**Use Case 01-Collection**

**Req-01** The satellite shall collect the weather data every 20 minutes. (High)

**Use Case 02-Transmitter**

**Req-02** The system shall store and transfer the data using encryption. (Medium)

**Req-03** The system shall notify if an instrument does not report readings, or any errors present. (High)

**Use Case 03-Processor**

**Req-04** The system shall create weather reports with an accuracy of 90% or better. (High)

**Use Case 04-Generator**

**Req-05** The system shall generate the weather report within 10 minutes. (High)

**Req-06** The system shall have a friendly user interface. (Medium)

**Use Case 05-Logger**

**Req-07** The system shall keep a log of all users who accessed the data. (Medium)

**Req-08** The system shall make a copy of each report and store it in a separate database for logging purposes. (Low)

**Req-09** The system shall have the ability for the user to set custom alerts based on certain weather conditions. (Medium)

**Req-10** The system shall be able to have remote updates and a restore option if the update is corrupted. (High)

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**ID: 01**

**Collection**

This use case will collect weather data that includes the following: temperature, pressure, humidity, wind speeds, wind direction, clouds, using on board weather collection instruments. The collection of the weather data will be done using the following: Visible light imager, infrared sounder, cameras, radiometers (water vapor, microwave), and scatterometers. This data is then forwarded to the next use case transmitter.

The ideal scenario is the data is collected in its entirely and successfully transmitted to the ground station.

The alternate scenario is the data is corrupted or a instrument has failed onboard the satellite.

**ID: 02**

**Transmitter**

After the data collection the satellite will then transmit the result to weather agencies and other facilities. The amount of data that is to be sent and packet size is what needs to be determined. As well as the intervals of transmissions.

The ideal scenario is successful and complete transmission to the ground.

The alternate scenario is the transmission cannot be sent due to inclement weather or a malfunctioning antenna.

**ID: 03**

**Processor**

After the data is transmitted from the satellite the data will then be processed accordingly. This is done using models and advanced analyzation techniques and algorithms. The system analyzes the data for any patterns present and anomalies.

The ideal scenario is accurate reports and patterns processed.

The alternate scenario is the transmission cannot be sent due to inclement weather or a malfunctioning antenna.

**ID: 04**

**Generator**

After the data is processed weather reports are generated. The reports are quickly re-checked making sure that the processed data accurately shows what is expected. This can include special weather alerts such as hurricanes and tornadoes expected. The alerts can be pushed through users’ phones, tv’s, and other electronic devices for disastrous alerts.

The ideal scenario is accurate weather reports, and the alerts are pushed through successfully and users are aware of the alerts.

The alternate scenario is that he alerts generated do not process through and not alert users this can be due to malfunctioning equipment or power outages.

**ID: 05**

**Logger**

The events are logged into the system showing how quickly the alerts were pushed through which includes the use of timestamps through the generation process. The logger is a good reference for accountability and to review if anything can be sped up. The logger also includes any other requirements such as software updates to the system, user log, and custom weather alerts.

The ideal scenario is the logger performs timestamping that shows the correct data.

The alternate scenario is that the timestamping does not display due to coding errors.