1. Specifying the requirements through Use Cases

Name Use Case:	UC1: Urban traffic flow congestion analysis
Scope	Traffic flow management application
Level	User goal
Primary actor	Urban mobility planner
Stakeholders and Interests	- Users (urban mobility planners, media team of the urban mobility department): needs real time analysis of urban mobility, to be able to find the best solution to improve traffic flows throughout the city. - The Mayor of Wonderland: wants to accepts plans to improve traffic congestions only when all stakeholders and their interests have been considered (costs, noise, pollution etc.). - Emergency services (police, ambulance, firefighters): wants to be able to see where high congestion areas are (circumventing these areas during peak hours). - Residents: wants less congested traffic, but the solution must be fair (noise, pollution).
Preconditions	- The system has retrieved all relevant sensory data and is ready to simulate. - The user is authenticated to use the system (logged in).
Postconditions	- Cause and effect of different scenarios regarding urban traffic are shown in real-time. - A selection of suggested improvements for traffic flow is shown by the system.
Main Success Scenario:	1. The user authenticates and is logged into the system. 2. The system shows the traffic flows of the city, based on historic data. 2.1 Congested traffic flows are shown in red. 3. The user selects a certain area/roads to be improved. 4. The system suggests traffic flow improvements. 5. The user selects the best (w.r.t. noise, pollution, costs, people affected) traffic flow improvement. 6. The system shows the updated traffic flow. 7. The user retrieves a report of suggested traffic flow improvement and plan of action generated by the system (simulated data). 8. The report then presented to the respective stakeholder (mayor, for approval or emergency services).
Special Requirements:	1. Data must be stored locally (by the municipality, not in the cloud). 2. Process in real-time; show results directly. 3. No technical expertise is needed to use the system (user friendly).

Table 1: UC1 Urban traffic flow congestion analysis.

Name of Use Case:	UC2: Urban traffic flow during big events analysis
Scope	Traffic flow management application
Level	User goal
Primary actor	Urban mobility planner
Stakeholders and Interests	- Users (urban mobility planners, media team of the urban mobility department): needs real time analysis of urban mobility, to be able to find the best solution to improve traffic flows during big events. - Emergency services (police, ambulance, firefighters): wants to be able to see where high risk areas are, what the effect of certain big events are on certain congestion points (and how these can be improved). - The Mayor of Wonderland: wants to accepts plans to improve traffic congestions only when all stakeholders and their interests have been considered (money, noise, pollution etc.). - Residents: wants less congested traffic, but the solution must be fair (noise, pollution).
Preconditions	- The system has retrieved all relevant sensory data and is ready to simulate. - The user is authenticated to use the system (logged in).
Postconditions	Cause and effect of different scenarios regarding urban traffic are shown in real-time.
Main Success Scenario:	1. The user authenticates and is logged into the system. 2. The system shows the traffic flows of the city, based on historic data. 2.1 Congested traffic flows are shown in red. 3. The user specifies a big event at a certain building/area with an expected number of visitors. 4. The system shows the traffic flows from before and after the event. 5. The user selects can tinker around with traffic flow management solutions (blocking certain roads off, redirecting traffic, etc.) 6. The system shows the updated traffic flow. 7. The user retrieves a report of suggested traffic flow measurements and plan of action generated by the system (simulated data).
Special Requirements:	1. Data must be stored locally (by the municipality, not in the cloud). 2. Process in real-time; show results directly. 3. No technical expertise is needed to use the system (user friendly).

Table 2: UC2 Urban traffic flow during big events analysis.

Name of Use Case:	UC3: Urban traffic flow noise and pollution analysis.
Scope	Traffic flow management application
Level	User goal
Primary actor	Media team
Stakeholders and Interests	- Users (urban mobility planners, media team of the urban mobility department): needs real time analysis of urban mobility, to be able to find the best solution to improve traffic flows/ - The Mayor of Wonderland: wants to accepts plans to improve traffic congestions only when all stakeholders and their interests have been considered (costs, noise, pollution etc.). - Emergency services (police, ambulance, firefighters): wants to be able to see where high congestion areas are (circumventing these areas during peak hours). - Residents: wants less congested traffic, but the solution must be fair (noise, pollution).
Preconditions	- The system has retrieved all relevant sensory data and is ready to simulate. - The user is authenticated to use the system (logged in).
Postconditions	Cause and effect of different scenarios regarding urban traffic are shown in real-time.
Main Success Scenario:	1. Multiple residents filed reports on traffic related issues (noise, pollution, congestion) 2. The user (media team member) authenticates and is logged into the system. 3. The system shows the traffic flows of the city, based on historic data. a. Areas affected by noise and pollution are highlighted b. Population density is shown. 4. The user retrieves an overview of areas that are higher than the allowed noise/pollution levels. 5. The user retrieves a report of suggested traffic flow measurements and plan of action generated by the system (simulated data) in order to lower the noise/pollution levels below certain thresholds 6. The report is presented to the relevant stakeholders (Mayor, Head of Urban Mobility Department, Residents).
Special Requirements:	1. Data must be stored locally (by the municipality, not in the cloud). 2. Process in real-time; show results directly. 3. No technical expertise is needed to use the system (user friendly).

Table 3: UC3 Urban traffic flow noise and pollution analysis.