POLITECNICO
MILANO 1863

DREAM – Data-dRriven PrEdective FArMing in Telangana

Software Engineering 2

Simone Brunello - 10831750
Nicholas Nicolis - 10867841

Academic Year 2021-22

GOALS

Goals	Description
G1	Allow farmers to easily check weather condition.
G2	Allow farmers to have technical and personalized advices from other farmers or experts of the field.
G3	Allow farmer to ask for help to the government.
G4	Improve the communication between farmers through a forum.
G5	Improve data communication between farmers and government.
G6	Allow the government to improve the analysis and the sharing of important data concerning agriculture.
G7	Allow the government to have specific data about farmers.
G8	Allow the policy makers to easily recognise critical and virtuous situations.

DOMAIN ASSUMPTIONS

To guarantee application's behaviour

D5 - The registered farmers are the owners of the farm.

D9 - Every farmer own a generic mobile device in order to use the application, otherwise the government will provide one.

D11 - Farmers send the report with all of their data every 6 months.

To avoid economical frauds

D7 - Before sending economical helps or bonuses to farmers there is an external check. by a government financial organ.

DOMAIN ASSUMPTIONS

To guarantee PDPA (»Indian GDPR«)

D3 - Every farmer and policy maker give the authorization to use their geographical data for the internal system processes.

D4 - Every farmer give the authorization to use their land registry data for the internal system processes.

BOUNDARIES

No public access

Farmers who don’t own a farm can’t utilize the application.

External API

The application rely on external sources and this implies that data updates could be not completly under the control of the internal developing team.

Administration

Administrative users are not analysed in these documents.

IMPORTANT REQUIREMENTS

To guarantee comunication

R15 - The system shall allow the farmer to send a ticket request.

R17 - The system shall allow the farmer to compile a report.

R20 - The system shall allow the farmer to visualize the forum.

R39 - The system shall allow the policy maker to visualize data.

To deliver reliable data

R7 - The system shall allow the farmer to check the weather conditions of the entire week.

R12 - The system shall allow the farmer to visualize the archive.

FUNCTIONALITIES

Farmer

- Archive
- Sending tickets
- Sending reports
- Using Forum

Both

- Weather forecast
- Reading news

Policy Maker

- Answer tickets
- Answer reports
- Analyze statistics
- Contact list
- Read Forum

USE CASES

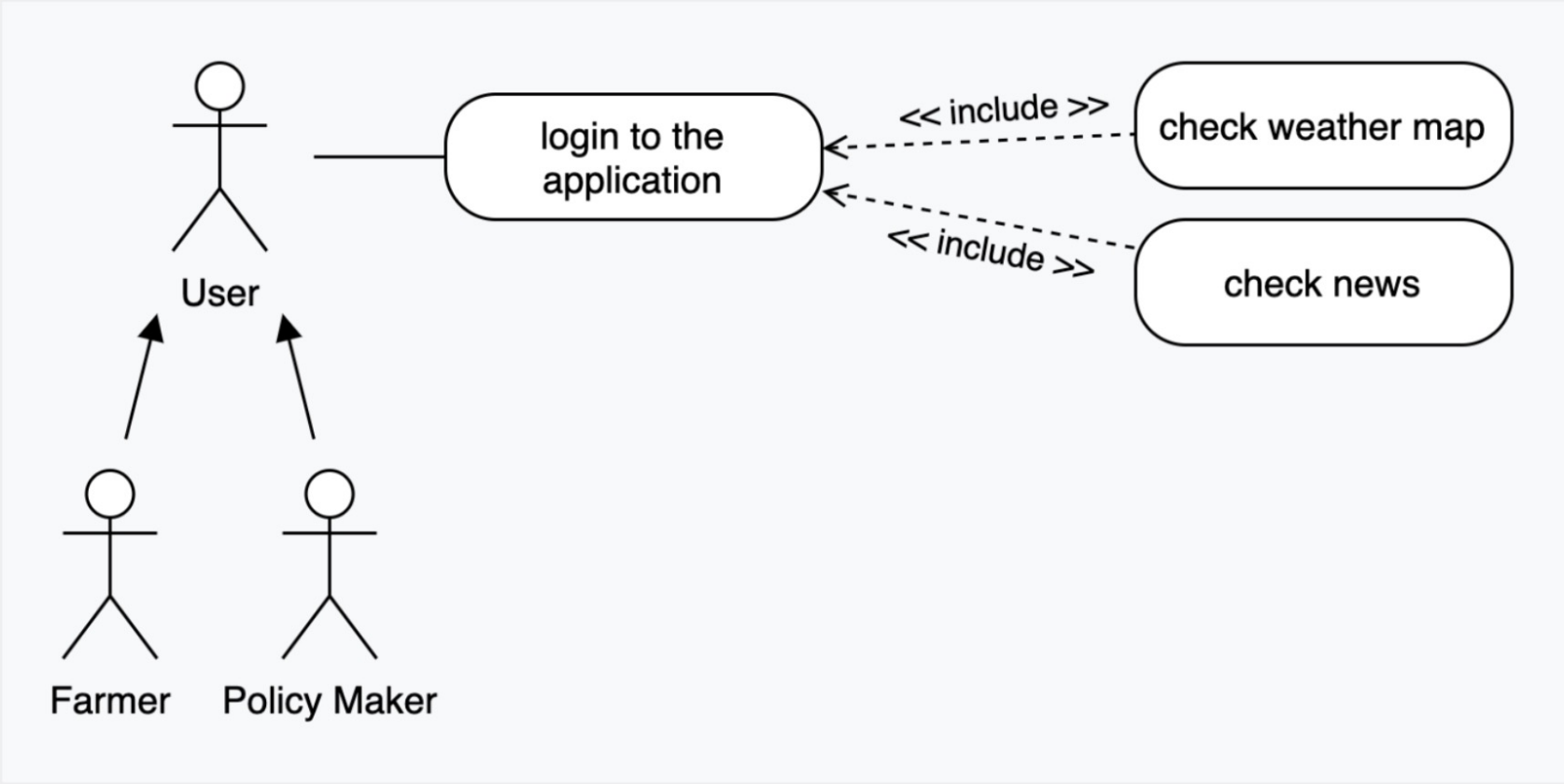
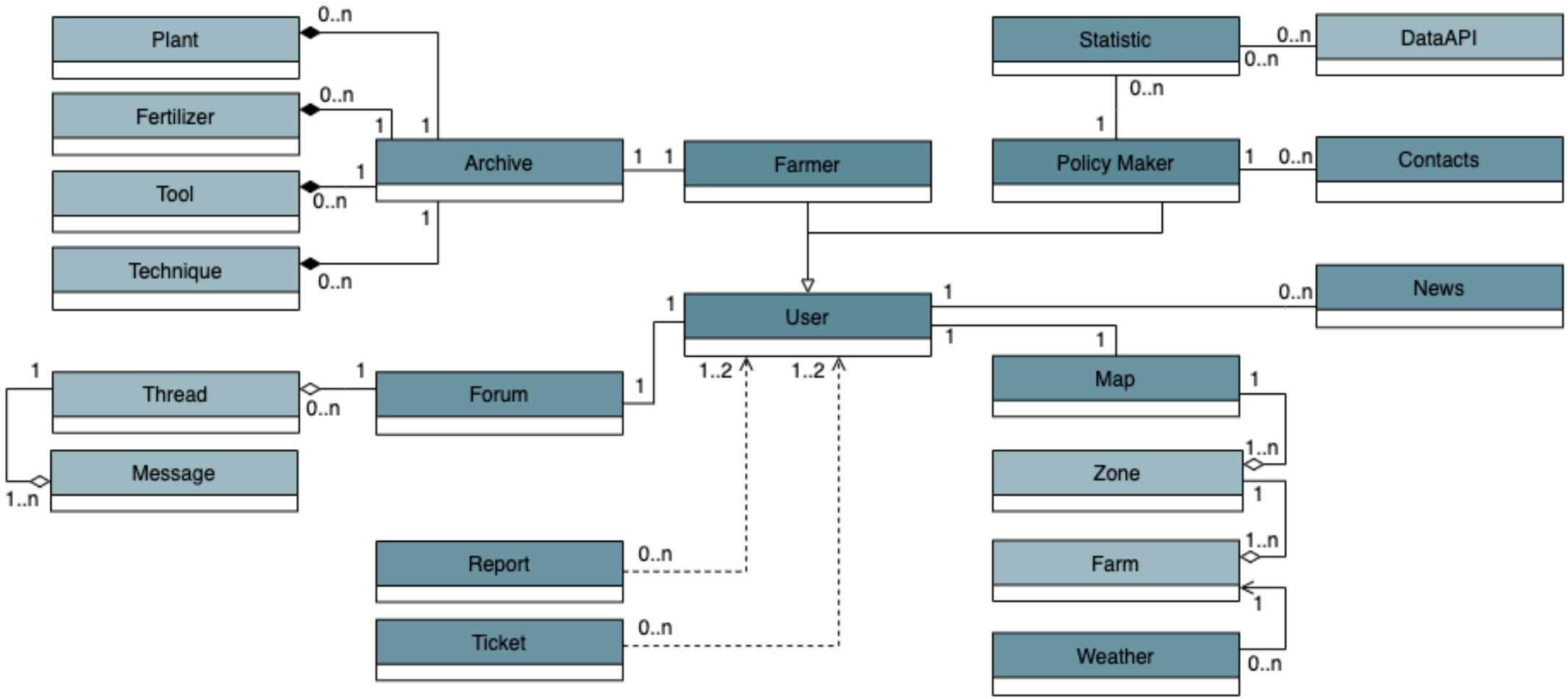
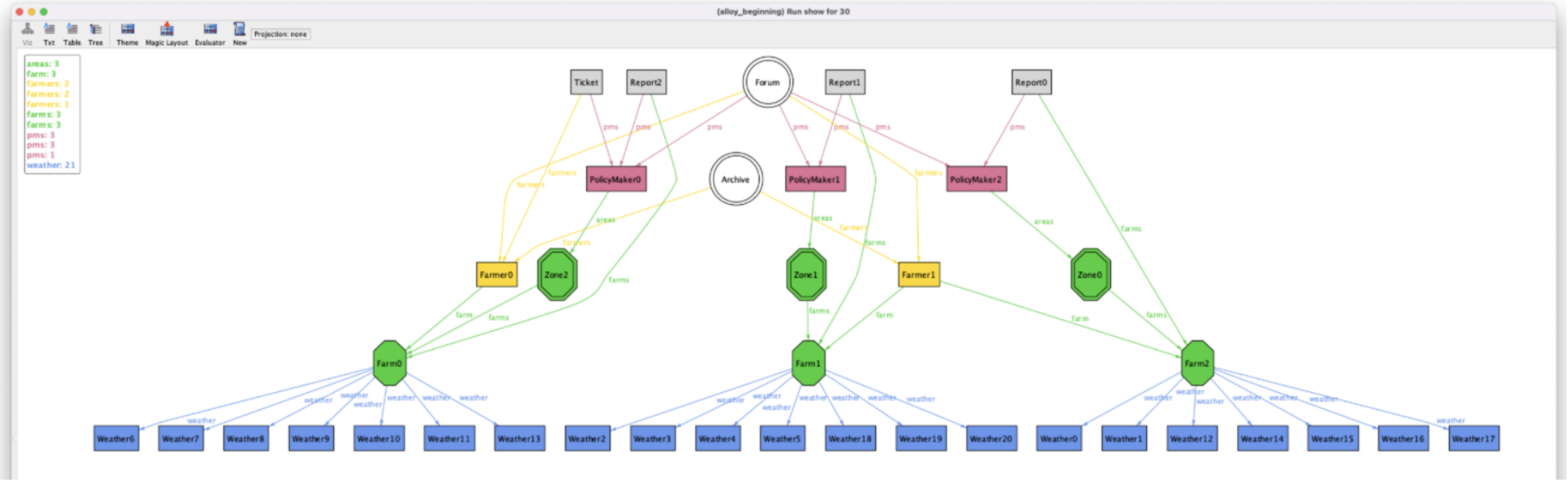


Figure 3.5: General User | use cases

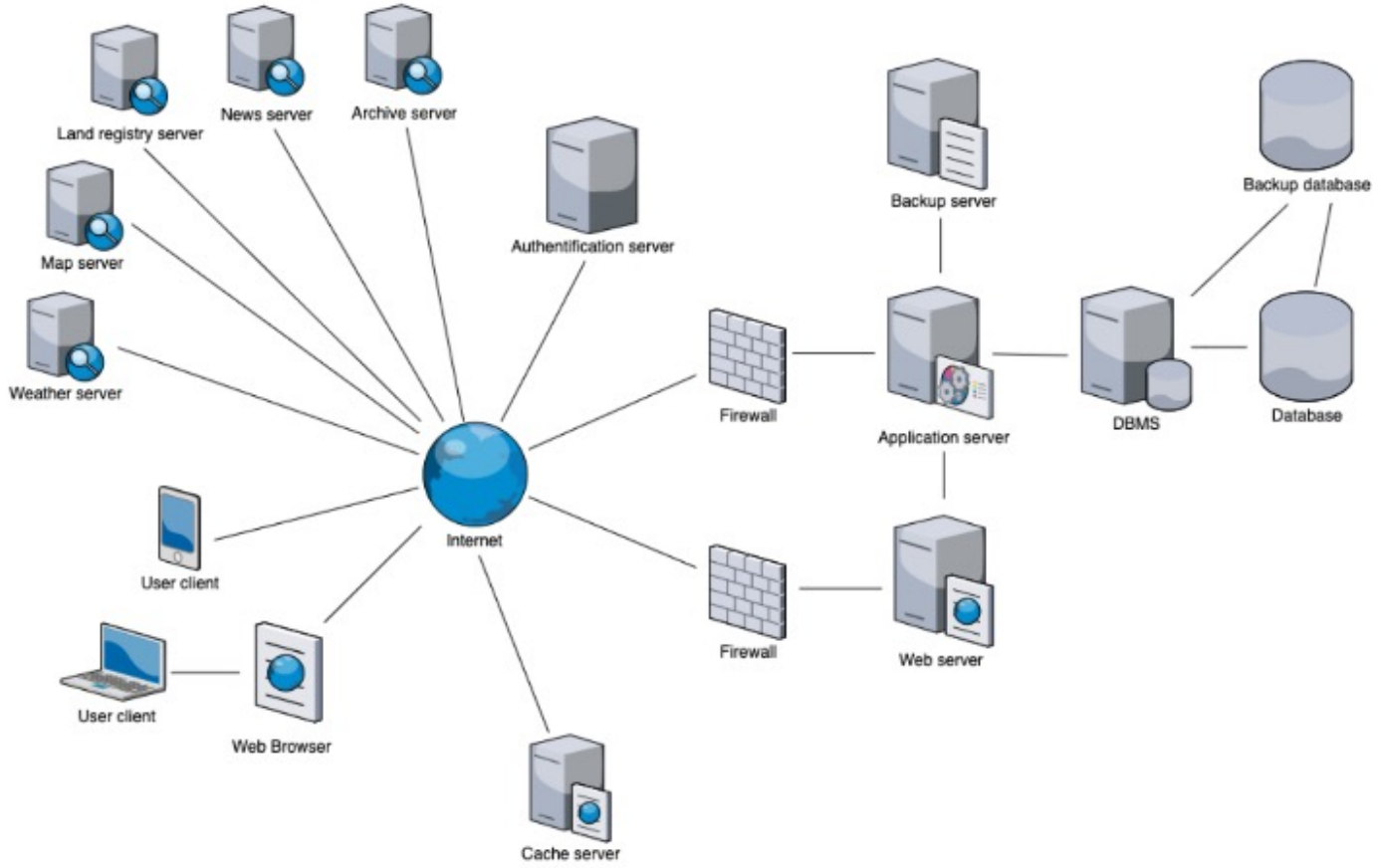
CLASS DIAGRAM



ALLOY


(alloy_beginning) Run show for 30
Viz
Txt
Table
Tree
Theme
Magic Layout
Evaluator
New
Projection: none
areas: 3
farm: 3
farmers: 2
farmers: 2
farmers: 1
farms: 3
farms: 3
pms: 3
pms: 3
pms: 1
weather: 21
Ticket
Report2
Forum
Report1
Report0
Archive
PolicyMaker0
PolicyMaker1
PolicyMaker2
Farmer0
Zone2
Zone1
Farmer1
Zone0
Farm0
Farm1
Farm2
Weather6
Weather7
Weather8
Weather9
Weather10
Weather11
Weather13
Weather2
Weather3
Weather4
Weather5
Weather18
Weather19
Weather20
Weather0
Weather1
Weather12
Weather14
Weather15
Weather16
Weather17

NETWORK DESIGN



COMPONENTS DESIGN

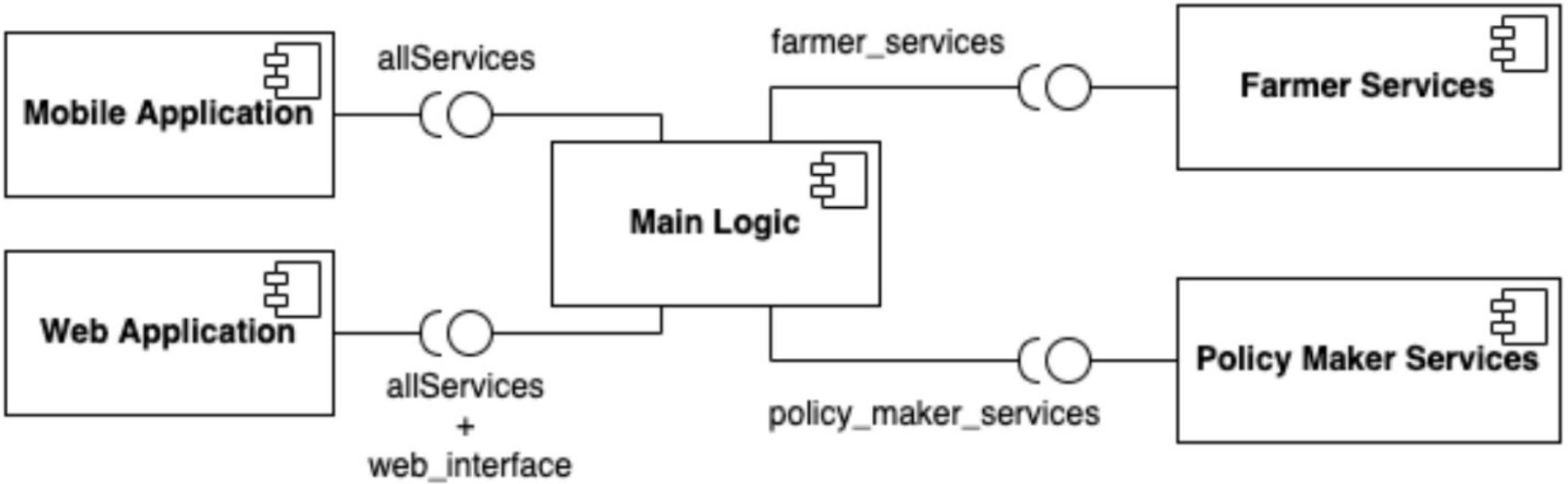


Figure 2.2: high level - component diagram

INTERFACES DESIGN

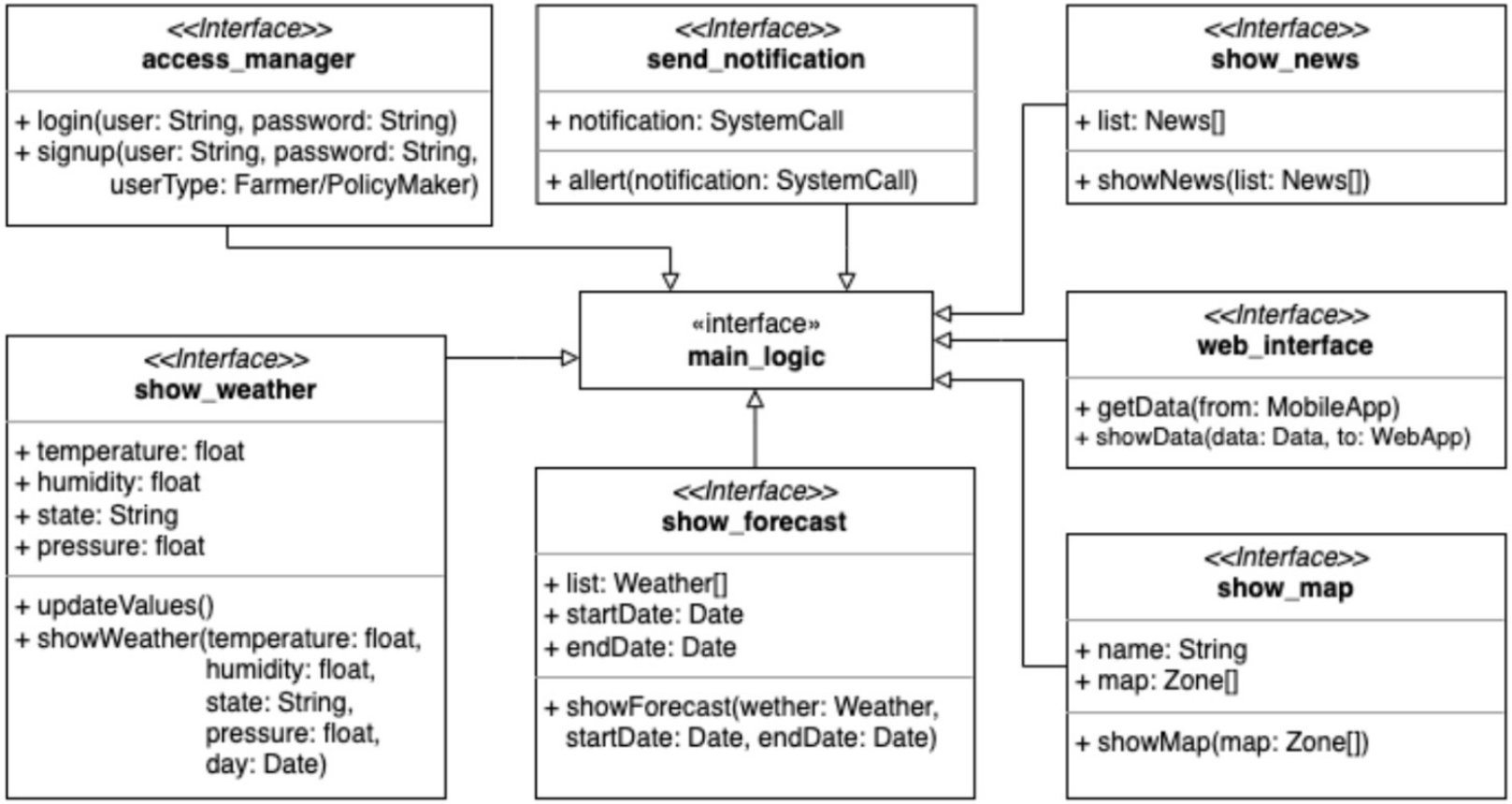


Figure 2.12: main logic - interface diagram

Architectural styles

- Client-Server.
- REST Architecture.

Recommended patterns

- Model-View-Controller pattern.
- Facade pattern.
- Factory pattern.
- Observer pattern.

GANTT DIAGRAM

Development suggestions

- Top-down.
- Parallel programming.

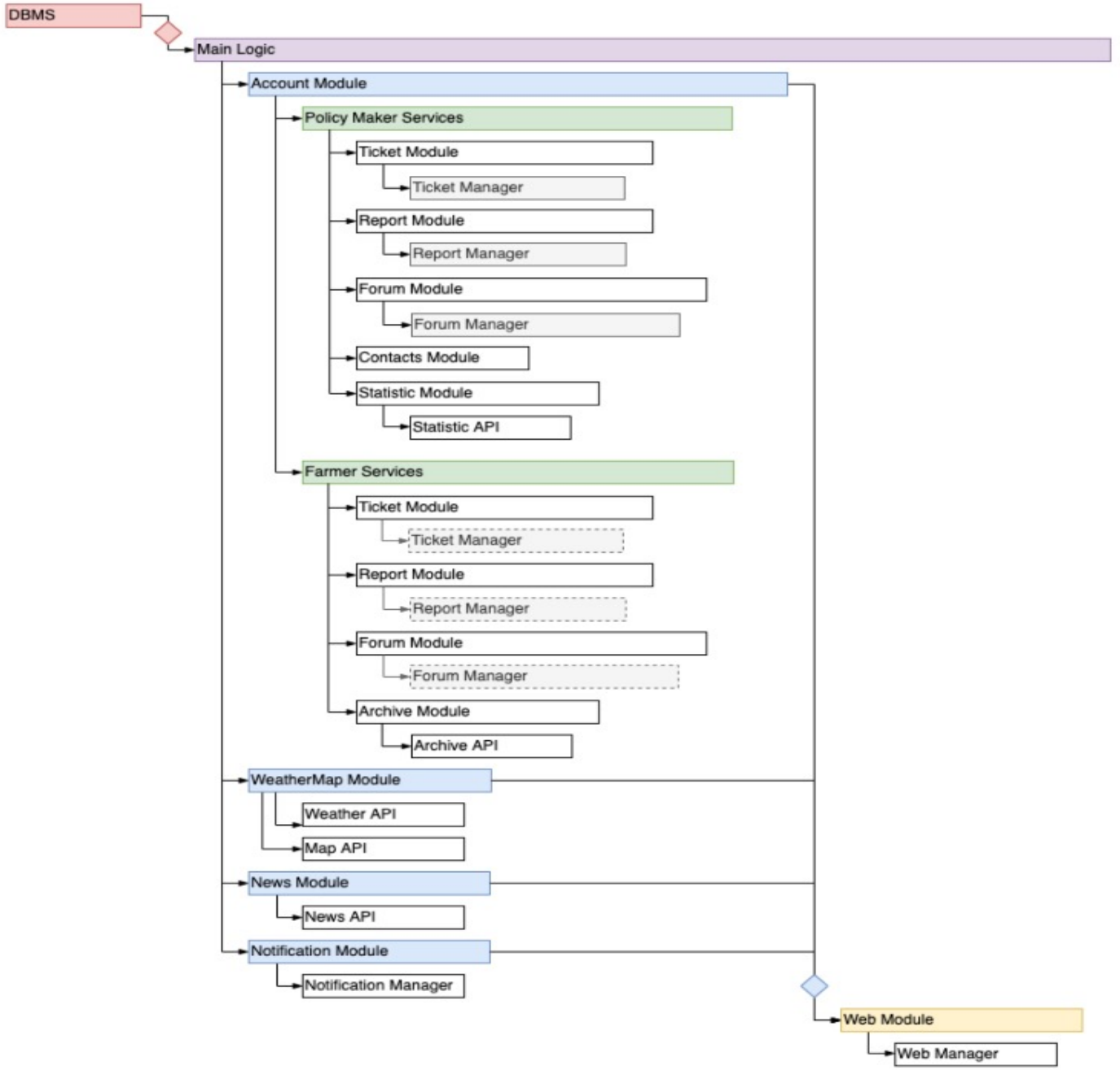


Figure 5.1: Gantt diagram

POLITECNICO
MILANO 1863

DREAM – Data-dRriven PrEdective FArMing in Telangana

Software Engineering 2

Simone Brunello - 10831750
Nicholas Nicolis - 10867841

Academic Year 2021-22