UNIVERSITY OF PERADENIYA

Faculty of Engineering

PROGECT PROPOSAL ON

DEVELOPMENT OF AN ADVANCED SHIPYARD SPACE ALLOCATION AND SCHEDULING SOFTWARE FOR STREAMLINING UNIT FABRICATION PROCESS

at

COLOMBO DOCKYARD PLC, COLOMBO 15

Team members

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CONTENT

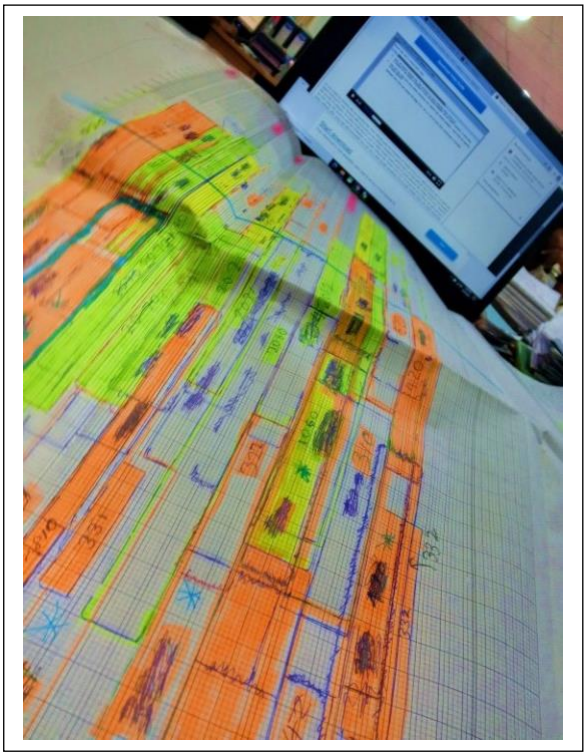
(1.0) INTRODUCTION

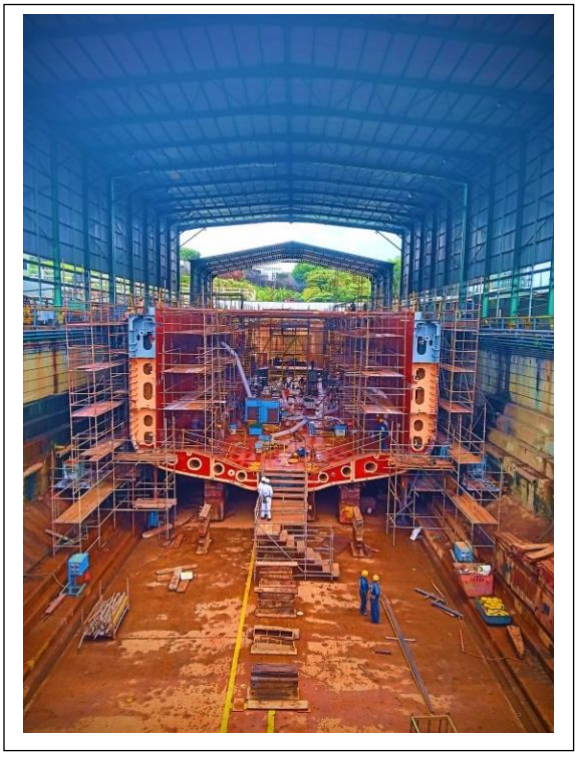
Shipyard space allocation and scheduling represent critical facets of shipbuilding and repair operations. These processes revolve around the efficient management of available workspace within a shipyard and the development of a meticulously structured timeline for constructing, assembling, and maintaining vessels and their constituent parts. The core principles encompass the optimization of space utilization to alleviate congestion, the logical sequencing of tasks to ensure a smooth workflow, and the allocation of resources, from labor to materials, in a manner that prevents shortages and overuse. Meeting project deadlines and maintaining flexibility to adapt to changing circumstances are paramount, as is the quest for resource efficiency to reduce operational costs. Quality assurance, rooted in well-planned scheduling and resource allocation, ensures the production of high-quality vessels. The integration of data-driven decision-making through advanced software solutions and unwavering commitment to safety protocols further underpin the successful orchestration of shipyard activities. In essence, shipyard space allocation and scheduling endeavors to harmonize resource, space, and time management, fostering efficient, punctual, and cost-effective ship construction and maintenance, all while upholding stringent safety and quality standards.

Therefore, the shipbuilding industry, a cornerstone of global trade and transportation, relies on the efficient fabrication and assembly of complex units within shipyards. These units, which range from ship hulls to intricate machinery components, form the foundation of vessels that navigate the world's waterways. However, the path to achieving optimal productivity, cost-effectiveness, and timely project completion in shipyard operations is not without its challenges. In the dynamic world of shipbuilding, the ability to allocate space effectively and schedule unit fabrication processes efficiently is paramount. As Co. Dockyard plc has been doing this space allocation process manually from the beginning with a waste of a big time period, they have already noted that Traditional approaches often fall short, resulting in suboptimal space utilization, project delays, and increased operational costs. To address these issues and empower shipyards to thrive in a competitive environment, we propose the "Development of an Advanced Shipyard Space Allocation and Scheduling Software.". Here we consider dimensions of the beds, width of a unit , number of units, tonnage, sequence, number of ships works at a period for the space allocation process and some other data to do space allocation process in unit fabrication automatically using the software. Moreover, we can use only a excel file with required data and the software will give the space allocated chart in a user-friendly way. Therefore, we no need to do the space allocation of unit fabrication process manually.

(2.0) AIM AND OBJECTIVES

In an era where technological advancements are transforming industries, the shipbuilding sector must not lag behind. The demand for ships continues to rise, with diverse requirements spanning from cargo vessels to offshore platforms. Meeting these demands necessitates innovative solutions that optimize the utilization of available resources while maintaining the highest standards of quality and safety. Therefore, ensuring that tasks are sequenced, scheduled, and allocated the appropriate workspace is akin to orchestrating a symphony of operations. The orchestration becomes even more intricate when considering the varying sizes, shapes, and complexities of ship components. As Current methods often lack optimization and are prone to inefficiencies. This project seeks to address these challenges by developing a software tool tailored to the specific needs of shipyards. Hence, there are some primary objectives of this project, such as, develop an advanced shipyard space allocation and scheduling software , optimize space utilization within the shipyard, improve unit fabrication scheduling to meet project deadlines, enhance overall productivity and reduce operational cost and etc. Therefore as a team we believe that this would be really effective output which can revolutionize and give advantages for a long time in marine engineering sector.





(3.0) METHODOLOGY AND WORK PLANE

The project will follow these key steps:

1) Concept Dev.

- Analyzing current procedure
- Identification of the problem state
- Research
- Project Proposal

2) Design Planning

- High-level system architecture
- Select technology stack and tools
- Flowchart diagram
- Revise the flow chart

3) Dev. & Testing

- Python Script
- Bug testing
- Final code
- UI/UX Design

4) Deployment

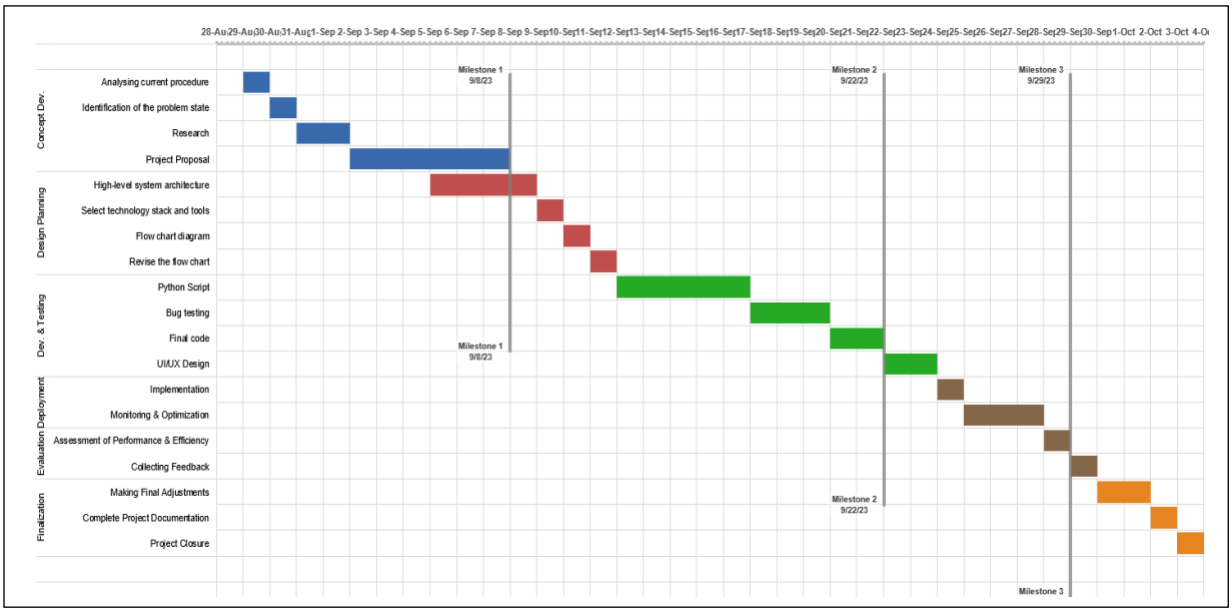
- Implementation
- Monitoring & Optimization

5) Evaluation

- Assessment of Performance & Efficiency
- Collecting Feedback

6) Finalization.

- Making Final Adjustments
- Complete Project Documentation
- Project Closure


Concept Dev.
Analysing current procedure
Identification of the problem state
Research
Project Proposal
Design Planning
High-level system architecture
Select technology stack and tools
Flow chart diagram
Revise the flow chart
Dev. & Testing
Python Script
Bug testing
Final code
UI/UX Design
Evaluation Deployment
Implementation
Monitoring & Optimization
Assessment of Performance & Efficiency
Collecting Feedback
Finalization
Making Final Adjustments
Complete Project Documentation
Project Closure
Milestone 1
9/8/23
Milestone 2
9/22/23
Milestone 3
9/29/23

(4.0) CONCLUSION

The "Development of an Advanced Shipyard Space Allocation and Scheduling Software" project is poised to be a transformative endeavor, offering a pivotal advancement in shipyard operations. Through the optimization of space allocation and scheduling processes, our primary goal is to elevate productivity, reduce operational costs, and uphold project deadlines. This comprehensive project proposal earnestly seeks the endorsement and support needed to proceed with software development.

This initiative signifies a substantial stride towards revolutionizing shipyard operations. Through the implementation of this innovative software solution, our overarching vision is to empower shipyards globally not only to meet but surpass industry standards, thereby fostering a culture of innovation, heightened efficiency, and unwavering competitiveness. In essence, this project heralds a new era in shipyard management, one that promises to elevate shipbuilding and repair processes to unprecedented levels of excellence and effectiveness.

(6.0) REFERENCES

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