

National Institute of Technology, Rourkela
Computer Science Department
CS6471: Advanced Software Engineering
Laboratory

Problem Definition Document Submission

Project Title: Road Repair and Tracking Software (RRTS)
Development

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Problem Definition Document

- **Project Title:** Road Repair and Tracking Software (RRTS) Development
- **Problem Statement:** The challenge is to create a Road Repair and Tracking Software (RRTS) for a city's Public Works Department. This software should handle everything related to road repairs: when residents report issues, supervisors assess road conditions, prioritize repairs based on severity and location, schedule the work with available resources, adapt to changes in personnel and machinery, and offer repair statistics to the mayor. The aim is to simplify road maintenance management and improve decision-making, resource allocation, and reporting for the city's road upkeep.
- **Project Objectives:**

The objective of the Road Repair and Tracking Software (RRTS) project is to automate and enhance the road repair activities of a large city's Public Works Department. Key goals include:

 - **Efficient Complaint Handling:** Develop a system for residents to report road issues, streamlining complaint recording and retrieval.
 - **Prioritization and Assessment:** Assist supervisors in evaluating road conditions, prioritizing repairs based on severity and locality type.
 - **Resource Planning:** Estimate required raw materials, machinery, and personnel for repairs, generating feasible schedules.
 - **Real-time Resource Management:** Allow administrators to update available resources, enabling dynamic project rescheduling.
 - **Statistical Insights:** Provide the mayor with repair statistics, ongoing tasks, and resource utilization over time.
 - **Informed Decision-Making:** Empower supervisors and administrators with data for optimal repair management.
 - **Transparency:** Maintain a digital record of repair processes, enhancing accountability and transparency.

The RRTS project aims to create an integrated solution for efficient, data-driven road repair management.

- **Preliminary Ideas:**

1. **Complaint Digitization:** Streamline complaint recording, capturing key details for efficient management.
2. **Priority Algorithm:** Develop a priority system based on road condition and locality, adhering to industry norms.
3. **Resource Estimation:** Estimate material, machinery, and personnel needs using historical data and repair complexity.
4. **Dynamic Scheduling:** Generate flexible schedules considering priorities and real-time resource availability.
5. **Administrator Control:** Provide an interface for resource updates, adapting to unforeseen changes.
6. **Data Analytics:** Incorporate analytics for repair stats, task reports, and resource utilization insights.
7. **Transparency:** Maintain digital records of processes and resource use, enhancing transparency and accountability.

These initial ideas, grounded in industry practices, will evolve through user collaboration during the project's lifecycle.

- **Project Scope:**

1. Automate and enhance road repairs for a city's Public Works Department.
2. Web and mobile compatibility, integration with city systems, industry standards adherence.
3. Rigorous testing, best industry standard methodology, user collaboration.
4. Project completion targeted within 12 months.
5. Total estimated cost and time will be a lot because we are going to use robust, scalable and industry standard tools and techniques.

- **Feasibility Study:**

Time Estimate for Feasibility Study:

The feasibility study phase is expected to take approximately 4 to 8 weeks to complete, considering the project's complexity and data availability.

For the feasibility study, a budget of around 5% to 10% of the total project cost is recommended. Actual costs may vary based on specific project needs, best practices and resources.