

**Project Design Phase-II**  
**Solution Requirements (Functional & Non-functional)**

Date	12 May 2023
Team ID	NM2023TMID22230
Project Name	Project - SQUID: Street Quality Identification

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Sensor Deployment and Data Collection	<ol style="list-style-type: none"><li>1. Identify the appropriate type and number of sensors needed to capture data related to street quality</li><li>2. Develop a deployment plan for installing sensors in the targeted area</li><li>3. Ensure sensors are properly calibrated and functioning correctly to capture accurate data</li><li>4. Establish a method for transmitting sensor data to a central server for processing</li></ol>
FR-2	Data Processing and Analysis	<ol style="list-style-type: none"><li>1. Develop algorithms to process and analyze sensor data, such as identifying potholes, cracks, and bumps</li><li>2. Identify thresholds or criteria for defining street quality, such as the number or severity of potholes</li><li>3. Develop models to predict how street quality may change over time based on the collected data</li><li>4. Analyze trends and patterns in the data to identify areas or factors that may contribute to poor street quality</li></ol>
FR-3	Data Visualization and Reporting	<ol style="list-style-type: none"><li>1. Develop dashboards or other visualizations that provide real-time updates on street quality to stakeholders</li><li>2. Develop reports that summarize trends and patterns in the data over time</li><li>3. Allow stakeholders to customize visualizations or reports to meet their specific needs</li></ol>
FR-4	Maintenance and Repair Management	<ol style="list-style-type: none"><li>1. Develop a method for prioritizing maintenance and repair tasks based on the severity and location of street quality issues</li><li>2. Establish communication channels with maintenance and repair teams to ensure timely and accurate repairs</li><li>3. Monitor and track maintenance and repair activities to ensure they are completed as expected</li></ol>
FR-5	Data Security and Privacy	<ol style="list-style-type: none"><li>1. Establish appropriate access controls to ensure only authorized users can access and modify data</li><li>2. Implement measures to protect data privacy, such as anonymizing or aggregating data to prevent identification of individual vehicles or drivers</li><li>3. Develop a disaster recovery plan to ensure data can be recovered in the event of a system failure or other disaster.</li></ol>

### Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	<b>Usability</b>	The solution should be easy to use and accessible to different types of users, such as maintenance personnel, decision-makers, and the general public.
NFR-2	<b>Security</b>	The solution should ensure data privacy and confidentiality by implementing secure communication protocols, access control, and data encryption.
NFR-3	<b>Reliability</b>	The solution should be reliable and able to consistently collect, process, and analyze data from IoT sensors to identify street quality parameters.
NFR-4	<b>Performance</b>	The solution should have optimal performance to ensure timely data processing and analysis. It should also be able to handle peak loads during high traffic periods.
NFR-5	<b>Availability</b>	The solution should have high availability to ensure that it is accessible to users and stakeholders at all times. This requires robust infrastructure and redundancy measures to avoid downtime.
NFR-6	<b>Scalability</b>	The solution should be scalable to accommodate additional IoT sensors as needed without compromising the system's availability.