

SafeStreets

MARRI IACOPO
SALAMINO MANUEL
SALAZAR MOLINA STEVEN ALEXANDER



GOALS

User goals:

[G.2] Send reports about traffic violations.

[G.3] Add pictures, type of the violation, GPS and time to the violation report.

Authority goals:

[G.5] Check the correctness of a report.

[G.6] Generate traffic ticket from verified reports.

[G.10] Get suggestions about how to improve urban mobility.

Common goals:

[G.1] Access the functionalities of the application from different locations and devices.

[G.7] Access information about safe/unsafe areas.

[G.8] Access statistics about effectiveness of SafeStreets.

[G.9] Access statistics about violations.



WORLD AND MACHINE PHENOMENA

World Phenomena

- A person leaves the car in an inappropriate place.
- A User witnesses a traffic violation.

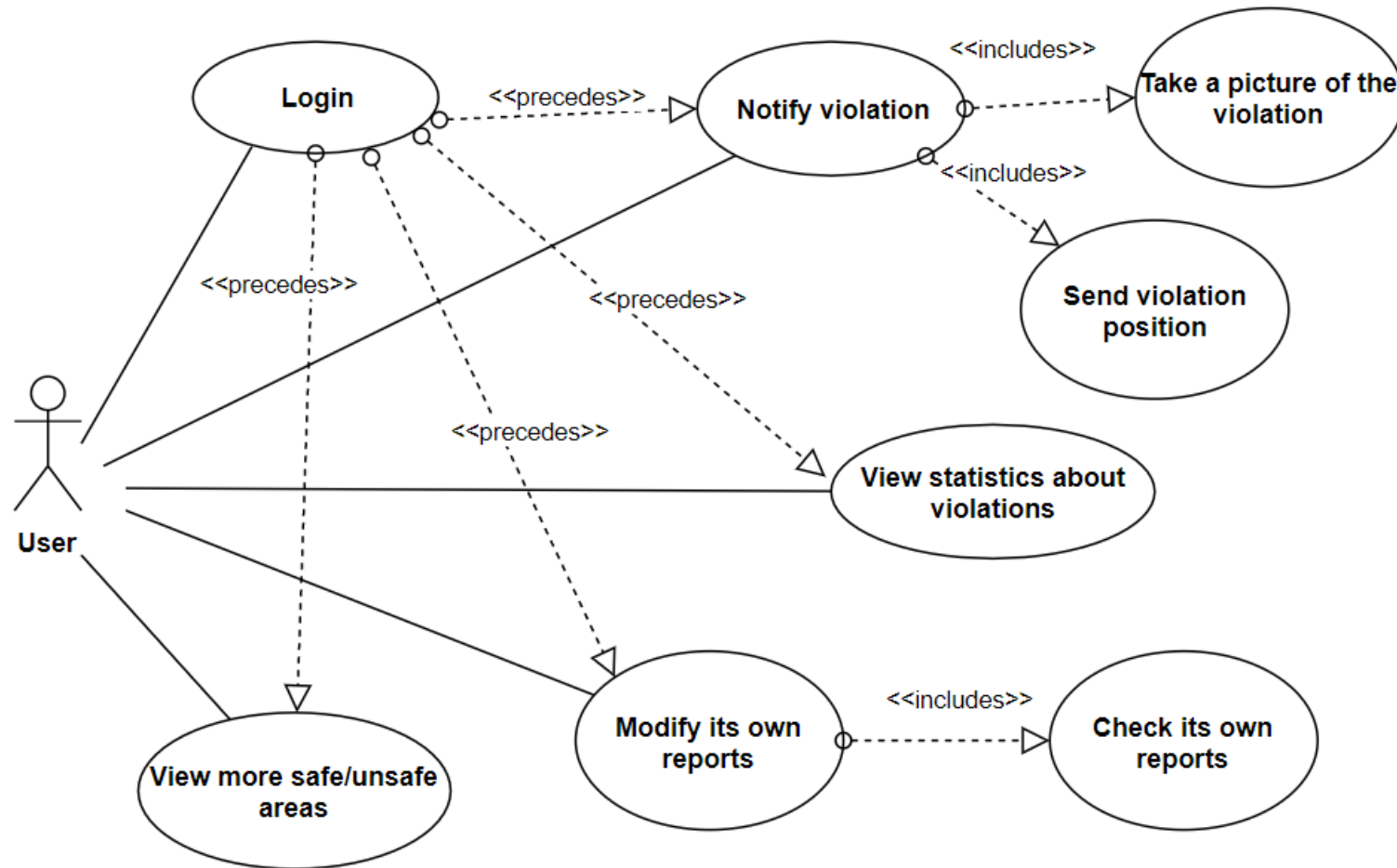
Shared Phenomena

- A User sends a report.
- SafeStreets shows to a User his own reports.
- SafeStreets shows inferred safe/unsafe areas.

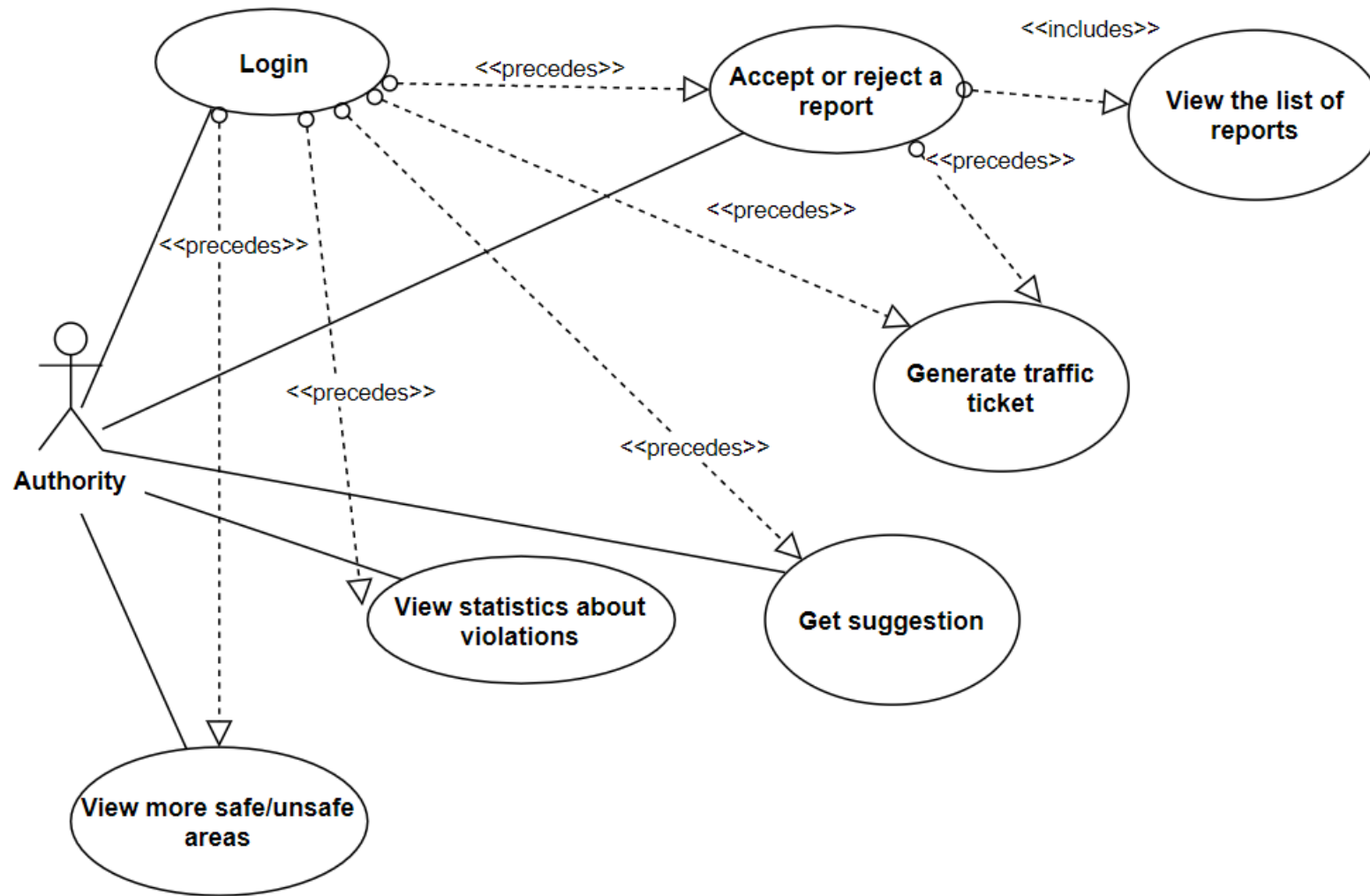
Machine Phenomena

- SafeStreets encrypts sensitive data.
- SafeStreets stores data.

USER USE CASE DIAGRAM



AUTHORITY USE CASE DIAGRAM



GOALS MAPPING ON REQUIREMENTS

[G.2] User sends reports about traffic violations.

- **[R.10]** The System must submit the received reports to an Authority for checking its validity.
- **[R.11]** The System must recognize if a report, that is about to be sent, may involve a violation already notified and alert the User.
- **[D.3]** The GPS is assumed to be subject to a maximum error of 20 meters.
- **[D.7]** Is assumed that the camera used by the User's device is working properly.

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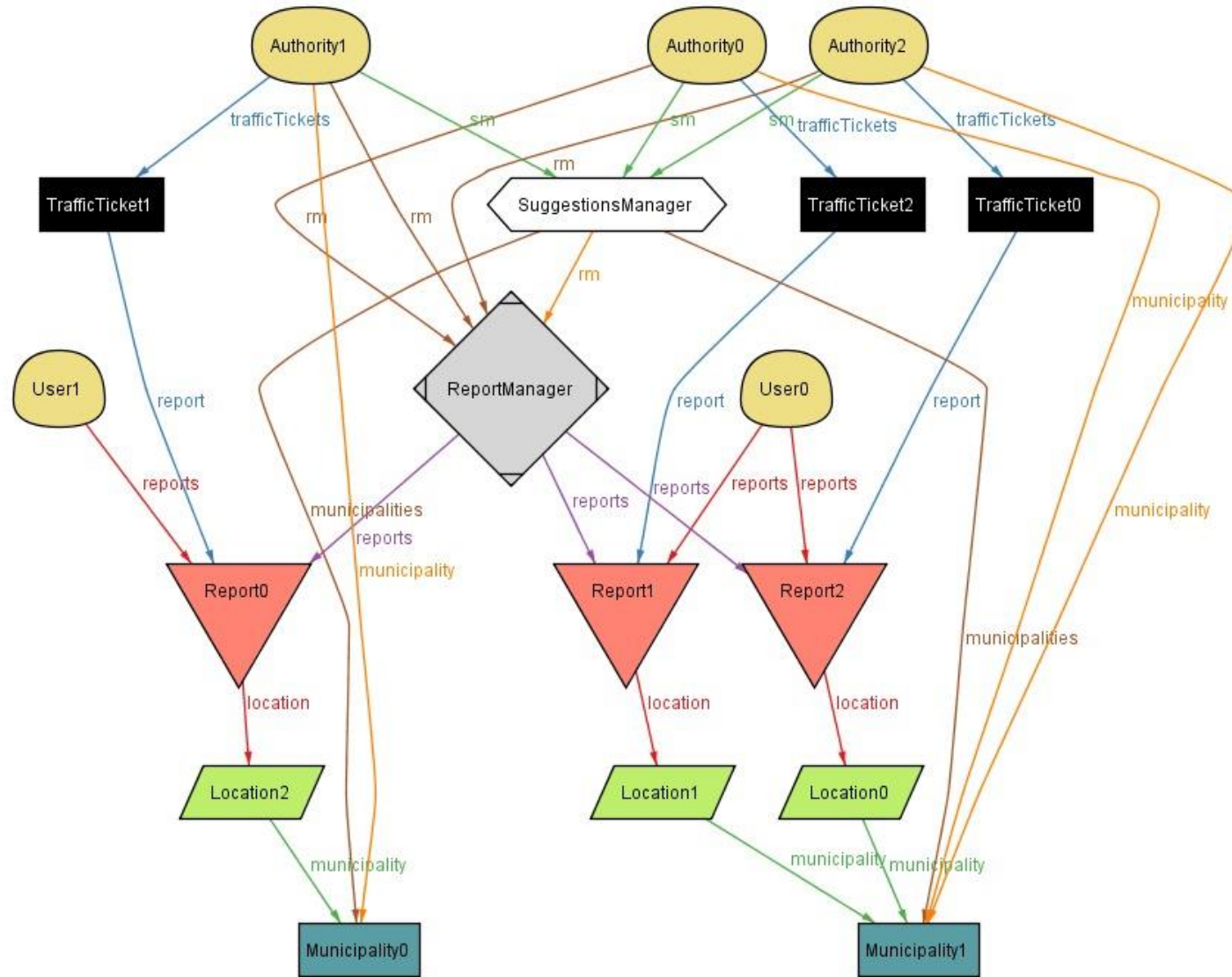
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[G.10] Authority get suggestions about how to improve urban mobility.

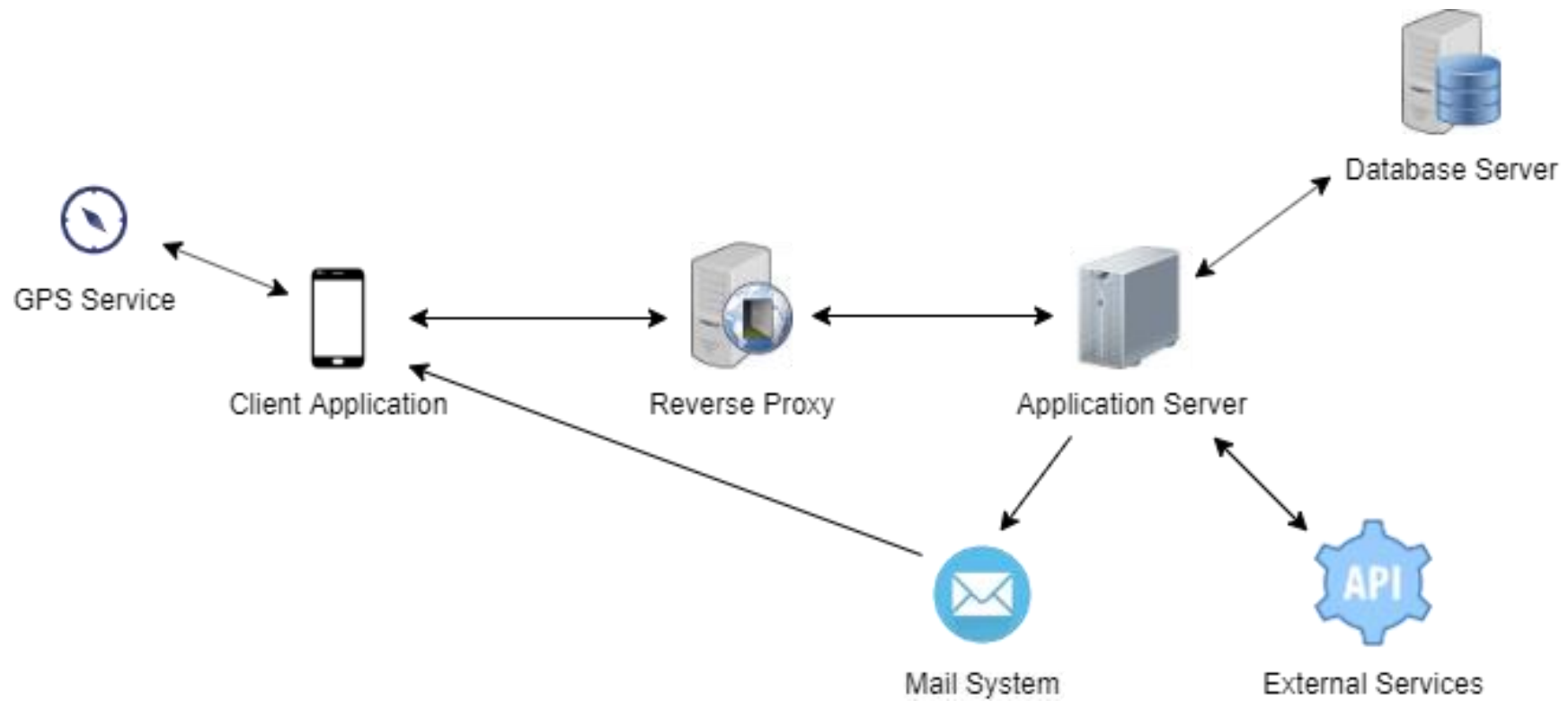
- **[R.27]** The System must cross its data with the municipality ones.
- **[D.9]** Is assumed that the municipality offers an API to access their urban mobility data.



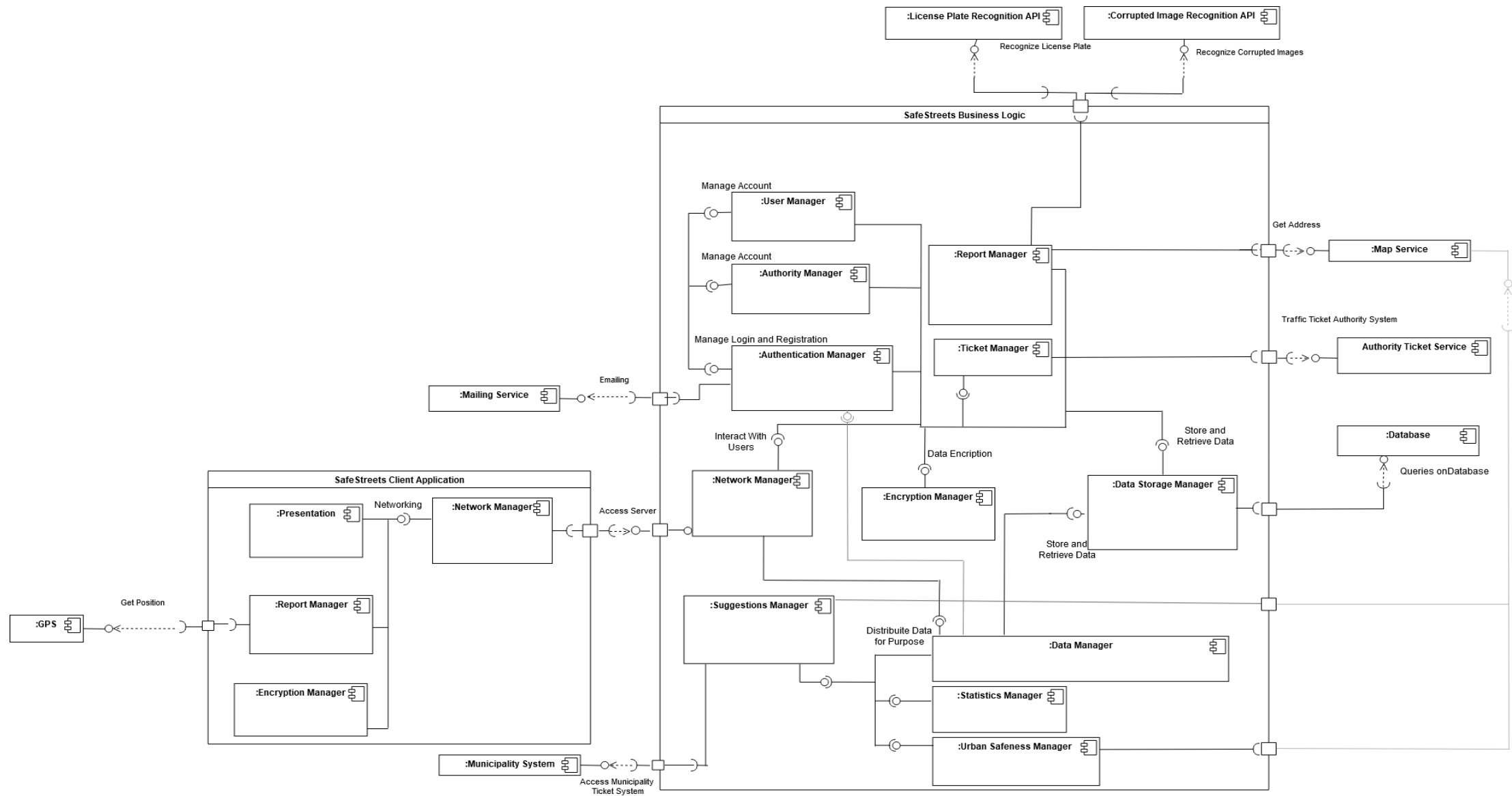
ALLOY



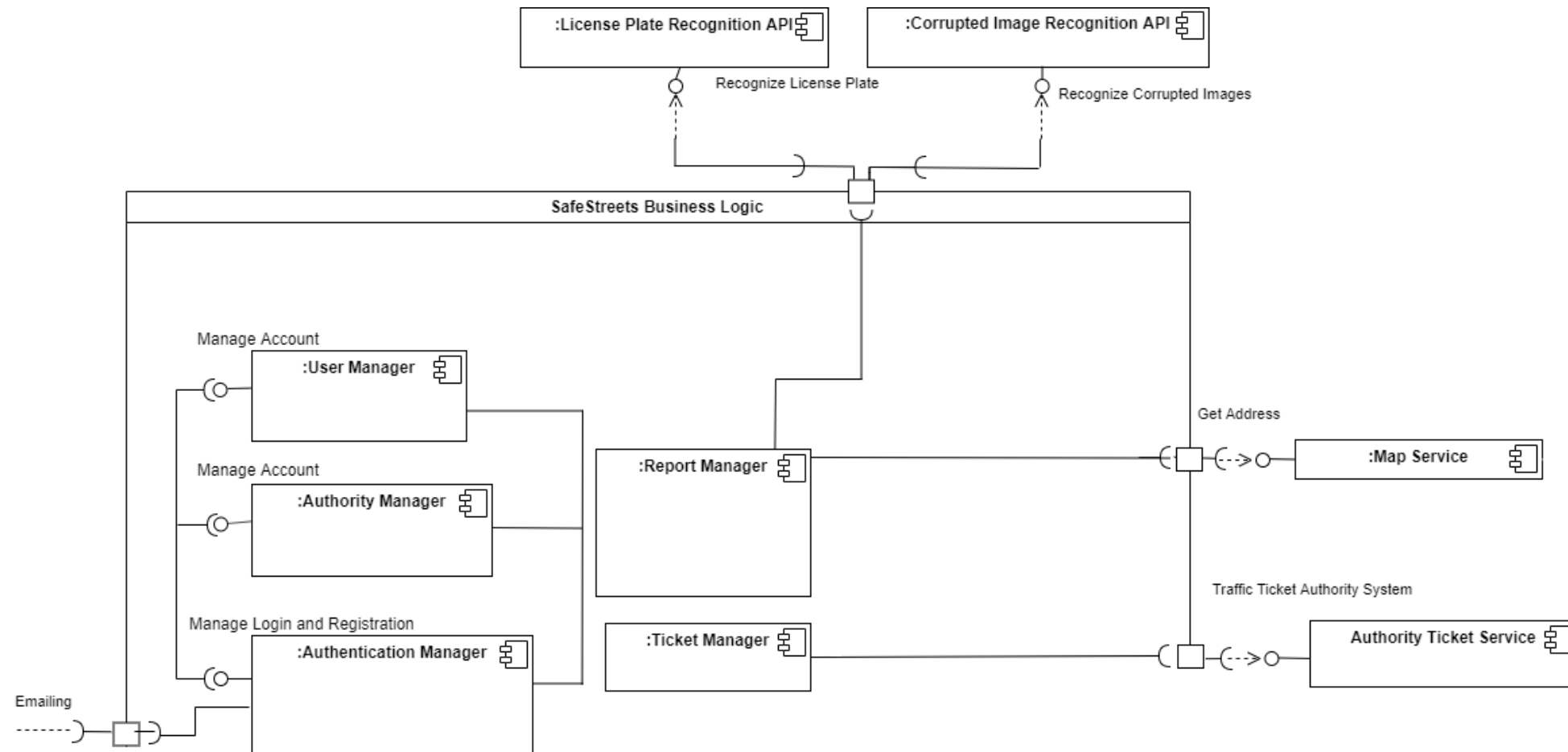
SYSTEM OVERVIEW



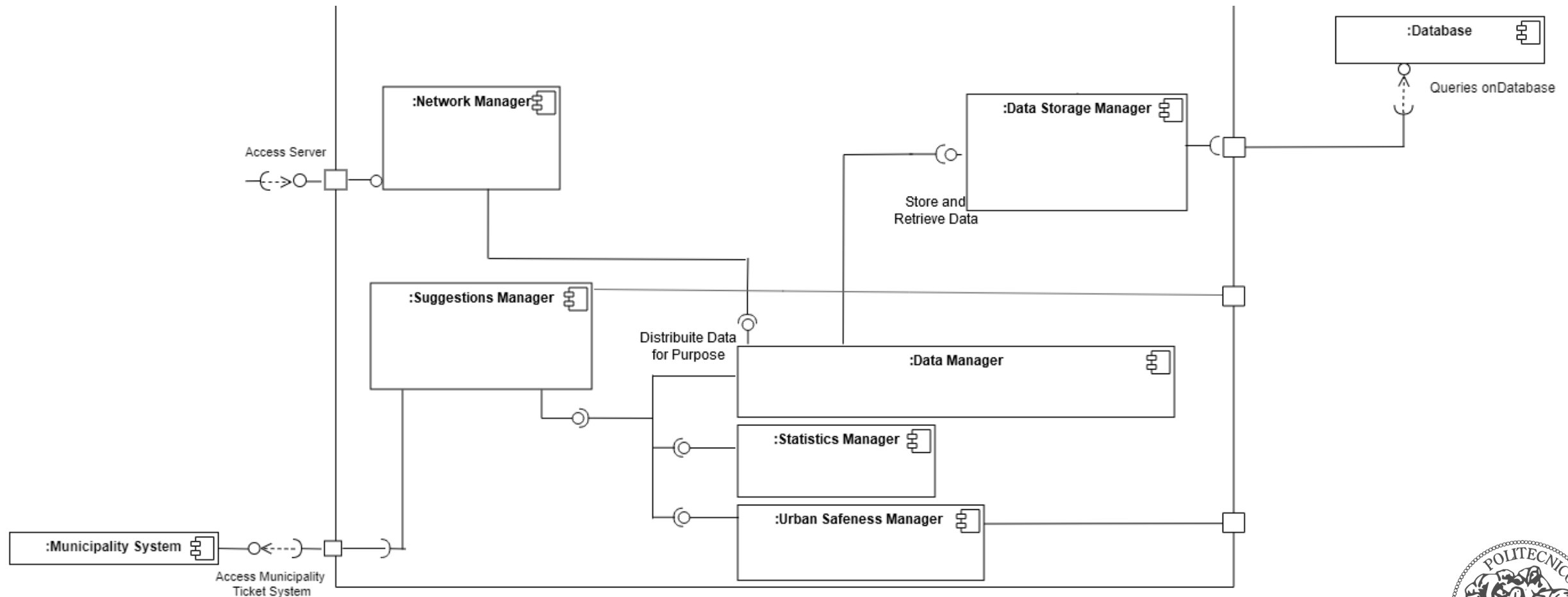
COMPONENT DIAGRAM



MEANINGFUL INTERACTIONS



MEANINGFUL INTERACTIONS



DESIGN CHOICES AND PATTERNS

Multi-Tier Architecture:

Guarantees that each tier only deals with a specific task, creating a flexible and reusable application.

REST:

Allows data exchange through HTTP protocol and stateless operations improving interoperability between systems.

RDBMS:

A Relational DBMS improves accuracy, flexibility, security and guarantee an easy management.

Observer:

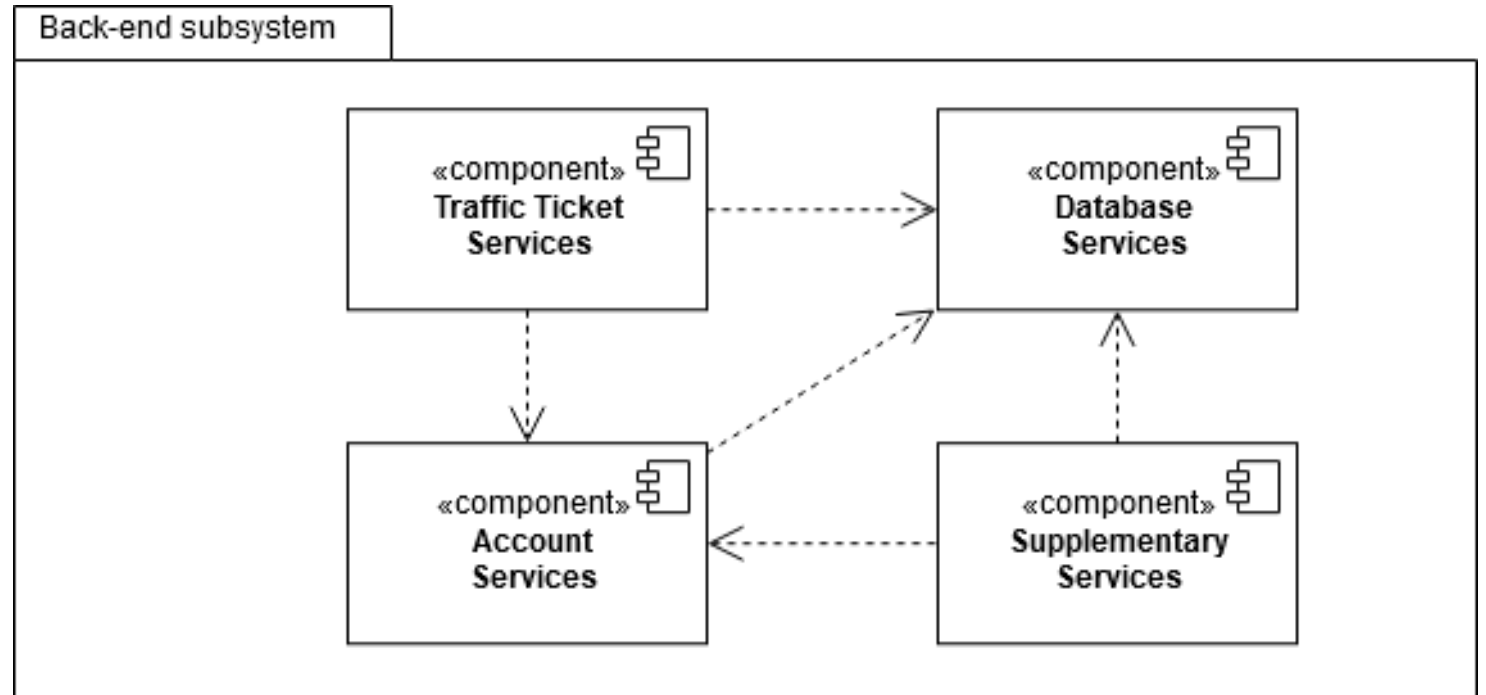
Improves the scalability of the system, making easier to add new components or functionalities.



IMPLEMENTATION PLAN

Bottom-up approach:

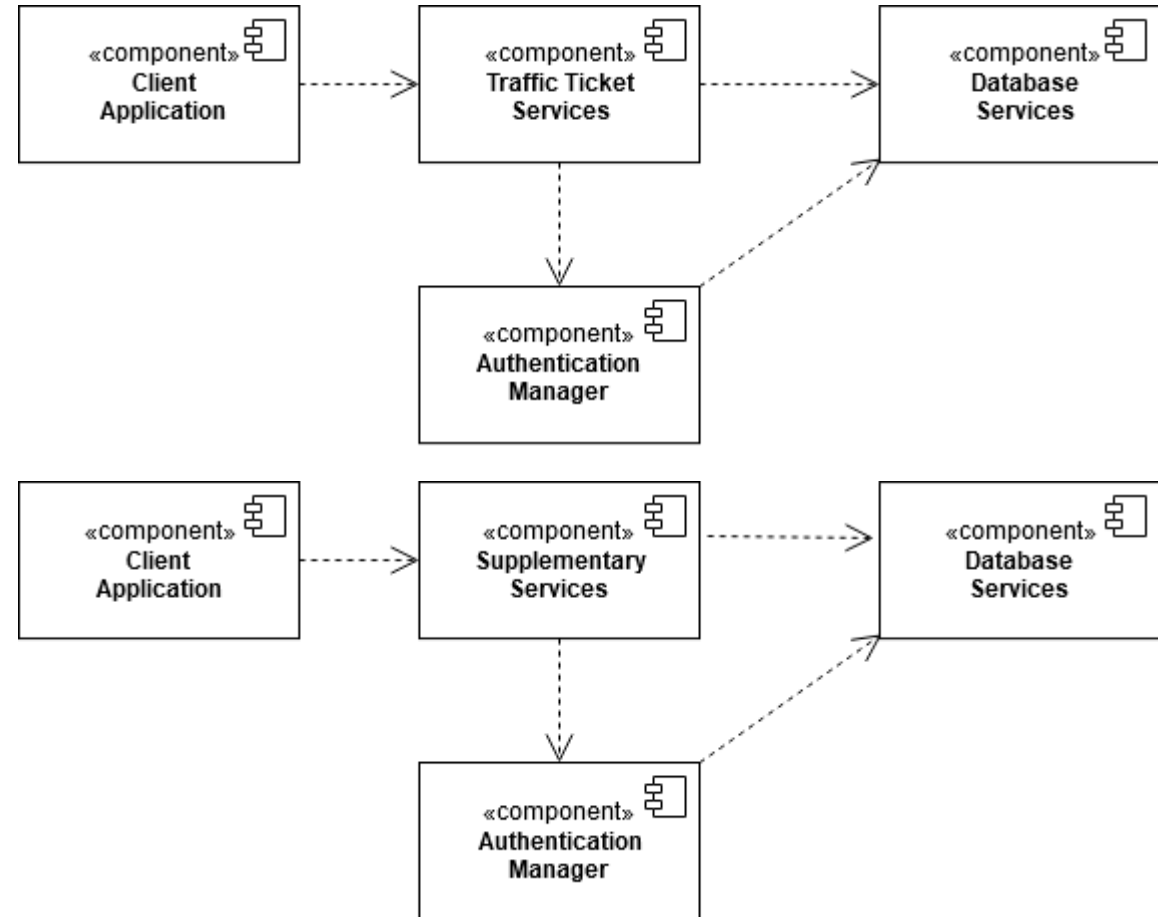
- As a first step, implementation and testing of single component of the same subsystem.
- The subsystems will be integrated and tested together.
- Testing the correct behaviour of the system.



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IMPLEMENTATION PLAN

Functionality	Importance for the customer	Difficulty of implementation
Sign up and login	low	low
Report a violation	high	high
View old reports	medium	low
View Statistics	low	medium
View Suggestions	medium	high
View Safe/Unsafe areas	high	medium



THANK YOU FOR YOUR ATTENTION

