams, and communicate progress to the executive team.

**Module 3 – The Project Plan**



**Initial Work Breakdown Structure (WBS) for AI-Enhanced Implantable Eye Project**

The AI-Enhanced Implantable Eye for Glaucoma Treatment is an innovative project aimed at developing a device that leverages AI technology and bioengineering to monitor intraocular pressure in real-time and potentially restore vision. To ensure the project is managed efficiently, a structured project management plan incorporating environment variable, scope processes, and organizational systems is essential.

Work Breakdown Structure (WBS) is a crucial tool in project management that divides the project into smaller, more manageable components. For this project, the WBS includes key phases such as Planning and Research, Development, Testing and Validation, and Regulatory Approval and Launch. Each phase is broken down into specific tasks, such as identifying regulatory requirements, designing AI algorithms, and conducting clinical trials, which are assigned to respective team members.

The WBS serves as a roadmap for the project, detailing all tasks and deliverables. By breaking down the project into smaller parts, it helps manage the scope, allocate resources, and set clear milestones. It also facilitates communication among team members and stakeholders, ensuring everyone is aligned with the project goals. The WBS is a living document that will evolve as the project progresses, allowing for adjustments and refinements as needed.

Integrating environment variables, scope processes, and organizational systems into the project plan is critical for the success of the AI-Enhanced Implantable Eye project. The WBS provides a clear structure that guides the project from inception to completion, ensuring all aspects are covered and managed effectively.

**Module 4 – The Project Design and Outline**A close-up of a document

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**Module 5 – Design Methodology**

**Gantt Chart**

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**Introduction**

The AI-Enhanced Implantable Eye project aims to develop a revolutionary implantable device designed to monitor and manage intraocular pressure (IOP) in glaucoma patients using artificial intelligence (AI). This project merges bioengineering with advanced AI algorithms to ensure real-time monitoring and adjustment, potentially restoring vision through regenerative capabilities. This paper outlines the project’s design methodology, covering the various phases and presenting a Gantt chart that illustrates the project timeline and concurrent tasks.

**Design Methodology**

**Inception Phase (Months 1-6)**

The inception phase focuses on planning, initial research, and establishing key clinical partnerships. During this period, the prototype's design and foundational work for AI algorithms begin.

* **Key Deliverables**: Prototype design and clinical partnerships.

**Development Phase (Months 7-18)**

The development phase involves the creation of the AI system and the hardware components that will interface with the optic nerve. This phase will also integrate both software and hardware systems to develop the prototype.

* **Key Deliverables**: A functional prototype capable of autonomously managing IOP.

**Testing & Validation Phase (Months 19-24)**

Clinical trials will be conducted during this phase to ensure the system works as intended, focusing on its ability to track and autonomously manage intraocular pressure in real-time.

* **Key Deliverables**: Clinical trial results and performance validation reports.

**Regulatory Approval Phase (Months 25-30)**

This phase focuses on obtaining the necessary approvals from regulatory bodies, such as the FDA. All required documentation will be submitted, and the product will be prepared for market entry.

* **Key Deliverables**: Regulatory submissions and approvals.

**Launch & Maintenance Phase (Months 31-36)**

The final phase of the project involves launching the product to the market, followed by monitoring post-launch performance and ensuring proper system maintenance for early adopters.

* **Key Deliverables**: Product launch and post-market surveillance reports.

**Concurrent Tasks**

Throughout the project, several tasks will run concurrently to optimize the use of resources and time:

* **Research and development** during the inception phase will overlap with early-stage clinical partnerships.
* **Prototype development** and **software integration** will run in parallel during the development phase.
* **Regulatory preparation** will commence during clinical trials to streamline the approval process and minimize delays.

**Conclusion**

The AI-Enhanced Implantable Eye project requires careful planning and execution across multiple phases. By utilizing a Gantt chart, the project’s timeline can be visualized, ensuring that concurrent tasks are efficiently managed, and key deliverables are met on time. This structured approach will help guarantee the successful development, testing, and launch of this innovative medical device.

**Module 6 - Risk Matrix**

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There are a few risks that come with the AI-Enhanced Implantable Eye project, but with the right approach, they can be managed. The most concerning would be **technical issues with the AI system**, which could really mess with real-time monitoring if something goes wrong. We’ll handle this by testing the system constantly to catch any problems before they get serious.

**Hardware malfunction** is another big one, especially since the device interacts with the optic nerve. While it's unlikely, if something does go wrong, it could have serious consequences. That’s why we’re putting the hardware through rigorous testing and partnering with reliable manufacturers.

**Regulatory delays** can also be a major headache, so we plan to start the approval process early during clinical trials to avoid getting held up later.

As for **clinical trial failures**, while the chance is low, it’s always a possibility in medical projects. Thorough pre-clinical testing should reduce the chances of issues in human trials.

Finally, **funding shortfalls** could slow us down if we run into budget issues, so having multiple funding sources and a contingency plan in place will help keep things moving smoothly.

By anticipating these risks and having a solid plan in place to address them, the AI-Enhanced Implantable Eye project should stay on track and achieve its goals.

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