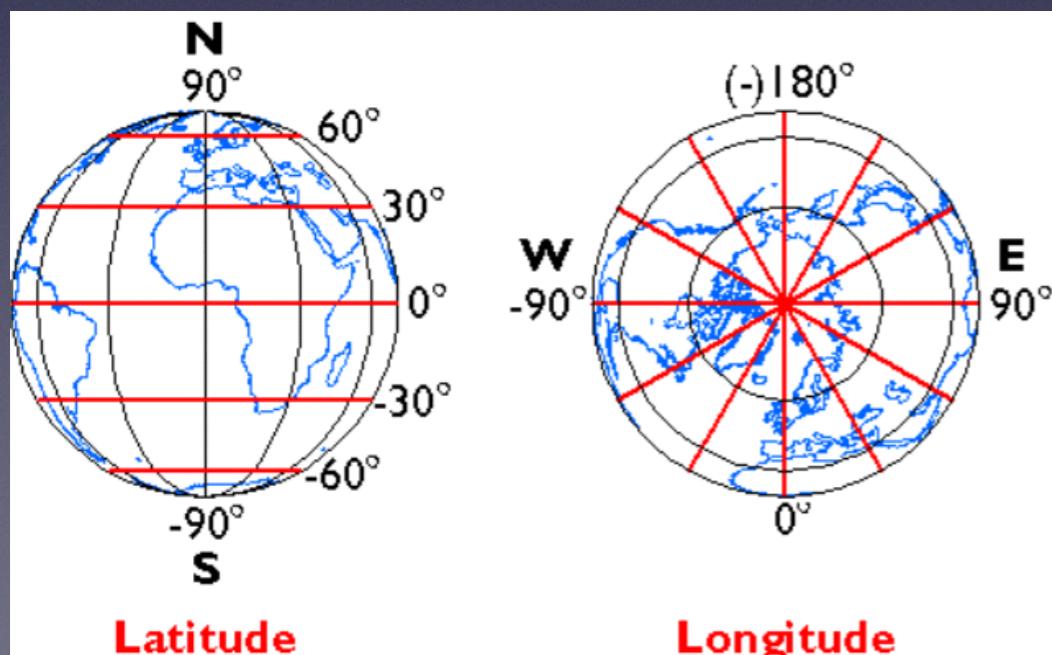
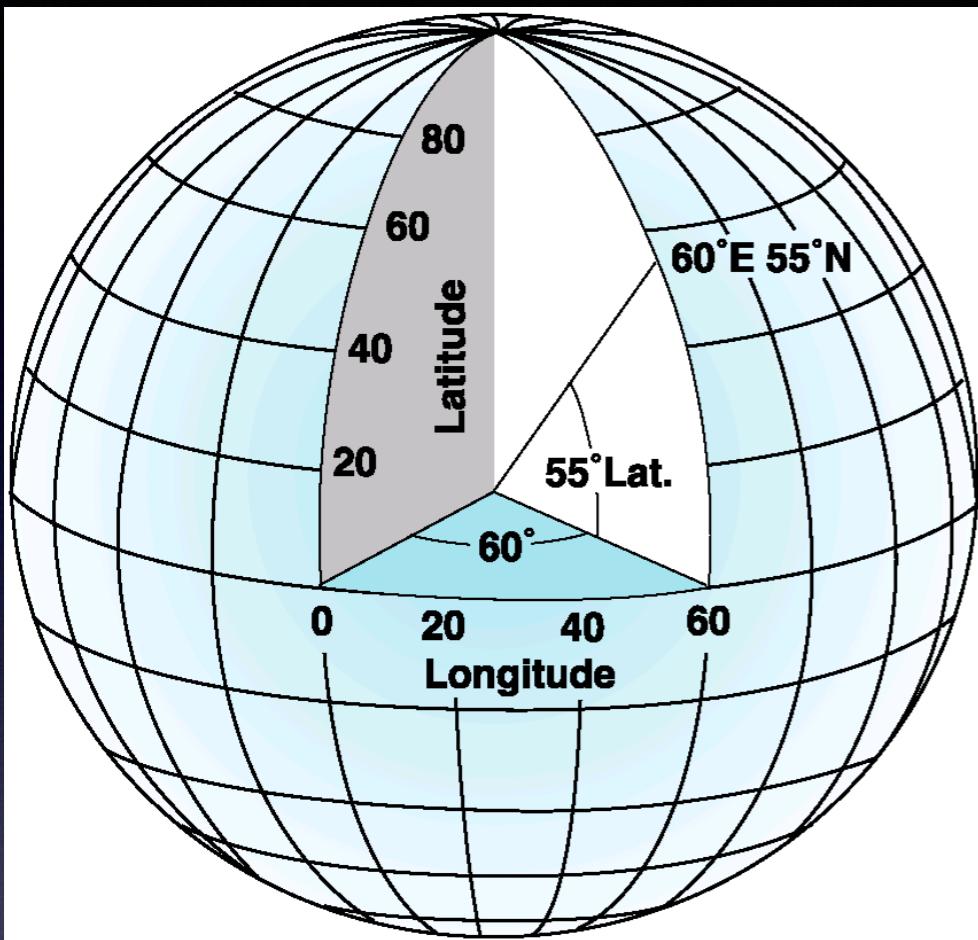


GPS

GPS Gives Us Positions on Earth



- Longitude and latitude - angles measured relative to the plane of the Prime Meridian and equator, respectively (analogous to x,y)
- Angles are measured in degrees (degrees, minutes, seconds (DMS) or decimal degrees).
- Surface expression of longitude and latitude - graticule of meridians and parallels
- GPS Components need to know where they are relative to this geographic, or spherical, coordinate system.
- Remember that this coordinate system is defined based on a datum.

GEOGRAPHIC Coordinate Systems

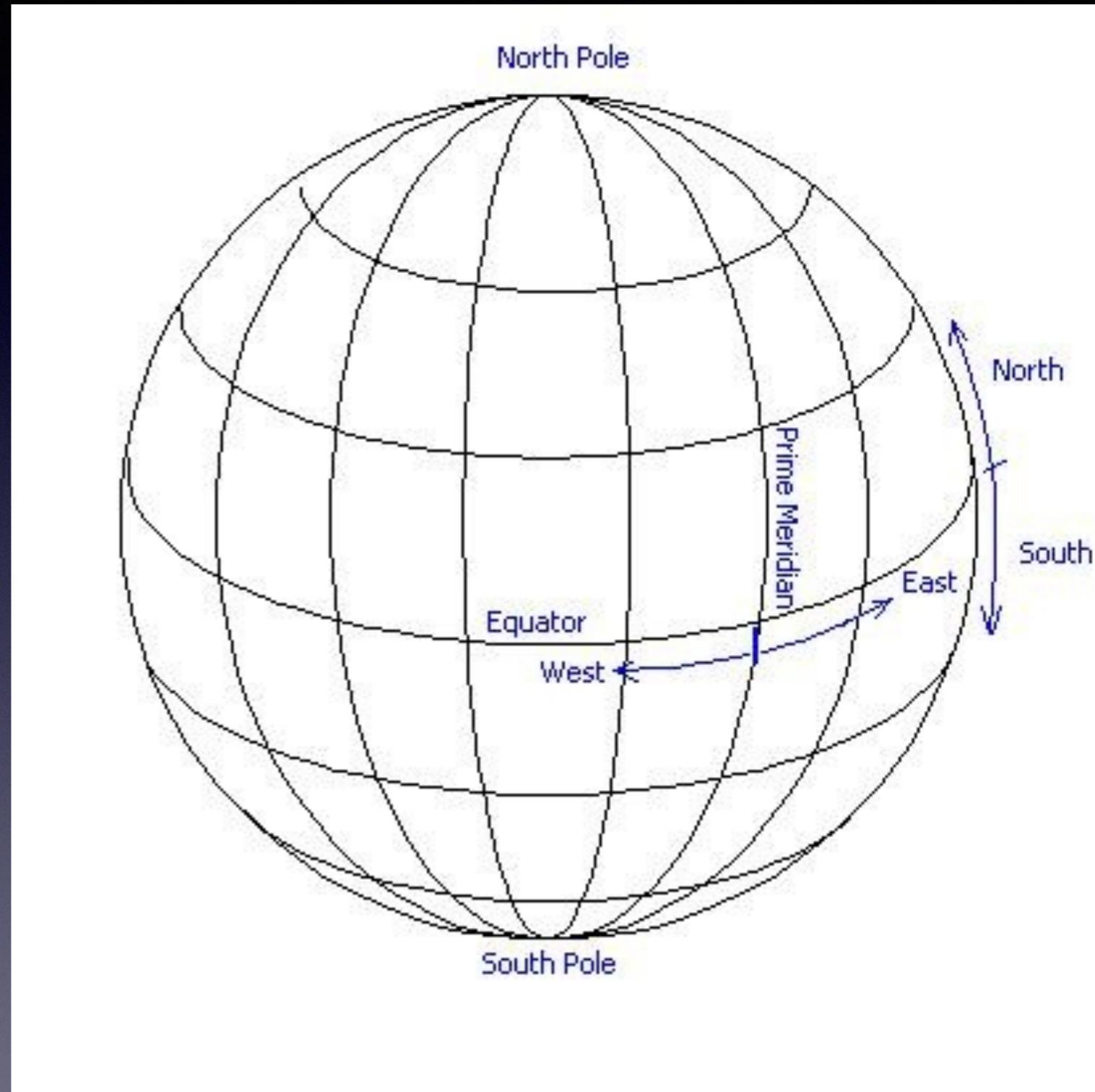
- Measured in:
 - degrees, minutes, seconds
 - decimal degrees

1 Degree = 60 Minutes

1 Minute = 60 Seconds

No limit on accuracy

$43^\circ 4' 31''$
is the same as
 43.0753°



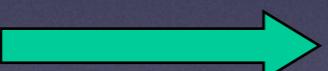
GEOGRAPHIC Coordinate Systems

- Measured in:
 - degrees, minutes, seconds
 - decimal degrees

1 Degree = 60 Minutes

1 Minute = 60 Seconds

$43^\circ 4' 31''$
is the same as
 43.0753°



Convert seconds to minutes...

$$31 \text{ seconds} / 60 = 0.5166 \text{ minutes}$$

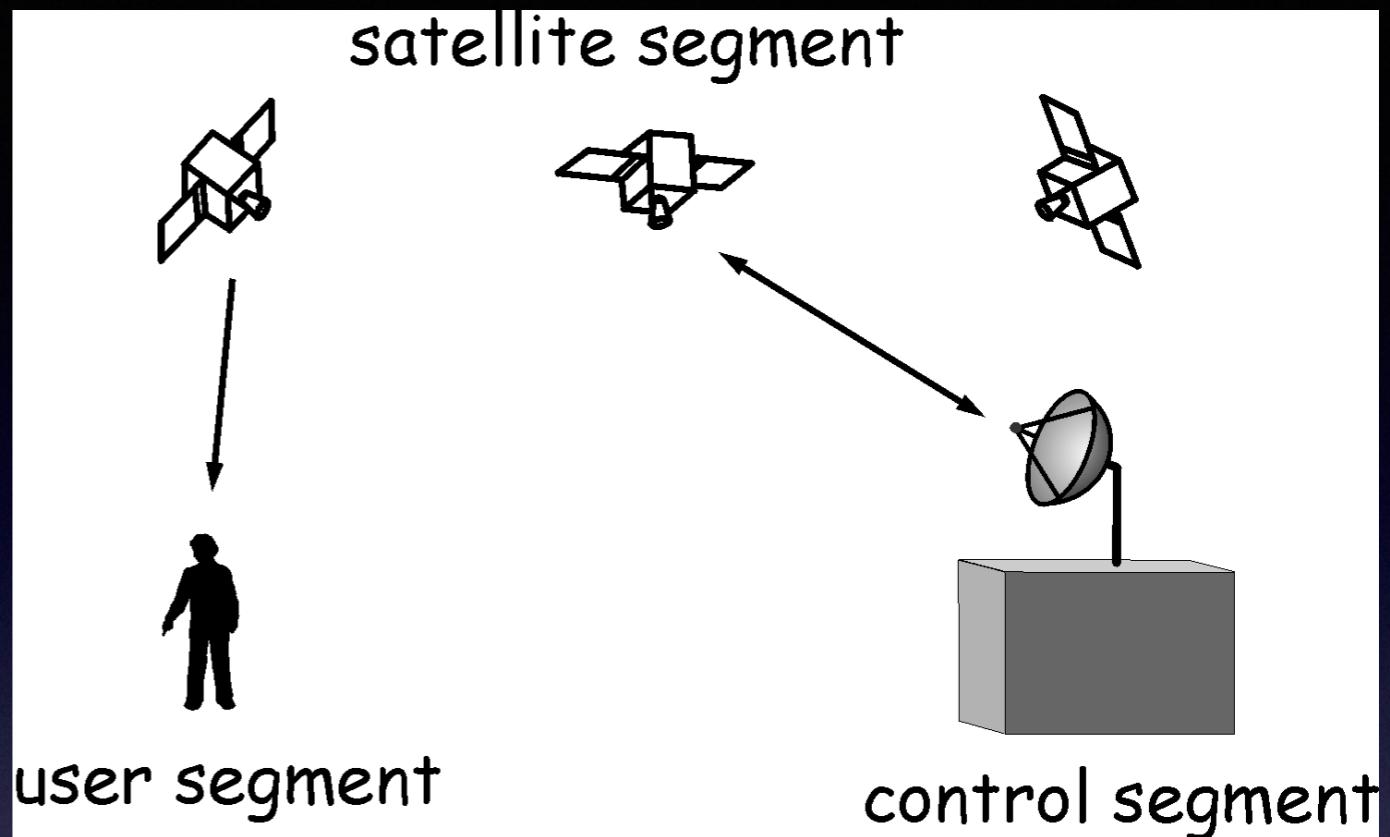
Convert minutes to degrees...

$$4.5166 \text{ minutes} / 60 = 0.0753 \text{ degrees}$$

No limit on accuracy

What is GPS?

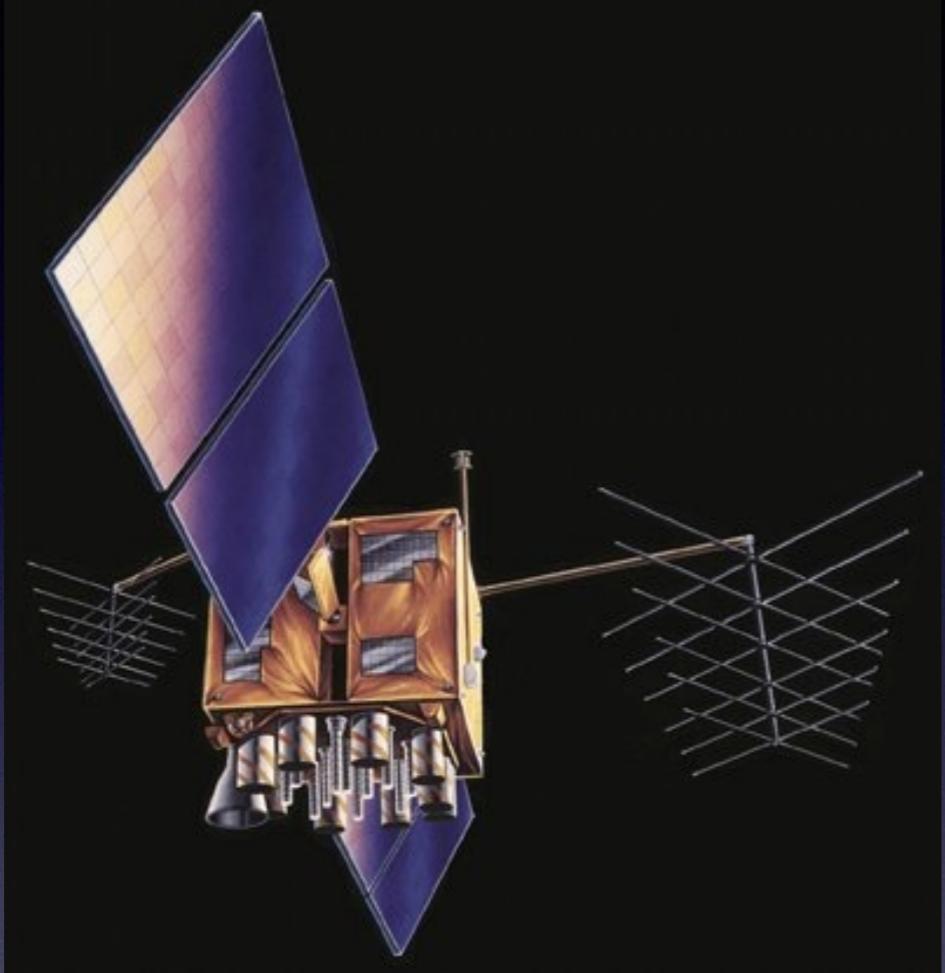
A system to calculate
a position or
coordinate on the
Earth's surface



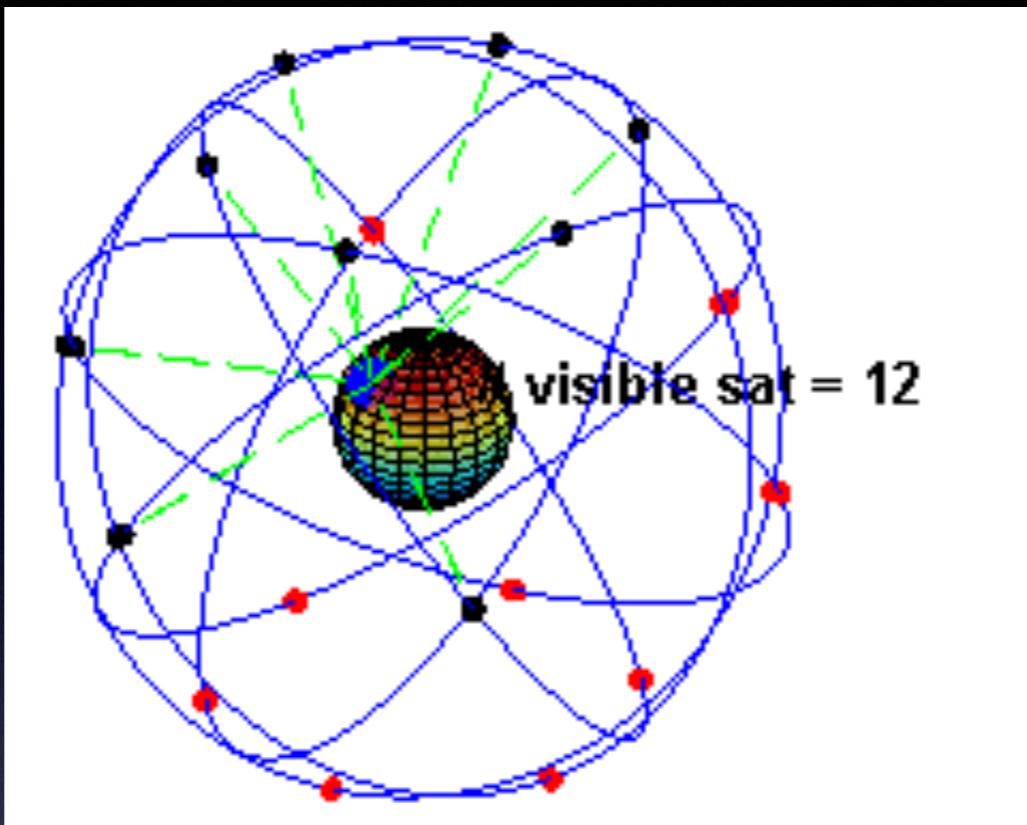
History of GPS

- 1978: First GPS satellite launch
- 1983: GPS revealed (kept secret until now)
- 1994: All 24 satellites operational
- 1996: Investment to date - \$12 billion
- 1999: “Washington, DC -- Vice President Gore announced today a \$400 million new initiative in the President's balanced budget that will modernize the Global Positioning System (GPS) and will add two new civil signals to future GPS satellites, significantly enhancing the service provided to civil, commercial, and scientific users worldwide.”
- 2000: Selective Availability Turned Off

What is the GPS space segment?



Constellation of at least 24 satellites (31 currently)
Each satellite follows one of six distinct orbits
Each satellite circles the Earth in 12 hours
Continually broadcasting codes to GPS receivers



<http://en.wikipedia.org/wiki/File:ConstellationGPS.gif>



Justin D. Cole Mnemon

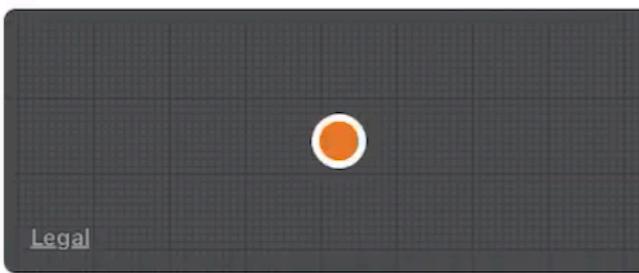
0.0 mph

Justin D. Cole Mnemon

1 battery WAAS

19 Trips on this iPad

Location



Satellites

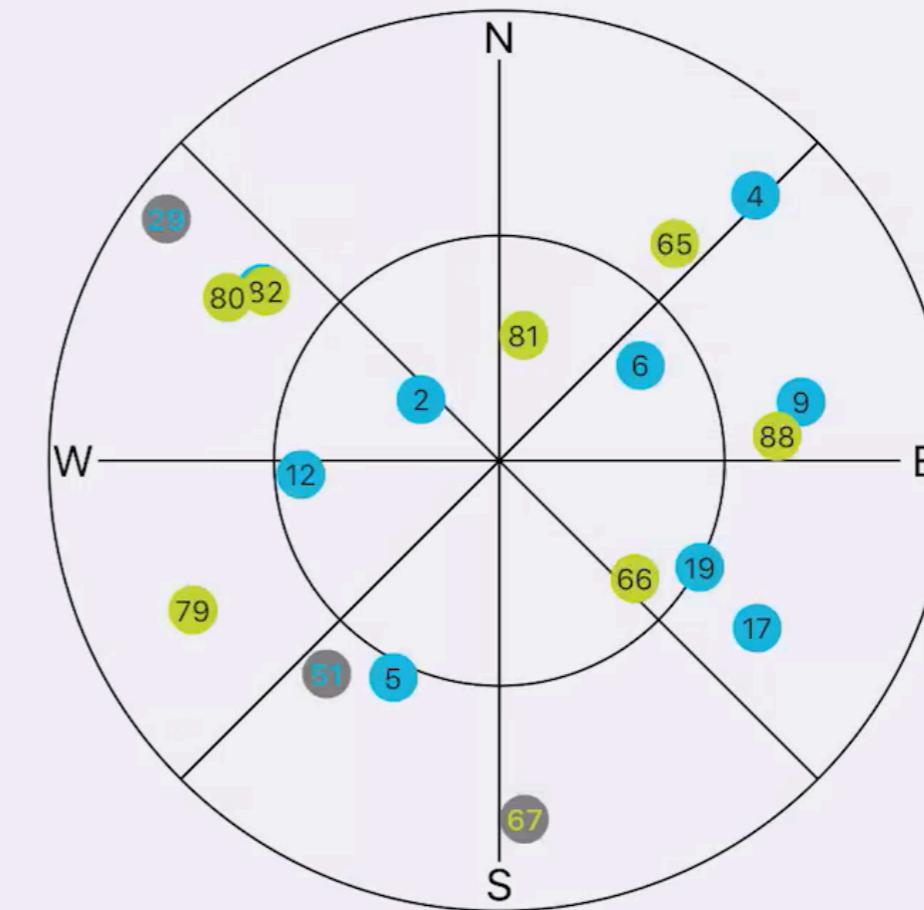


Learn More

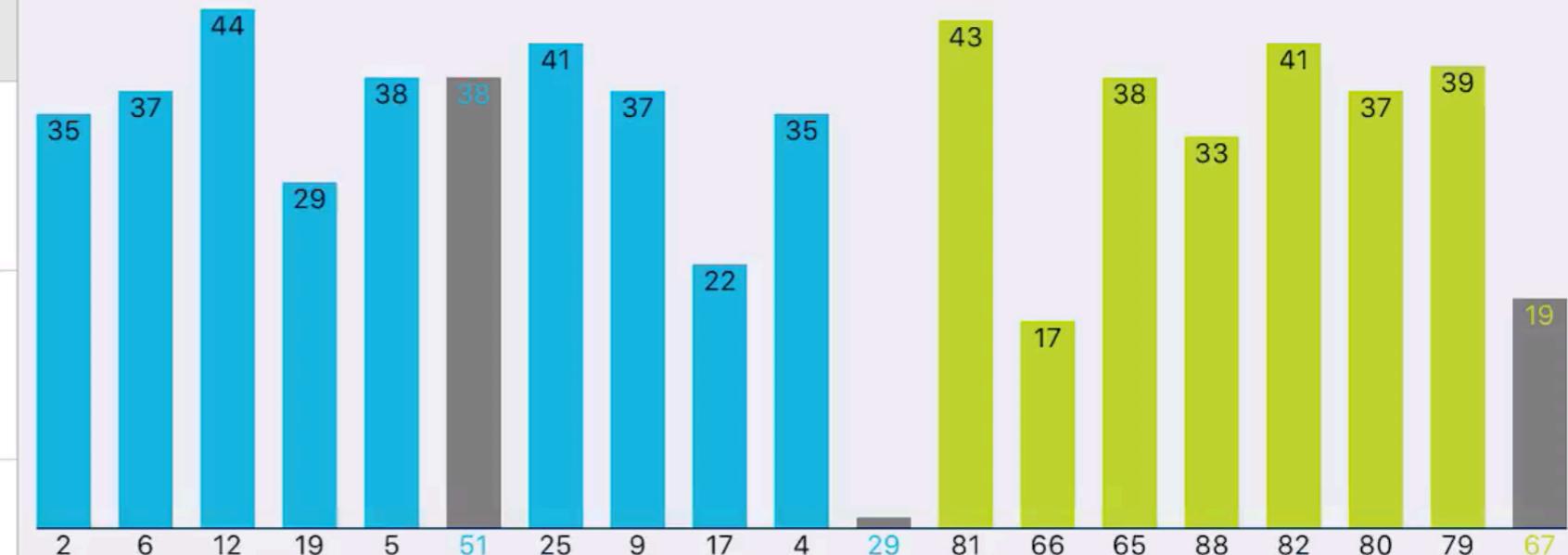
Troubleshooting

App Settings

Satellites

GPS
GLONASS

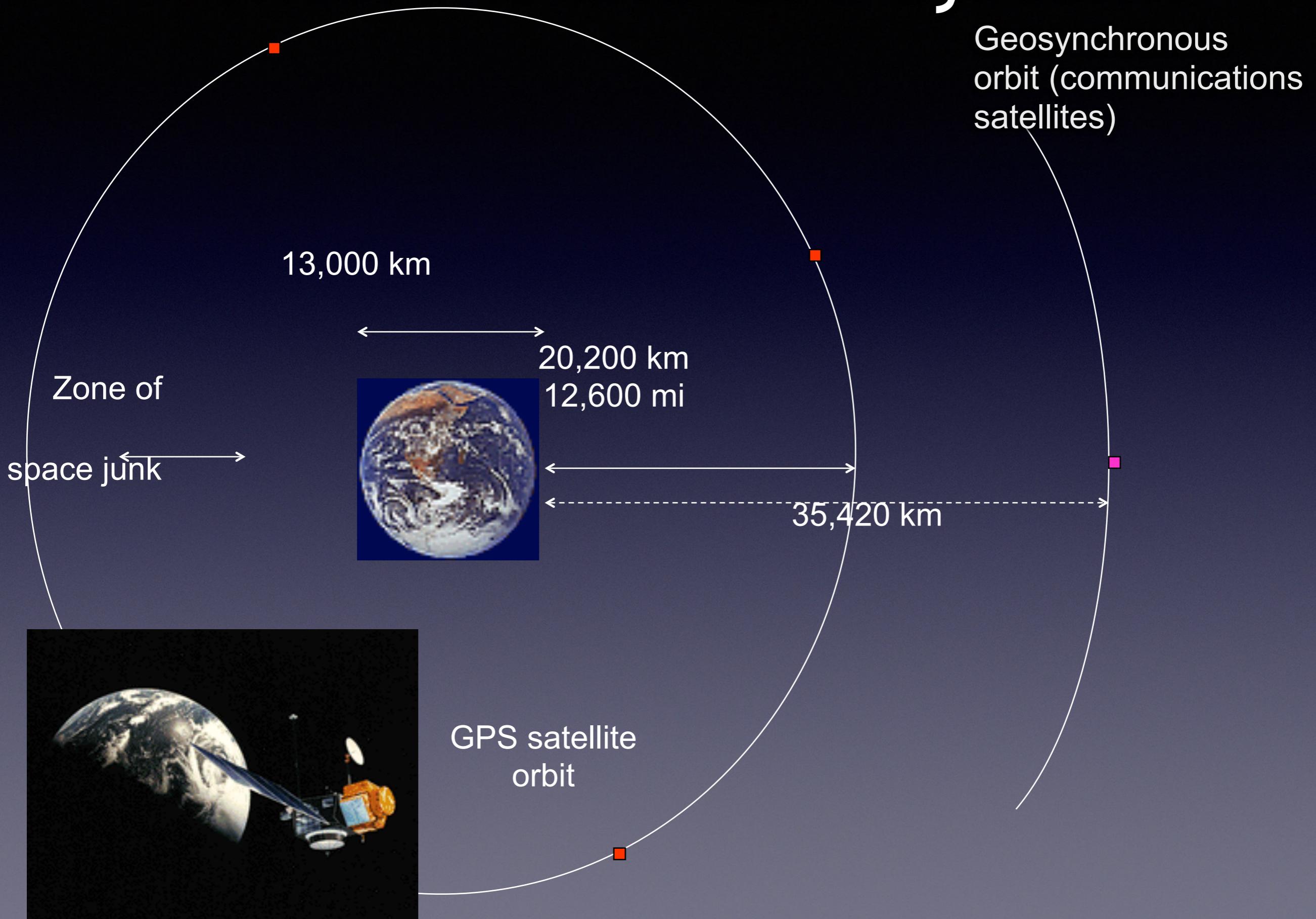
Locked on Satellites: 16 of 19



Accuracy (RMS):

2.8m
Horizontal3.3m
Vertical4.7m
Positional

Where is the GPS system?



What is the GPS control segment?

- Monitor Stations continually monitor satellite position info.
- Master Control Station calculates orbit and clock info. every 15 min.
- Ground Antennas broadcast updated navigation info. to satellites once or twice a day
- Satellites use updates in their broadcasts



What is the GPS user segment?



Receivers continually listen for broadcasts from satellites

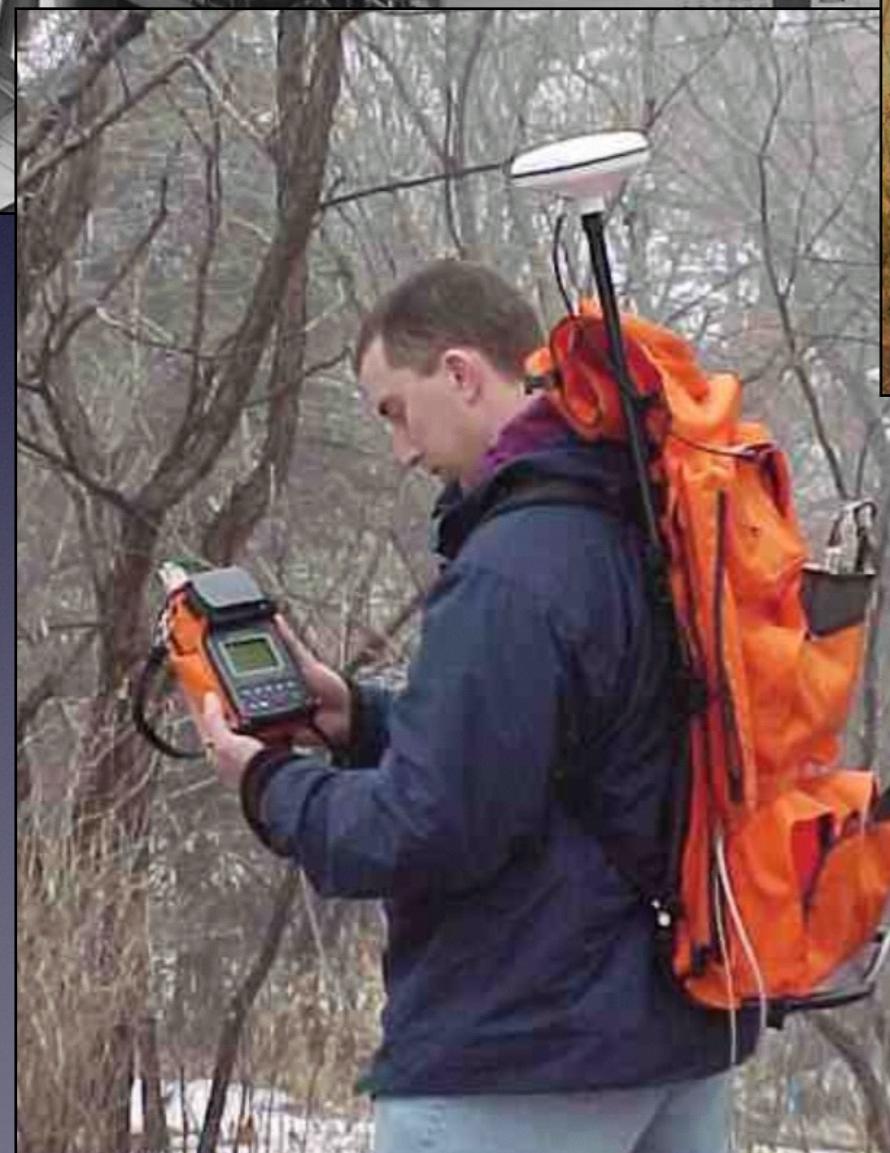


Internal computer contains almanac of satellite positions

Calculate distance from each satellite

Use trilateration to determine position of Earth's surface

What is the GPS User Segment?



How It Works (In 5 Easy Steps)

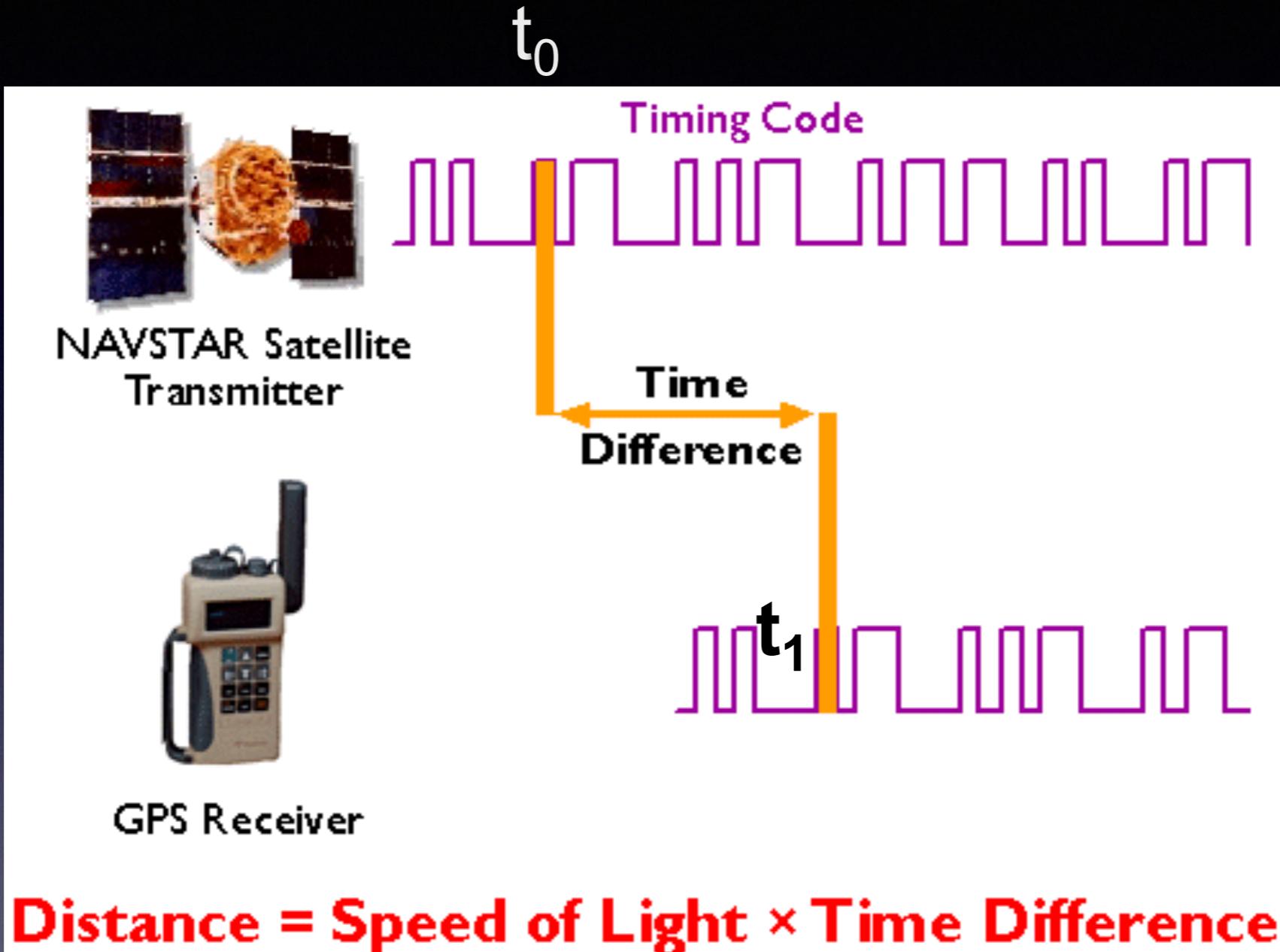
GPS is a *ranging* system (trilateration)

- The “reference stations” are satellites moving at 4 km/s
1. A GPS receiver (“the user”) detects ranging signals from several satellites
 - Each transmission is time-tagged
 - Each transmission contains the satellite’s position
 2. The time-of-arrival is compared to time-of-transmission
 3. The delta-T (i.e time difference) is multiplied by the speed of light to obtain the range
 4. Each range puts the user on a sphere about the satellite
 5. The intersections of several spheres yields the user position

The Fundamental Principal: Speed * Time = Distance

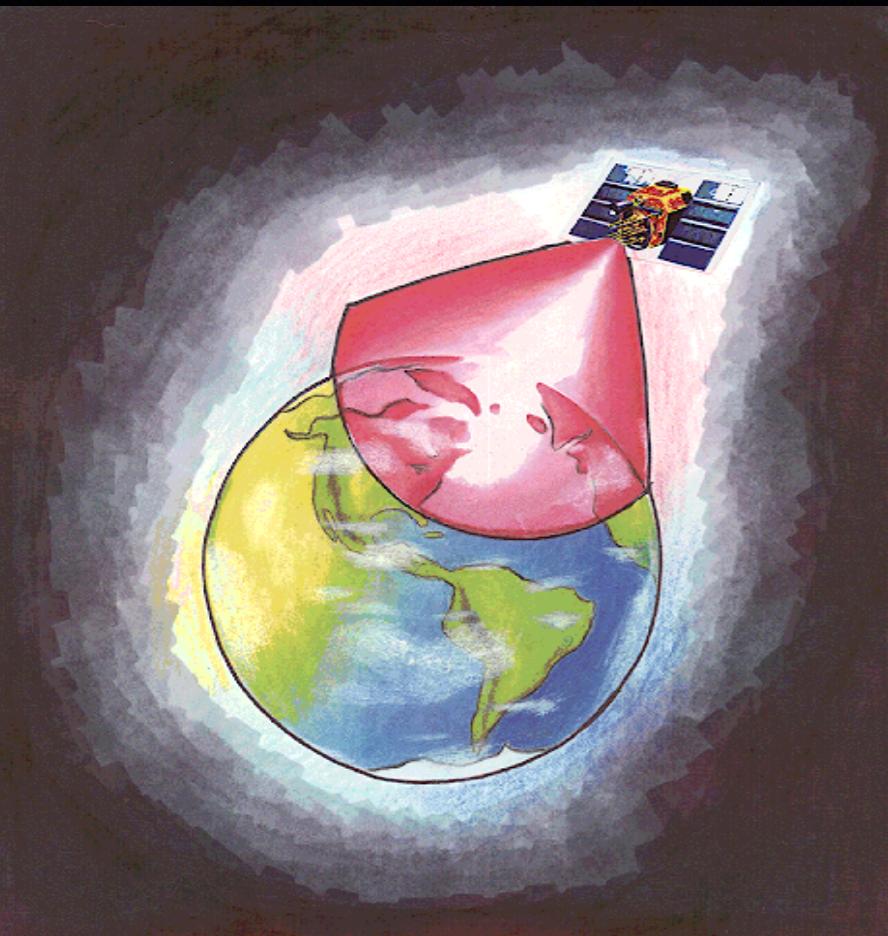
- Radio waves are electromagnetic radiation, and travel at a constant speed: 299,792,458 meters/sec (186,000 mi / sec)
- Measure of how long it takes signal to reach receiver = distance to the satellite.

What is satellite ranging?

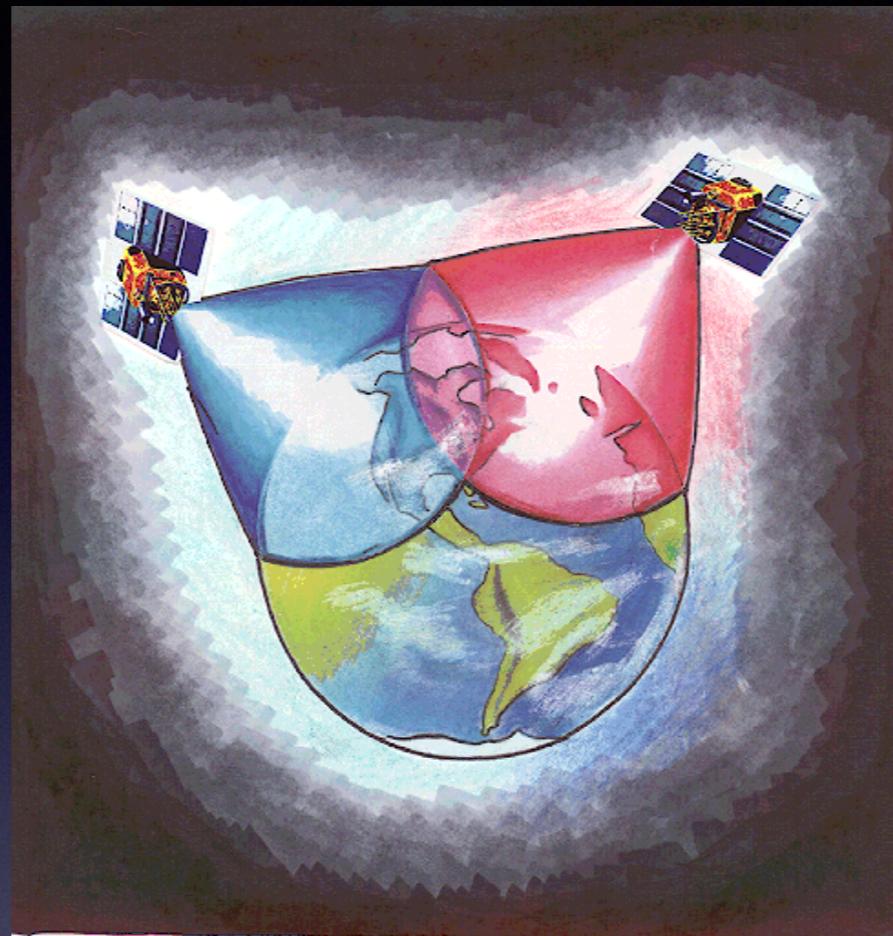


Code sent from satellite at t_0 matches code generated at receiver at t_1

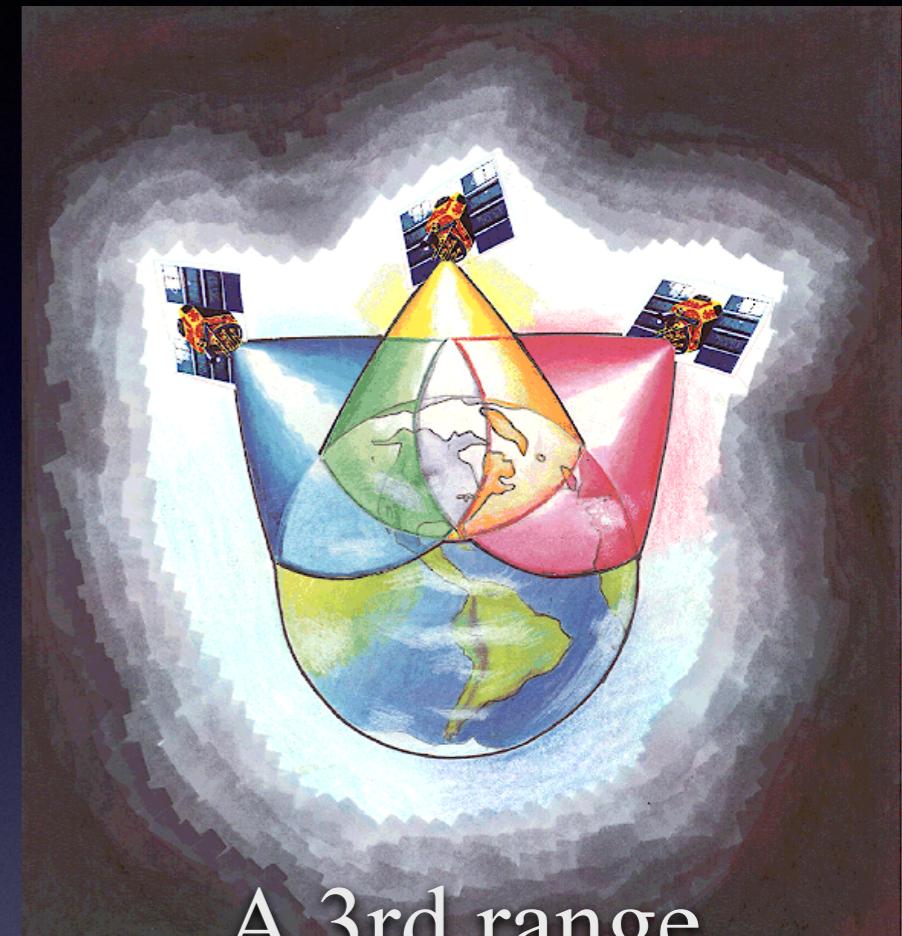
Multi-Satellite Ranging



1 range puts user on the spherical face of the cone.



Intersecting with a 2nd range restricts user to the circular arcs.



A 3rd range constrains user to 1 of the 2 points.
Which point is determined by “sanity” – 1 point obviously wrong.

GPS accuracy

Non Sequitur By Wiley Miller

I TOLD YOU
NOT TO BUY
THAT G.P.S.
ON E-BAY,
BUT WOULD
YOU LISTEN
TO ME?
NO-O-O-O...

©05 WILEY MILLER DIST. BY UNIVERSAL PRESS SYND.

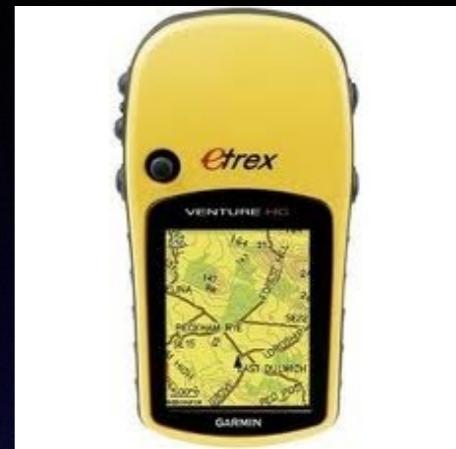
WWW.UCONICS.COM / NONSEQUITUR

6-18

WILEYLINK@COMCAST.NET

Accuracy of different types of GPS units

- Low end (recreational grade)
 - \$100-\$400
 - Accuracy: 10-20 feet
- Mid Range (mapping grade)
 - \$2,500 - \$10,000
 - Accuracy: 2-5m, sub-meter real-time, centimeter accuracy with post-processing.
- High end (survey grade)
 - \$10,000 - \$25,000
 - Accuracy: sub-meter to centimeter real-time, sub centimeter accuracy with post-processing.

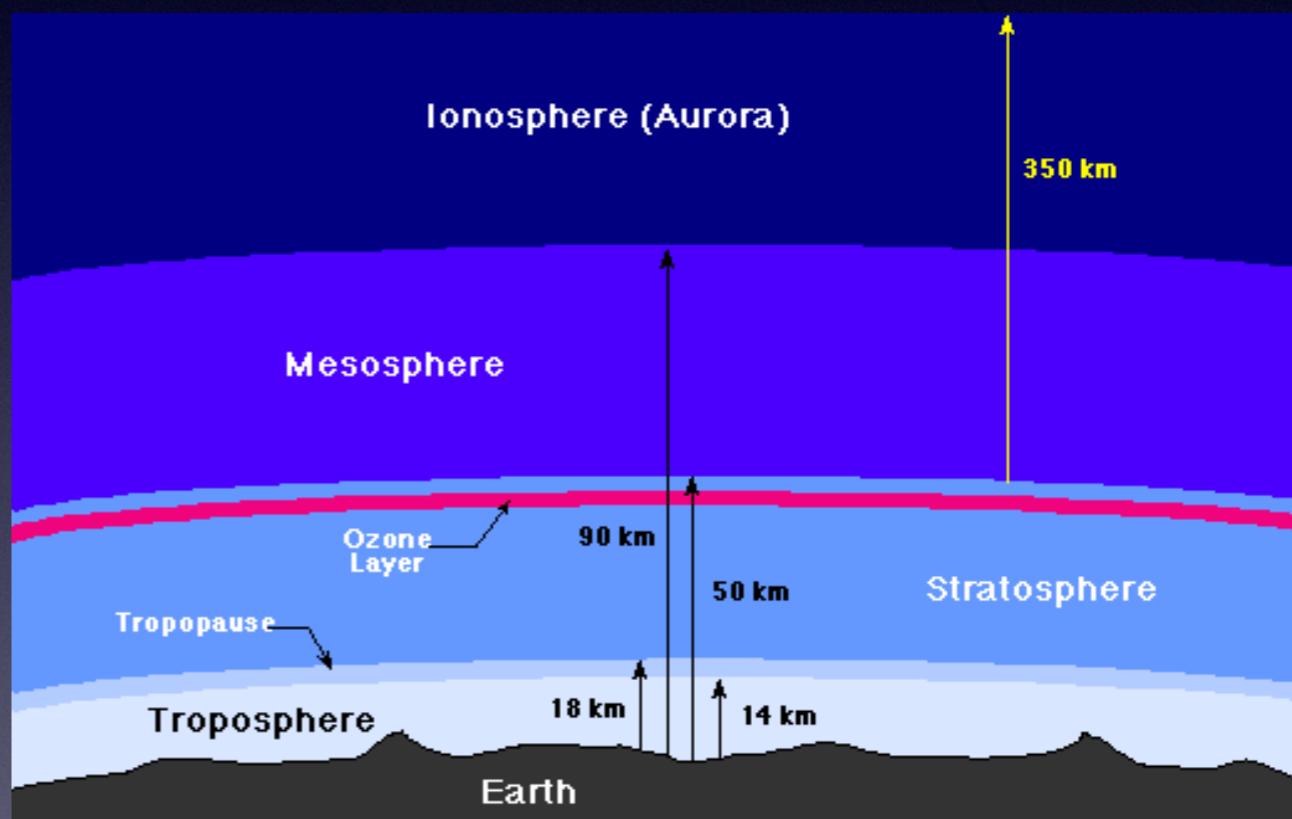


What accounts for inaccuracies?

- Atmosphere (10 meters)
- Orbit Error (5 meters)
- Electronic “noise” (meters)
- Clock Error (meters)
- Multipath error (meters)
- Receiver error (any size)
- Geometric effects (Dilution Of Precision)
- Operator error (to 100s of meters)

What accounts for inaccuracies?

- Atmospheric Delay
 - Satellite signal bounces around traveling through the ionosphere and the troposphere.
 - Increases time to reach Earth,
 - Alters calculated position.



What accounts for inaccuracies?

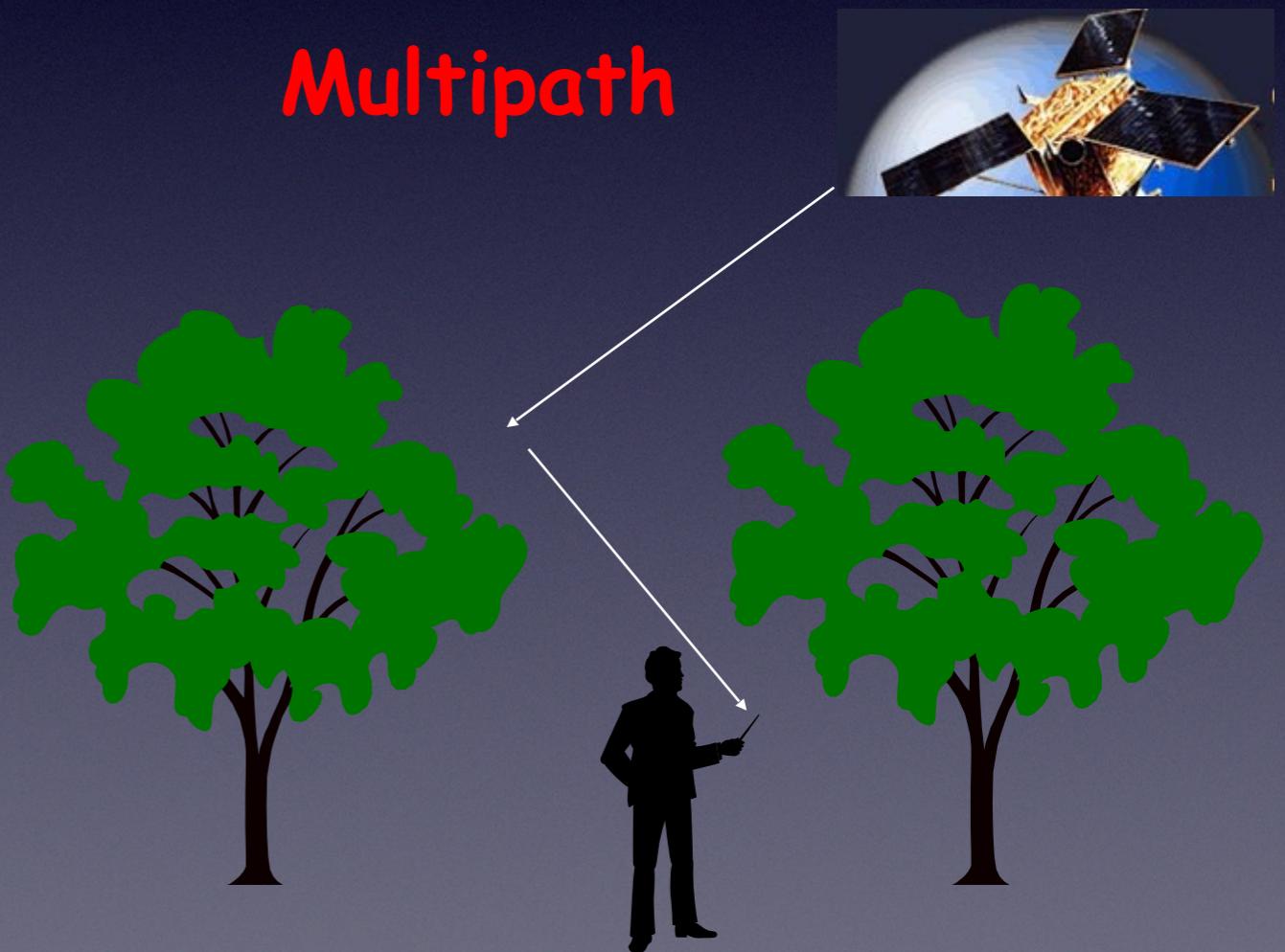
- Multipath
 - GPS signal is reflected off objects before reaching receiver



No multipath



Multipath



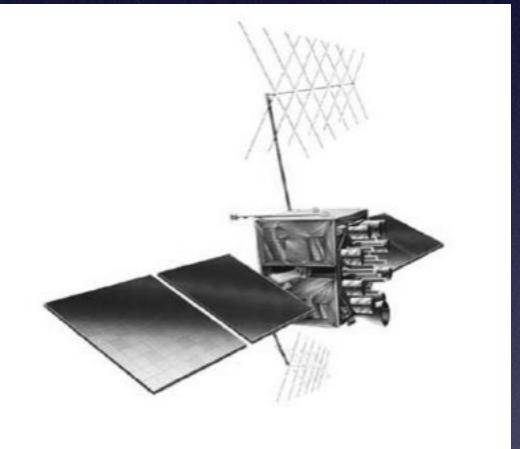
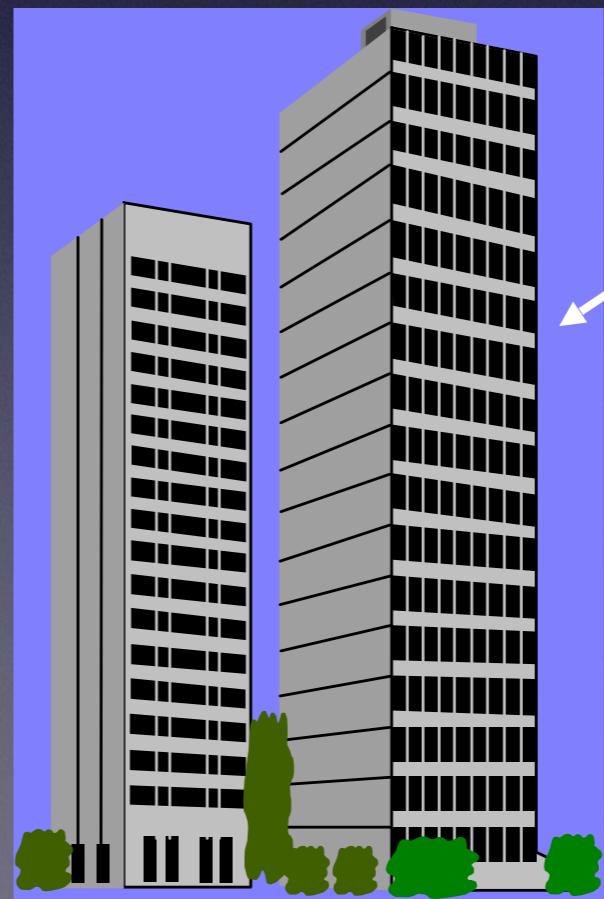
What accounts for inaccuracies?

- Obstruction
 - Landscape features block the GPS signals
 - Schedule your data capture during a time when you maximize the number of visible satellites

GPS does not work very well in areas with too many obstacles
(Forests, cities, steep mountains)

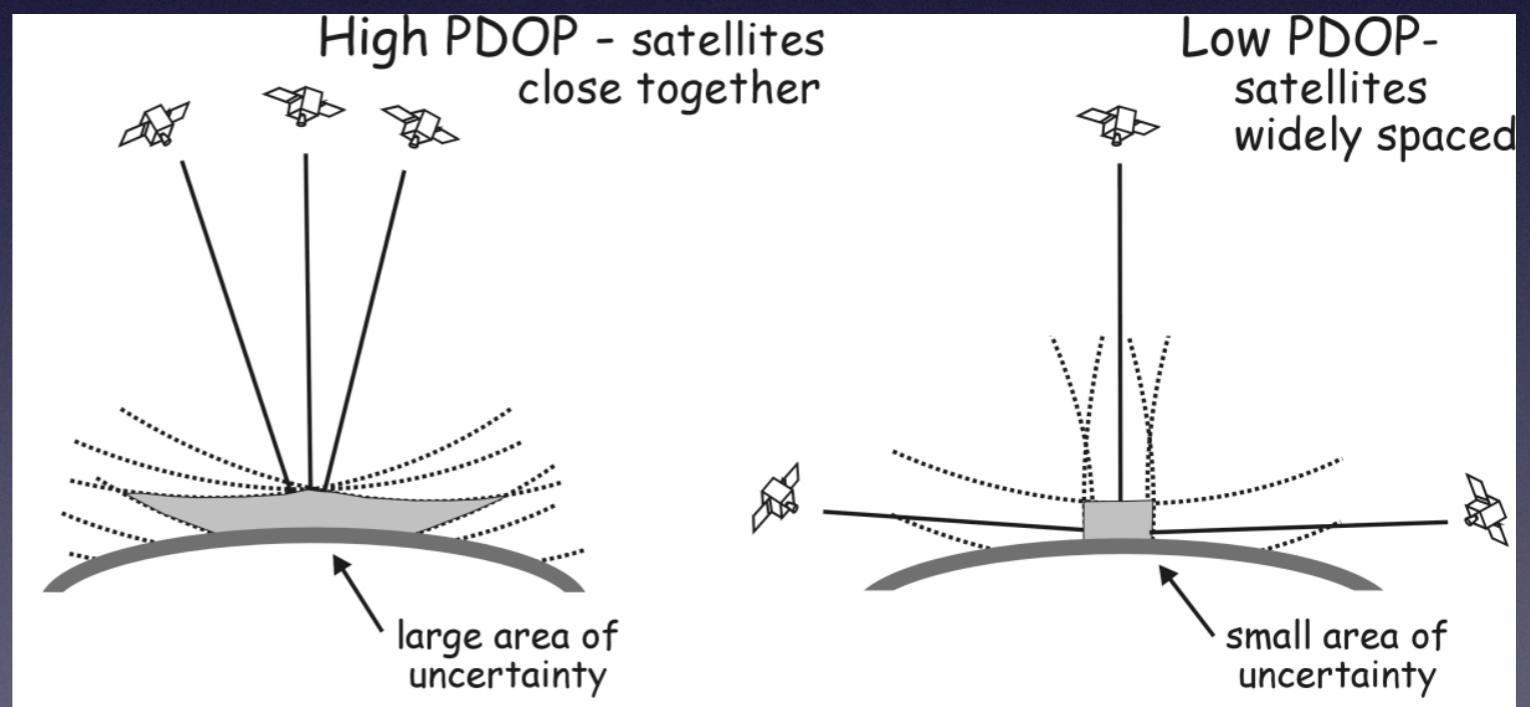
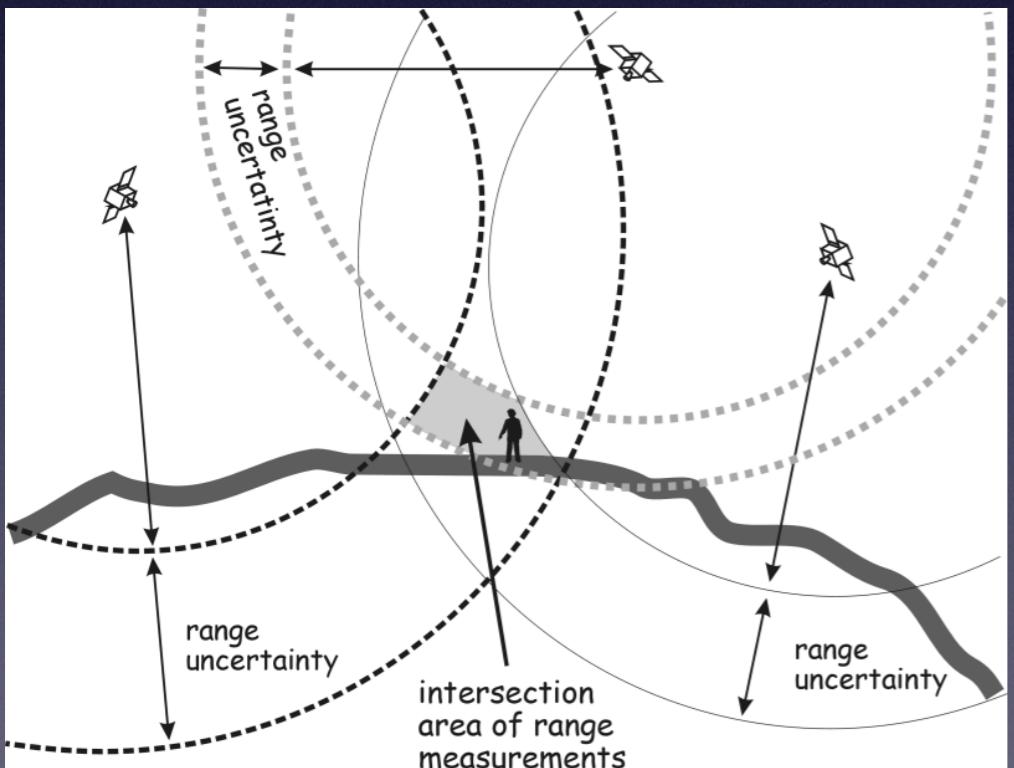


??



What accounts for inaccuracies?

- Positional Dilution of Precision (PDOP)



Two Methods for Improving Accuracy

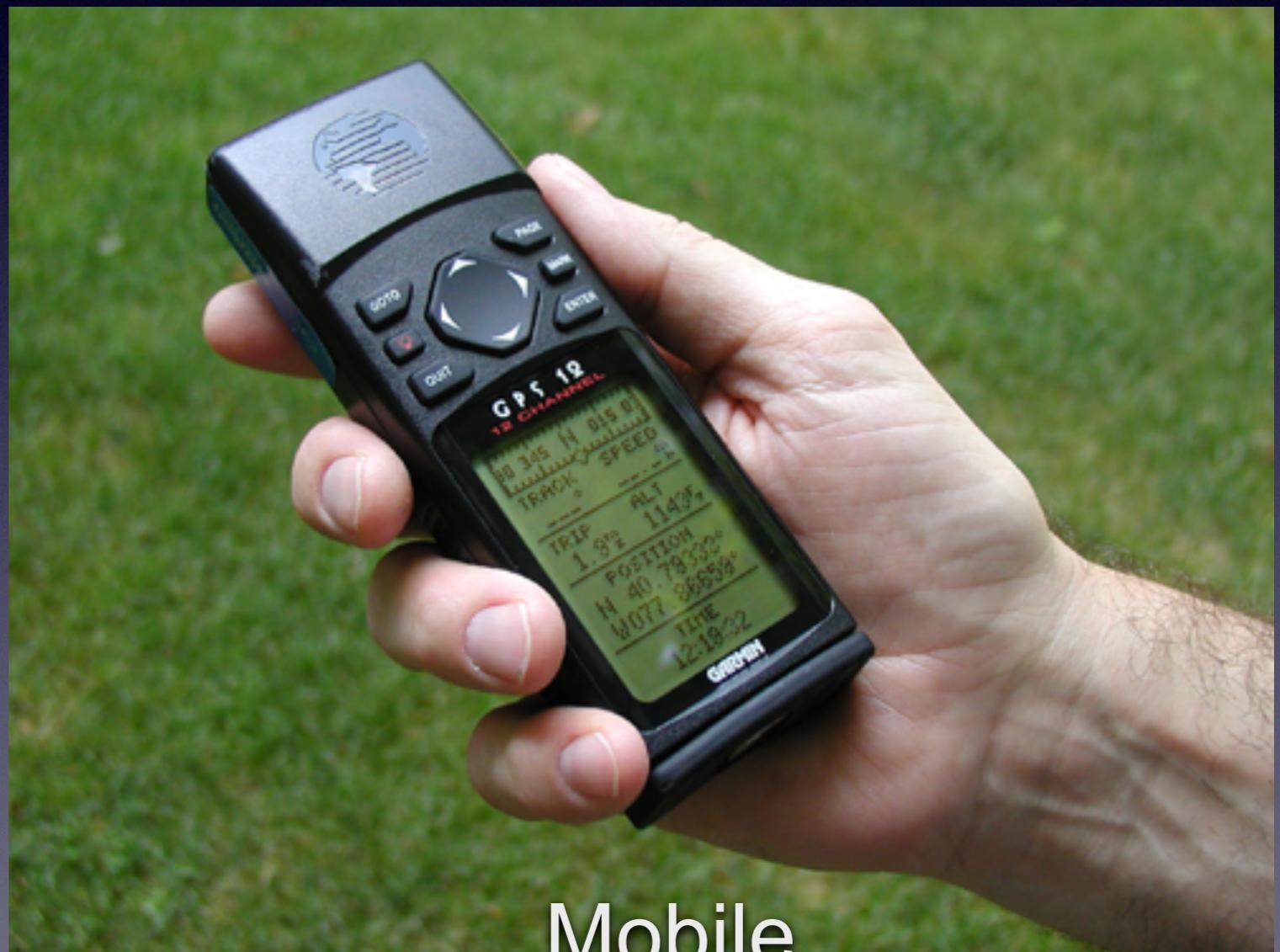
- Differential GPS
- Wide Area Augmentation System (WAAS)

What is differential GPS?

Addition of a Base Station with mobile GPS



Base
station



Mobile
Device

Base Station



Base station

Base station set up on a precisely known location.

Base station receiver calculates the difference between its true position and the position calculated from satellite signals.

Mobile Receivers

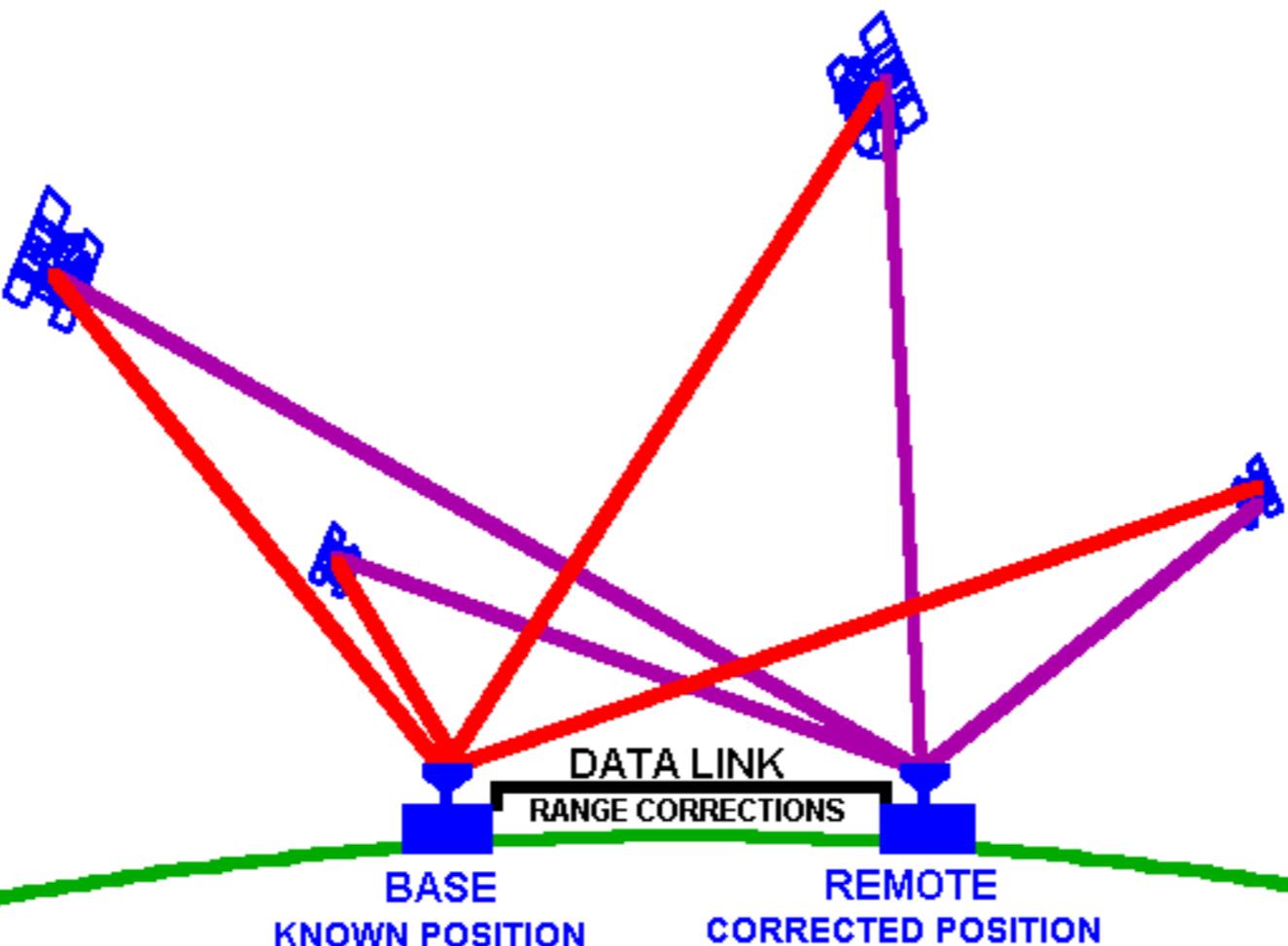
Difference applied to GPS receiver data.

Mobile GPS positions adjusted according to differential info.



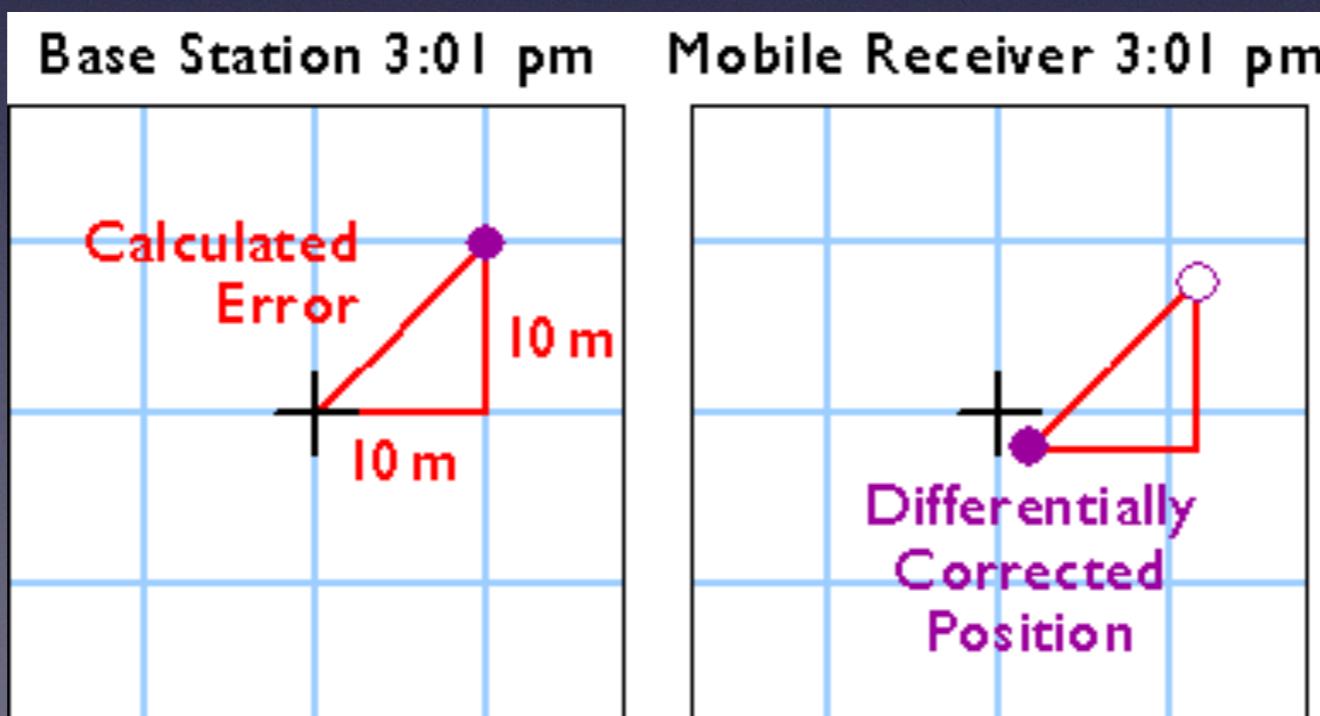
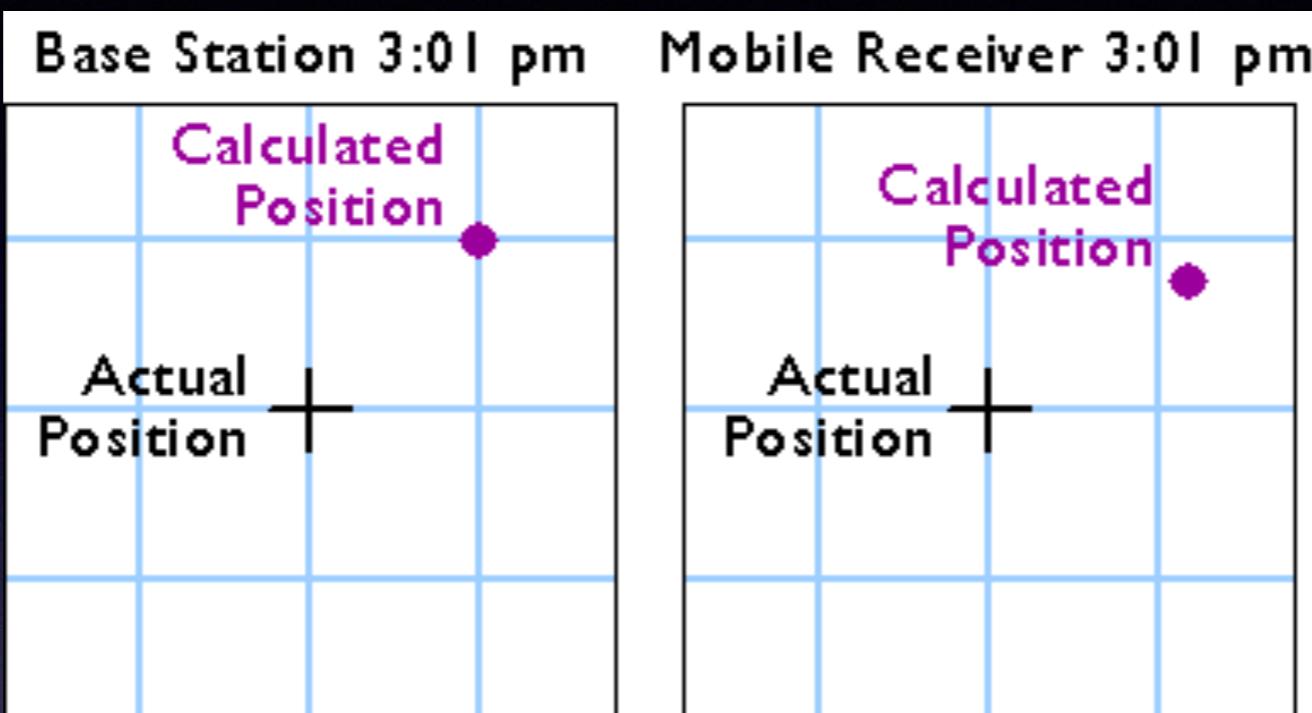
Mobile

DIFFERENTIAL GPS POSITIONING



PHDANA 10/92

What is differential GPS?



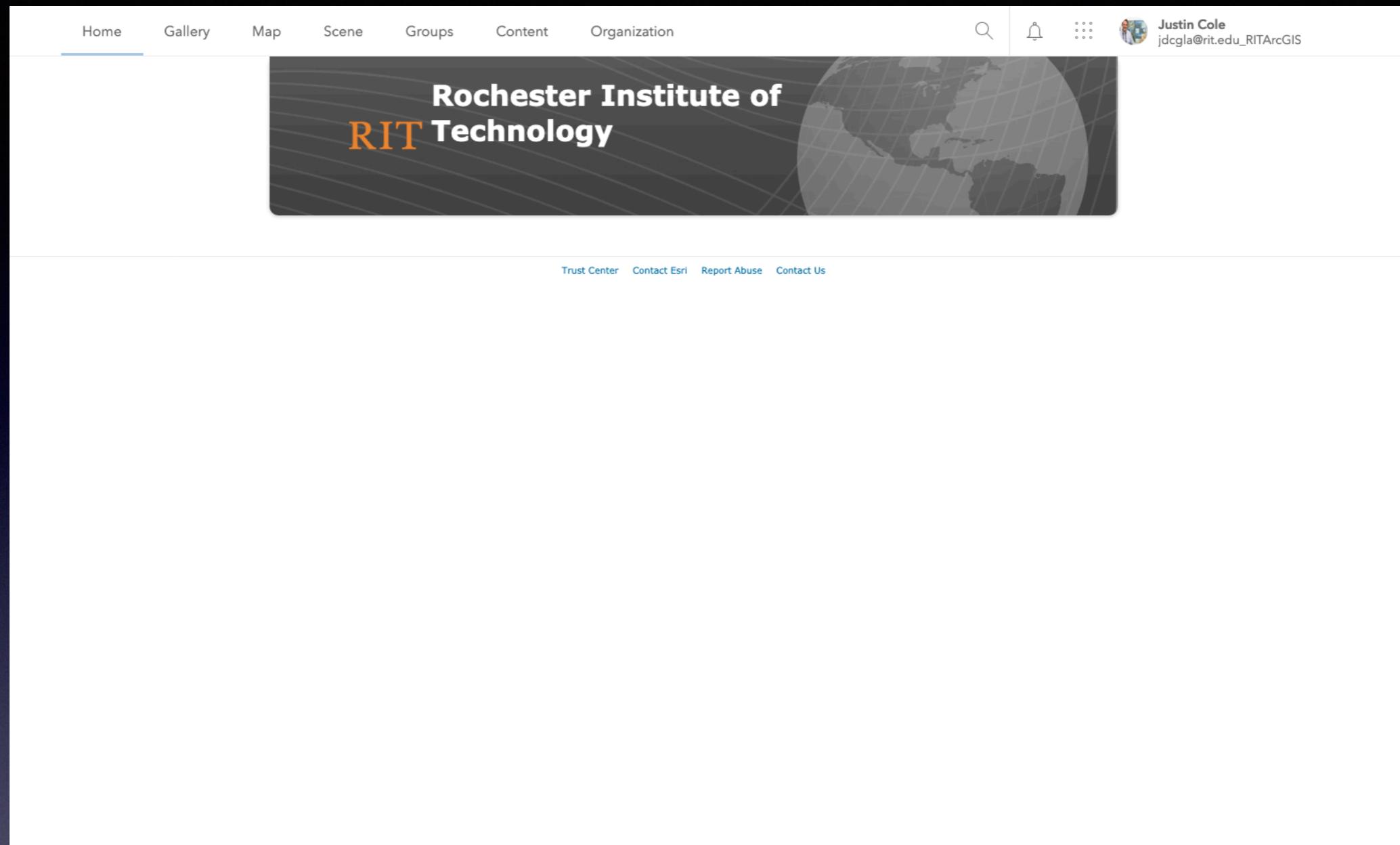
Web Applications

ArcGIS Online

- ESRI's Online GIS
- It has access to a lot of available data
 - Public, Private, and Commercial
- Integrated into many of the ArcGIS Desktop Platform
- Credit based system where certain things use credits
 - Geocoding
 - Analysis

ArcGIS Online and ArcGIS Desktop Work Together

- You can publish maps and data from desktop to ArcGIS Online
- Can create feature layers to edit on ArcGIS Online
- Can load ArcGIS Online Layers into ArcGIS Desktop



What you see when you login

The screenshot shows the ArcGIS Content page. At the top, there are navigation links: one page, history, home, Gallery, Map, Scene, Groups, Content (which is highlighted), and Organization. To the right are search, notification, and user profile icons. The user is Justin Cole (jdcgla@rit.edu_RITArcGIS).

The main content area has tabs: My Content (selected), My Favorites, My Groups, My Organization, and Living Atlas. Below the tabs are buttons for Add Item and Create, and a search bar with the query "Search IGME 382 Fall 2020". There are also filters for Table, Date Modified, and a Filter icon.

The left sidebar shows Folders: All My Content, jdcgla@rit.edu_RITArcGIS, IGME 382 Fall 2020 (selected), IGME382 Admin, Survey-ISTE 151H Fall 2019 Demo, and Survey-ISTE 484 2019 Midterm Peer Review.

The main content area displays a table of results for "IGME 382 Fall 2020". The columns are Title, Type, Status, and Modified. The results are:

Title	Type	Status	Modified
Fire Hydrants Survey	Web Map	Unlocked	Sep 14, 2020
Fire Hydrant Survey IGME 382 Fall 2020	Feature Layer (hosted)	Unlocked	Sep 14, 2020

The sidebar also includes a Filters section with expandable categories: Item Type (Maps, Layers, Scenes, Apps, Tools, Files, Notebooks), Location, and Date Modified.

Content

Content

This is where all of your content is located. You can view and create feature services, maps, applications. You can also export data out from here.

[↑ Add Item](#)[+ Create](#)[Search IGME 382 Fall 2020](#)[Table](#)[D](#)**Folders**[Filter folders](#)[All My Content](#)[jdcgla@rit.edu_RITAr](#)[IGME 382 Fall 2020](#)[IGME382 Admin](#)[Survey-ISTE 151H Fall Demo](#)[Survey-ISTE 484 2019 Midterm Peer Review](#)**Filters****Item Type**[Maps](#)[Layers](#)[Scenes](#)[Apps](#)[Tools](#)[Files](#)[Notebooks](#)**Create layers and more****Feature Layer**

Create an editable layer with fields copied from a template or feature layer.

**Tile Layer**

Create a fast-drawing tile layer from a feature layer.

**Locator (view)**

Create a view of the ArcGIS World Geocoding Service to suit your needs.

Create apps**Configurable Apps**

Create an app by selecting a focused template and configuring its properties.

**Web AppBuilder**

Create an app by selecting a theme and choosing from a library of widgets.

**StoryMaps**

Tell a story by combining maps with narrative text and media.

**Dashboards**

Create a dashboard with data visualizations that provide key insights.

**Sites**

Create a tailored website with pages to share information to a specific audience.

**Experience Builder**

Use a template or start from scratch to create the exact web experience you want.

[Create to create](#)

Lets Create Content

Create a feature layer

X

From Template

From Existing Layer

From URL

What do you want to do?

Select a feature layer template

Search

Show All

»

Build a layer

Agriculture

Electric Utilities

Environment

Forestry

Gas Utilities

General

Natural Resources

Petroleum

Public Safety

Telecommunications



AEDs



As-Built Mapping



Backflow Inspection



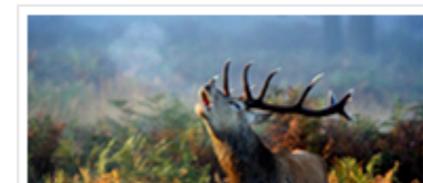
Boom Placement



Bridge Inventory



Check In



Cancel

Lets Create Content

[From Template](#)[From Existing Layer](#)[From URL](#)

What do you want to do?

Agriculture

Electric Utilities

Environment

Forestry

Gas Utilities

General

Natural Resources

Petroleum

Public Safety

Telecommunications

Transportation

Water Utilities

Select a feature layer template

 Search

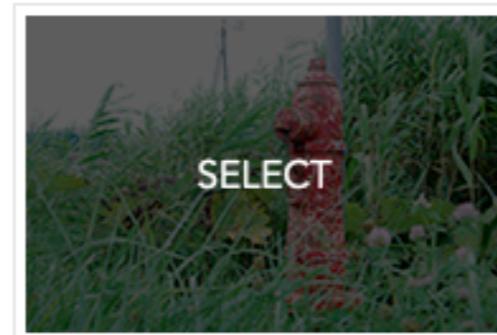
Damage Assessment



Debris Reports



Field Interviews



Fire Hydrants



Fire Safety Surveys



Location Tracking



Restaurant Inspections



Road Closures

[Cancel](#)

Lets Create Content - Search for Fire Hydrants

[From Template](#)

[From Existing Layer](#)

What do you want to do?

Agriculture

Electric Utilities

Environment

Forestry

Gas Utilities

General

Natural Resources

Petroleum

Public Safety

Telecommunications

Transportation

Water Utilities

Select



Damag



Fire Hy



Restau



Fire Hydrants

The location of fire hydrants and detailed inspection information.

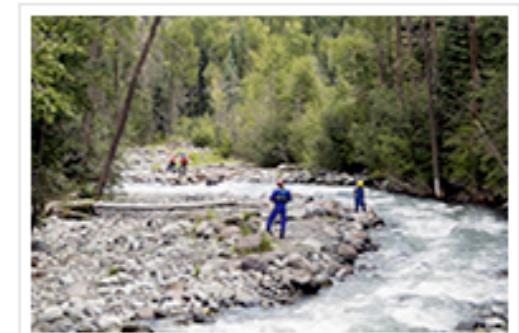
[CREATE](#)

[CLOSE](#)

Search



Field Interviews



Location Tracking

[Cancel](#)

Lets Create Content - Search for Fire Hydrants and Create

Create a feature layer

X

Create a new, empty feature layer. A feature layer lets you create, edit, query, and display data.

Select the layers to include. Click a layer name to edit it.

FireHydrants

Capture GPS receiver information

[Back](#)

[Next](#)

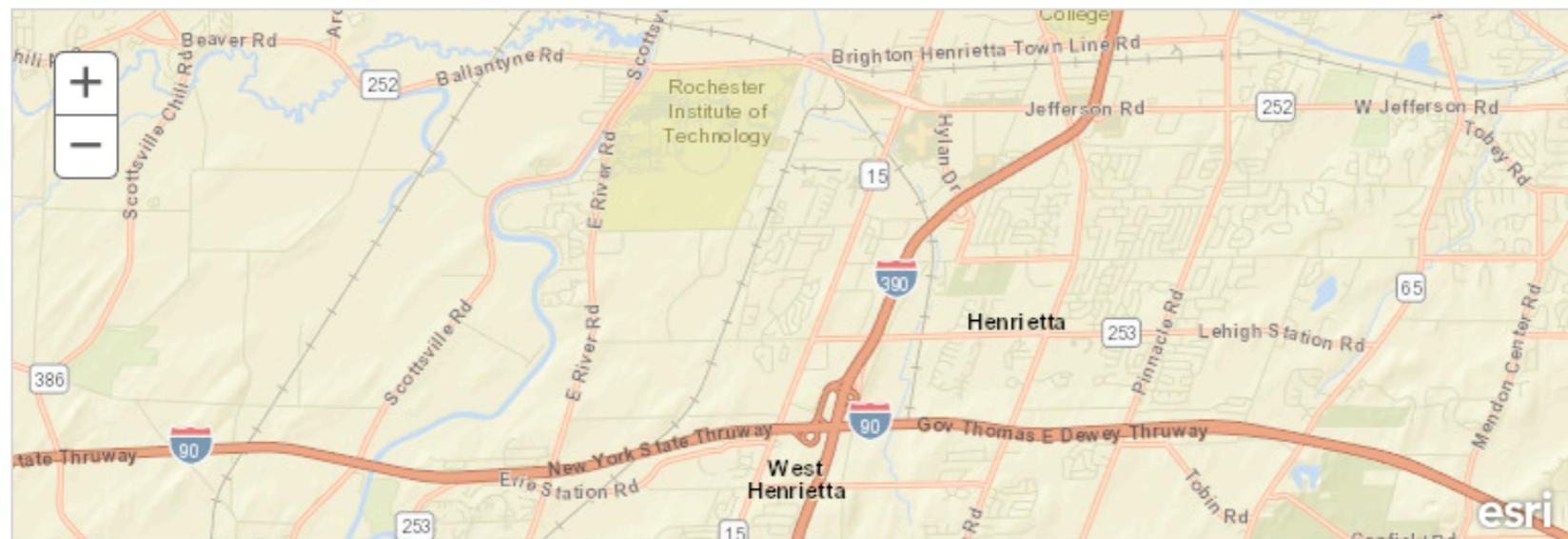
[Cancel](#)

Lets Create Content - What Features

Create a feature layer

X

Pan and zoom this map to set the map extent for the new hosted layer.



Left:

-77.787

Right:

-77.523

Top:

43.099

Bottom:

43.034

[Back](#)

[Next](#)

[Cancel](#)

Lets Create Content - Extent of Features

Create a feature layer

X

Specify a title, tags, and summary for the new hosted layer.

Title:

Fire Hydrant Survey IGME 382 Fall 2020

Tags:

Hydrants X Fire Service X Hydrant Inspections X Fire Flow X ArcGIS for Local Government X ArcGIS.LocalGovernment X

ArcGIS.Solution X Local Government X Municipal X City X County X Fire District X Fire Hydrant Inspection X

Add tags

Summary: (Optional)

Enter a summary

Save in folder:

IGME 382 Fall 2020



Back

Done

Cancel

Lets Create Content - Give it a Name

Fire Hydrant Survey IGME 382 Fall 2020

Overview

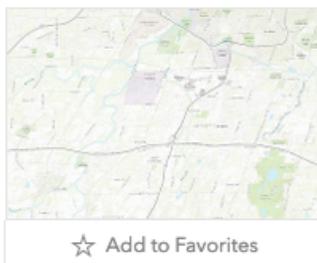
Data

Visualization

Usage

Settings

Edit Thumbnail



Add a brief summary about the item.

Feature Layer (hosted) by jdcgla@rit.edu_RITArcGIS

Created: Sep 14, 2020 Updated: Sep 14, 2020 View Count: 0

Add to Favorites

Edit

Open in Map Viewer

Open in Scene Viewer

Publish

Create View Layer

Export Data

Update Data

Share

Description

Add an in-depth description of the item.

Edit

Layers

 FireHydrants
Point Layer

>

Terms of Use

Edit

Add any special restrictions, disclaimers, terms and conditions, or limitations on using the item's content.

Comments (0)

Leave a comment.



Leave a comment.

You Now Have Fire Hydrants - Open them in the Map Viewer

Item Information

Low

High

 Top Improvement: [Add a summary](#)

Edit

Details

Source: [Feature Service](#)

Data Last Updated: Sep 14, 2020, 9:43:15 AM

Size: 0 KB



Edit

Share



Open in Map Viewer

Map Viewer (Data and Basemaps)

The screenshot displays the ArcGIS Map Viewer interface with three main panels:

- My Map Panel (Left):** Shows a map of the Western United States and Mexico. It includes a legend, guided tours, and three learning tours:
 - Learn to make a map:** START TOUR >
 - Learn to style a map:** START TOUR >
 - Learn to explore Esri Map Layers:** START TOUR >
- Select a basemap Panel (Center):** A modal window titled "Select a basemap" is open, showing nine options with preview images:
 - Imagery:** Satellite view.
 - Imagery with Labels:** Satellite view with street names.
 - Streets:** Street map.
 - Topographic:** Elevation map.
 - Terrain with Labels:** Elevation map with street names.
 - Light Gray Canvas:** Light gray background map.
 - National Geographic:** Detailed map with color-coded regions.
 - Oceans:** Map of the oceans.
 - OpenStreetMap:** OpenStreetMap-based map.
- Add Panel (Right):** Shows options for adding layers:
 - Search for Layers:**
 - Browse Esri Map Layers:**
 - Guided tour:**
 - Pick a tour to learn more about using the map viewer:**
 - Add Layer from Web:**
 - Add Layer from File:**
 - Add Map Notes:**

At the bottom left, there is a footer with links: Esri.com, ArcGIS Marketplace, Help, Terms of Use, Privacy, Contact Esri, Contact Us, Report Abuse.

Adding Data

Search for Layers

Find: Weather

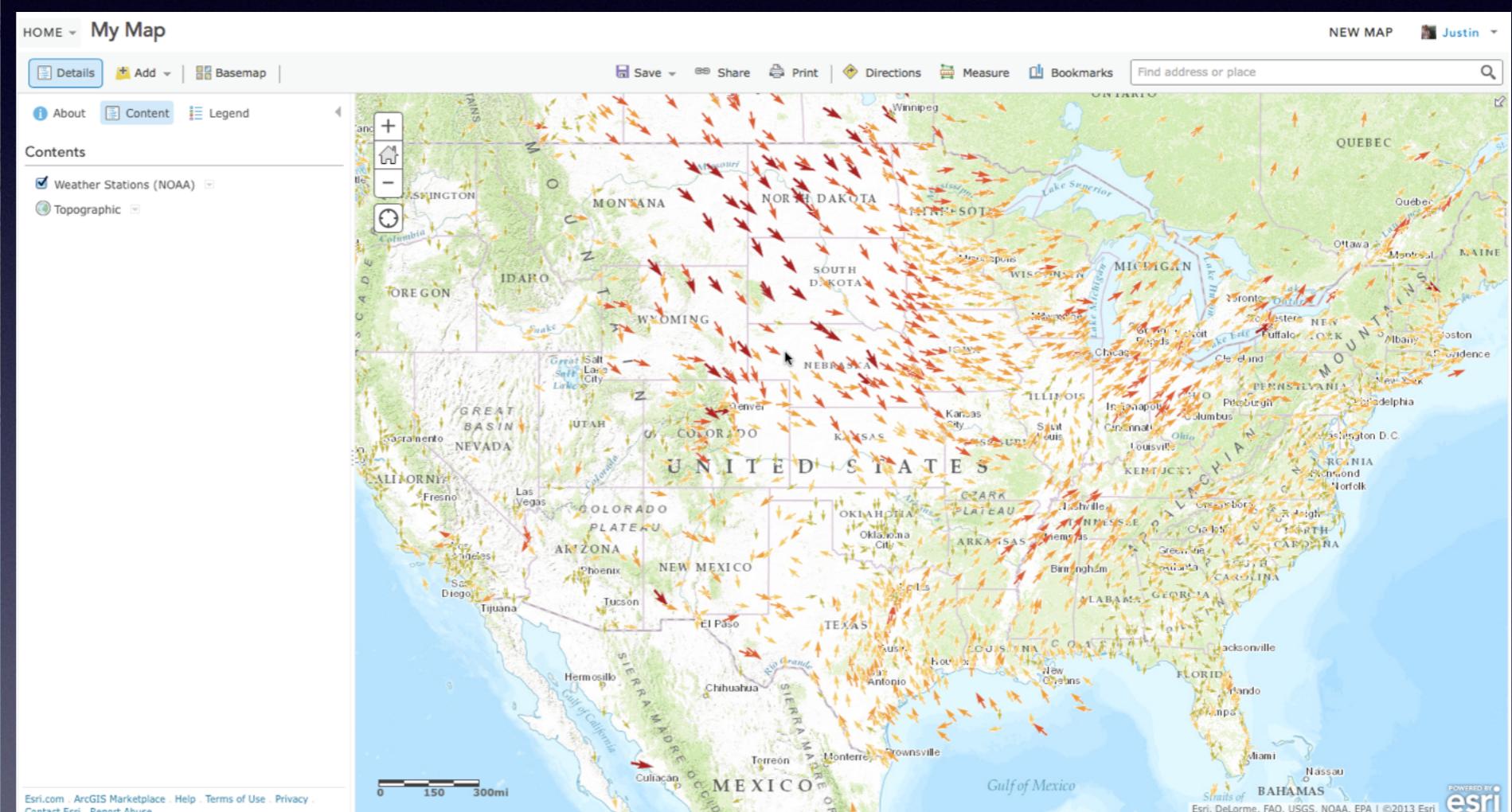
In: ArcGIS Online

Within map area

483 Results Found

- Weather Stations (NOAA)
- USDA USFS Wildland Fire Potential
- Hurricanes Active
- USDOC NOAA Global Surface Wind Observations
- NOAA Short Term Warnings
- HPC Worst Case Snow Forecast - 48hrs (10% Chance of Bei
- USDOC NOAA Radar Warnings
- Koppen-Geiger Observed and Predicted Climate Shifts
- Active Hurricanes
- USDOC NOAA and USDOI - USA Weather Warnings
- Tropical Weather
- USDOI USGS Stream Gauges and Weather Stations
- USDOC NOAA Damaging Winds

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Contact Esri . Report Abuse



Adding Data

Browse Esri Map Layers

All Categories

World Transportation



Add layer to map ▾

World Boundaries and Places



Add layer to map ▾

USA Topo Maps



Add layer to map ▾

World Imagery



Add layer to map ▾

World Topographic Map



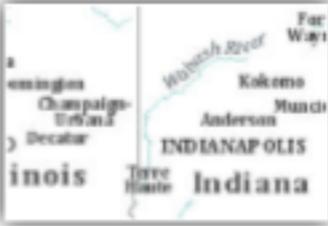
Add layer to map ▾

National Geographic World



Add layer to map ▾

World Reference Overlay



Add layer to map ▾

World Traffic Service



Add layer to map ▾

1 2 3 4 5 6 7 8 9 10 11 12 13

CLOSE

Add Layer from File

Locate the file you want to import. You can import a zipped shapefile (ZIP) with up to 1000 features in it, a comma, semi-colon, or tab delimited text file (CSV or TXT), or a GPS Exchange Format (GPX).

File: no file selected

IMPORT LAYER

CANCEL

Add Map Notes

Name:

Template:

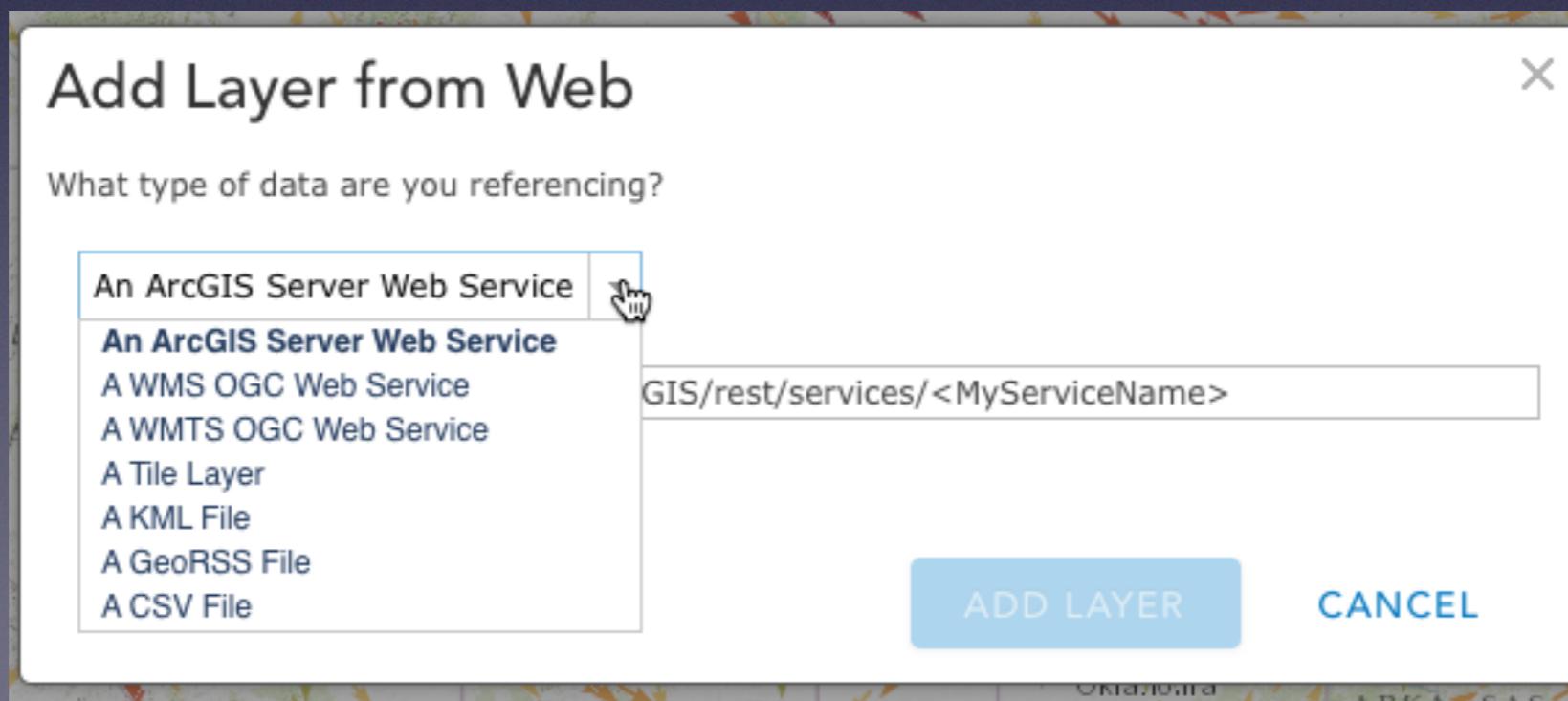
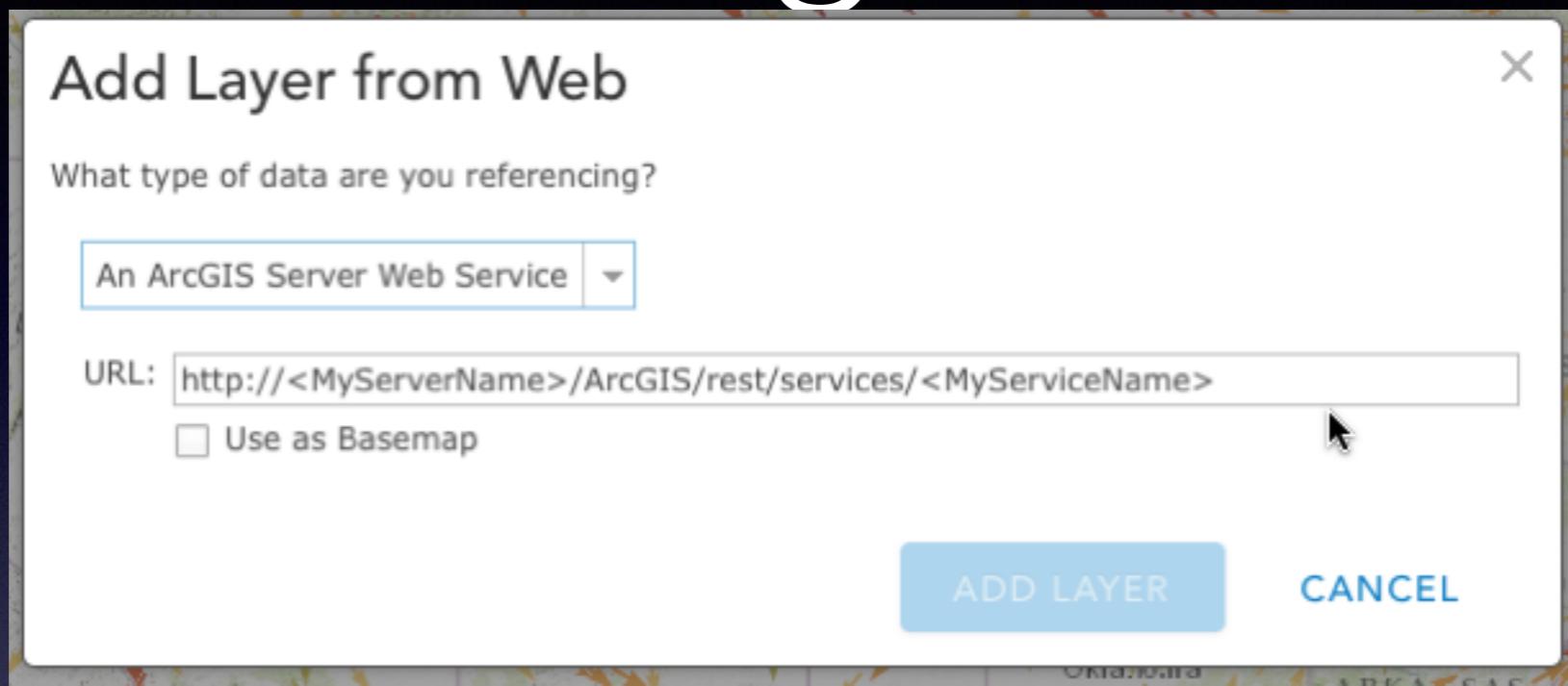
Use Map Notes to create basic shapes in a wide variety of applications.

CREATE

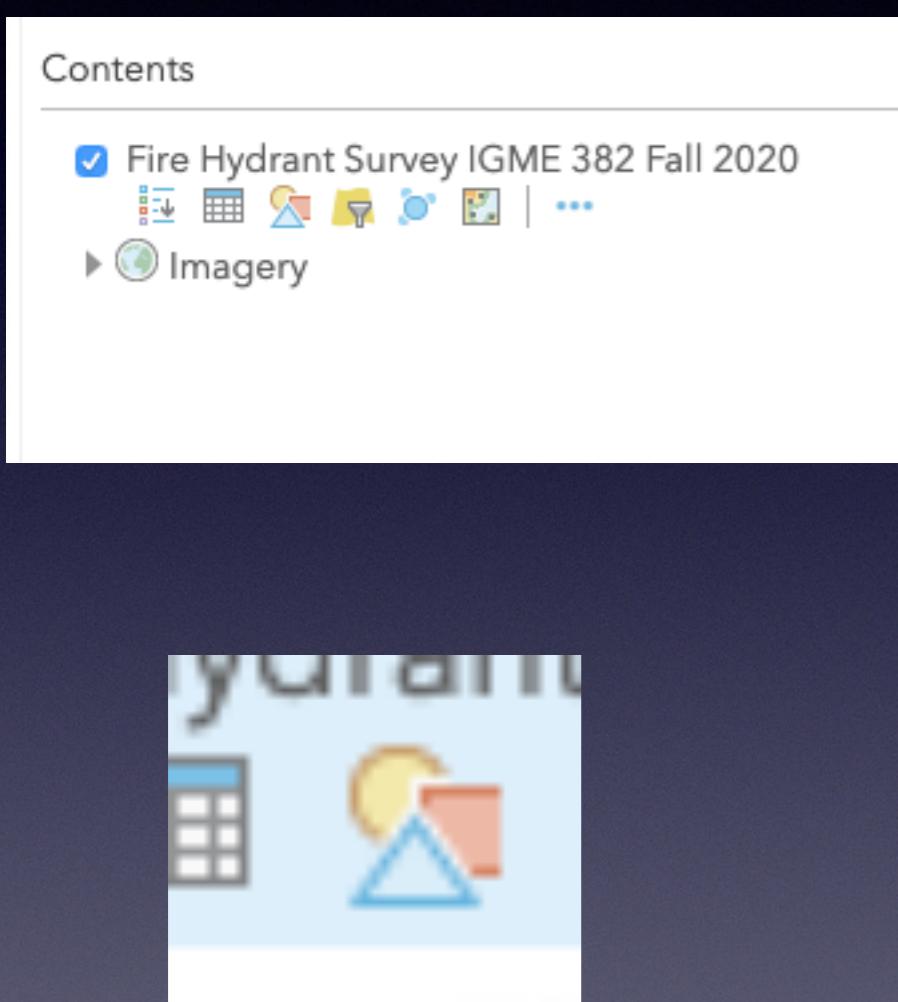
CANCEL



Adding Data



Changing Symbology



Home ▾ Fire Hydrants Survey

Details Add Edit Basemap Analysis

Change Style

Fire Hydrant Survey IGME 382 Fall 2020

1 Choose an attribute to show

Status

Add attribute

2 Select a drawing style

Types (Unique symbols)

OPTIONS

Location (Single symbol)

SELECT

DONE CANCEL

Trust Center Contact Esri Report Abuse Contact Us

Details Add Edit Basemap

Change Style

Fire Hydrant Survey IGME 382 Fall 2020

Status

Click to edit symbol or label.

LABEL	COUNT
Assigned	4
Completed	0
Unassigned	0
Other	0
In Progress	0

Rotate symbols (degrees)

Transparency

Overall

Per feature Set from Attribute Values

Visible Range

Suggest

World Room

OK CANCEL

Shareable Maps

Share

Choose who can view this map.

Currently, only you can view your map. Before you can link to it or embed it, you need to allow others to view your map.

- Everyone (public)
- Rochester Institute of Technology
- Members of these groups:

- Eric, Joe, Steven
- IGME 382 Fall 2020
- ISTE 384 Spring 2020 Network Analyst Assignment
- ISTE 484 Spring 2019
- ISTE 484 Spring 2020
- ISTE-151 Fall 2017 Story Map Assignment
- ISTE-151 Fall 2019 Story Map Assignment
- ISTE-382 Fall 2018 Story Map Assianment

Link to this map

<https://arcg.is/1mjeuK>

Share current map extent

Embed this map

[EMBED IN WEBSITE](#)

[CREATE A WEB APP](#)

Create a New Web App

Configurable Apps

Web AppBuilder

ArcGIS Dashboards

What do you want to do?

Select a configurable app. [?](#)

Show All

Build a Story Map

Collect/Edit Data

Compare Maps/Layers

Explore/Summarize Data

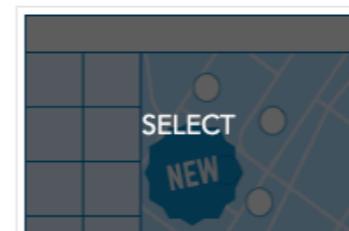
Interpret Imagery

Map Social Media

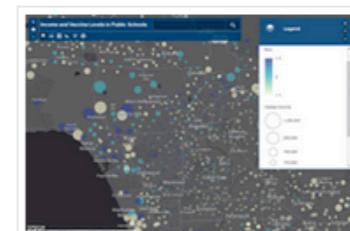
Provide Local Information

Route/Get Directions

Showcase a Map



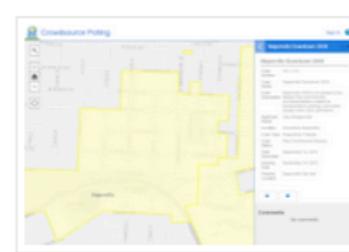
Attachment Viewer



Basic Viewer



Compare



Crowdsource Polling



Directions



Edit



BACK

CANCEL

Embed in Website Option

Share

Embed in Website

Copy and paste HTML to embed in website

```
<iframe width="500" height="400" frameborder="0" scrolling="no" marginheight="0" marginwidth="0" src="http://justincole.maps.arcgis.com/home/webmap/embed?webmap=f62d3acb9ff244bc891dfa30be8afb25&extent=-74.0338,44.0942,-894"></iframe>
```

Small
300x260



Medium
500x400



Large
940x600



Custom
Width 500
Height 400

Show zoom control

Show home button

Show scale bar

Show legend

Show description

[< Back](#)



Select Language
Powered by
Google Translate

"National CORS" program. Anyone with a receiver that can postprocess their raw GPS data can go to the NGS website and down-load correction files to increase the accuracy of their data, or down-load them directly from this site. Also available to the public, is the ability to connect to our base station to perform Real-Time Kinematic (RTK) surveys. Anyone with the appropriate equipment can simply register with our department and receive a username and password to access the base station 24 hours a day, 7 days a week.

Be Sure To:

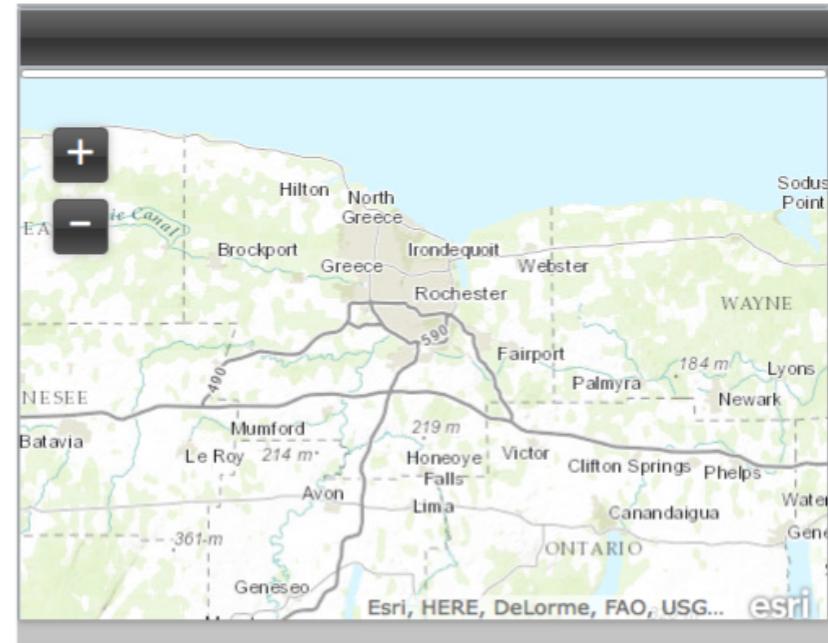
- Call Before You Dig
- Wait The Required Time
- Confirm Utility Response
- Respect The Marks
- Dig With Care

800-962-7962

[CLICK HERE TO DOWN-LOAD STATIC GPS FILES FOR POSTPROCESSING](#)

[CLICK HERE TO BECOME A REGISTERED RTK USER](#)

[GPS Base Station Map](#)



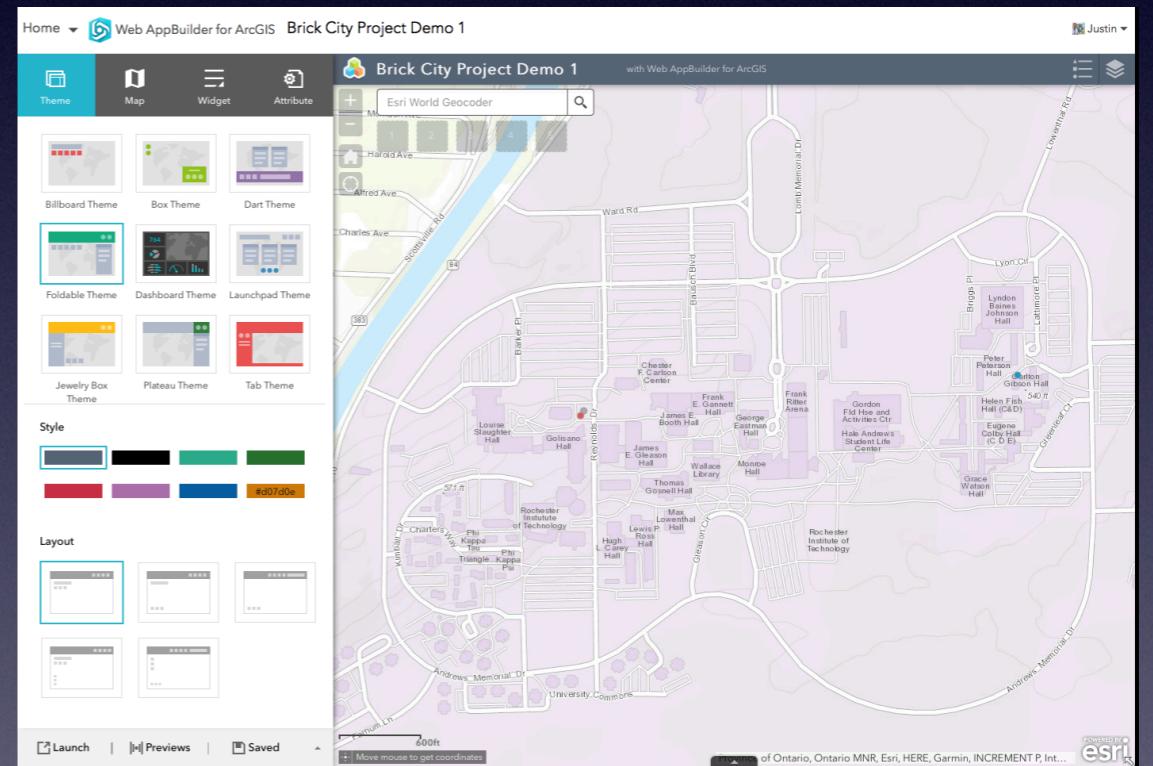
[Back to top](#)

Related Web Sites

[US Department of Commerce](#)

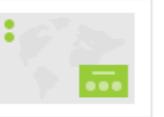
Web App Builder

- Another option to share your map is the web app builder
- This creates a custom skin for the web map with tools and other features



Home ▾  ArcGIS Web AppBuilder **Fire Hydrants Survey** ⓘ New App ▾  Justin ▾

Theme  Map  Widget  Attribute 

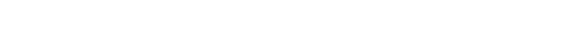
 Billboard Theme  Box Theme  Dart Theme

 Foldable Theme  Dashboard Theme  Launchpad Theme

 Jewelry Box Theme  Plateau Theme  Tab Theme

 Pocket Theme

Style

   
    #d07d0e

Layout

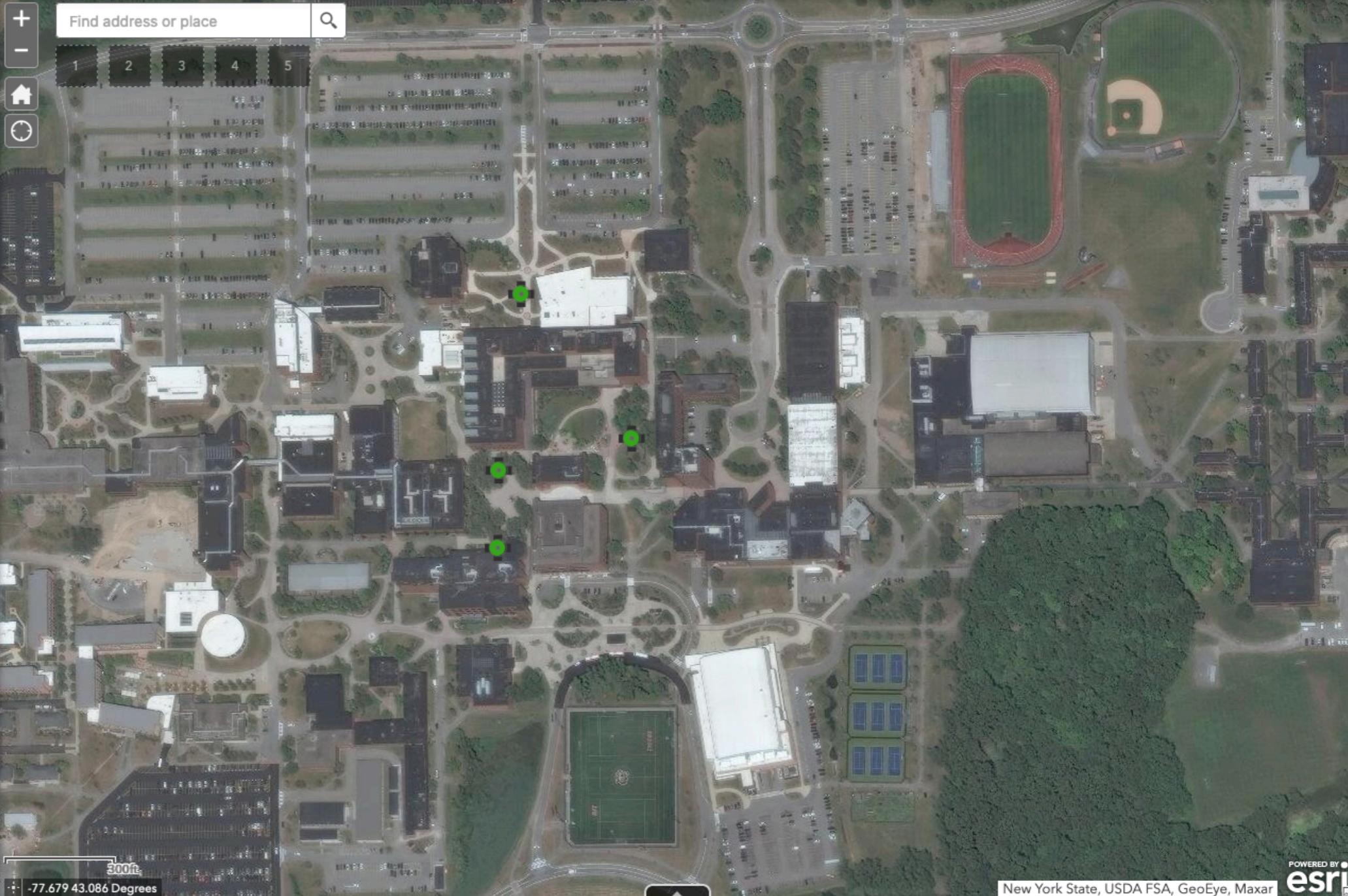
  

 Launch |  Previews |  Save

Fire Hydrants Survey with ArcGIS Web AppBuilder

Find address or place 

1 2 3 4 5



300ft
-77.679 43.086 Degrees

New York State, USDA FSA, GeoEye, Maxar 

Home ▾  ArcGIS Web AppBuilder **Fire Hydrants Survey** ⓘ New App ▾  Justin ▾

Widget

Set the widgets in this controller >

Header Co...

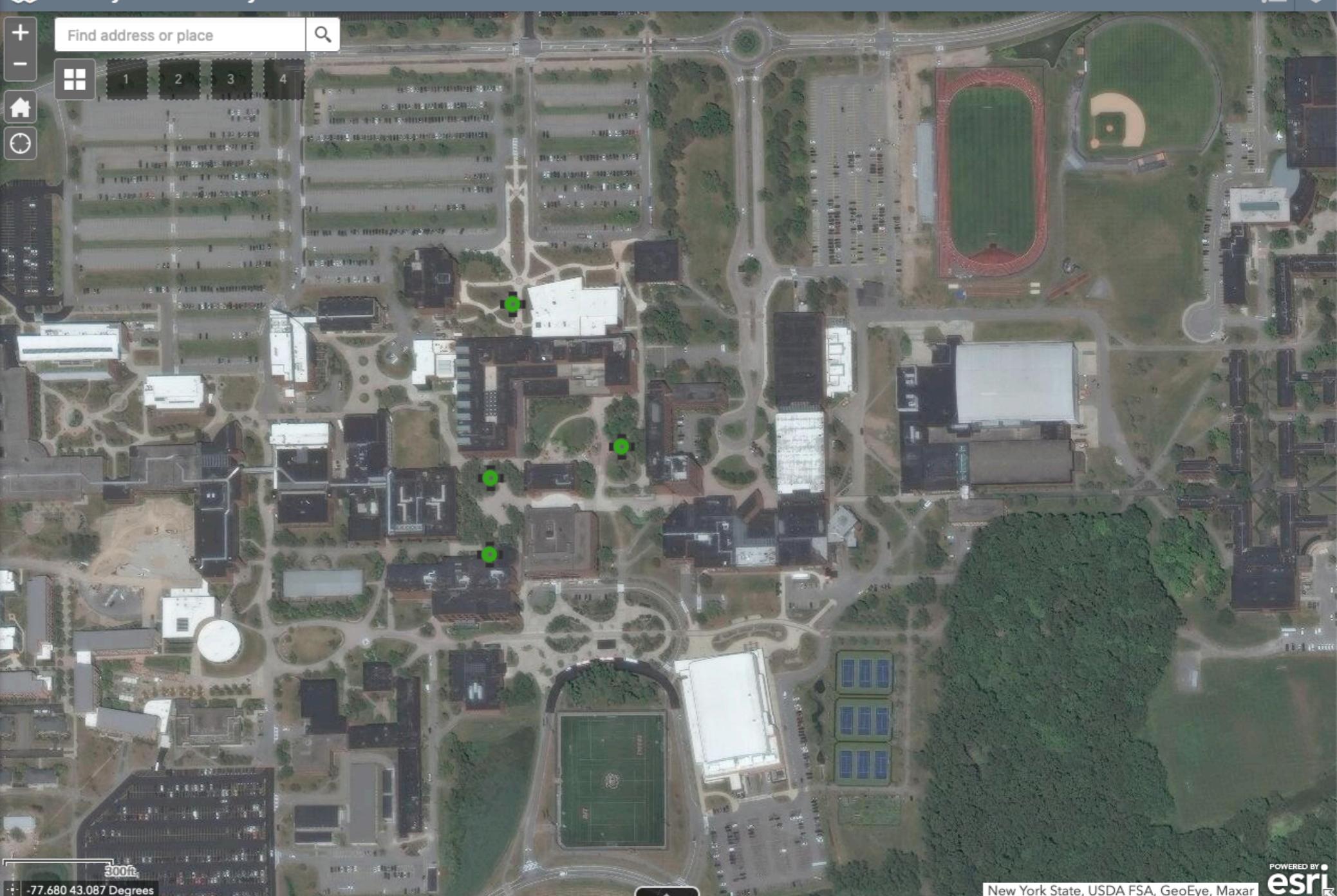
Attribute T... Coordinate Extent Nav... Full Screen

Home My Location Overview ... Scalebar

Search Splash Zoom Slider

Basemap ... Widget Widget Widget

4 Widget



Find address or place 

1 2 3 4

+ - ⌂ ⌃ ⌄ ⌅

300ft
-77.680 43.087 Degrees

Launch | Previews | Save

POWERED BY  New York State, USDA FSA, GeoEye, Maxar

Search icon

Add Data About Analysis Basemap G... Batch Attrib... Bookmark Chart Coordinate ... Directions District Loo... Draw



Edit Extent Navi... Filter Geo Lookup Geoproc... Grid Overlay Group Filter Home Image Mea... Incident An... Infographic



Info Summary Layer List Legend Measurement My Location Near Me Oblique Vie... Parcel Drafter Print Query Related Tab...



Report Feat... Reviewer D... Screening Search Select Share Situation A... Suitability ... Smart Editor Stream Summary



Clocks

Times & Clocks

OK

Cancel



Basemap Gallery

Change widget icon

[Learn more about this widget](#)

- Always synchronize with the Basemap Gallery setting of the organization
- Configure custom basemaps



Dark Gray Canvas



Imagery



Imagery with Labels



Light Gray Canvas



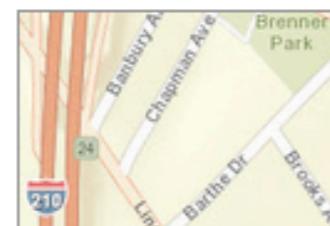
National Geographic



Oceans



OpenStreetMap



Streets



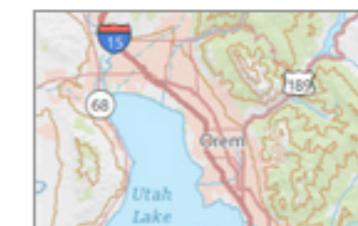
Terrain with Labels



Topographic



USA Topo Maps



USGS National Map

OK

Cancel

Theme Map Widget Attribute

Branding
Add logo, title, or subtitle for your app.

 Fire Hydrants Survey

with ArcGIS Web AppBuilder

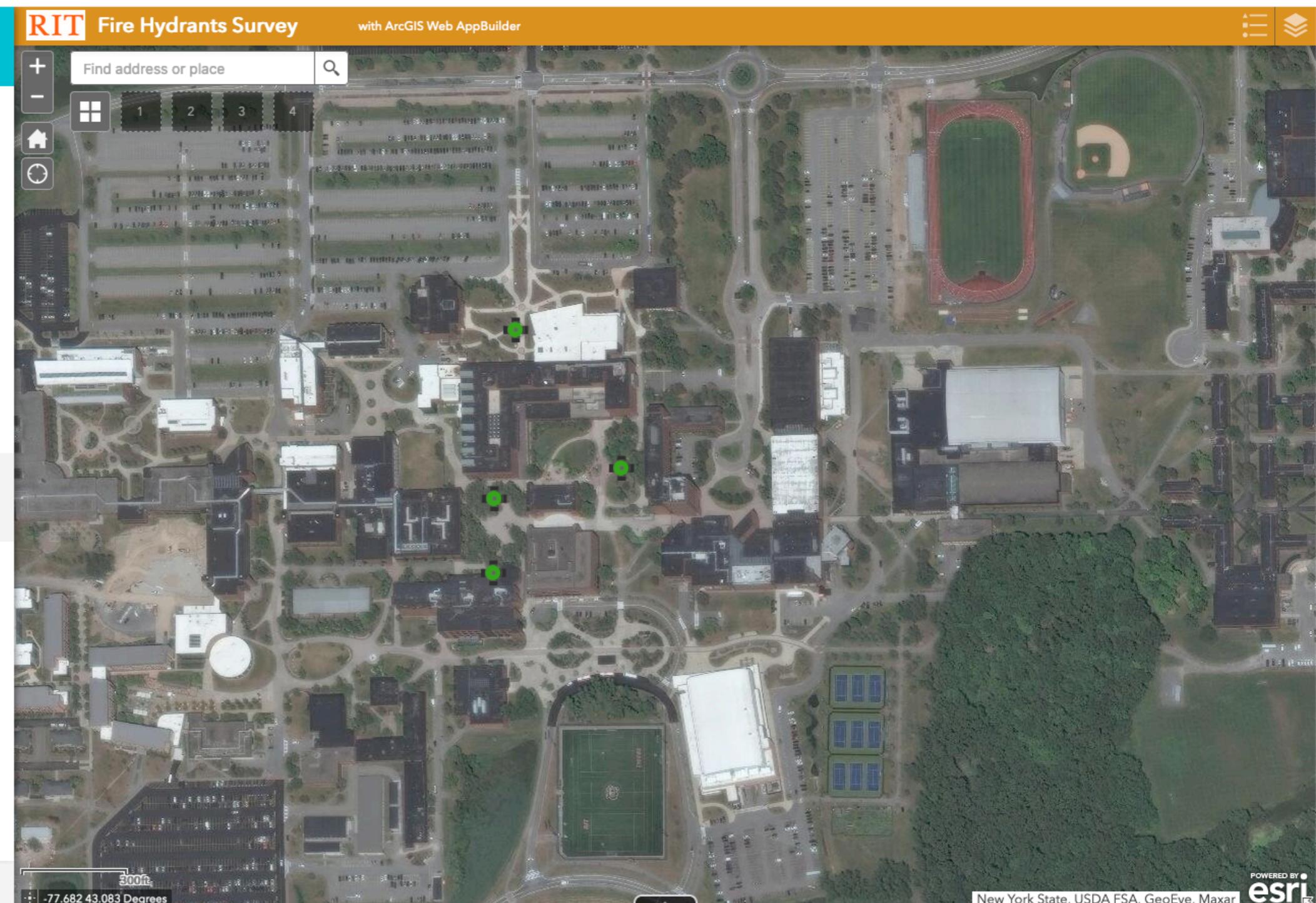
Links
[+ Add new link](#)

App state
 Keeps map extent and layers visibility while leaving the app.

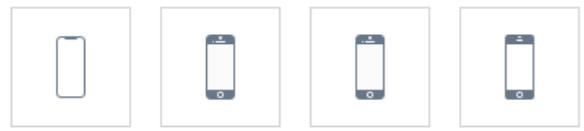
Extra data source >
Configure data sources for the app in addition to the layers in the map.

Subscriber content access >
Configure ArcGIS Online subscriber content used by the app to allow users to access through your subscription.

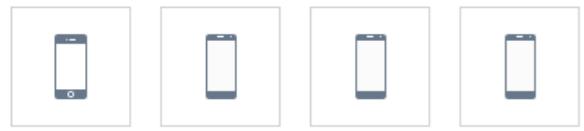
Launch | Previews | Save



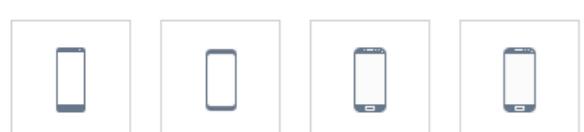
Width 1024 Px Height 768 Px



iPhone X iPhone 8 Plus / iPhone 7 Plus / 6s Plus / 6 Plus iPhone 8 / iPhone 7 / 6s / 6 iPhone SE / 5 / 5C / 5S



iPhone 4s / 4 LG G5 / G4 / G3 Lenovo Z2 Pro Xiaomi Mi 5



HTC 10 Samsung Galaxy S8 / Samsung Galaxy S8 Plus Samsung Galaxy S7, S7 edge Samsung Galaxy Note 4



Google Nexus 10 Google Nexus 6 Google Nexus 5 iPad Pro



Scan QR code to view application on your mobile device



RIT Fire Hydrants Survey with ArcGIS Web AppBuilder

The map displays the RIT campus with several green circular markers indicating the locations of fire hydrants. The map includes buildings, roads, and surrounding green spaces. A scale bar at the bottom left shows 300ft, and a text box says "Move mouse to get coordinates".

Find address or place

POWERED BY esri

New York State, USDA FSA, GeoEye, Maxar

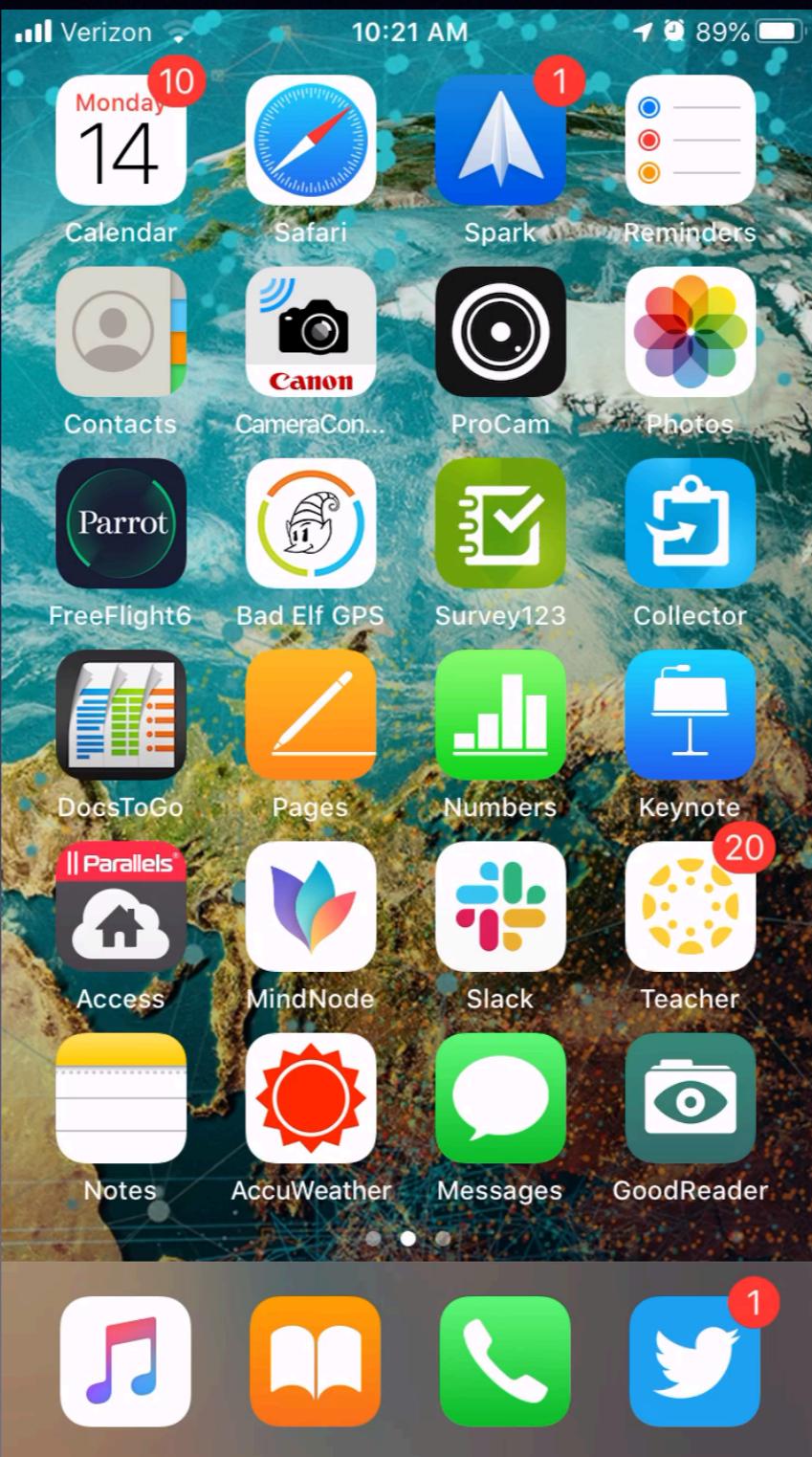
ESRI Mobile Applications

- Beside Web Application ESRI has a few mobile applications that you can use
 - Map Viewer
 - ArcGIS Explorer
 - Data Capture
 - ArcGIS Collector
 - Survey123
 - Others
- And you can create your own using experience builder and application studio
- Soon many will be combined into Field Apps

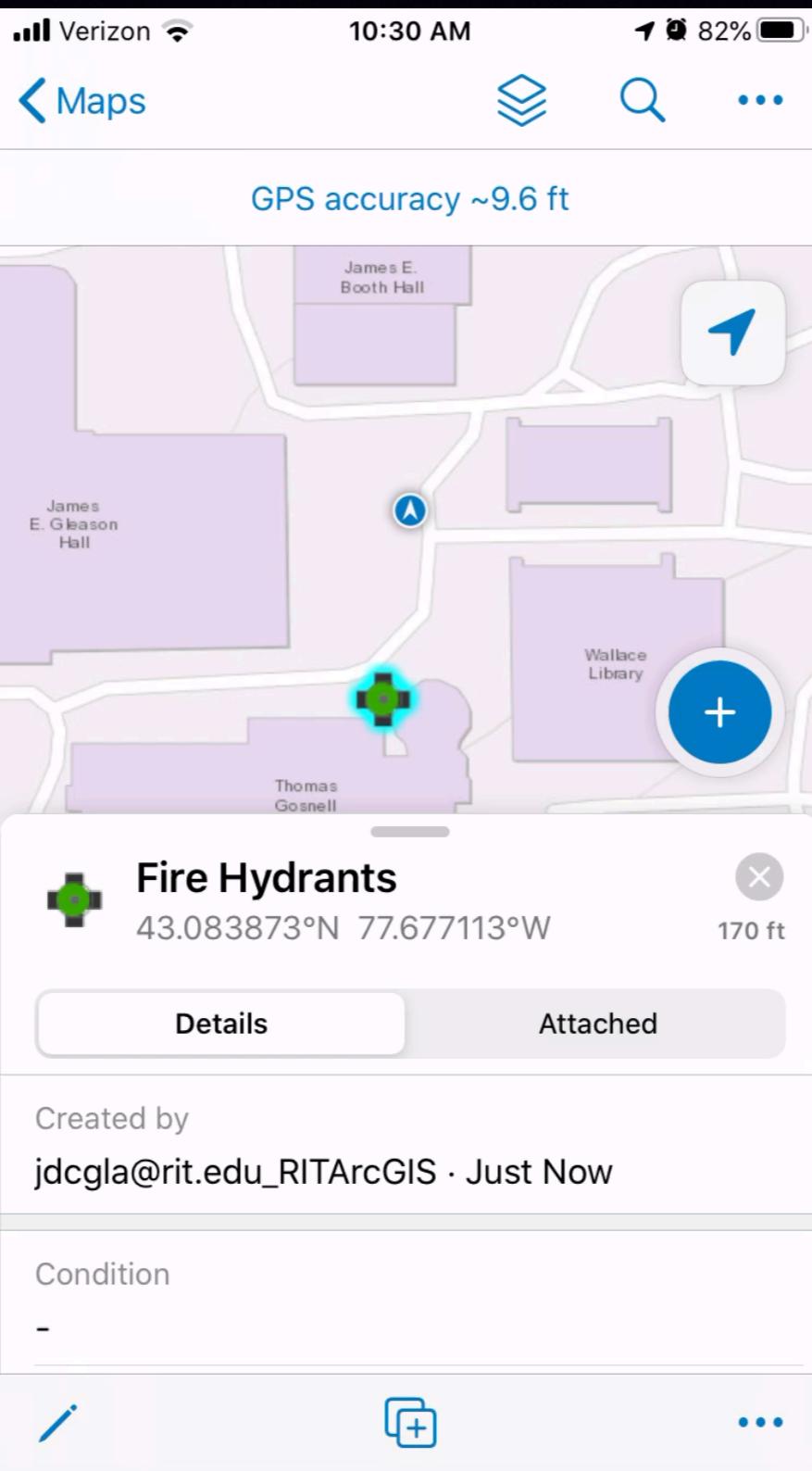
ArcGIS Collector

- Collector is a field data collection application
- It reads your web maps from ArcGIS Online
- You can configure it do a lot of high level data management such as related tables and attachments
- You can also use external GIS to get the higher level of accuracy

Capture Data



Capture Data



Survey 123

- Survey 123 is an application running in ArcGIS Online that allows you to create a location aware surveys.
- It can only collect point data
- But the attribute data it can collect is quite complicated.
- You can also capture an image and load it to your Geodatabase



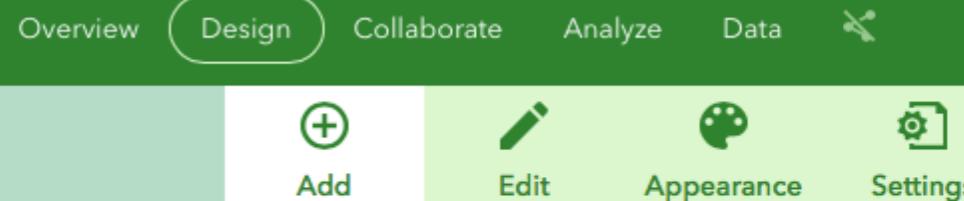
Lilac Inventory

Description content for the survey

Please drag from or click on the right panel to add your first question.

Submit

Powered by Survey123 for ArcGIS



Common Questions

- | | |
|-----------------|-----------------|
| Singleline Text | Multiline Text |
| Single Choice | Multiple Choice |
| Dropdown | Rating |
| Number | Date |
| Time | GeoPoint |
| Image | Email |
| Website | Note |

Saved

Preview

Publish



Add



Edit



Appearance



Settings

Date

Label

Date

Hint

B A | |

Tell user how to fill this question

Default Value

Submitting date

Specified date

Validation

This is a required question

Limit to the following date range

Start date

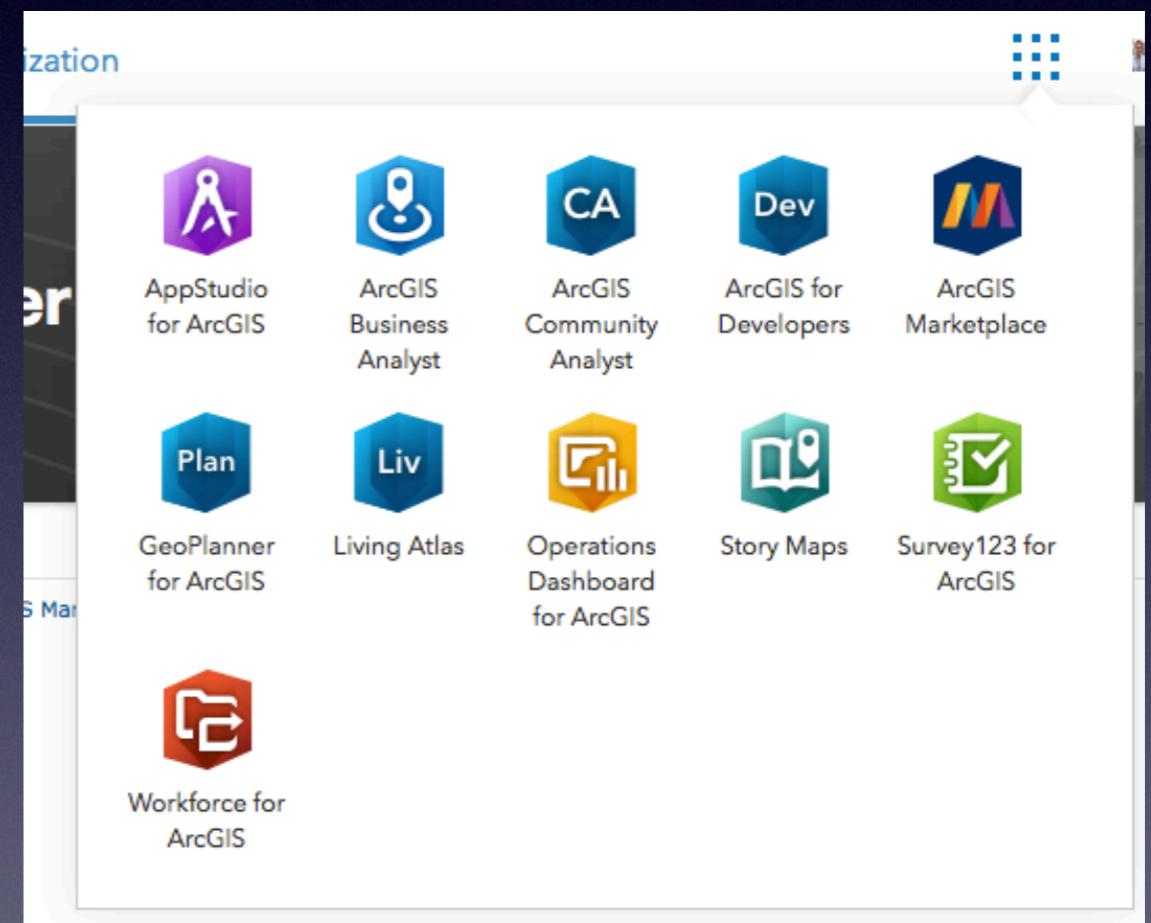
End date

Other

Cache answer to this question

Survey123

- Open ArcGIS Online (arcgis.com) and login with your RIT account.
- Then Click on the
- Then Survey123
- You may get a message on authorizing Survey123, click authorize and continue



Survey123

- Click Create a New Survey
- Use the Web Designer
- Give it your name, Tag, and you can add a summary later.
- Then Create

+ Create a New Survey

Create a New Survey

Using the web designer

- Get started quickly
- Best for simple surveys
- Author your survey graphically

Get Started

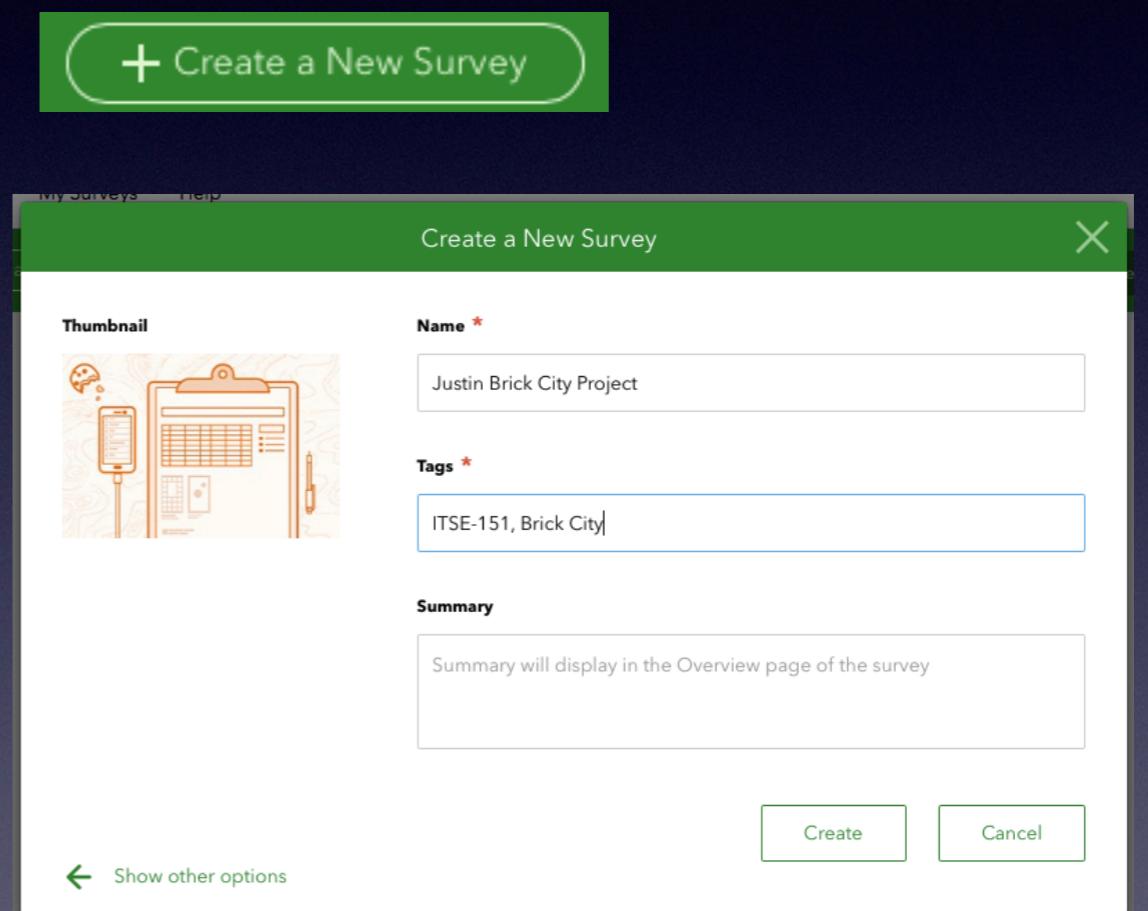
Using Survey123 Connect

- Using a desktop application
- Full smart form capabilities
- Author through XLSForms (spreadsheet)

Get Started

Survey123

- Click Create a New Survey
- Use the Web Designer
- Give it your name and Tags and you can add a summary later.
- Then Create





Add



Edit



Appearance

S

Justin Brick City Project

Description content for the survey

Please drag from or click on the right panel to add your first question.

Submit

Powered by Survey123 for ArcGIS

Common Questions

Singleline Text

Multiline Text

Single Choice

Multiple Choice

Dropdown

Rating

Likert

Number

Date

Time

GeoPoint

Image

Email

Website

Note

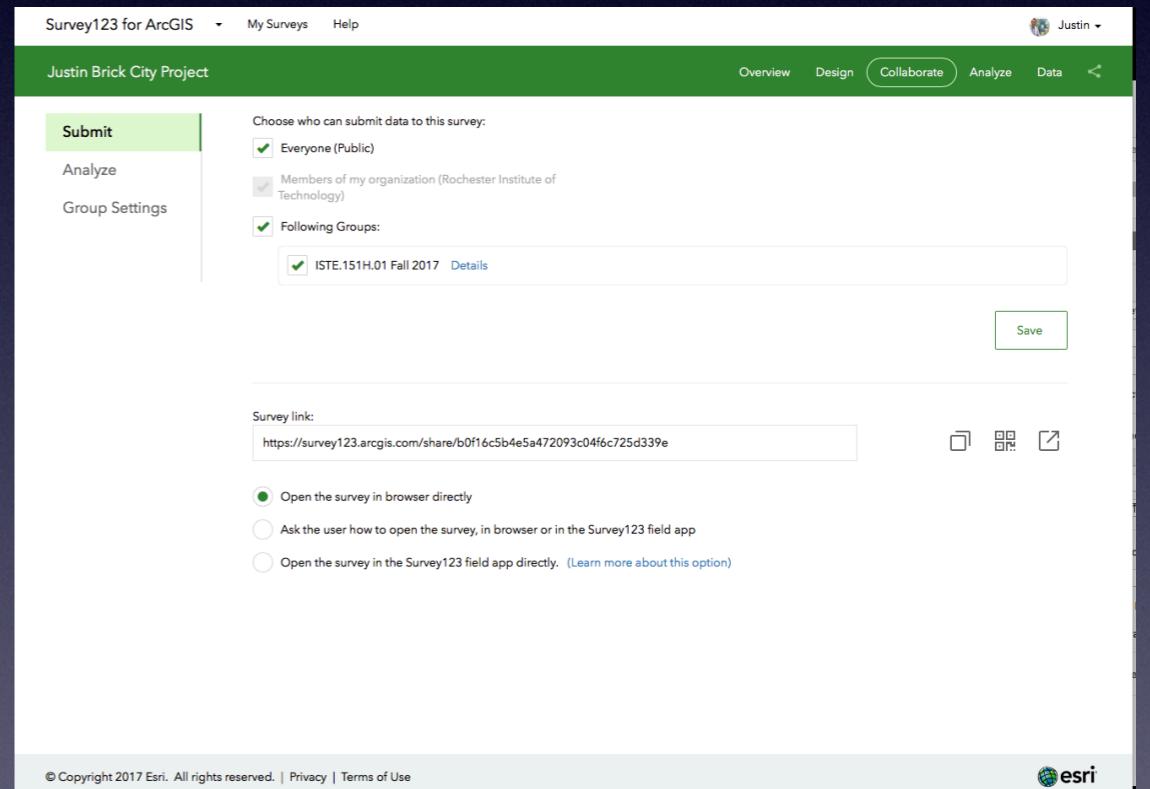
Saved

Preview

Pub

Next Steps

- Make sure to save periodically
- You can preview how the form will look on a variety of devices and screens
- When You are done click publish
- You will also need to go to the collaborate button to share it with me and the rest of class



Editing Your Data in ArcGIS Online

- Editing your data in ArcGIS Online is easy
- Click on Edit and then click the feature you want to edit
- You can drag it or just change the attributes
- You can also create a new feature by clicking the feature from the Add Feature Menu

Editing Your Data in ArcGIS Online

Home ▾ Fire Hydrants Survey 

New Map ▾ Create Presentation  Justin ▾

Details  Add  Edit  Basemap  Analysis

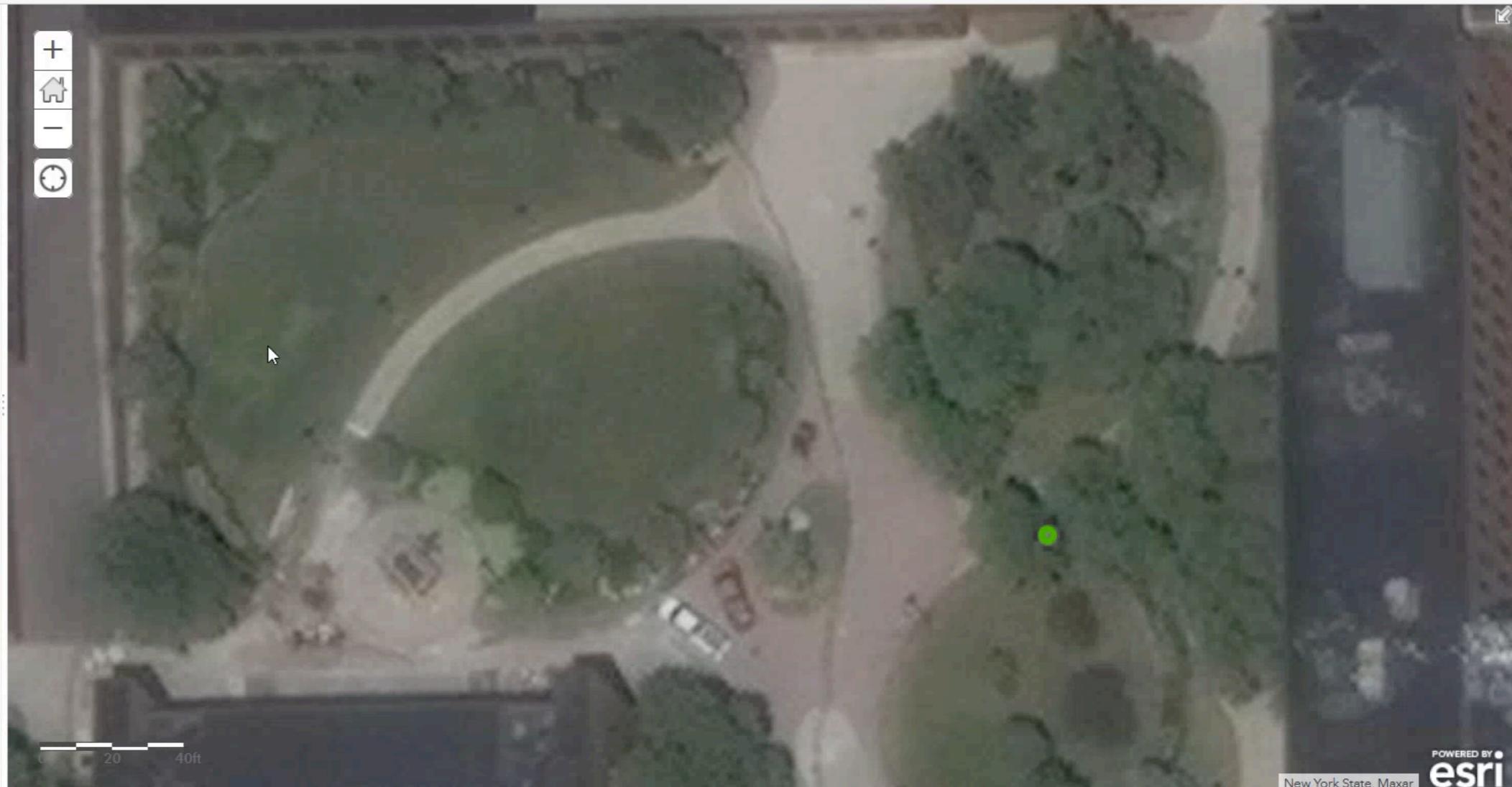
Save  Share  Print  Directions  Measure Bookmarks Find address or place 

Add Features

Fire Hydrant Survey IGME 382 Fall 2020

 Completed  Assigned  Water Hydrant Inspections



UNDO REDO MANAGE

20ft 40ft

Trust Center Contact Esri Report Abuse Contact Us

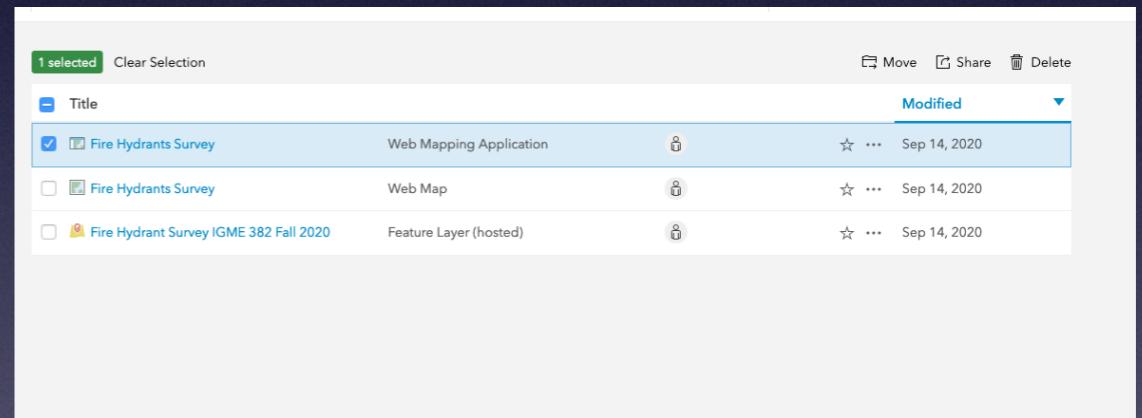
New York State, Maxar POWERED BY esri

Class Assignment

- You will create a web application for Fire Hydrants
 - If you want to create some other feature you need to contact me for approval
- You will need at least 3 points with some attributes
- You can add other layers if you want (search ArcGIS Online for ideas)
- In your web application you will need to have a logo and at least 2 custom widgets for your theme
- Post a link to this into the discussion for week 5
- In order for your link to work you will need to share the application and other pieces of the web application (features and web map) with the class group in ArcGIS Online

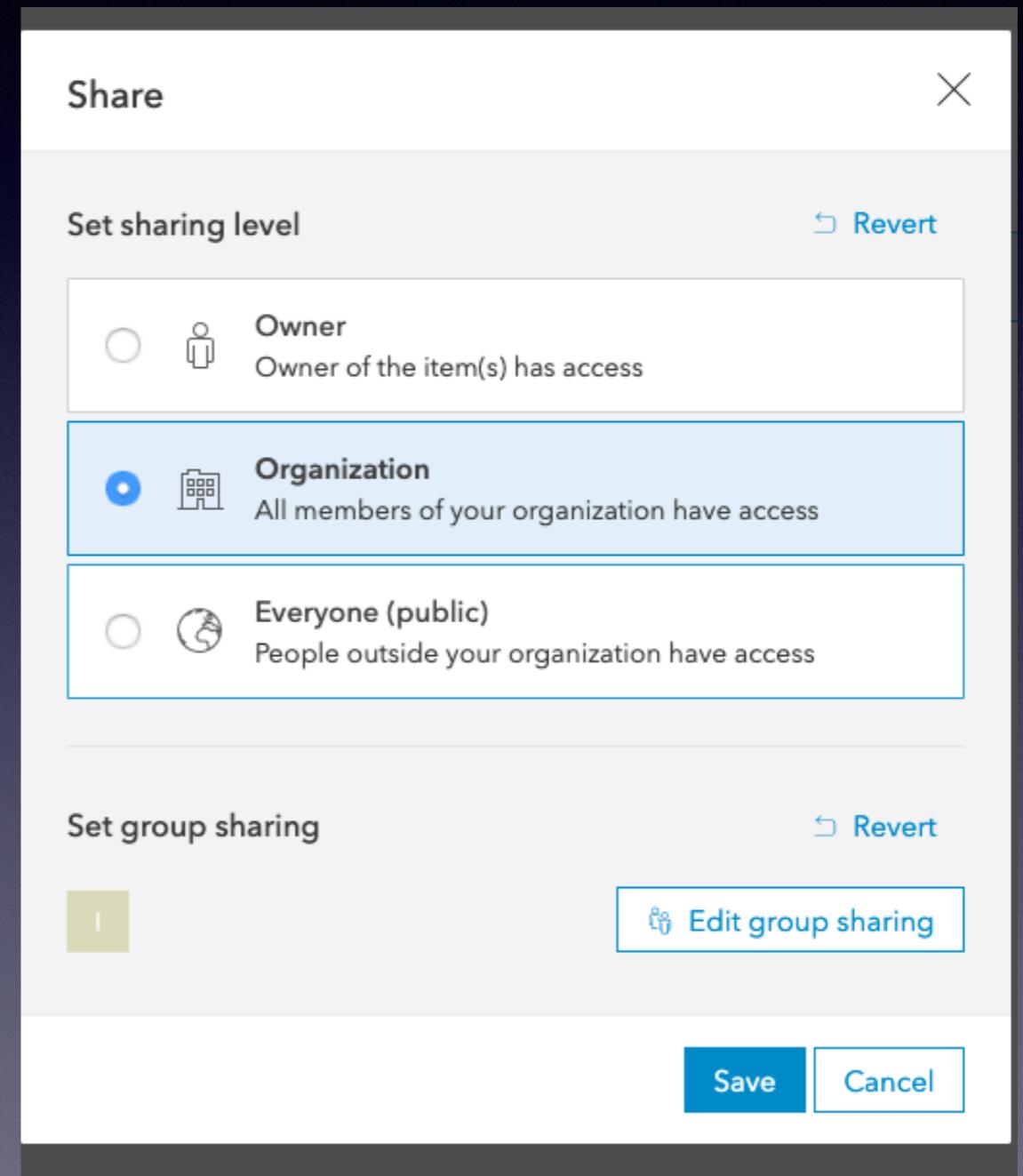
Sharing your Application with the Group

- Open your content tab in ArcGIS Online
- Use the check box and check your Web Application
- Click Share
- Click set group and then you should see the group for the class IGME 382 Fall 2020
- Update the other components' sharing if you get asked
- Then when you send the link in MyCourses our class will be able to view your application



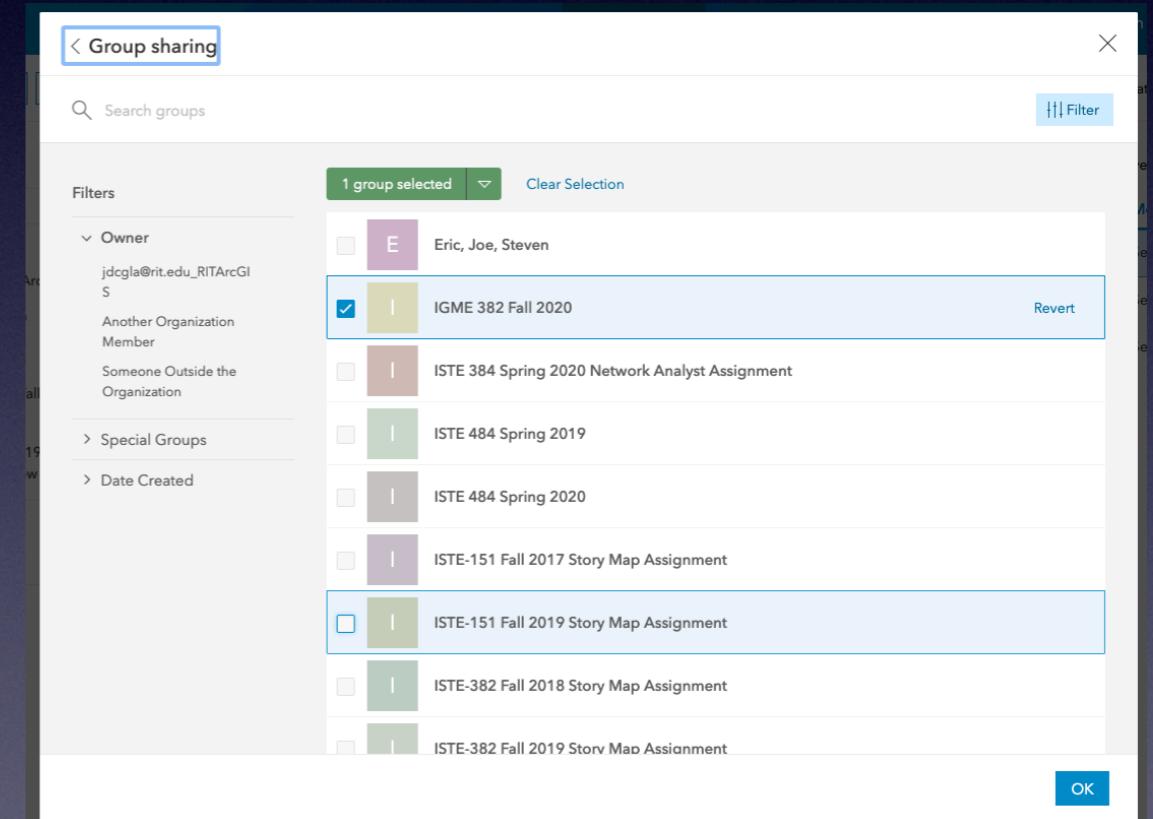
Sharing your Application with the Group

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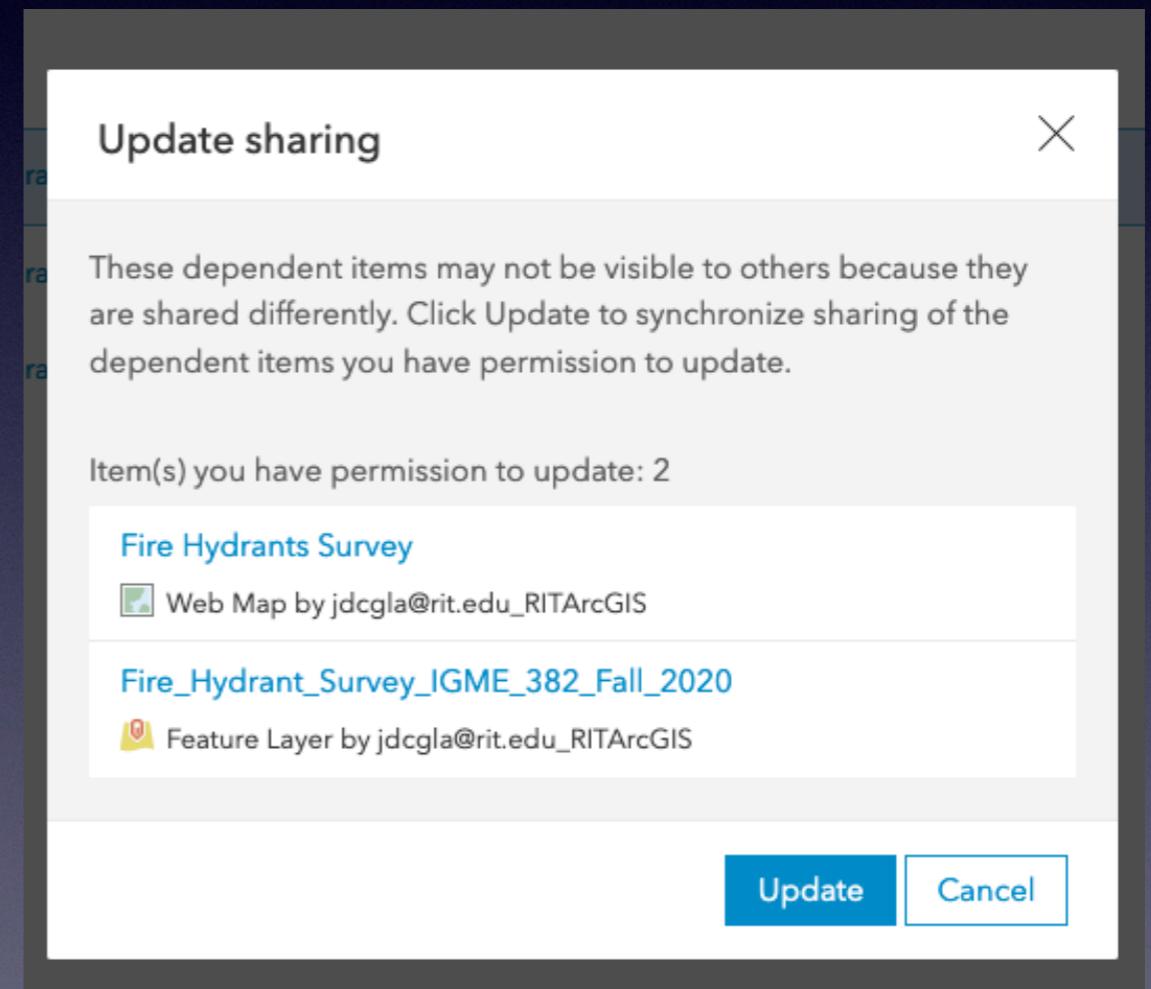
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Lab 2 – GIS and Basic Map Making

Due Date: September 30, 11:30 PM

Delivery Format: Word file in drop box

Reminders:

Data is Lab2Data.zip

Reading for Next Week

- ArcGIS 20 Chapter 7&8 Address
- giscensus_samplechapter
- Geocode Addresses
- What is geocoding Help ArcGIS for Desktop