

MOBILE MAPPING

Mobile apps that combine mapping technologies with layers of data can make every flight, hike, or drive an adventure. For example, location-based technologies can help you learn about landscape features, fossil digs, cities, and more... making Earth Science more accessible to everyone!

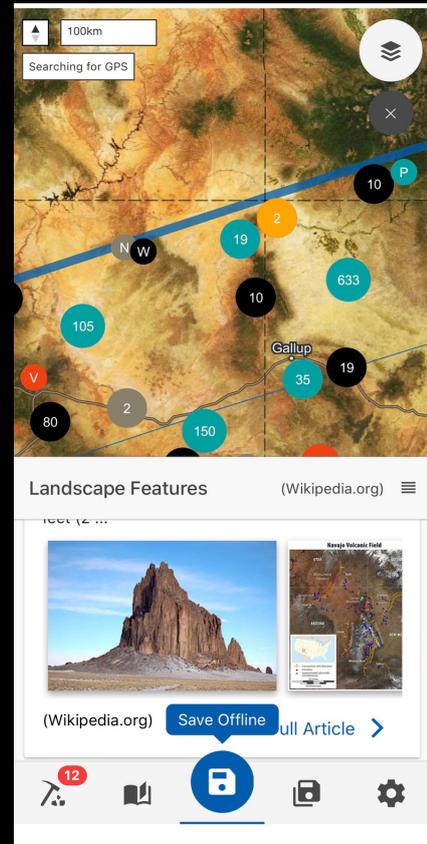


HOW DOES IT WORK?

The **Global Positioning System (GPS)** pinpoints your location from satellite data. **Remote sensing** methods use sensors on satellites or aircrafts to detect energy reflected from Earth to identify geographical features, both man-made and natural.



Then, **Graphic Information Systems (GIS)** layer these maps with other information. For example, data about the age of rocks, fossil sites, scientific research sites, mountain ranges, canyons, volcanoes, rivers and lakes, and many other features can be stored and analyzed by GIS.



FLYOVER COUNTRY

Flyover Country is a NSF-funded mobile app that uses these technologies to put

interactive maps on your device and save them for offline use. These maps show landmarks and geological data, providing information about the world outside your window. The app was a winner of the 2017 NSF Vizzie Challenge!

THE BOTTOM LINE ▶ **The world, in the palm of your hand!**

THE PILOT OF FLYOVER COUNTRY

Shane Loeffler is a researcher and software developer at the University of Minnesota. Through extensive collaborations with faculty and staff at the university, Shane's team integrates computer science, communication, and Earth Science to make our world more accessible with apps like Flyover Country mobile app.

“ Learning to code has opened up many opportunities for my life, and allows me to create fun new tools for myself as well as other people. ”



Shane Loeffler

Biking, rock climbing, snowboarding, climate action, and photography



WORDS TO KNOW

Global Positioning System (GPS)

A navigation satellite system that shows both geolocation and time information anywhere on or near Earth

Remote Sensing

Using satellite and aircraft-based sensors to detect and classify objects from great distance

Graphic Information System (GIS)

Computer system that captures, stores and displays all types of geographic data

WHAT DO YOU THINK?

Explore Flyover Country by designing a trip for friends visiting from out of state:

- Download the app [here](#)
- Turn on "Show Location" and "Show Speed/Altitude"
- Zoom in to an area of interest
- Create a ground (car) or air (plane) path
- Load the map

Where should your friends sightsee?

What features should they look for?

Do you think **GPS** works everywhere?

Why or why not?

What other applications could use **remote sensing** technology ?

BLUEPRINT WIREFRAME 5



Wireframes: the Blueprints of an App

A wireframe is a visual guide, or "screen blueprint" used in the early stages of designing an app or web page. Wireframes are simple to use and allow you to design and modify your work-in-progress as you go. The main purpose of a wireframe is to conceptualize what the app will do, rather than what it will look like.

Wireframes include information about functions embedded in an app or links in a webpage. Check out the wireframe to the right as an example!

Ready to build an app?

- 1st:** Set a goal.
- 2nd:** Pick the platform - iPhone or Android?
- 3rd:** Pick a programming language and learn it.
- 4th:** Use a wireframe platform, like **Canva** or **JustInMind** to sketch your design ideas!



TRY IT OUT

Click on the phones and check out free coding sites to help you get started on your Apple or Android app!

Links in this issue:

- <https://bit.ly/2gygS2t>
- <https://bit.ly/2VjX6Bn>
- <https://flyovercountry.io>
- <https://bit.ly/2VjXdgh>
- <https://bit.ly/2GhdliQ>
- <https://bit.ly/2ldB86C>
- <https://bit.ly/2UxcWme>

Photo credits:

- Thomas Osmonson
- Shane Loeffler
- Amy Myrbo

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.