

Data Lifecycle Scenario: Smart City Traffic Management

You are given a short scenario to analyze.

Step 1: Individual work Draw the lifecycle diagram, indicating:

- the sources of data,
- potential issues with quality, trustworthiness, or usability,
- the expected type(s) of data (structured / semi-structured / unstructured)

Step 2: Group Discussion: Compare your individual diagrams and notes with group members. Reflect on each stage of the lifecycle with your team and answer the guiding questions provided, completing the **lifecycle-step boxes** together. Prepare a brief summary (keywords or 1–2 sentences) to present.

Time guideline: 5 minutes individually, 10 minutes in groups.

Scenario Description: Smart City Traffic Management

A smart city collects traffic data from road sensors, cameras, GPS-equipped public transport vehicles, bikes, and shared scooters. The goal is to monitor congestion, optimize traffic flow, schedule public transport efficiently, and provide real-time updates to commuters. Data is collected continuously and includes both structured and unstructured sources, such as vehicle counts, camera images, and incident reports. The city must also integrate historical patterns and seasonal variations to improve planning. Additionally, citizen privacy must be protected, and any predictive models need to account for unusual events such as roadworks, accidents, or weather disruptions.

Scenario Analysis (individual work): Draw the lifecycle diagram, indicating:

- Source(s) of the data (human/machine, internal/external)
- Data type (structured / semi-structured / unstructured)
- Any obvious quality, reliability, or trustworthiness issues

Lifecycle diagram

Data Lifecycle Reflection (group work): For each stage, reflect on what it could involve in this scenario. Consider:

- How should missing or corrupted sensor data be handled?
- How can privacy be preserved with GPS tracking?
- What types of analysis could improve traffic flow or public transport scheduling?
- How can alerts be communicated effectively to commuters and emergency services?

Collect

Clean / Preprocess

Store

Analyze

Communicate / Report