Deconstructing Spatial Reference:
What Every GIS User Needs to Know

Paul Trevillion, Esri

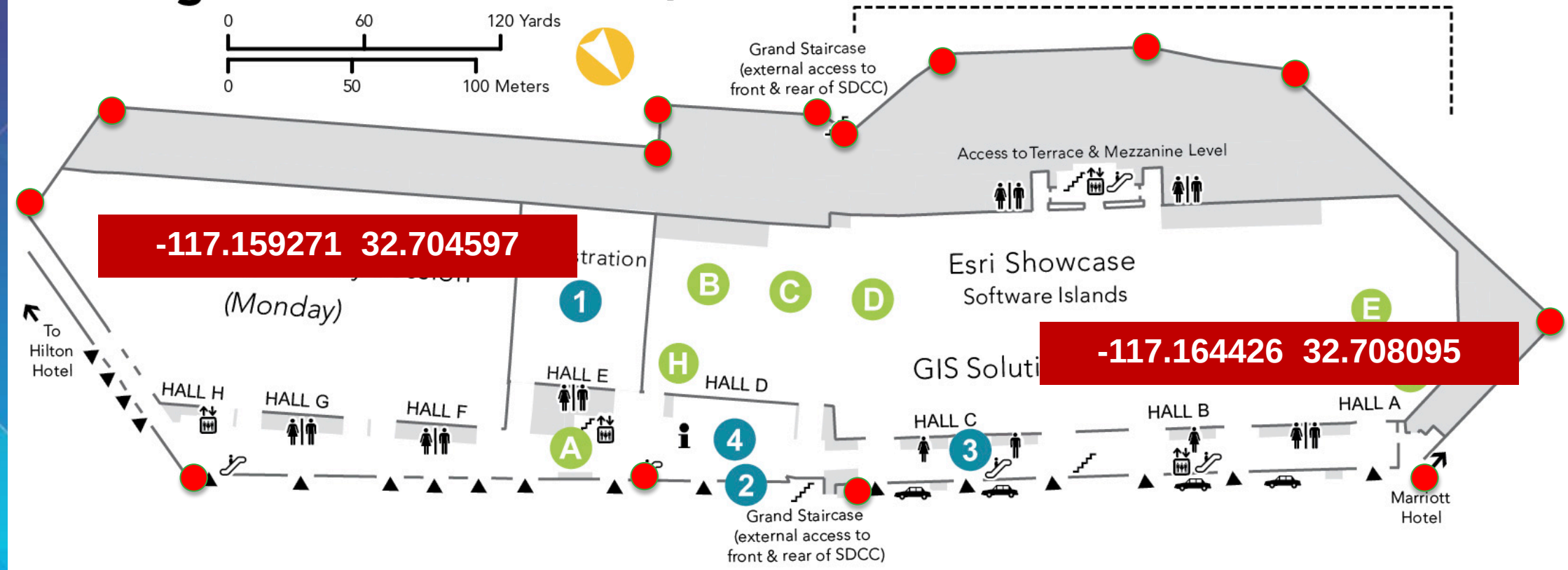
You already have a sense of it

Spatial Reference = “Spatial Reference System”

- Coordinate System
- Projection
- Datum

San Diego Convention Center, Ground Level

Cartography by Esri Mapping Center
(mappingcenter.esri.com)



1 Registration	*Sat–Thur*	A Activities Desk	*Wed–Thur*	E 30-Minute Technical Workshops	Stairs	Information Desk
2 First Aid	*Tue–Thur*	B National Security Showcase	*Tue–Thur*	F User Software Applications Fair, Developer Activities	Escalator	Access Parking Level
3 Coat Check	*Tue–Thur*	C Federal Showcase	*Tue–Thur*	G Meeting Rooms	Elevator	Men's Restroom
4 Esri Store	*Tue–Thur*	D Environment Showcase	*Tue–Thur*	H Start Up Zone	Entrance	Women's Restroom


Access to Terrace & Mezzanine Level
HALL H
HALL G
HALL F
HALL E
HALL D
HALL C
HALL B
HALL A
1
2
3
4
A
B
C
D
E
F
G
H
Hyatt
Children's Park
Convention Center Trolley Station
Gaslamp Quarter Trolley Station
PETCO Park
Park at the Park
Embarcadero Marina Park North
Embarcadero Marina Park South
San Diego Convention Center
Hilton Bayfront
W Harbor Dr
E Harbor Dr
W Island Ave
Island Ave
K St
Park Blvd
Gull St
Convention Way
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong)

HALL H
HALL G
HALL F
HALL E
HALL D
HALL C
HALL B
HALL A
Access to Terrace & Mezzanine Level
Hyatt
Marriott
Childrens Park
Convention Center Trolley Station
Park at the Park
PETCO Park
Gaslamp Square Park
Gaslamp Quarter Trolley Station
Embarcadero Marina Park North
Embarcadero Marina Park South
W Harbor Dr
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L St
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Gull St
Tony Gwynn Dr
Hilton Bayfront
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,


Martin Luther King Jr Promenade
W Harbor Dr
Hyatt
W Island Ave
Front St
Children's Park
1st Ave
2nd Ave
4th Ave
6th Ave
7th Ave
Island Ave
The Mark Ln
I St
Convention Center Trolley Station
Marriott
K St
Marina Linear Park
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2
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#1 Every spatial data set has a coordinate system

File-based data:

- Shapefiles
- Raster datasets
- File geodatabases
- Personal geodatabases

RDBMS-hosted data

- Enterprise geodatabases
- Workgroup geodataabases

Server hosted data

- Map services
- Features services
- Image layers
- Web Maps

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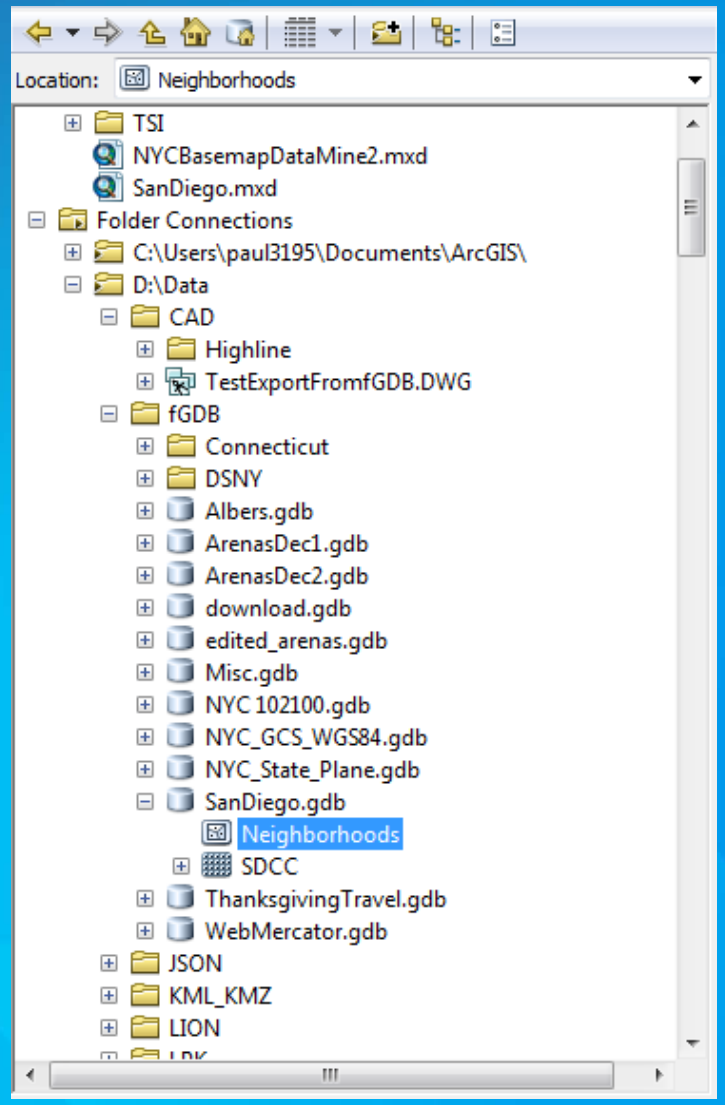

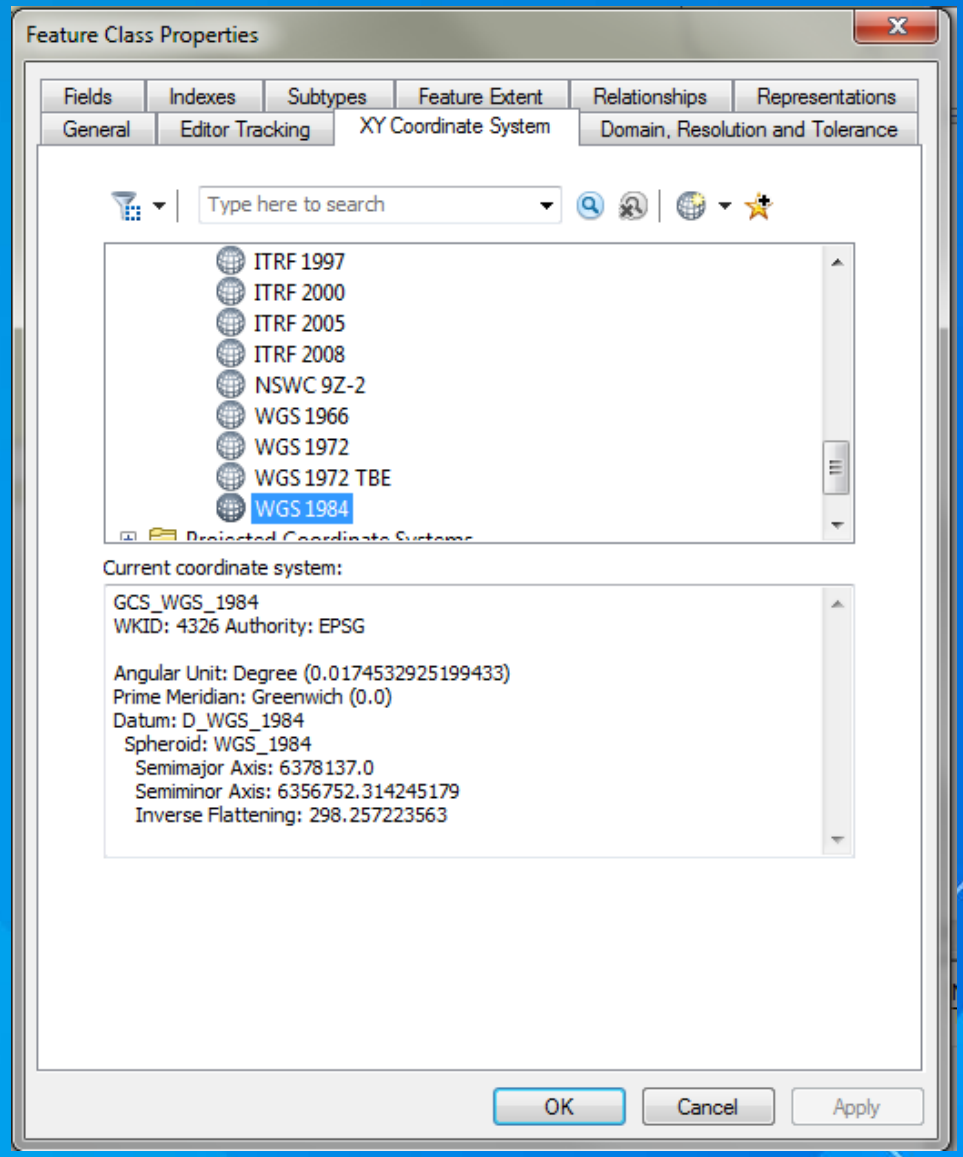

#1

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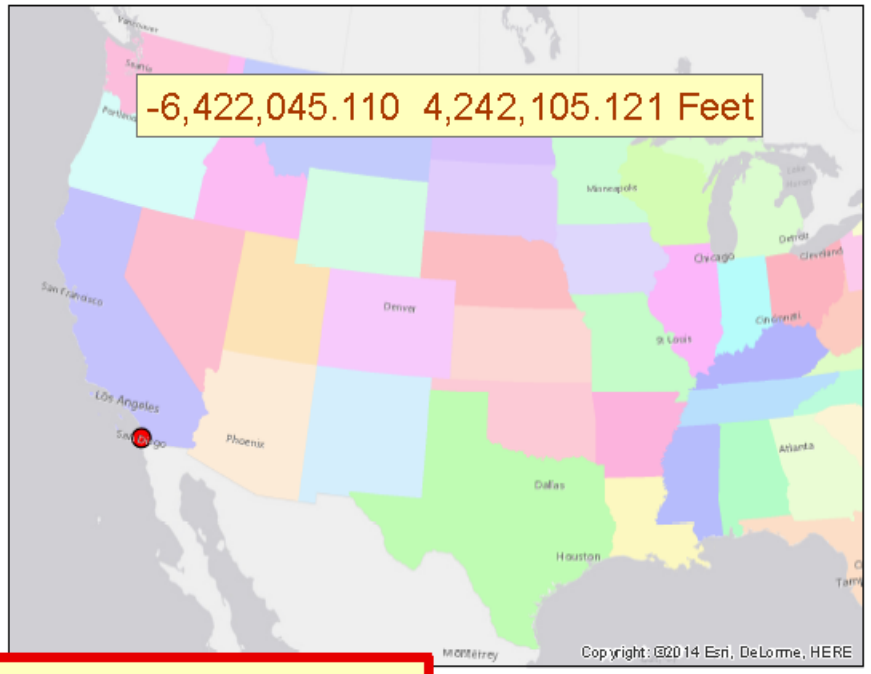
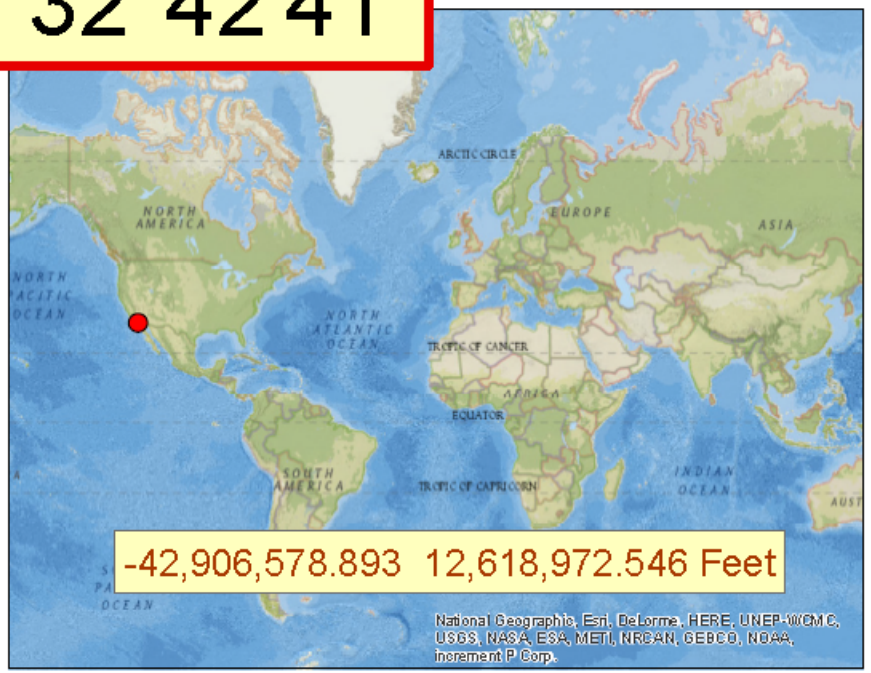
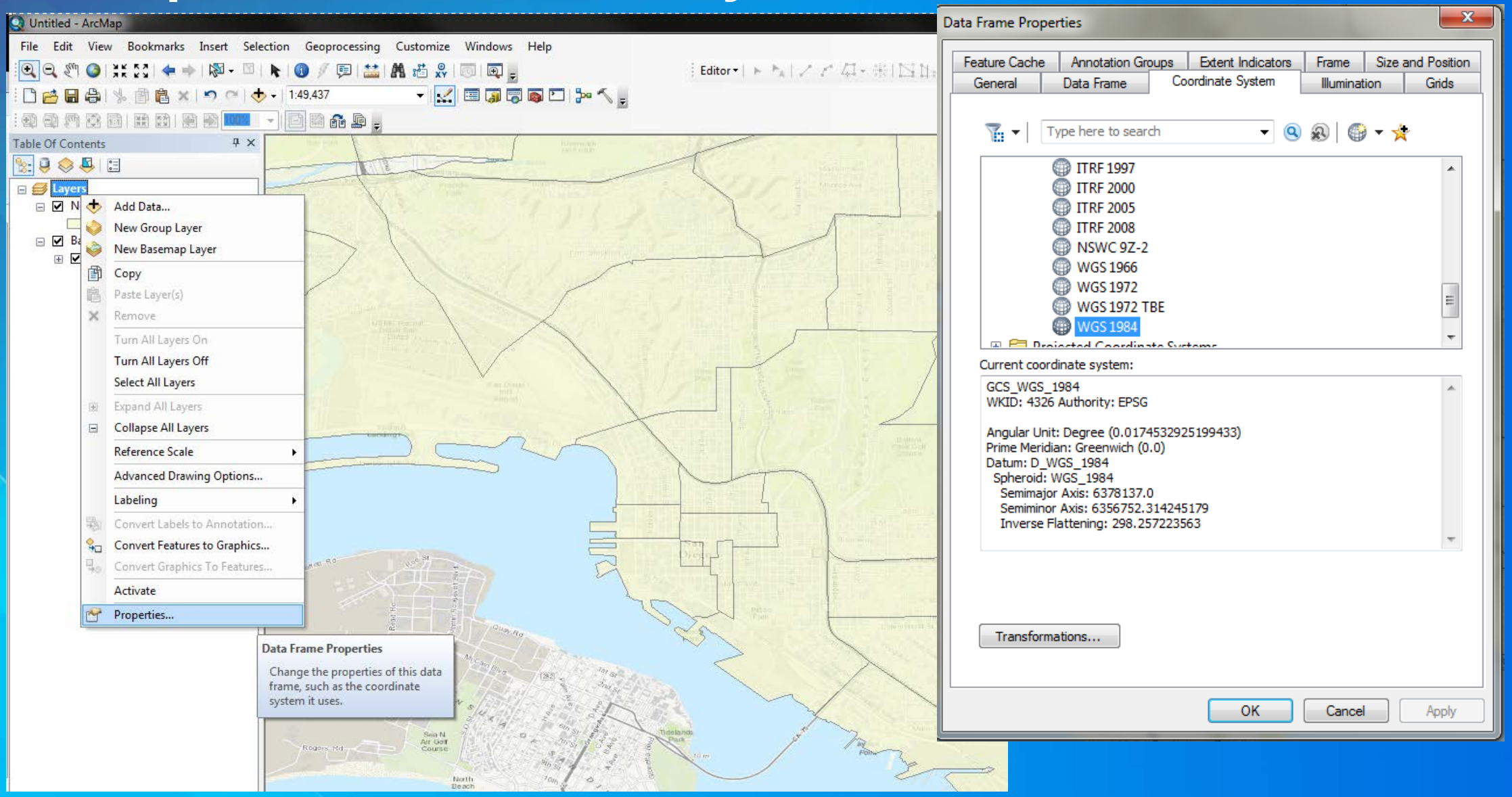


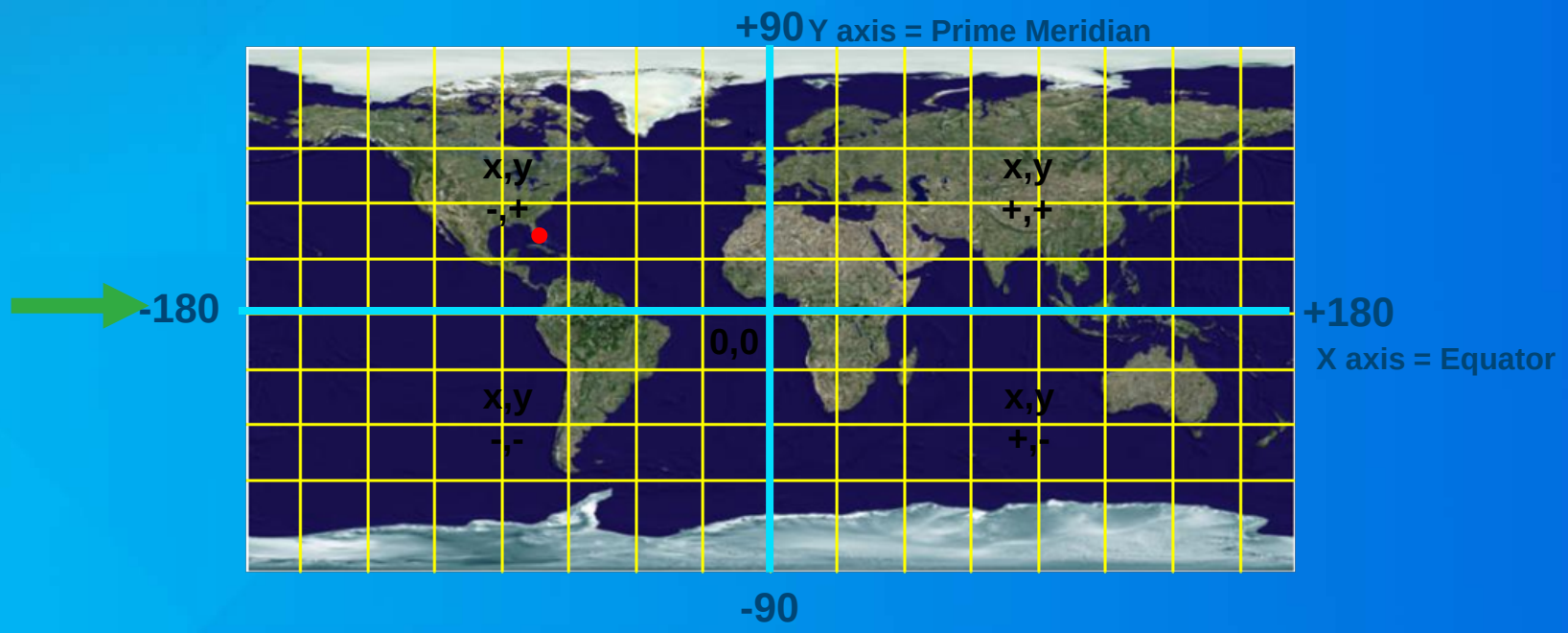
-117°9'36" 32°42'41"



#2 A map has a coordinate system



#3 Mapping anything on a flat surface is a PROJECTION …



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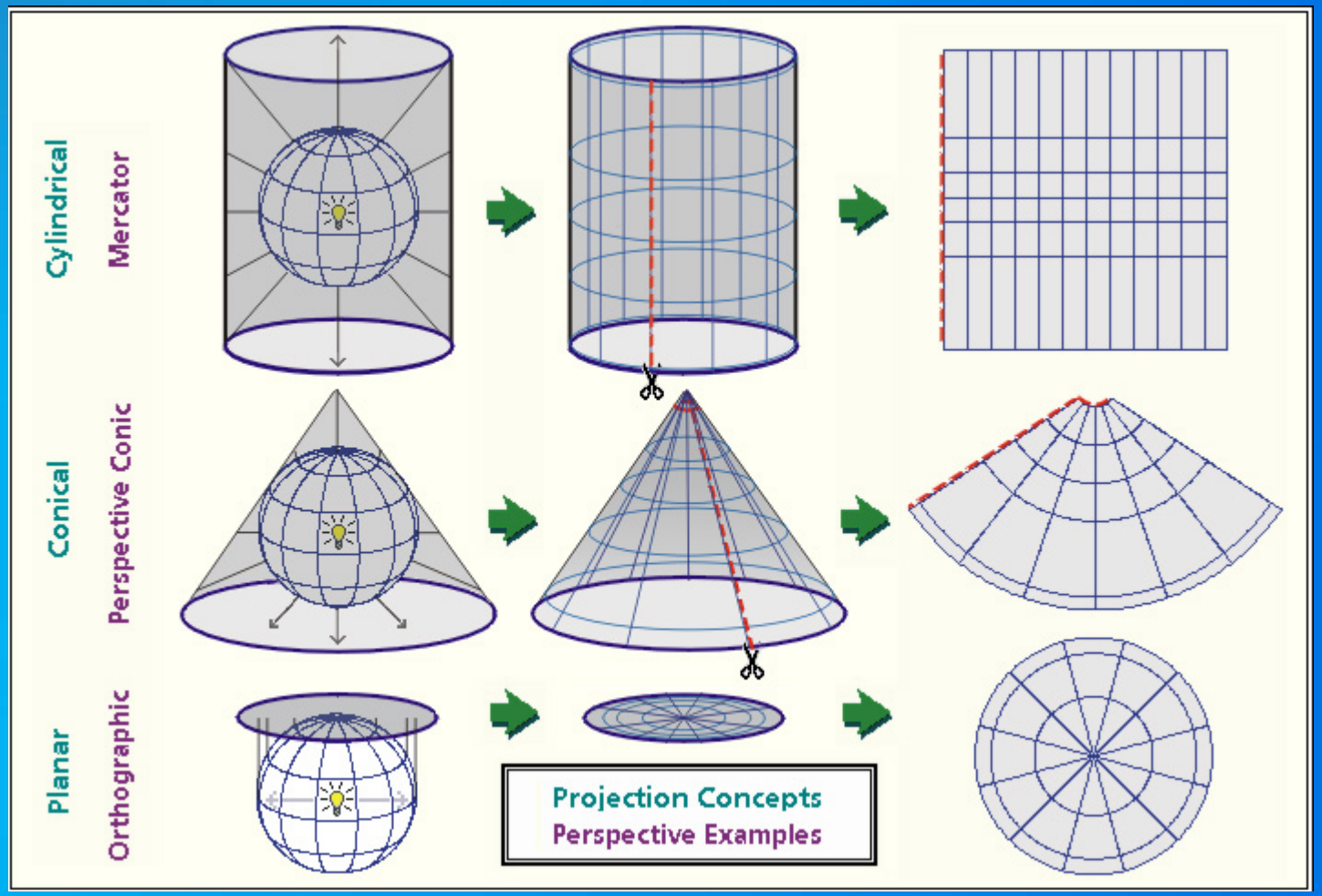
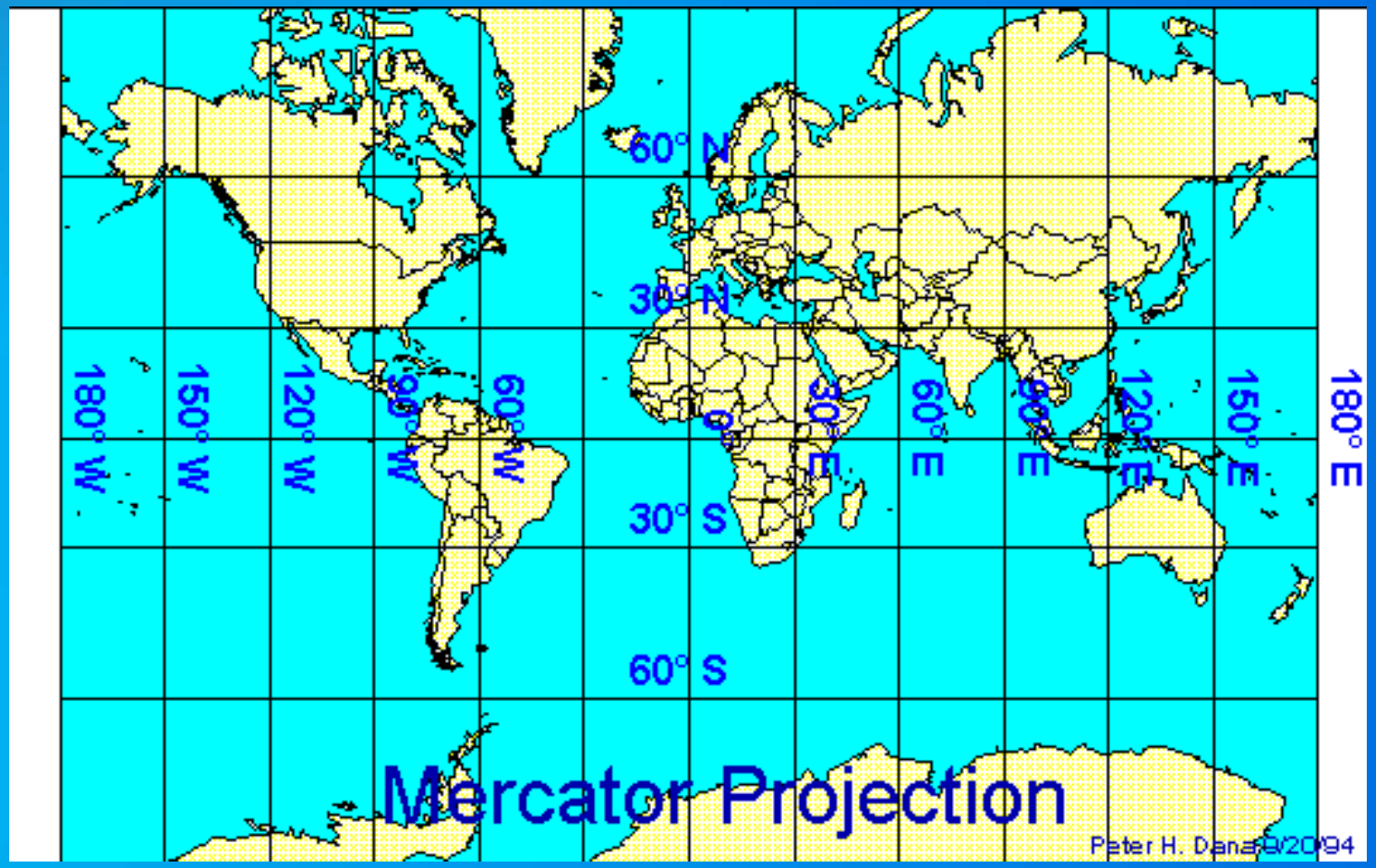
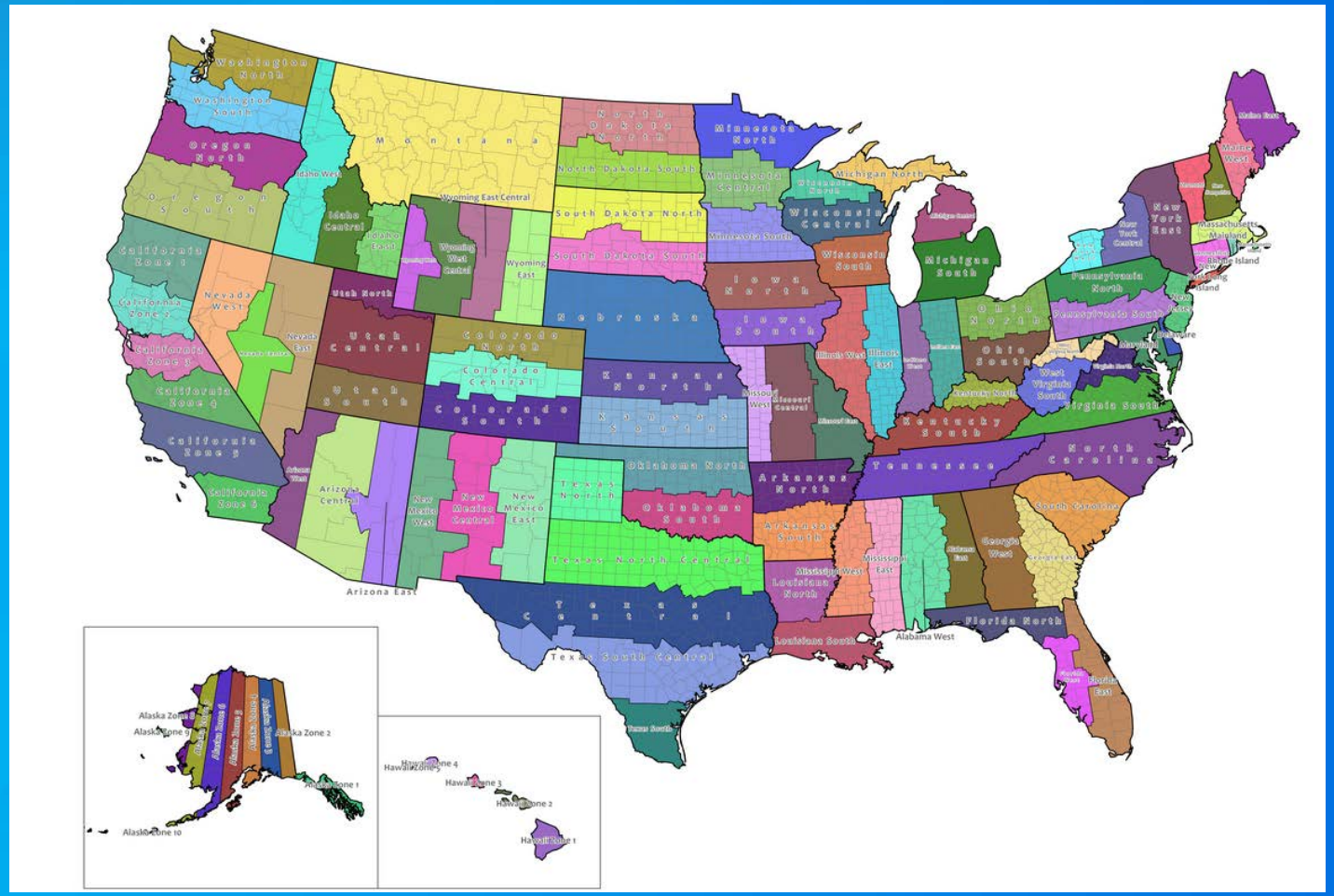


#4 … even when the coordinates are lat/long degrees (GEOGRAPHIC)



#5 Every flat map distorts the real world in some way

#6 For small portions of the earth, we tend to use projections that minimize distance distortion

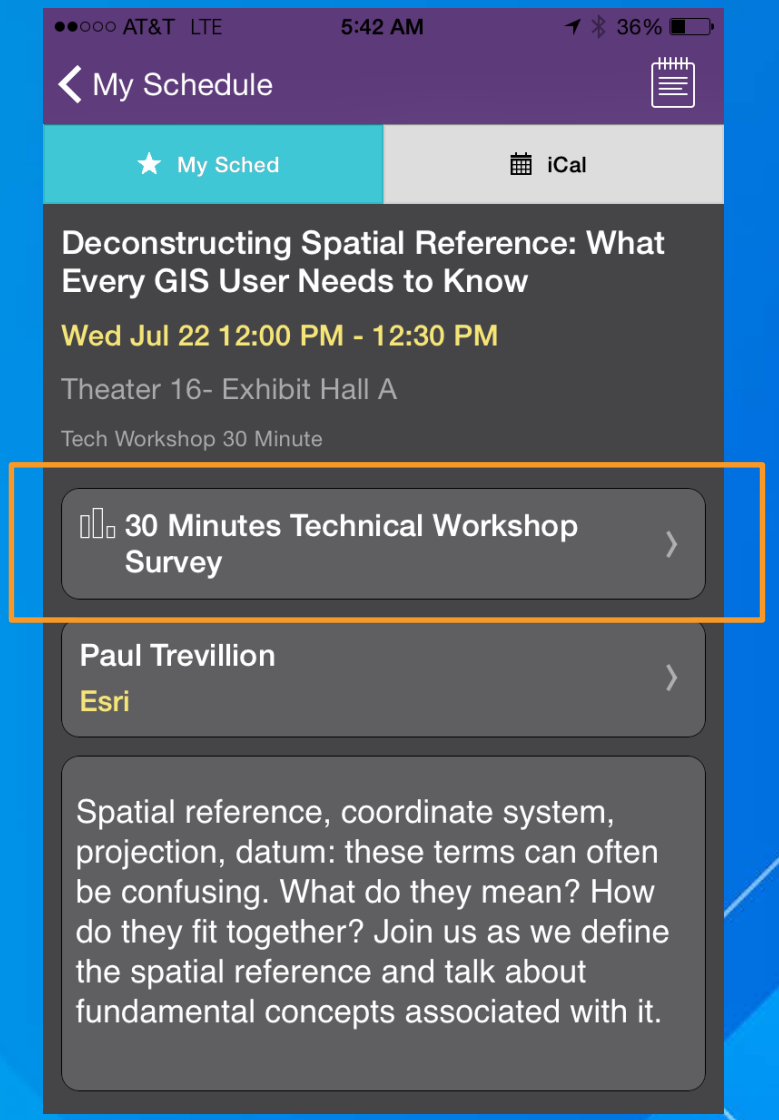


#7 These allow us to use linear measures (feet, meters) as coordinate values. These are called PROJECTED COORDINATES

#8 There are thousands of STANDARD coordinate systems, both GEOGRAPHIC and PROJECTED

Thank you…

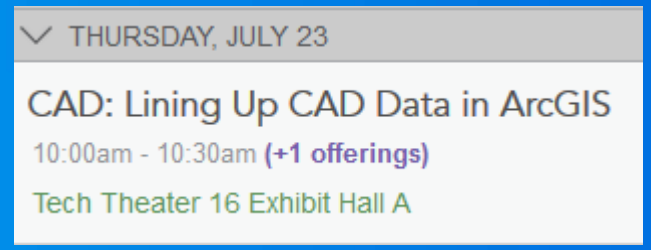
- Please fill out the session survey
- In your mobile app, select …
  Deconstructing Spatial Reference
- Click “Technical Workshop Survey”
- Answer a few short questions and enter any comments



Want to learn more?

- **Documentation**
  - ArcGIS for Desktop Documentation

- **Additional Resources**



Understanding our world.