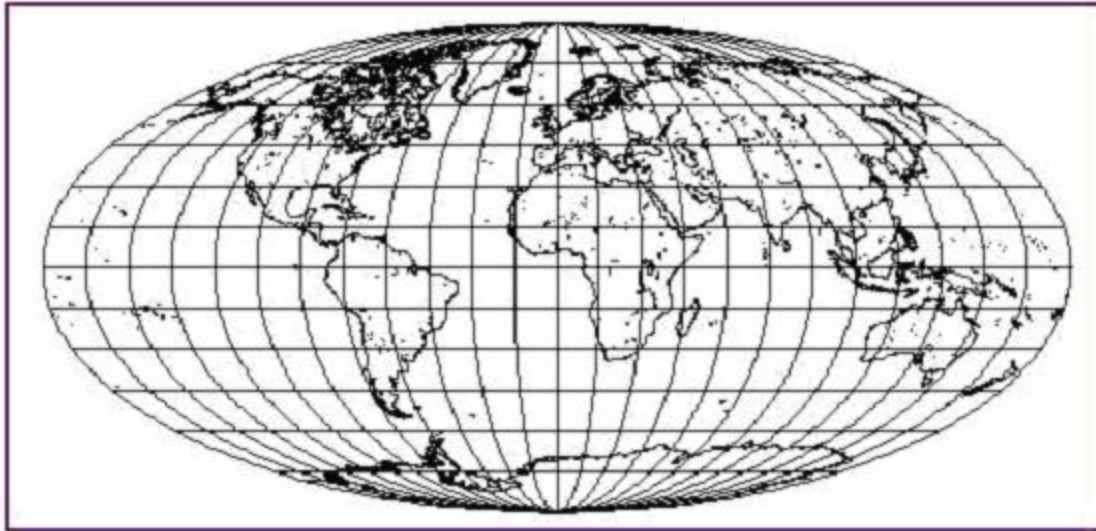


# MAPPING ON THE WEB

Interactive Web Design | Spring 2018

# Where it all began...

Xerox PARC Map Viewer: world 0.00N 0.00E (1.0X)



Select a point on the map to zoom in (by 2), or select an option below. Please read [About the Map Viewer](#), [FAQ](#) and [Details](#). To find a U.S. location by name, see the [Geographic Name Server](#).

## Options:

- Zoom In: (2), (5), (10), (25); Zoom Out: (1/2), (1/5), (1/10), (1/25)
- Features: Default, All; +borders, +rivers
- Display: color; Projection: elliptical, rectangular, sinusoidal; Narrow, Square
- Change Database to USA only (more detail)
- [Hide Map Image](#), [Retrieve Map Image Only](#), [No Zoom on Select](#),
- [Place mark at \(0.00N 0.00E\)](#), [Reset All Options](#)

# Where it all began...

1. Use a map viewer on a web browser and click on a link to a function
2. Web browser sent an HTTP request to a web server
3. Web server receives request, performs mapping operations, generates a new map, and return it to the web browser that requested it
4. Web browser receives & displays the map image

# A little history

- 1994. Canadian National Atlas Information Service
  - ▣ Allowed public to select data layers and submit request to display the map
- 1995. National Geospatial Data Clearinghouse & Alexandria data library
  - ▣ Allowed users to specify keywords and a geographic area and search for maps & satellite images that met criteria
- 1995. Census TIGER Mapping Service
  - ▣ Allowed public to query & map demographic data



- 1996. MapQuest

- View maps, look for businesses, find optimal routes and plan trips

- 1999. Web 2.0

- Created a read-write web where user-generated content could now be created
- Web is now a platform for computing & software development
- Software that goes across many devices



## **Web 2.0**

= user-generated content

+ web as a platform

+ rich user experience

# Mapping on the web = Web GIS

= slippy map = interactive map = online map

# What is the difference between digital & web maps?

- Digital
  - ▣ Involves a computer, but might not be accessible by the internet
  - ▣ Usually created by a GIS
- Web / Interactive
  - ▣ A type of digital map – viewed in a web browser

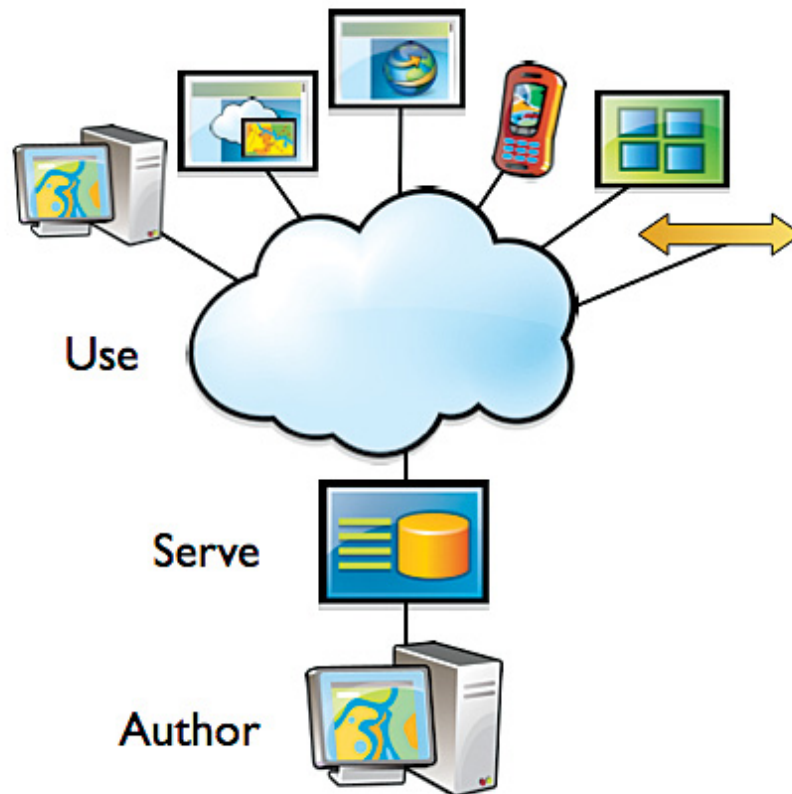


# What is a Slippy Map?

- Synonymous with Web Map – a map that slips around when you drag the mouse (pan & zoom)

# What is Web GIS?

- Any GIS that uses web technology to communicate between components (server & clients)



# Characteristics of Web GIS

- **Global reach.** present & access web GIS from anywhere in the world
- **Large # of users.** used by many people at once, with any background, from anywhere
- **Cross-platform compatibility.** just need a web browser
- **Easy-to-use.** no learning curve for using specialized software (i.e. ArcGIS) necessary

# Web GIS Principles

- Harnessing of collective intelligence & data as the next 'inside intel'
- Using the Web as a platform
- Mash-up Style Programming
- Mobile Solutions
- Rich user experience

# Collective intelligence



- Web 2.0 provided read-write functionality that creates user-generated content
  - ▣ Collect & share geographic knowledge promoting collaboration
  - ▣ Groups can share data, maps & applications

# Web as a platform

- Provides a platform for computing & software development
  - ▣ Publish base maps, data, and Geoprocessing functions as web services
  - ▣ Cloud-based software & services, hosted user storage, access to GIS tools and imagery

# Mash-up style programming

- Integrating web services from multiple sources
- API's – **A**pplication **P**rogram **I**nterface
  - ▣ Essentially, a contract between two individual software programs that allows those programs to communicate directly with one another and use each other's functions

# Mobile Solutions

- Accessing apps or services on your mobile device
  - ▣ Foursquare, apple maps, google maps,
- Also used to COLLECT data in the field, in real-time
  - ▣ Collector, Avenza Maps



# Rich user experience



- Animations, multi-media, 2-D & 3D, combine web services, various zoom levels

# Functions of Web GIS

- Mapping
- Querying
- Collection of geospatial data
- Disseminating geospatial data
- Geospatial analysis
- And.....

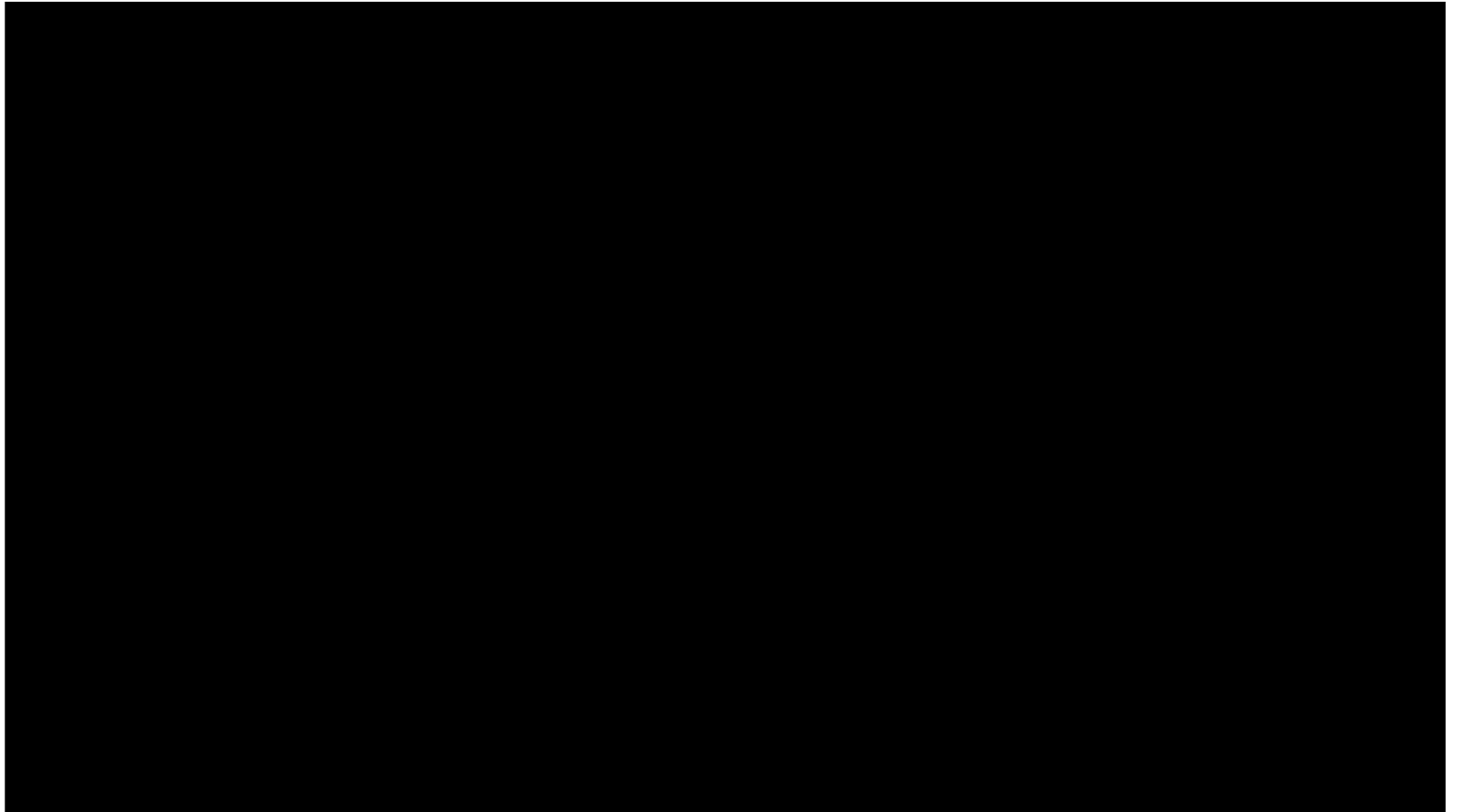
# Web maps tell stories too

- Principles of storytelling with web maps
  - ▣ Connect with your audience
  - ▣ Just like a title of a map – start your story with something that lures in your audience
  - ▣ Choose an effective design for your content
  - ▣ Easy-to-read maps
  - ▣ Keep it simple



Web GIS as a...

# New business model



# Tool for government

- USGS Earthquake Hazard map

<http://earthquake.usgs.gov/earthquakes/map/>

# Infrastructure for science

- Data Basin. Science-based mapping & analysis platform that supports learning, research, and sustainable environmental stewardship.

<http://databasin.org/>

# Essential component of daily life

- Where is the closest coffee shop right now??

<https://www.google.com/maps>