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Use cases

Weather satellite system

1. Receive & process satellite data.

* The software system receives raw data transmitted by the weather satellite and processes it to extract relevant information.
* The weather satellite transmits raw data to the software system.
* The software system receives the raw data and decodes it.
* The software system processes the decoded data to extract weather-related information such as temperature, humidity, and cloud cover.

1. Capture & transmit orbital images.

* The software system commands the weather satellite to capture images of the Earth's surface and transmit them to ground control.
* The software initiates the image capture.
* The image is captured & compressed to be transmitted to ground control.
* Once received it is examined for further analysis.

1. Monitor & analyze environmental parameters.

* The software system continuously monitors environmental parameters such as temperature, humidity, and atmospheric pressure using onboard sensors.
* Onboard sensors collect environmental data at regular intervals.
* The software system receives sensor readings and updates environmental parameter databases.
* Anomaly alerts are generated and transmitted to ground control for further investigation.

1. Perform manual & autonomous orbital adjustments.
   * The software system autonomously adjusts the weather satellite's orbit to optimize data collection and communication.
   * The software system monitors the satellite's orbit and evaluates orbital parameters.
   * Based on predefined criteria such as coverage area & orbital location the software system calculates required orbit adjustments.
2. Ensure data security & integrity.

* Data transmitted by the weather satellite is encrypted using secure protocols.
* The software system implements authentication mechanisms to ensure that only authorized entities can access satellite data.