Acronym	Senser
Project	**Aircraft Sentence Server**
Doctype	**Requirements**
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Chapter 1

Project Drivers

1.1 Purpose of the Project

1.1.1 Vision Statement

This project aims at developing a server that provides aircraft sentences locally in a Java application.

1.1.2 Project Outcomes

The Java application fetches aircraft sentences from an external source.

The Java application creates a sentence object for each sentence obtained.

The Java application prints a string representation of each sentence onto the screen.

1.1.3 Learning Objectives

After having completed this project, as student, you can ...

- develop and integrate Java classes.
- perform simple String operations in Java.
- handle Date objects in Java.
- output Strings on the screen in Java.

1.2 Stakeholders

1.2.1 Project Team

Various members and roles.

1.2.2 Product Users

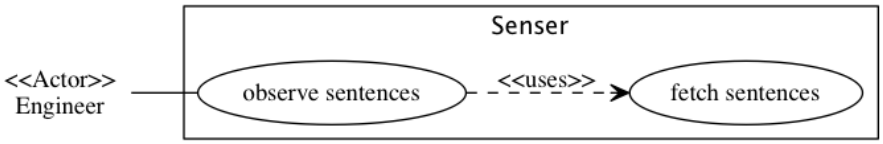
Local Flight Control Engineer, User. Priority: **Key User**.

Chapter 2

Functional Requirements

2.1 Data Model and Data Dictionary

2.1.1 Use Case Diagram



2.2 Senser Functional Requirements

Model [Senser] ucd :: Senser

Senser.F.10 Observe ADSB-Sentences **essential**

Model [Senser] uc :: Engineer → observe sentences

Feature In order to get an overview of the local flight traffic, as a flight control engineer, I want to be able to observe each incoming aircraft sentence, with the content of the sentence, separated into the individual aircrafts.

Senser.F.20 Fetch Raw Sentences **essential**

Model [Senser] uc :: observe sentences«uses» → fetch sentences

Feature In order to provide ADSB-sentences locally, the system shall fetch the sentences from the following web service:
https://opensky-network.org/api/states/all

Feature In order to integrate seamlessly with other OS operations, the web service address shall be provided as an input parameter upon application start.

Chapter 3

Non-Functional Requirements

3.1 Look and Feel Requirements

Senser.NF.10 Text Output per aircraft sentence **essential**

Feature The system shall display each aircraft sentence received in the following form (example):

Current Aircrafts in range 4

```
["3c5ef9", "EWG6FE  ", "Germany", 1560420319, 1560420319,  …],
["4401d4", "EJU54MC ", "Austria", 1560420319, 1560420319, …],
["3c6dd3", "EWG8002 ", "Germany", 1560420319, 1560420319, …],
["4ca8d9", "RYR7RL  ", "Ireland", 1560420319, 1560420319, …], …
```

3.2 Implementation-Specific Requirements

3.2.1 Process

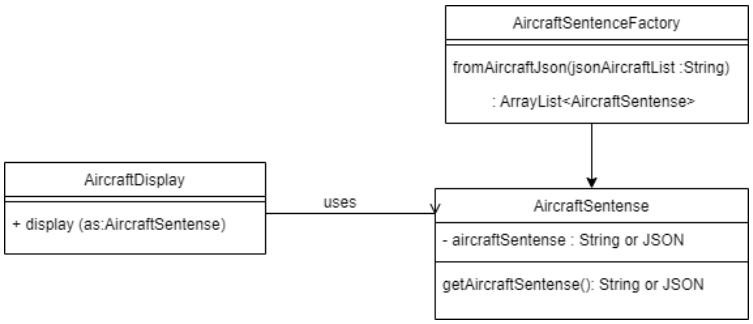
Senser.NF.50 Test Driven Development **essential**

In order to ascertain sufficient testing of the product, the implementation must be carried out following a test-driven development approach.

3.2.2 Architecture

Senser.NF.60 Use of Classes and Interfaces **essential**

Feature The organization of the system implementation shall reflect the classes and interfaces shown in the following class diagrams:



3.3 Maintainability Requirements

Senser.NF.70 Documentation **essential**

In order to ascertain high understandability, the source code must be self-explanatory.

Senser.NF.80 Cohesion and Coupling **essential**

In order to support high maintainability, the modules of the system must be realized with high-cohesion and low coupling.

Senser.NF.90 OO Design Principles **essential**

In order to support high maintainability, the other well-known principles of good object-oriented design must also be applied.

Chapter 4

Additional Domain-Specific Information

4.1 JSON Format

The ADS-B sentences provided by the web service have the following (example) format:

```
["3c6754","EWG2KA  ","Germany",1560673602,1560673607,9.2432,48.695,null,true,
       0,163,null,null,null,null,false,0],
["3c6583","DLH2LX  ","Germany",1560673610,1560673610,9.0772,48.7305,7879.08,
       false,247.15,8.62,-8.13,null,7871.46,"1000",false,0],
["44034f","LDM26DK ","Austria",1560673285,1560673301,9.2016,48.6893,320.04,
       true,1.29,165,null,null,null,"5365",false,0],
["42491e","AFL2378 ","United Kingdom",1560673610,1560673610,9.6077,48.854,
       10980.42,false,223.44,231.73,0,null,11231.88,"1000",false,0],

...
```

4.2 Existing Libraries

org.json: (preferred)
- API: https://stleary.github.io/JSON-java/
- Provided: json-20140107.jar

gson:
- API: https://google.github.io/gson/apidocs/
- Download: https://github.com/google/gson

jackson:
- Tutorials + Download: https://github.com/FasterXML/jackson-docs

jsonstream.jar: Plane Server