**Project Charter Document**



**Project Name:** Machin Downtime

**Industry**: Vehicle Fuel Pump Manufacturing

**Department:** Technical resolution department

**Product/Process:** Data Analysis



**Prepared By**

|  |  |
| --- | --- |
| **Document Owner(s)** | **Project/Organization Role** |
| Give your name | Mention that you are data analyst or data scientist |
| Biplab Mondal | Data analyst |
|  |  |

**Project Charter Version Control**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Author** | **Change Description** |
| 1.0 | 12/03/2025 | Biplab Mondal | Document created |
|  |  |  |  |

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# PROJECT CHARTER PURPOSE

The project charter defines the scope, objectives, and overall approach for the work to be completed. It is a critical element for initiating, planning, executing, controlling, and assessing the project. It should be the single point of reference on the project for project goals and objectives, scope, organization, estimates, work plan, and budget. In addition, it serves as a contract between the Project Team and the Project Sponsors, stating what will be delivered according to the budget, time constraints, risks, resources, and standards agreed upon for the project.



# PROJECT EXECUTIVE SUMMARY

* Business Problem
* Business Objective
* Business Constraint
* Success Criteria:
  + Business Success Criteria
  + Economic Success Criteria
* Data Collection: Update this section after the research is done.
* Scope: If you are doing this for any specific department of the organization then please mention the same.
* Assumptions: E.g., Data will be provided by customer, Cloud & GPU will be provided by customer
* Risks: E.g., Required data might not be available; Server connectivity might be weak, etc.
* Costs: Project cost – You can do assumptions by putting [number of hours \* number of human resources (cadre wise) \* hourly cost]
* Timeline: High level timeline of the project. E.g., Project will be for 20 to 25 days.
* Approach: Data Analytics Project Management Methodology



# PROJECT OVERVIEW



# PROJECT SCOPE

## Project Deliverables

|  |  |
| --- | --- |
| **Milestone** | **Deliverable** |
| * Identifying Constraints and design the project architecture, explore various public forums to collect relevant data, Data Preparation. | * Deliverable 1.1—Identifying Constraints and design the project architecture. * Deliverable 1.2—Explore various public forums to collect relevant data. * Deliverable 1.3— Data Preparation |
| * EDA and Descriptive Analytics | * Deliverable 2.1— EDA and Descriptive Analytics * Deliverable 2.2— Insights documentation |
| * Show case and review, Final Presentation and documentation, Handover and KT. | * Deliverable3.1 – show case and review. * Deliverable3.2 – Final Presentation and documentation * Deliverable3.3 – Handover and KT |

## Deliverables Out of Scope

* Web Application
* Mobile App
* Cloud based deployment

## Project Duration (start date: 15/09/2021 End date: 05/10/2021)

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Milestone** | **Date Estimate** | **Deliverable(s) Included** | **Confidence Level** |
| * Identifying Constraints and design the project architecture, explore various public forums to collect relevant data, Data Preparation. | [15/09/2023]  -  [21/09/2023] | * Deliverable 1.1—Identifying Constraints and design the project architecture. * Deliverable 1.2—Explore various public forums to collect relevant data. * Deliverable 1.3— Data Preparation | [High] |
| * EDA and Descriptive Analytics | [22/09/2023]  -  [30/09/2023] | * Deliverable 2.1— EDA and Descriptive Analytics * Deliverable 2.2--- Insights documentation | [High] |
| * Show case and review, Final Presentation and documentation, Handover and KT. | [01/10/2023]  -  [05/10/2023] | * Deliverable3.1 – show case and review * Deliverable3.2 – Final Presentation and documentation * Deliverable3.3 – Handover and KT | [Medium] |



# PROJECT CONDITIONS

## Project Assumptions

* Data will be extracted from public sources and then client provided data is mapped and finally one master data will be shared by Innodatatics for further analysis.
* Dashboards and insights are mandatory.

## Project Issues *– Fill it as and how project progresses.*

**Priority Criteria**

1 − High-priority/critical-path issue; requires immediate follow-up and resolution.

2 − Medium-priority issue; requires follow-up before completion of next project milestone.

3 − Low-priority issue; to be resolved prior to project completion.

4 − Closed issue.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **#** | **Date** | **Priority** | **Owner** | **Description** | **Status & Resolution** |
| 1 | 12/03/2025 | High | Biplab Mondal | Data quality issues with missing or inconsistent records such as ‘Hydraulic\_Pressure’, ‘Coolant\_temperature’, etc. in the machine downtime dataset. | **Resolved.**  Resolution involved imputation and some removal of missing values to ensure completeness and reliability of the dataset. |
| 2 | 13/03/2025 | High | Biplab Mondal | Difficulty in visualizing complex interactions between multiple variables. | **Resolved**.  By refining visualization techniques and adjusting plot parameters. |

## Project Risks – *Identify if there are any risks that you foresee.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Risk Area** | **Likelihood** | **Risk Owner** | **Project Impact-Mitigation Plan** |
| 1 | Unstable Hydraulic Pressure | High | Biplab | **roject Impact**: Can cause machine failure, overheating, and unplanned downtime.  **Mitigation Plan**:   * Implement real-time monitoring of hydraulic pressure. * Schedule preventive maintenance to check leaks and oil quality. * Use **automated pressure regulators** to stabilize fluctuations. |
| 2 | Coolant Temperature & Pressure Instability | Medium | Biplab | **Project Impact**: Leads to overheating, reduced efficiency, and component wear. **Mitigation Plan**:   * Install temperature and pressure sensors with alerts. * Ensure coolant levels are maintained. * Use a **predictive maintenance system** to detect early faults. |
| 3 | Air System Pressure Drops | Low | Biplab | **Project Impact:** Affects machine speed and accuracy, increasing rejection rates.  **Mitigation Plan:**   * Regularly check air compressor performance. * Inspect piping for leaks. * Implement backup air tanks for continuous pressure supply. |
| 4 | Spindle & Tool Vibrations | High | Biplab | **Project Impact:** Can lead to tool breakage, misalignment, and defects. **Mitigation Plan:**   * Install shock absorbers for vibration control. * Use higher-quality cutting tools and replace them on schedule. * Train operators on optimal spindle speed settings**.** |
| 5 | Voltage Instability & High Torque | Medium | Biplab | **Project Impact**: Can lead to electrical failures, overheating, and machine shutdowns.  **Mitigation Plan**:   * **Install voltage stabilizers** to prevent sudden drops/spikes. * Regular torque calibration to ensure optimal performance. * Implement **power backup (UPS/generators)** to avoid sudden shutdowns. |



# PROJECT REFERENCES – Any previous projects you have referred. If yes, please share the details.

|  |  |
| --- | --- |
| **Project** | **Description** |
| Optimizing Maintenance Schedules with Predictive Analytics | Research on optimizing maintenance schedules using predictive analytics to enhance efficiency and reduce operational costs in industrial settings. |
| Understanding Machine Downtime: A Review of the State-of-the-Art | A review of current state-of-the-art techniques and methodologies for understanding and managing machine downtime in manufacturing environments. |

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# APPROVALS

**Prepared by** Biplab Mondal\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Manager

**Approved by** Sharat Chandra M\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Sponsor

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Executive Sponsor

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Client Sponsor

