2025 RunSpace Innovation Challenge
Preliminary Project Proposal

Innovation Category	
Team Name	SATMENTORS
Project Name	OPEN SOURCE SATELLITE CONSULTING SOFTWARE
Themes (Please tick only one option)	□Ground Equipment & Services □Satellite Manufacturing □Satellite Services ✔ Satellite Launch □Others_____

Table of Content

1. Background and Motivation

- **Growing Interest in Space Technology among the students and researchers** - Currently there is no affordable consolidated platform for design, simulation, management and guidance related to satellite missions. This leads to less involvement of students and researchers in this field.
- **Lack of Integrated platforms for complete satellite development** - Currently there is no integrated, user- friendly platform offering design, simulation, data handling, and post-launch maintenance in one place for satellite technology, making it difficult for streamlining and optimization.
- **Challenges in accessing expert guidance and mentorship** - Many small-scale student and amateur teams face significant barriers to access specialized, step by step guidance and real-world industrial insights, which hinders project success.
- **Limited Access to Live Monitoring for Data and Satellite performance** – There are only few platforms that offer real-time information regarding critical satellite health monitoring or data access which is essential for mission success.
- **Importance of collaboration between Academia and Industry** – There is a visible gap between academics and industry which makes collaborations, partnerships, and knowledge transfer more difficult.
- **Emergence of AI in Technical Consulting** – Although there are AI chatbots in many platforms, it is not yet utilized for satellite design, and management guidance, which is actually a promising area.
- **Simplifying complex satellite design process** – This project aims to simplify the multiple intricate steps in satellite design, manufacturing and mission planning, which makes it a user- friendly and interactive platform for beginners.
- **Bridging knowledge gap for Non-professionals** - A dedicated platform can support the understanding from design to analysis, making space technology more accessible.
- **Growing hub for innovation** – This platform would provide a virtual space to exchange ideas, design, failures, and improvements enabling professionals, amateurs, and industries to collaborate and grow together.
- **Enabling Affordable and Sustainable satellite missions** – By offering easy- to-use tools, mentorship, and post-launch support, this project will enable cost-effective, efficient, and sustainable satellite missions, especially for educational and research purpose.

2. Key Concept and Relevance to Space

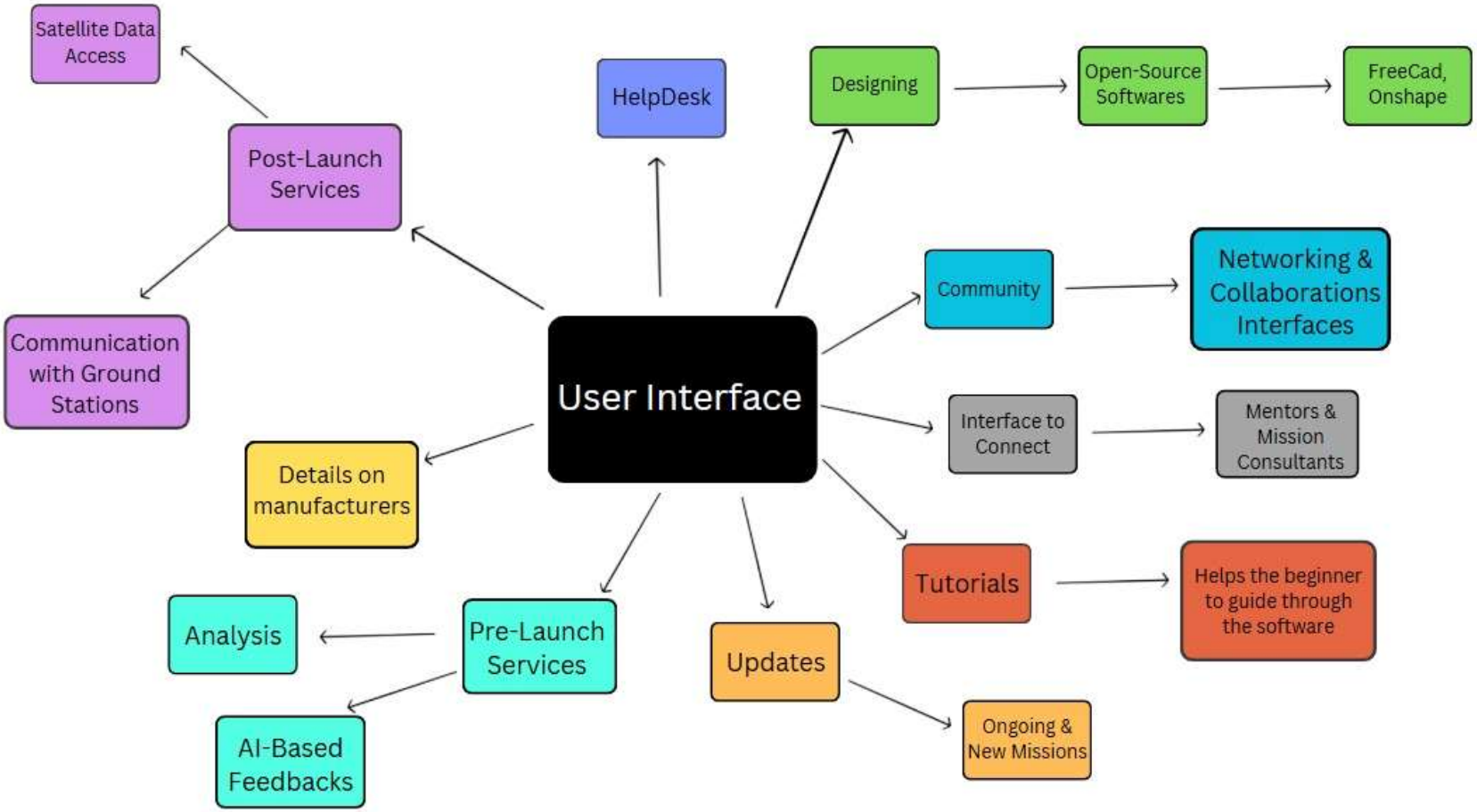
Open Source Satellite Consulting Software includes the following.

- User Interface for Learning, Networking, Analysis, Designing, and Research.
- Organised Community for Satellite manufacturing and services.
- Satellite as a Service, Accessing Data for education, research and mission hosting.
- Connect with mentors and mission consultants.
- Information and updates about legal compliances and regulations.
- Mission planning for launching your satellites.
- Recommendation system and feedback for enhancing user experience.

User Interface and Services

Our user interface provides you with

- Access to data collected by satellites and networking opportunities with professionals in the related field.
- AI-based Recommendation and feedback system for easy use and streamlining research using data collected from past and ongoing missions.
- Updates and news about the current trends in the industry.
- Aid in satellite designing according to the required objectives, will connect with open source CAD software like TinkerCad, FreeCad, etc.
- Access to tools for simulating satellite behaviour, hardware integration, functional & environmental testing.
- Pre-recorded lectures about the important topics for the manufacturing of the satellites and data analysis.
- Networking and collaboration facilities with like-minded individuals and professionals for joint manufacturing and research.


Satellite Data Access
Post-Launch Services
Communication with Ground Stations
HelpDesk
Designing
Open-Source Softwares
FreeCad, Onshape
User Interface
Community
Networking & Collaborations Interfaces
Interface to Connect
Mentors & Mission Consultants
Details on manufacturers
Tutorials
Helps the beginner to guide through the software
Analysis
Pre-Launch Services
AI-Based Feedbacks
Updates
Ongoing & New Missions

Developing Mission Statements

This involves consensus-building among students, mentors, and consultants to ensure alignment with educational goals and technical feasibility.

Connects you with mentors and mission consultants for mission planning.

Mentors will guide students in technical skills, project management, design, Integration, and testing of their project.

Mission consultants help guide teams for project scheduling, resource allocation, and risk assessment to keep the mission on track and within the budget.

They help to streamline the application submission which includes the technical description of the satellite, mission objectives, and orbital parameters to the regulatory body for issuing a license and authorization for launch and operation that includes frequency coordination, interference analysis, and space object registration.

How we change space

Helps a user to be a part of the community that assists in accessing ground stations for communication and data transfer. Allowing multiple users to host experiments for missions on a shared satellite, reducing cost and accelerating development cycles for research and education.

Helps to connect with organizations that provide facilities for testing and data analysis for specific mission requirements.

Connects with organizations for pre-launch and post-launch services which includes subjecting the satellite to vibration, thermal, and vacuum tests to simulate launch space conditions, monitoring satellites, and encouragement for safe disposal, etc.

3. Influence on the Future of Industry or Society

Influence on the future of Industry and society

Widespread Space Education Interactive learning tools, affordable simulation platforms, and access to satellite data will bring space science to students and researchers.

Expansion of Satellite-Based Services

Satellite Service and counseling platforms will empower students and researchers to integrate real-time data for purposes like weather forecasting, environmental monitoring, logistics, and precision agriculture, elevating operational efficiency.

Rapid Innovation

Using virtual prototyping, modular design systems, and community-driven simulation environments, new satellite concepts can be tested and refined rapidly, accelerating the pace of technological advancement.

Improved Collaboration Networks

Open platforms and mentorship programs will eventually increase global collaboration between academia, industries, and startups, enabling knowledge exchange and project-based partnerships domestically and internationally.

Employment Creation & New Skill Market

As the Space industry continues to develop, it will create demand for new roles like Data analysts, Mentors, Mission consultants, Orbital engineers, Space law experts, and satellite repair technicians contributing to economic growth and workforce diversification.

Affordable Access to Space Tools

Easy access to simulation software, design guidelines, and mentorship will allow even underfunded institutions and individuals to contribute to space innovation, reducing entry barriers.

Space Debris Management

Efficient management and technical advisory will promote responsible satellite disposal and repurposing practices, reducing potential space debris.

Push Local Innovation Ecosystems

Satellite simulation platforms will enable regional innovation hubs to develop space solutions tailored to local challenges like deforestation monitoring or rural connectivity.

Cross-Disciplinary Innovation

Space will incrementally intersect with other sectors like healthcare, urban planning, and environmental science, opening new opportunities for interdisciplinary research and solutions.

Improved Feedback Loops and Continuous Refinement

Community building and AI-based feedback using live data enable satellite platforms to continuously improve, adapt to user needs, and remain aligned with changing industry standards.

Space become no longer distant

Space no longer remains distant or elite; instead, it will be understood as a vital, integrated part of everyday life with opportunities for everyone to explore.

4. Business and Market Feasibility Assessment

Target Segments

Commercial companies, startups, Educational and research institutions, Government and Defense agencies, Industry verticals (Telecom and mobile operators), Debris and servicing firms.

Pain points

Cost overruns & mission failures, Regulatory red tape, Hardware integration failures, Orbital debris, and disposal ambiguity.

Market trends

Current market trends include Rapid digital transformation and AI integration, leading to an increase in earth observation and downstream services with an emphasis on sustainability and debris management. Global growth, geopolitical competitions in the space industry, and emerging public-private collaborations will boost the space economy.

Core Competitors

FreeFlyer, ASTOS, Quindar, BlackSwan, and Continuum Space Systems are the core competitors that provide tools for simulation and mission planning, etc.

Competitive advantage

The single platform experience removes the need for multiple costly tools.

Global regulatory readiness, Hardware selection clarity, Sustainability as standard, and Public outreach programs.

Key revenue streams

Subscription-based SaaS access, Consulting and project fee, Pay-per-use satellite connectivity, Charges for premium developer/API access to integrate with platforms, Paid workshops and certifications for satellite mission designs, Mentorship packages – from one-to-one expert advising to group coaching sessions.

5. Annex - References

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