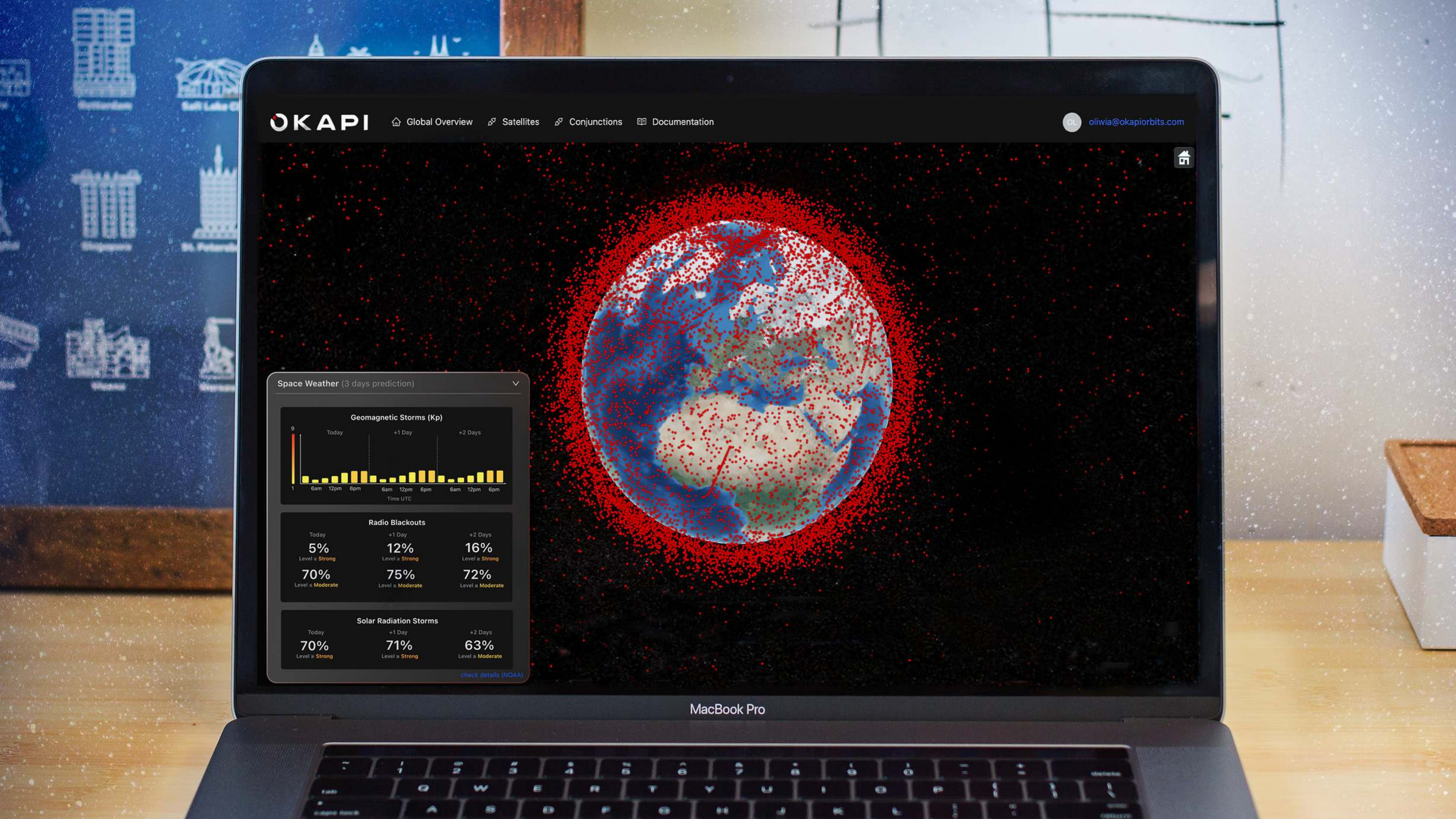
Case study:

DESIGN OF A SPACE WEATHER WIDGET

Oliwia Konieczna (UX/UI Designer)
+ the science department of
Okapi:Orbits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oliwia@okapiorbits.com
Space Weather (3 days prediction)
Geomagnetic Storms (Kp)
9
1
Today
+1 Day
+2 Days
6am 12pm 6pm 6am 12pm 6pm 6am 12pm 6pm
Time UTC
Radio Blackouts
Today
5%
Level ≥ Strong
70%
Level ≤ Moderate
+1 Day
12%
Level ≥ Strong
75%
Level ≤ Moderate
+2 Days
16%
Level ≥ Strong
72%
Level ≤ Moderate
Solar Radiation Storms
Today
70%
Level ≥ Strong
+1 Day
71%
Level ≥ Strong
+2 Days
63%
Level ≥ Moderate
check details (NOAA)
MacBook Pro

THE PROJECT

AND

THE PROCESS

Product

Space Weather Widget for the OKAPI Platform.
Created while working at Okapi:Orbits.

Goal of the project

Provide satellite operators with real-time updates on space weather conditions to improve their maneuver decisions.

My Responsibilities

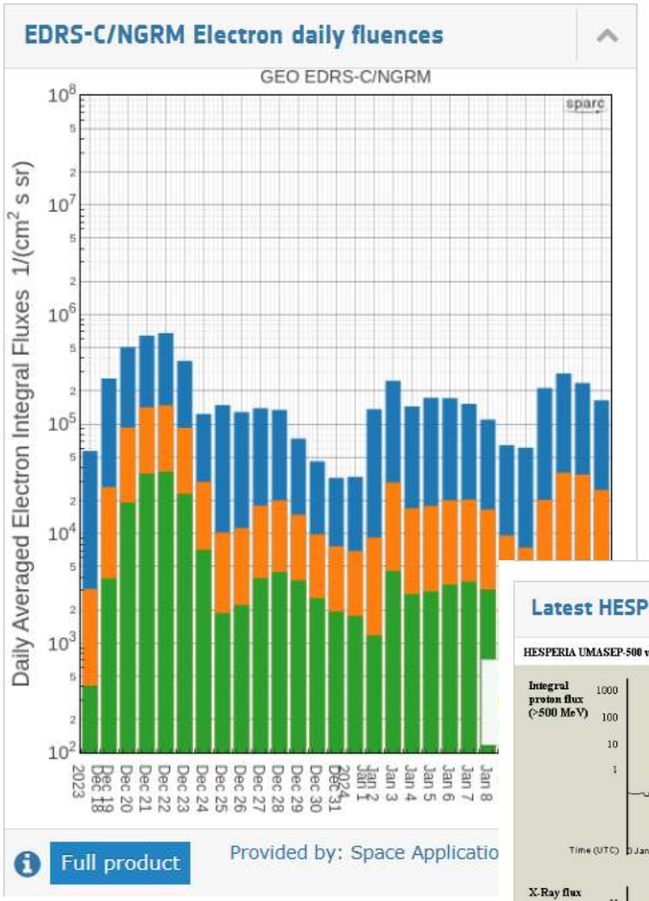
- User Research
- Defining problems & finding solutions
- User Experience Design
- Visual Design and Prototyping

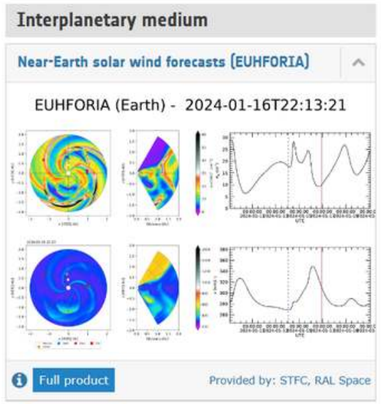
Software

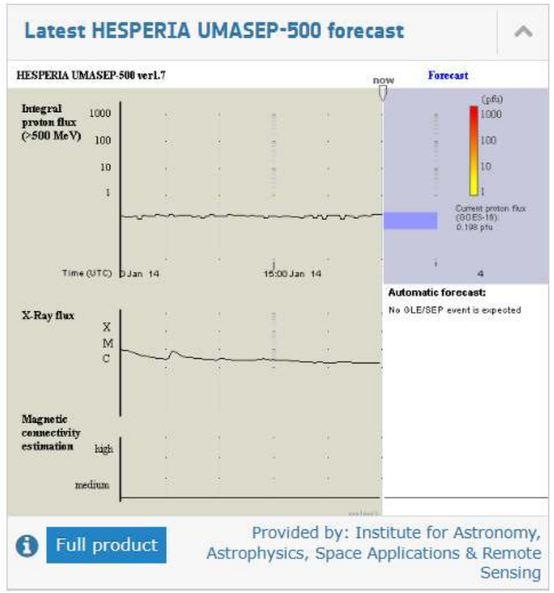
- Figma
- FigJam
- Miro
- Teams
- Gitlab
- Microsoft Planner

Exploring the problem

Satellite operators often rely on **multiple sources** of space weather data, which can be **time-consuming** and **difficult to interpret**. A space weather widget could provide a central location for real-time and accurate space weather information, simplifying the process of staying informed.







Benchmarking

My first action would be to do a research on the existing Space Weather Platforms asking also other colleagues what platforms are used the most for it. (Also would prepare a moodboard including normal weather widgets).

SPACE WEATHER PREDICTION CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Sunday, January 14, 2024 17:11:56 UTC

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SPACE WEATHER CONDITIONS on NOAA Scales

24-Hour Observed Maximums			Latest Observed			Predicted 2024-01-14 UTC			
R	S	G	R	S	G	R1-R2 30% / R3-R5 5%	S1 or greater 5%	G
none	none	none	none	none	none			none

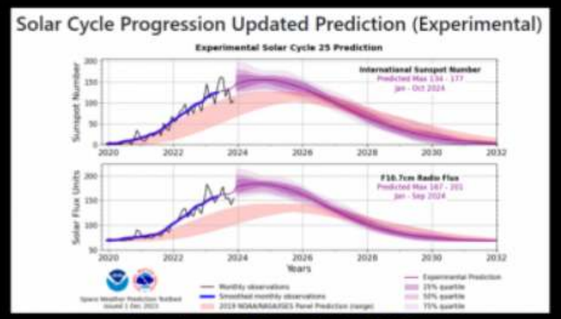
Solar Wind Speed: **478** km/sec

Solar Wind Magnetic Fields: Bt **6** nT, Bz **-5** nT

Noon 10.7cm Radio Flux: **185** sfu

Experimental Solar Cycle 25 Plot Available for Feedback

WHAT: Feedback Requested through December 31st, 2023



Experimental Solar Cycle 25 Plot

SWPC is in the last stages of preparation for operational deployment of a new Solar Cycle Progression Plot. Check out the new progression plots, for both sunspot number and solar flux, and provide any feedback by December 31st, 2023

National Oceanic and Atmospheric Administration — *Safeguarding Society with Actionable Space Weather Information* — Space Weather Prediction Center; Boulder, CO

New Space Weather Implementation Plan Rele
published: Friday, December 22, 2023 17:59 UTC
On 20 December, 2023, at a meeting of the Natio
Science and Technology Policy (OSTP) released

New Path for Space Weather Collaboration An
published: Friday, December 08, 2023 20:42 UTC
Space weather scientists at NOAA and experts a
effort to improve space weather forecasts and se

New SWPC Solar Cycle Progression Plots Ava
published: Monday, December 04, 2023 15:15 UTC
SWPC has made our new experimental solar cyc

NOAA SWPC Satellite Environment Testbed E
published: Friday, October 27, 2023 22:49 UTC
Satellite orbital drag and energetic particles toppe
satellites discussed at the Satellite En

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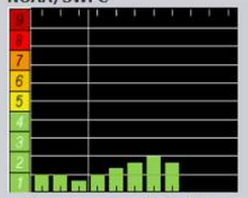
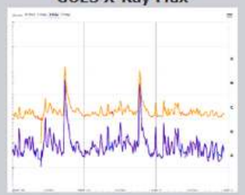
SPACE WEATHER

Space Weather

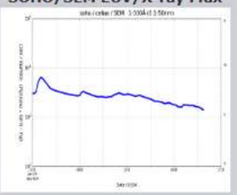
NOAA/SWPC



GOES X-Ray Flux



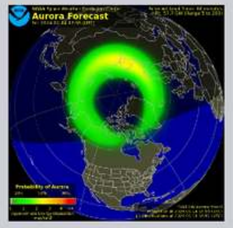
SOHO/SEM EUV/X-ray Flux

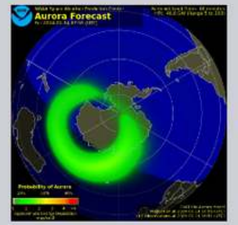


Dst Geomagnetic Index Estimate

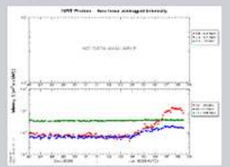
Low: Dst > -20 nT
Medium: -20 nT > Dst > -50 nT
High: -50 nT > Dst > -100 nT
Extreme: Dst < -100 nT

Auroral Activity Extrapolated from NOAA POES

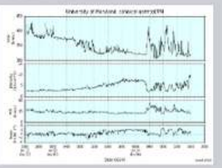




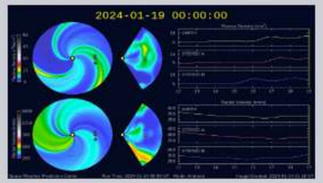
SOHO/ERNE High Energy Proton Flux



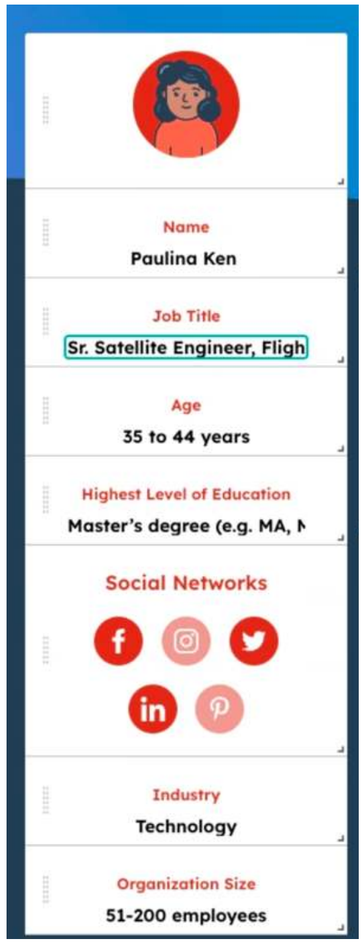
SOHO CELIAS/MTOF Proton Monitor

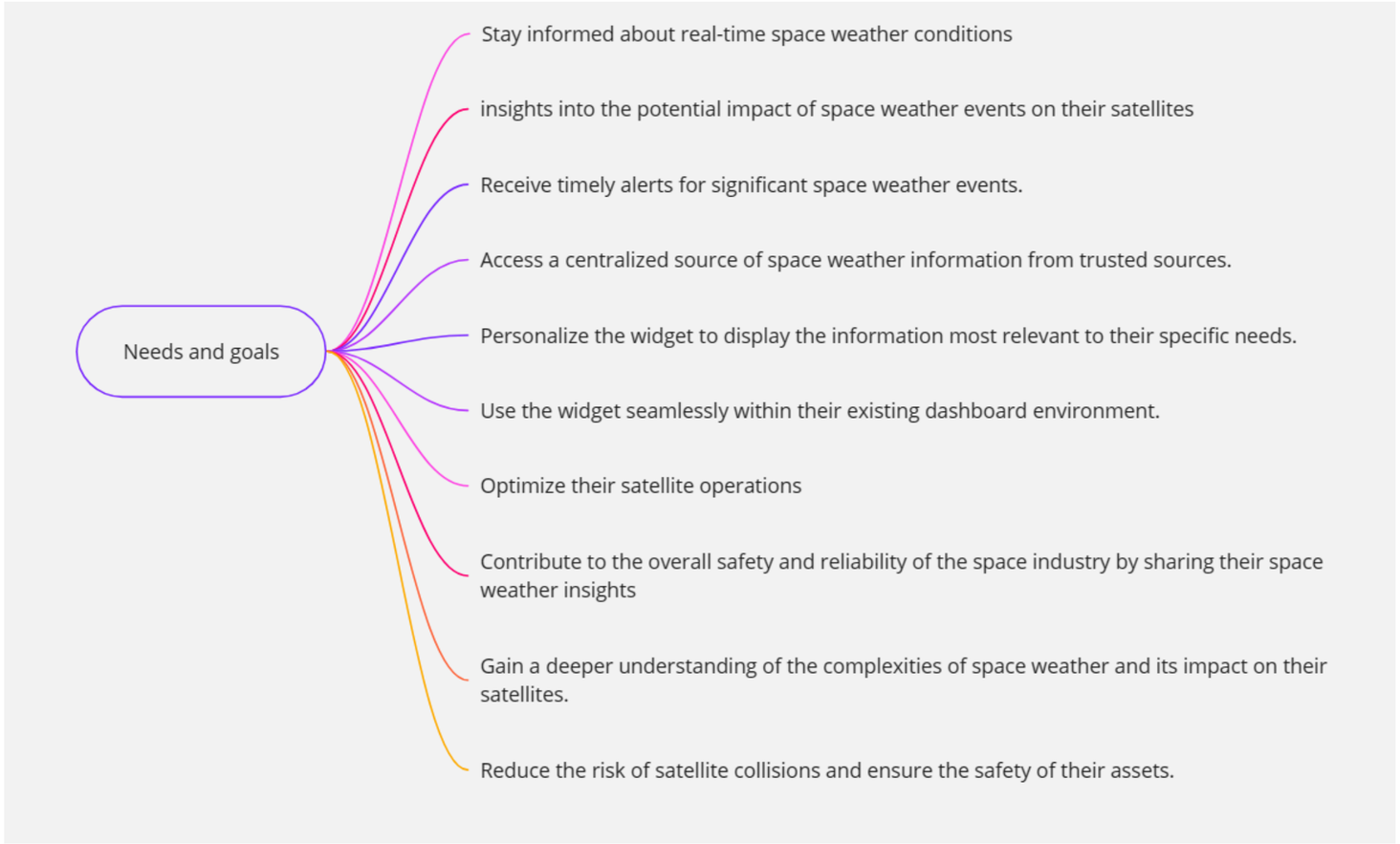


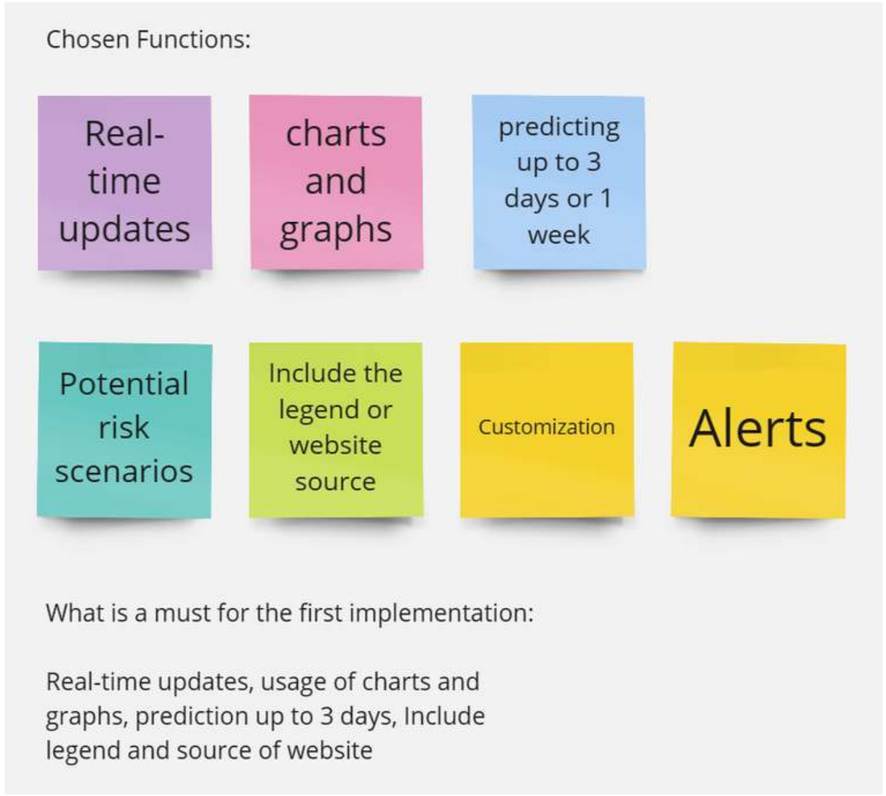
WSA-ENLIL Prediction



USER PERSONAL: USER NEEDS & GOALS





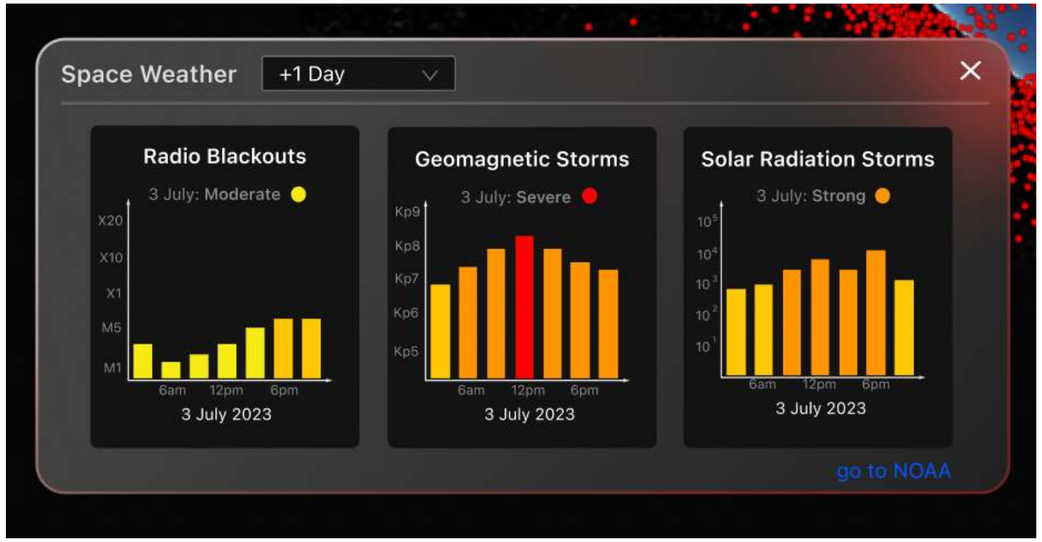


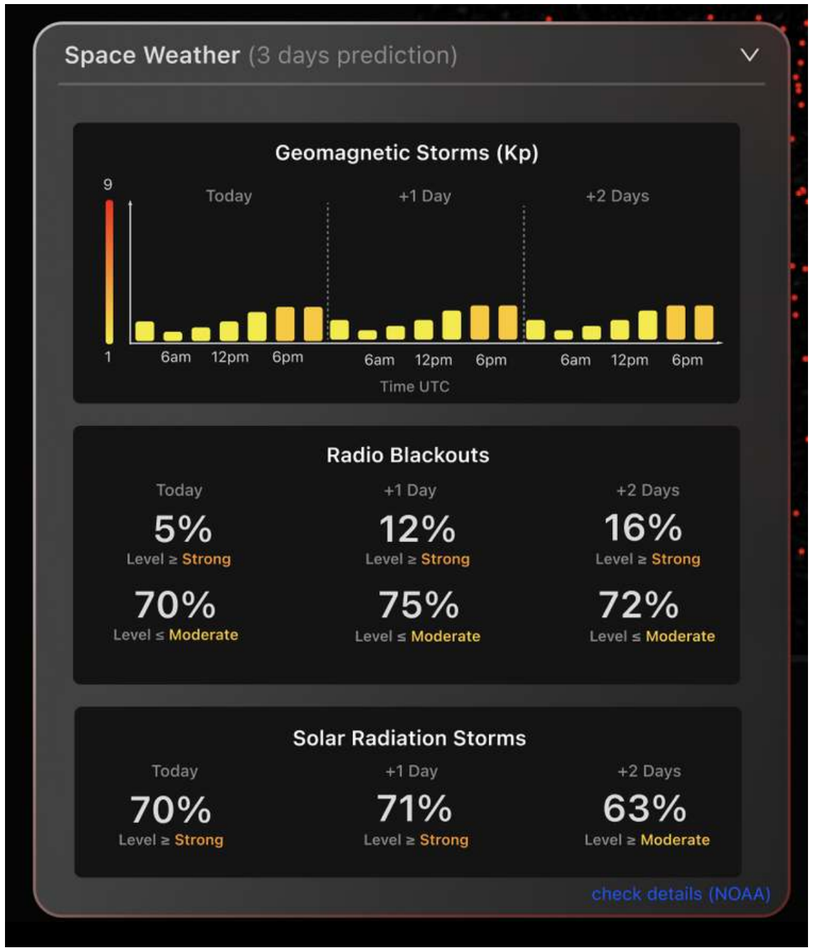
UX Workshops

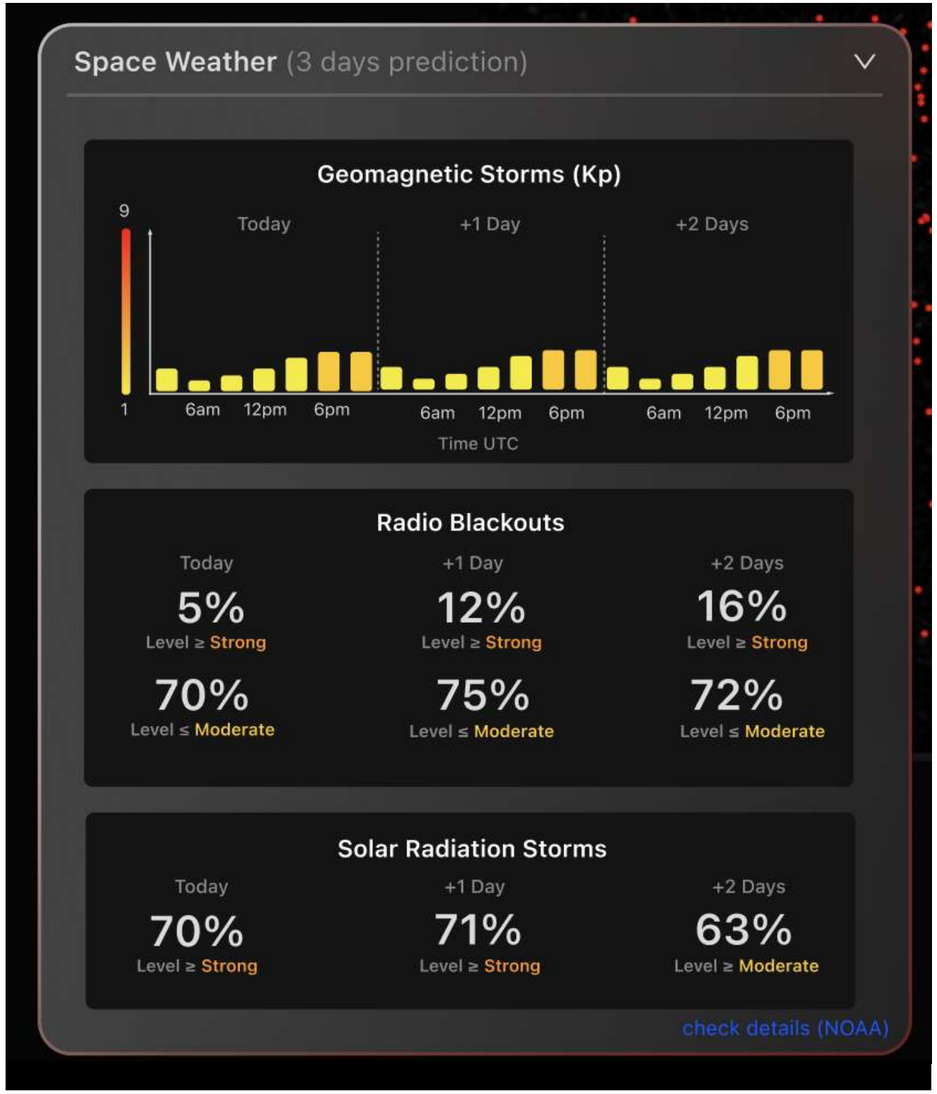
1. Define User Needs and Goals.
2. Define the requirements and Functions. Establish clear requirements for data sources, data visualization, and user interactions.
3. Prioritize features based on user needs and feasibility.

HIGH FIDELITY WIREFRAMES

HIGH FIDELITY VERSIONS







The Final Version

After receiving valuable feedback from aerospace engineers, I decided to display Radio Blackouts and Solar Radiation Storms as numbers to better reflect their varying frequencies and values. Additionally, I added a three-day prediction to make it easier for users to scan the widget quickly. For those who want more detailed information, I included a link to the NOAA website.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