

**Week 8: Course Project: Final Project Plan**

Managing IT Projects – 61445

Devry University

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## **1. Introduction**

### **A. Project Purpose**

The purpose of the "Restaurant Robot System" project is to revolutionize the dining experience by integrating robotics into the hospitality industry. This system will automate tasks such as order taking, food delivery, and clearing tables, improving efficiency, enhancing customer satisfaction, and reducing operational costs. The technology-driven approach aligns with the increasing demand for innovation in service delivery within the restaurant industry (Ivanov et al., 2019). The Restaurant Robot System is developed in order to achieve efficiency in restaurant management and at the same time serve as a basis for future developments of the restaurant and hotel industry.

### **B. Project Goals**

1. Implement a functional restaurant robot system capable of handling basic operational tasks.
2. Enhance customer satisfaction by reducing wait times and increasing service accuracy.
3. Reduce labor dependency and operational costs by automating routine activities.
4. Ensure scalability for future enhancements, such as multi-language support and advanced analytics.

### **C. Project Scope**

The project will include designing, developing, and deploying a robot system that integrates seamlessly with restaurant operations. The scope covers hardware procurement, software development, and team training. Further, the project will include the development of

user manuals and support to a user during the first month of utilization of the result. Other measures will also be targeted in the area of conformity to standards and security guidelines to guarantee the proper performance of the robotic system in a complex environment. Some of the plans that have been set forth in the project include the fine tuning of the robots to perform at different times of the day and at various occasions like, during mass events like lunch time. But it does not include, for instance, promoting it to other Restaurateurs or giving the product an upgrade after deployment.

#### **D. High-Level Budget**

The estimated budget for the project is \$250,000, allocated as follows:

- Hardware Procurement: \$100,000
- Software Development: \$80,000
- Team Training and Deployment: \$50,000
- Contingency: \$20,000

#### **E. High-Level Time Estimate**

The project is estimated to take six months, including planning, implementation, and deployment phases.

#### **F. Project Assumptions, Constraints, and Exclusions**

##### **Assumptions:**

- The project team will have access to necessary resources and stakeholder support.
- The selected hardware and software will integrate seamlessly.

##### **Constraints:**

- The budget cannot exceed \$300,000.
- The project must be completed within six months to align with business objectives.

**Exclusions:**

- Marketing activities beyond the restaurant's pilot phase.
- Post-implementation system upgrades and feature enhancements.

**2. Information Technology Project Process and Methodology (ITPPM)****Overall Approach to Delivering the Product and Reason for Choice**

The project will use the Agile methodology due to its flexibility in accommodating iterative changes and its focus on delivering functional prototypes at regular intervals. Agile's collaborative approach also enhances stakeholder engagement, ensuring that the final product aligns with customer requirements (Baxter & Turner, 2023). The Agile methodology gives a solid foundation through which the dynamic specify the project needs are well addressed. This approach means that there will be numerous engagements by the members of a particular team and stakeholders hence the constant revision till the final product is satisfactory. Sprint cycles in Agile will allow the team to ship new results, for instance, hardware integration, and/or software options, at the end of the sprint cycles. It also manages risks of the project and guarantees its alignment with both technical and business tasks through collaboration and adaptable practices as components of the suggested methodology.

**Phases of the IT Project Process (ITPP)**

1. **Initiation:** Thus, define requirements and set up a project charter. In this phase, feasibility studies will be conducted and key stakeholders will be enclosed and high level project objectives will be defined.
2. **Planning:** Make detailed project schedules and cost estimates in terms of human and material resources, time frame and risk control. In this stage, the team will also perfect the technical requirement and source the implements and implements to support for implementation.
3. **Execution:** Buy hardware, design software, and initiate the process of constructing a new system. This phase will involve integration of cooperate effort by the developer and the hardware engineering team and QA staff to make it work. This means that stakeholders will be in a position to view the sprint reviews, and therefore determine progress as well as input needed on the same.
4. **Monitoring:** Pursue up to date monitoring of progress and assessment of challenges or the occurrence of project setbacks. Performance indicators will be employed to address issues such as a lack of access to resources and communication by the team, while using elements of Agile will allow the quick identification of obstacles and trouble-shooting by the working group since these elements imply open and transparent working.

5. **Closure:** Implement the system and make sure employees in the restaurant understand how it works. This phase will be on the finishing of the deliverables, pilot run of the system and collection of feedback for fine tuning of the said system. Seminars in the course of staff familiarization will impart the requisite knowledge to enable efficient use of the new system.

### **Intersection of PMLC and ITPP**

The Agile methodology aligns with the PMLC by mapping its iterative cycles (sprints) to phases of the project life cycle. Each sprint focuses on completing specific tasks, such as hardware integration or software testing, ensuring that deliverables are achieved progressively (Kerzner, 2019).

## **3. Project Estimates**

### **A. Estimation Techniques**

The project will utilize parametric estimation and expert judgment. Parametric estimation will rely on data from similar projects to estimate costs and durations, while expert judgment will refine these estimates based on team input and industry standards.

### **B. Estimates of Effort, Cost, and Duration**

- **Effort:** 5,000 person-hours distributed across design, development, and deployment.
- **Cost:** \$250,000 (detailed in the budget).
- **Duration:** 24 weeks (six months).

#### 4. Risk Management Strategy

##### Risk Response Table

<b>Risk</b>	<b>Impact</b>	<b>Likelihood</b>	<b>Response Strategy</b>
Hardware delays	High	Medium	Establish backup suppliers.
Software integration failure	High	Low	Conduct early integration testing.
Budget overrun	Medium	High	Implement strict financial controls.

##### Detailed List of Risks

1. Hardware delays due to supply chain issues.
2. Software bugs causing delays in deployment.
3. Limited staff proficiency with new technology.
4. Budget overruns from unforeseen expenses.
5. Data security vulnerabilities.
6. Stakeholder resistance to new processes.
7. Lack of customer acceptance of robot systems.
8. Inaccurate time estimations affecting deadlines.
9. Poor communication within the project team.

10. Regulatory non-compliance.

### **Risk Response Strategy**

Risks will be addressed using proactive measures, such as training workshops and stakeholder engagement sessions, and reactive measures, like contingency planning. Some of the preventive steps are educational seminars meant to increase the understanding of the staff in regard to the new technology, and involvement of the stakeholder to gain their support, and preliminary trials to expose the key problems before they grow out of proportion. As such, creating the culture of learning and preparedness on the team level will allow to prevent and address challenges (Kerzner, 2019). Contingency planning on the other hand is makes provision for backup actions to be taken when other plans fail or when new problems arise. For example, in cases where there is a delay in hardware, one can come up with a backup supplier strategy in order to do away with set project length. Likewise in the case of software integration failures, quick fix and repair mechanisms will be implemented. The use of both models at the same time ensures that a project is optimally prepare for any events that may be inevitable while, at the same time, being prepared to embrace changes when necessary, thereby making the project as resilient as it can be.

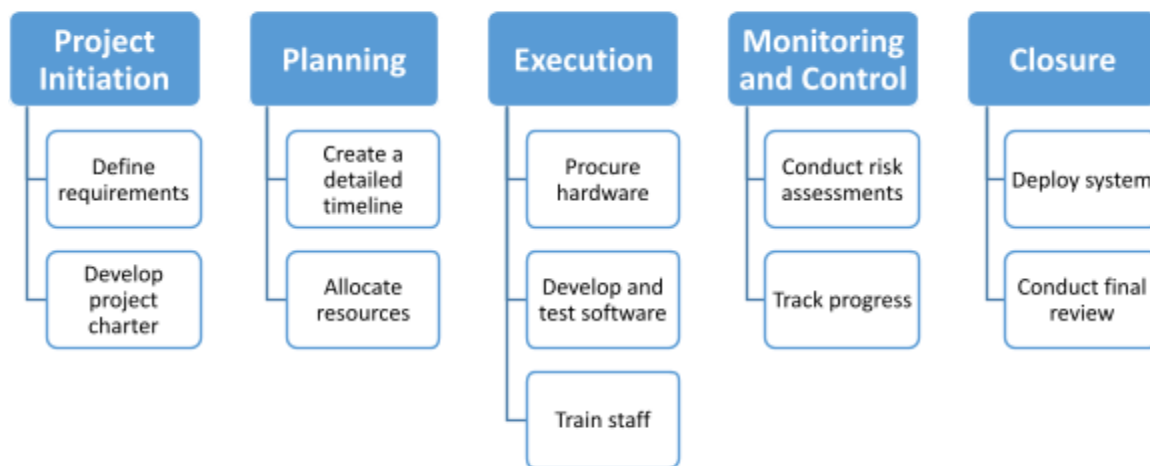
### **Risk Monitoring**

Risks will be tracked using a risk register and reviewed during weekly status meetings. The risk allocation matrix will record each risk including their likelihood/ consequence rating and risk management control. Weekly status meetings are planned where the risk register will be reviewed, and any new risks that need to be managed will be easily seen and dealt with. The project management tools that will be adopted shall enable consultation of the risks management progress in real-time (Kerzner, 2019). Moreover, to support/mitigate any similar problems in the

subsequent sprints, there will be a separate risk management group that will identify patterns and possible recommendations. It will also guarantee that every risk identified will be monitored and controlled in a constant systematic manner, giving maximum protection to the success of this project.

## 5. Schedule

### WBS



### Resource Table

Resource	Role
Project Manager	Oversees execution
Developers	Build and test software

Hardware Engineers	Handle robot integration
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### Responsibility Matrix

Task	Responsible	Accountable	Consulted	Informed
Software Development	Developers	Project Manager	QA Team	Stakeholders

### Major Milestones and Target Dates

- **Project Initiation Completed:** Week 2
- **Planning Phase Completed:** Week 6
- **Execution Phase Completed:** Week 20
- **System Deployment:** Week 24

## 6. Project Organization and Plan

The organization will follow a matrix structure of staffing where the project will employ functional and projectized employees and teams in equal measure (Ivanov et al., 2019). This structure enables enabling the functional departments to participate in project as they focus on the deliverables. Major stakeholders include project manager, developers, hardware engineers, and quality assurance officers who have well defined roles required for successful implementation of project.

Such responsibilities include supervising the general implementation of the project, coordinating the achievement of the project timelines and the main point of contact between the project stakeholders and the project operators. Software developers will perform the design and coding of the software part while MPNL engineers, hardware engineers, and scientists will design and integrate the robotic systems. End-users/end-users will request that quality assurance personnel test the system to see whether it satisfies a set level of quality.

## **7. Project Methodology**

The project will apply the Agile method that has been selected for its focus on the model's progressive approach to development and its emphasis on feedback. In other words, it can be useful when capturing requirements for a project is challenging due to that project's reliance on technology or because of the dynamism of the environment in question. This way, the project is kept focused with its goals while flexibility is achieved for changes to be effected.

Daily scrum meetings will be held for each of the two week sprints and a particular set of items will be produced by each iteration. These sprints will follow a structured cycle: The continuous representation of activities is planning, execution, review, and retrospective. With regard to planning, a number of activities may be categorized depending on their importance and the time of their execution during the event (Baxter & Turner, 2023). Implementation will contain activities of component development and integration While a paperwork or cyclical phase will be involved in assessing the deliverables to the quality standards. Scrum meetings held at the end of each sprint will allow the team to address lessons learned and feed that into the next sprint.

## **8. Change, Quality, and Communications Management Plan**

### **A. Change Management**

A formal change management process will be adopted to address any changes in relation to the project's plan. Any type or form of change will be recorded in a change register where particulars such as the nature of the change, justification, its implications on the time-line and cost will be entered. These requests will further be sent to the Change Control Board (CCB) formed of top stakeholders and project heads. CCB will judge every such request on the test of practical, appropriate, reasonable and relevant to the projects' goals and objectives (Baxter & Turner, 2023)

### **B. Quality Management**

This is in regards to the quality with an approved plan that will be used to supervise the quality of the deliverables at the project in order to ensure that they will meet the quality of the standards set by the industry. Another one is testing, the development will involve unit testing, integration testing as well as system testing though the process will be tested on a regular basis. Developers will do code reviews to perform Fault detection and software problems detection and hardware engineers will do performance test on the robotic systems.

### **C. Project Communications Plan**

Communication will play a most central role in the implementation of this project. These can include scope description; a detailed schedule of how information will be passed from one

stakeholder, partnering organization or team member to another and so on (Baxter & Turner, 2023). Optimization status reports will be shared with the project team on weekly basis showcasing the progress, risks or activities that might be expected in the near future. Information about the project will be updated on a monthly basis and submitted to the senior management for further reference to organizational goals and objectives.

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