

MM7: SDG1 SPACE4SDGS CHALLENGE NO POVERTY



Design Brief: SDG 1: Zero Poverty –Satellite Solutions for Poverty Alleviation

- Design a satellite system that provides affordable internet access to remote and underserved areas, bridging digital divides to support economic growth.

Challenge: Your challenge is to design a satellite system or mobile app that helps reduce poverty by improving people's access to resources, education, healthcare, and economic opportunities. Imagine how satellite technology could be used to improve lives by delivering important information, supporting local businesses, or helping people in remote areas get the services they need.

Considerations

- Connectivity: How will people connect to this system or app, especially in remote areas?
- Usability: Think about users with limited technology experience.
- Data Types: Decide on the type of information (e.g., health, education, market data) and how often it's updated.

Goal

By the end of this project, you will have a prototype of a satellite system or app that demonstrates how space technology can reduce poverty and improve lives by connecting people to essential resources and economic opportunities.

Background

More than 700 million people worldwide live on less than \$1.90 a day. Poverty affects people's ability to access basic needs, such as food, clean water, healthcare, education, and employment opportunities. In many remote or underserved areas, it can be difficult for people to find job opportunities, access resources, or receive the education they need to improve their situation.

Satellites can help connect people in rural or impoverished areas to the wider world. Satellite-based systems can send information, connect people to online markets, provide health and education services, or even help farmers grow their crops by providing weather and soil information.

Your goal is to find a way that satellite technology or an app can support people in these situations.



Your Mission

Create a concept for a satellite-based system or a mobile app that provides people in underserved areas with tools or information that help them overcome poverty.

Your project should:

- Identify a specific group or region of people who need support (e.g., farmers, students, small business owners, people in rural areas).
- Use satellite technology or an app to provide them with something valuable—such as information, training, weather data, market prices, or connection to health services.
- Be simple and easy for people with limited technology to use.

Each step will take one or more lessons and your teacher will also guide you with lessons and resources from the ‘Space Design Challenge Problem to Pitch’ Module

Design Process Overview

- Step 1: Introduction: What is the available and Who are your users?
 - Explore examples of satellite and app solutions for poverty reduction. Think about how space technology can reach people in ways that other services can't.
- Step 2: Empathy
 - Create user profiles for the people you want to help. What are their challenges, and what would help improve their lives?
- Step 3: Defining the Problem
 - Define the main problem that your project will solve. For example, is it access to education, markets, weather information for farming, or something else?
- Step 4: Ideate
 - Brainstorm different ideas for how your system could work. How would people use it? What kind of information would it provide?
- Step 5: Ideate 2 – Good Idea / Bad Idea
 - Refine your ideas. Focus on the most promising ones and think about how they could be even better or more accessible.
- Step 6: Prototype
 - Create a model or sketch of your satellite system or app. This could include the type of information it provides, how people interact with it, and what it looks like.
- Step 7: Test
 - Share your prototype with others to get feedback. Use their suggestions to make improvements and ensure it's easy to understand and helpful for your users.



VISIT

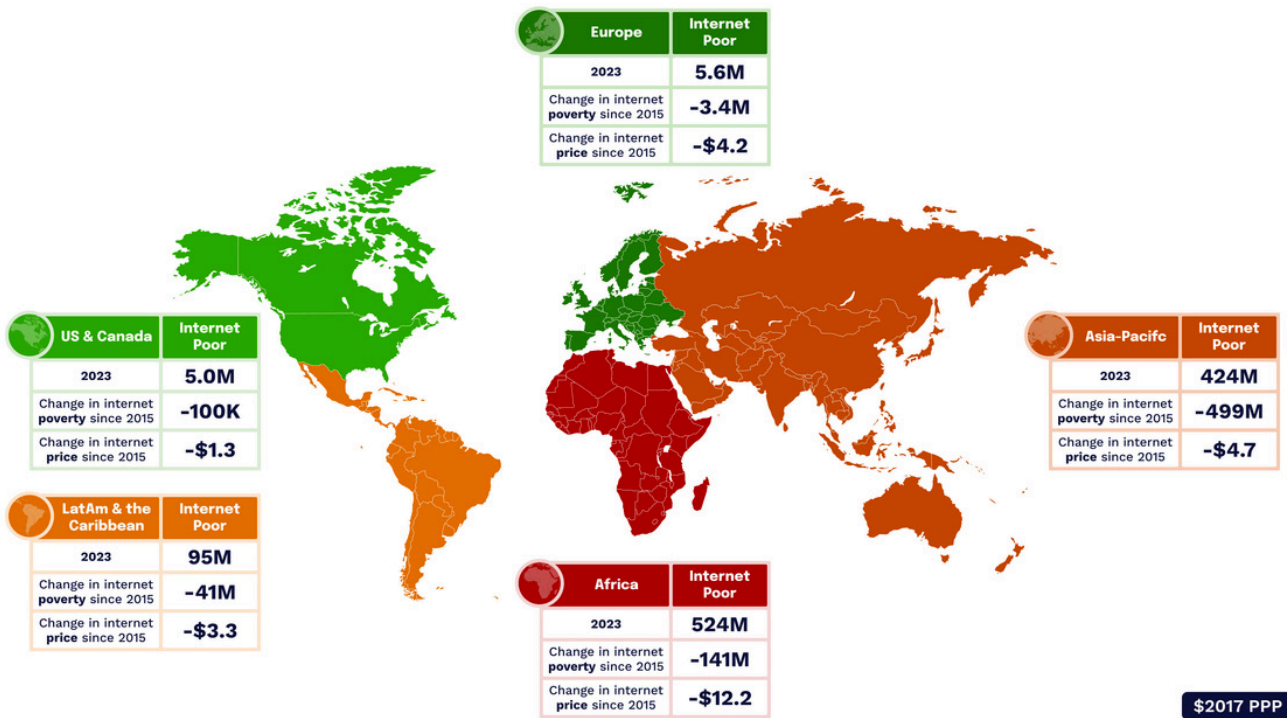
The United Nations Office for Outer Space Affairs (UNOOSA) works to promote international cooperation in the peaceful use and exploration of space, and in the utilisation of space science and technology for sustainable economic and social development.

<https://www.unoosa.org/oosa/en/ourwork/space4sdgs/sdg1.html>

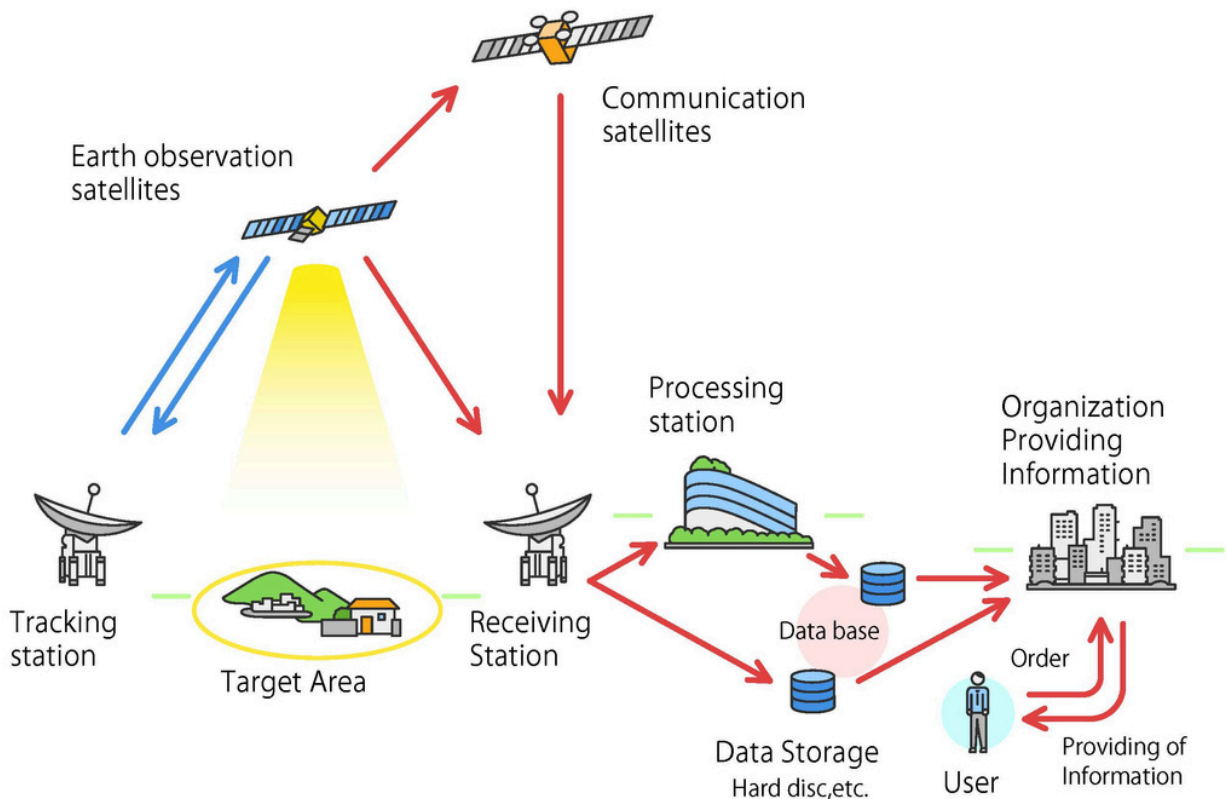
INTRODUCTION: POVERTY AND CONNECTIVITY ISSUES

Step 1: Introduction: What is the available and Who are your users?

- Use the Internet to explore examples of satellite and app solutions for poverty reduction.
- Think about how space technology can reach people in ways that other services can't.



Source: Internet Poverty Index 2023 by World Data Lab <https://worlddata.io/portfolio/2023-internet-poverty-index/>



The Earth observation satellite operators and data distributors - <https://www.restec.or.jp/en/knowledge/sensing/sensing-4.html> 2024

INTRODUCTION: POVERTY AND CONNECTIVITY ISSUES

Step 2: Empathy: Create user profiles for the people you want to help. What are their challenges, and what would help improve their lives?

Support: Use the resources in MM7: Problem to Pitch Space Design Challenge, Lesson 2, Empathy

These prompts are designed to support you to empathise and focus on the unique needs of different types of users by imagining their situation and putting yourself in their shoes.

User Prompts for Satellite Solution



1. Rural Farmer in a Remote Area

- "Imagine you are a farmer living in a remote village with limited access to weather forecasts and market prices. You rely on agriculture for your income, but frequent droughts and unpredictable weather make it difficult to plan your crops. How would a satellite-based app that provides real-time weather and soil information help you improve your farming practices and income stability?"

2. Small Business Owner in an Underserved Region

- "Imagine you own a small shop selling goods in a region with poor road access and minimal infrastructure. Your customers travel from surrounding villages, but without reliable supply chain information, you often face shortages. How could satellite data that tracks deliveries and traffic updates support your business operations and improve access to supplies?"

3. Healthcare Worker in a Rural Clinic

- "Picture yourself as a healthcare worker in a rural clinic with limited internet access and scarce medical resources. You often struggle to connect with nearby hospitals for updates on medical supplies and patient transfers. How could a satellite-based app with real-time updates on medical resources and availability help you provide better care to your patients?"

4. Teacher in a Village School

- "Imagine you are a teacher in a village school with no internet access and limited educational resources. Most of your students don't have textbooks, and you don't have digital resources to teach diverse subjects. How would a satellite-connected app that provides access to educational materials and interactive lessons benefit you and your students?"

5. Young Entrepreneur in a Developing City

- "You're a young entrepreneur in a developing city with plans to create an online business. However, frequent internet outages and a lack of reliable tech infrastructure slow down your growth. Think about how a satellite-based service that offers stable internet connections could impact your business operations, customer reach, and long-term success."

6. Government Official in Charge of Resource Allocation

- "Imagine you are a government official responsible for resource allocation in impoverished areas. Without reliable data, it's hard to know where resources are most needed. How could a satellite system that tracks food, water, and shelter resources help you make more effective and timely decisions?"



7. Community Leader Advocating for Local Resources

- "As a community leader in a remote village, you often advocate for better healthcare, education, and job resources for your neighbors. How would access to a satellite-based app that shows resource availability and gaps in real-time help you support your community better?"

8. Parent Seeking Education Opportunities for Children

- "Imagine you're a parent living in a rural area with few educational options. You want better opportunities for your children, but transportation is challenging, and local schools lack resources. How could a satellite-connected app that provides access to remote learning improve educational outcomes for your children?"

9. Environmental Conservationist in a Protected Area

- Prompt: "As a conservationist working to protect local wildlife and natural resources, you struggle to monitor illegal activities like poaching or deforestation. How would a satellite-based system that provides real-time updates on environmental changes help you protect and conserve natural habitats effectively?"

10 Local Journalists Reporting on Community Issues

"Imagine you're a journalist documenting the challenges your community faces, from poverty to limited healthcare access. How could a satellite system that provides up-to-date data on health, resource allocation, and education gaps enhance the impact of your reporting and help spread awareness?"

Step 3: Defining the Problem: Define the main problem that your project will solve. For example, is it access to education, markets, weather information for farming, or something else?

Support: Use the resources in MM7: Problem to Pitch Space Design Challenge, Lesson 3, Define e.g. on the problem tree what are the root causes (e.g., lack of access, poor infrastructure) and "branches" (poverty effects like poor education, low healthcare access) to show interconnected issues.

Step 4: Ideate: Brainstorm different ideas for how your system could work. How would people use it? What kind of information would it provide?

Step 5: Refine your ideas. Focus on the most promising ones and think about how they could be even better or more accessible.

Support: Use the resources in MM7: Problem to Pitch Space Design Challenge, Lesson 4 and 5, Ideate

Step 6: Prototype: Create a model or sketch of your satellite system or app. This could include the type of information it provides, how people interact with it, and what it looks like.

Support: Use the resources in MM7: Problem to Pitch Space Design Challenge, Lesson 6 Prototype

Prototypes can be 3D or 2D if using wireframes for software / apps. You can read this article to help you <https://www.figma.com/resource-library/what-is-wireframing/>

Mock-ups can help you imagine how a user might interact with your satellite data-based app or system. Follow the steps in Canva to create a user Interface (UI) Mock-up for Satellite Solution



Steps in Canva:

1. Open a New Project:
 - Create a Custom Dimensions project, and set it to 1080x1920 pixels (this mimics a mobile screen format).
2. Set Up a Mobile Background:
 - In Elements, search for “mobile screen” to find a blank phone outline. Place it in the centre of the canvas.
3. Design the App’s Home Screen:
 - Inside the mobile frame, add a rectangle for a menu bar at the bottom and a circle or square near the top for the main icon or app name.
 - Use text to title this screen as “Satellite Access App” or “Global Connect.”
4. Add Buttons or Icons for Key Functions:
 - Create buttons or icons for each function, such as Weather Data, Health Access, Educational Resources. Place each button within the phone screen as a tapable icon.
 - Label each icon clearly with small text beneath or beside it.
5. Add a Sample Data Preview:
 - Use a rectangle as a sample “data preview” section in the middle, where satellite data like “Weather Update: Sunny, 75°F” or “Local Health Center: 5 km away” would appear.
 - Use smaller text for this data to simulate a realistic UI (user interface) feel.
6. Enhance with Colours and Borders:
 - Add borders to each button/icon for a polished look, and apply a consistent color theme (e.g., blue and white for a “tech” feel).
7. Review, Download, and Save:
 - Make sure everything is aligned neatly and easy to read.
 - Download the mock-up once it’s polished!

Here’s a video of creating a mock-up in canva which might have different steps than above but will still help you [How To Create Mockups In Canva 2024 \(Step By Step\)](https://www.youtube.com/watch?v=2400MwF21Ds), [The Social Guide](https://www.youtube.com/watch?v=2400MwF21Ds)
<https://www.youtube.com/watch?v=2400MwF21Ds>

You can also use cardboard - [Cardboard Prototyping | Techniques](https://www.youtube.com/watch?v=qxXj2RhKjZY), [Cal Maritime Makerspace](https://www.youtube.com/watch?v=qxXj2RhKjZY)
see <https://www.youtube.com/watch?v=qxXj2RhKjZY>

Or Paper Mobile Application Design : [Paper Prototype Video](https://www.youtube.com/watch?v=y20E3qBmHpg), [Cor-mac](https://www.youtube.com/watch?v=y20E3qBmHpg)
<https://www.youtube.com/watch?v=y20E3qBmHpg>

Step 7: Test: Share your prototype with others to get feedback. Use their suggestions to make improvements and ensure it’s easy to understand and helpful for your users.

Support: Use the resources in MM7: Problem to Pitch Space Design Challenge, Lesson 7 Test