

Geog183: Cartographic Design and Geovisualization Spring Quarter 2020

Lecture 16: Web-based cartography

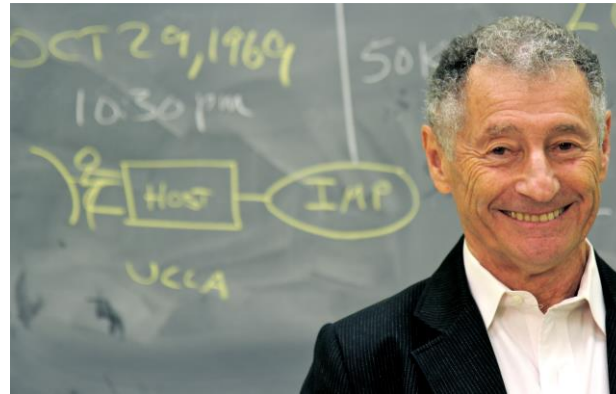


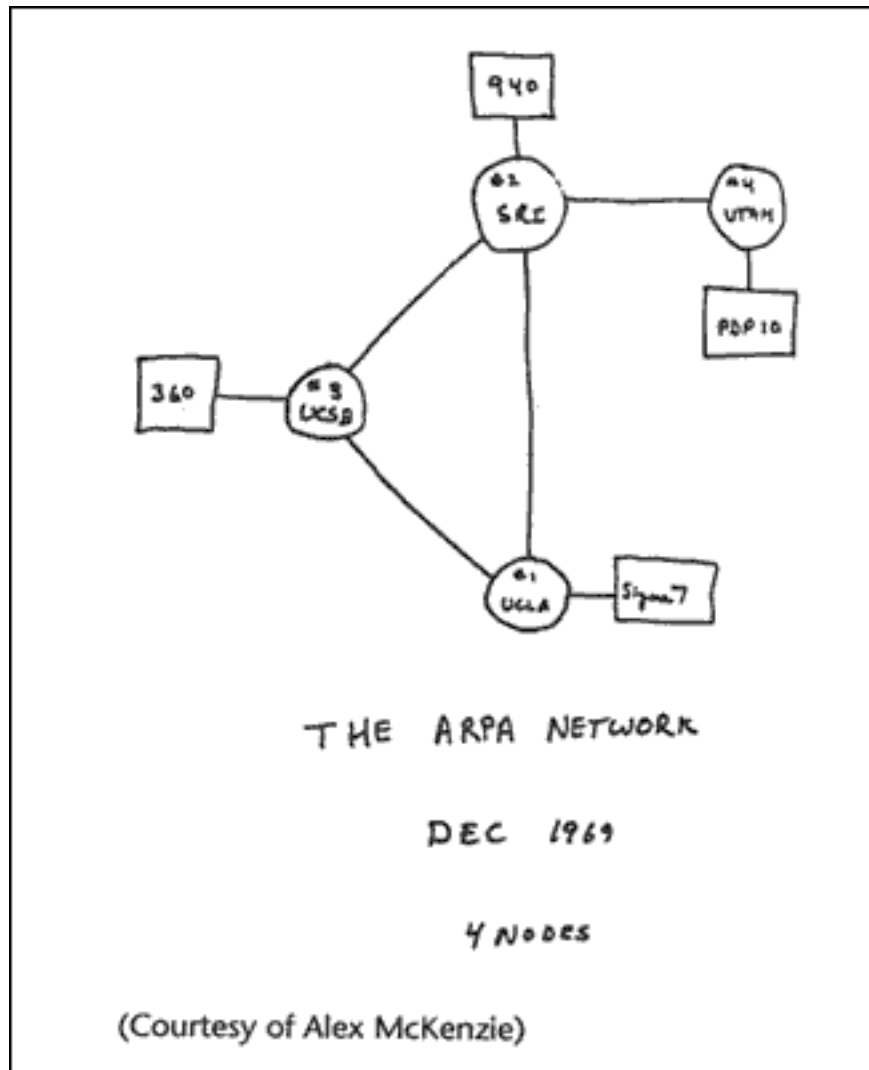
Web cartography

- Examine history of the WWW
- Maps and the web, and how they developed
- New capabilities, data, search, distribution, interaction
- The evolution of the client-server model
- Mobile computing and the web
- The GoogleMaps/Earth Era
- Spatially enabled Location-based services and maps
- What next?

Early Internet History

- J.C.R. Licklider of MIT, then DARPA, first proposed a global network of computers in 1962. Predicted interactivity, GUIs
- Leonard Kleinrock of MIT and later UCLA developed the theory of networks and packet switching
- Lawrence Roberts of MIT connected a Massachusetts computer with a California computer in 1965 over dial-up telephone lines
- Kleinrock's packet switching theory was confirmed.
- Roberts moved over to DARPA in 1966 and developed his plan for ARPANET





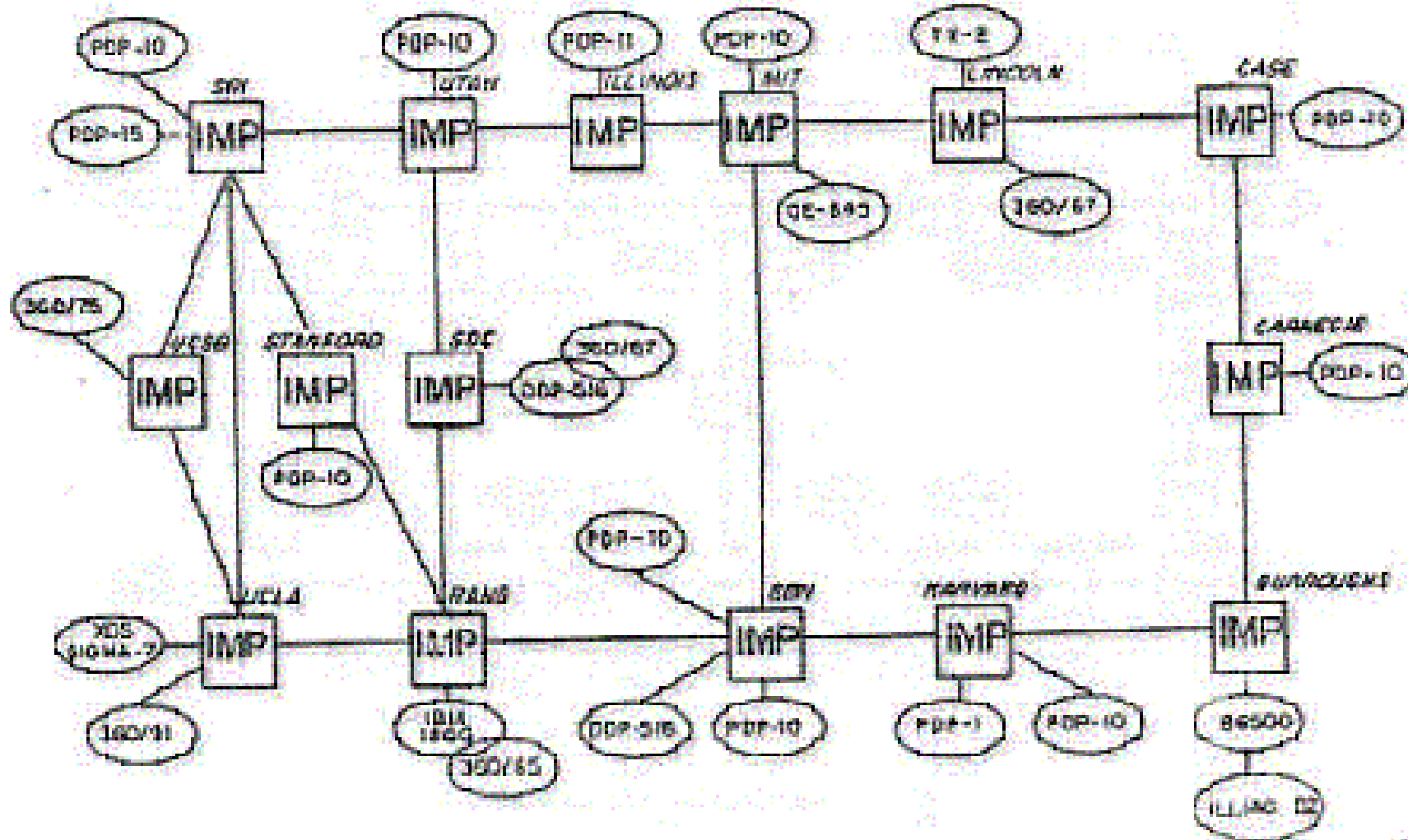
Leonard Kleinrock demonstrates how the first Internet communication was made with the help of an Interface Message Processor machine at his office at the UCLA Computer Science Department in Los Angeles

Simple beginnings

29 Oct 69	2:00	LOADED CP. PROGRAM (SK)
		FOR GEN BARKER
		BBN
	22:30	Talked to SER (SK)
		Host to Host
		Left imp program (SK)
		running after sending
		a host to host message
		to imp.

- ARPANET brought online in 1969
- Initially connected four major computers at universities in the southwestern US (UCLA, Stanford Research Institute, UCSB, and the University of Utah)
- 1970, MIT, Harvard, BBN, and Systems Development Corp in Santa Monica, Cal. were added.
- 1971, Stanford, MIT's Lincoln Labs, Carnegie-Mellon, and Case-Western Reserve U were added.
- Also, NASA/Ames, Mitre, Burroughs, RAND, and the U of Illinois plugged in.
- First message: Charlie Kline at UCLA sent the first packets on ARPANet as he tried to connect to Stanford Research Institute on Oct 29, 1969
- The system crashed as he reached the G in LOGIN!

The doubling begins



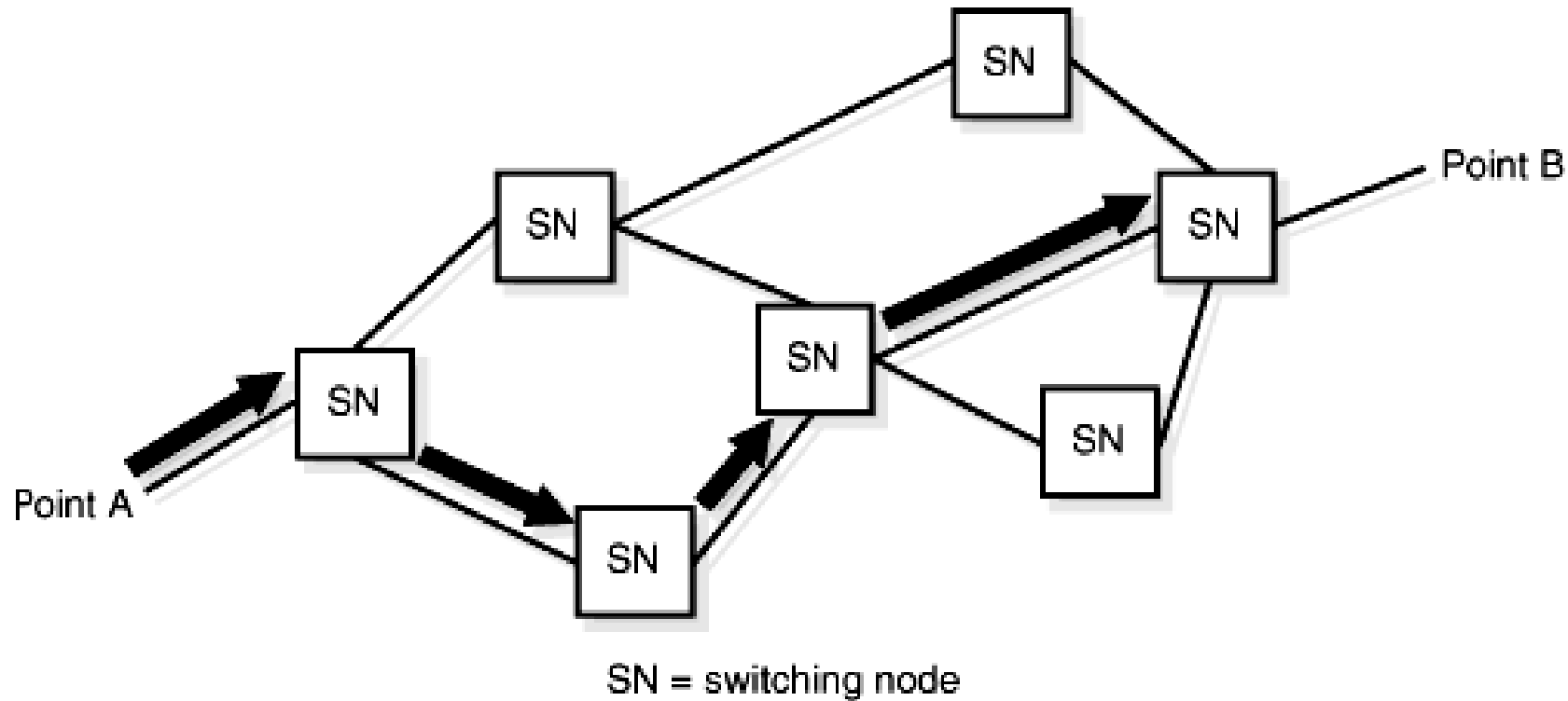
Important landmarks



- E-mail 1972 (Ray Tomlinson of BBN selects @) When Tomlinson showed it to his colleague Jerry Burchfiel, Tomlinson said "Don't tell anyone! This isn't what we're supposed to be working on."
- Telnet, ftp 1972-3
- Ethernet 1974, outgrowth of Bob Metcalfe's Harvard dissertation on "Packet Networks."
 - The dissertation was initially rejected by the University for not being analytical enough
- Frederick G. Kilgour of the Ohio College Library Center (now OCLC, Inc.) led networking of Ohio libraries during the '60s and '70s.
- TCP/IP develops 1970s onward
- BITNET connected IBM mainframes around the educational community and the world to provide mail services beginning in 1981 (includes listserves)
- 1986, the National Science Foundation funded NSFNet
- 1989 Archie, WAIS

Packet switching

Topology of a Packet-Switched Network



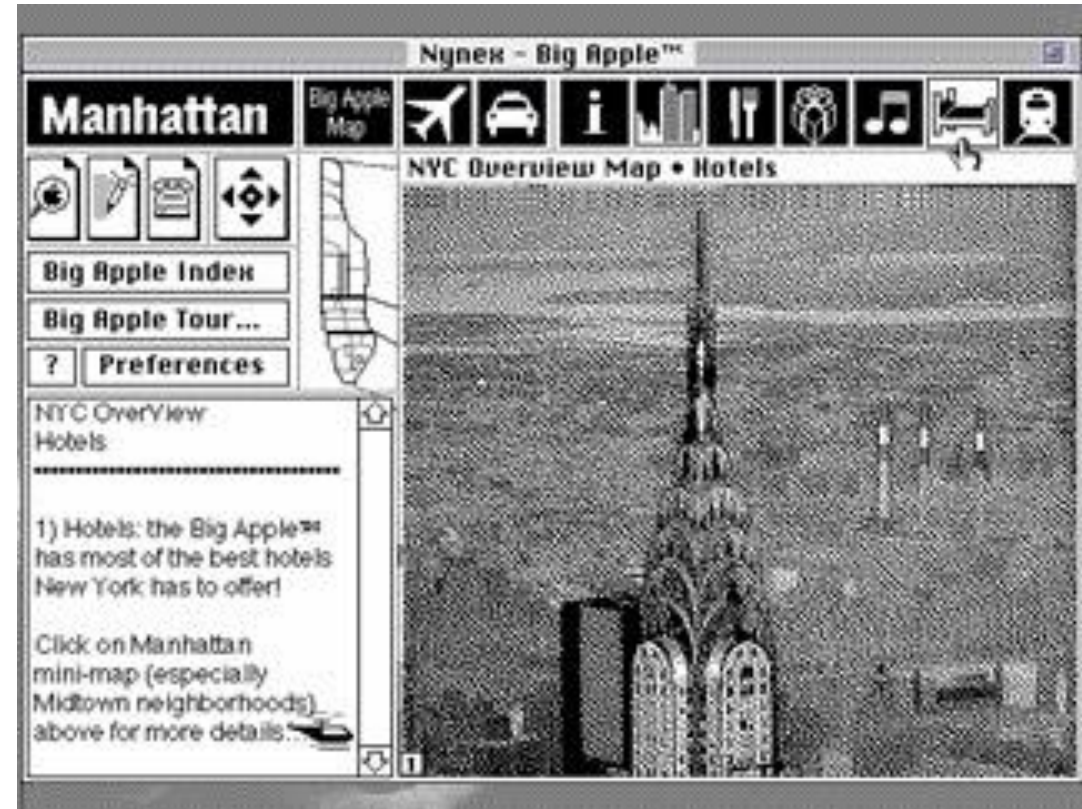
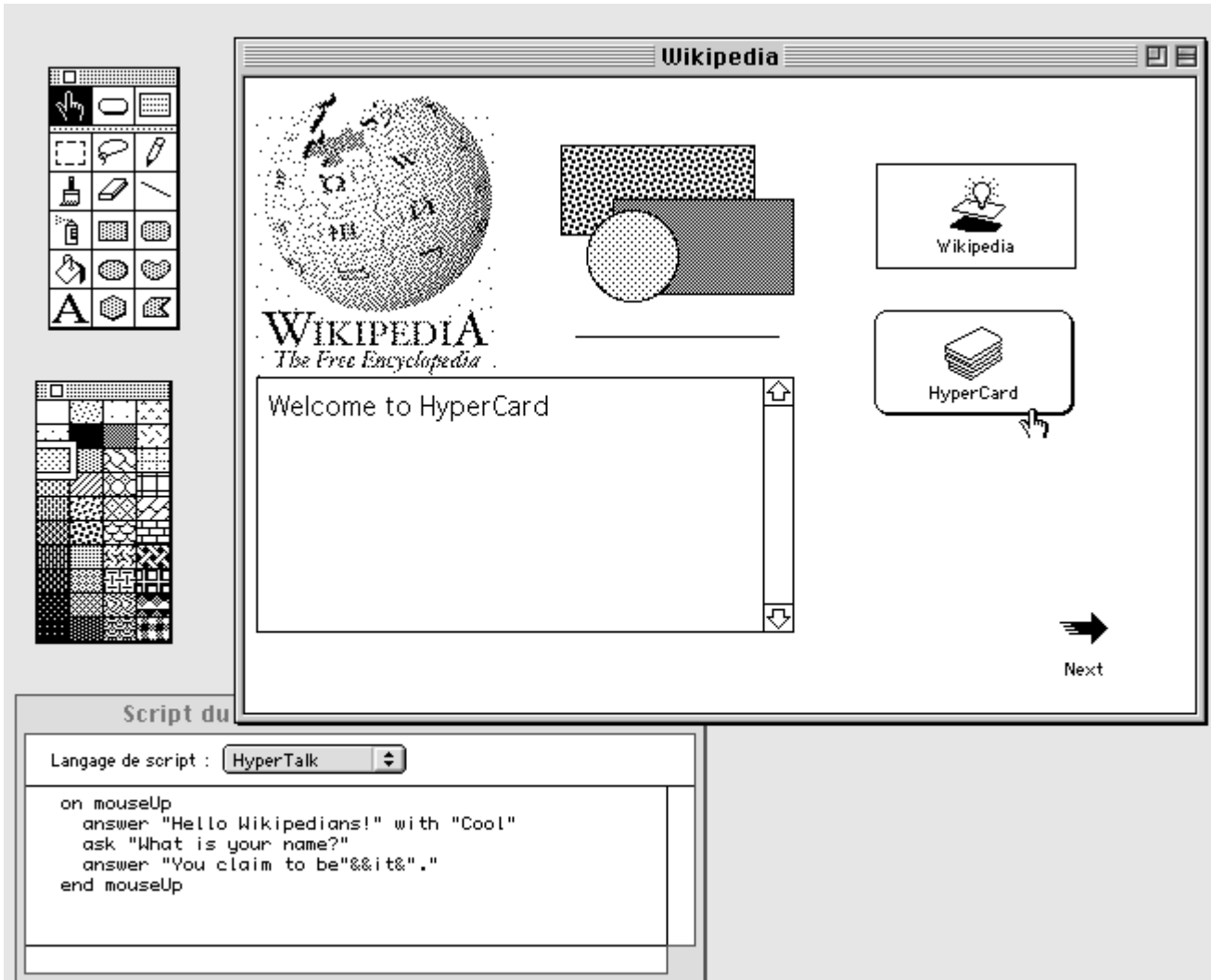
Protocols
Send/Acknowledge
Wrapper: target
IP address
Divided content
Handshake
Header, Path

Web landmarks

- **Gopher** (distributed document search and retrieval network protocol)
 - Used hyperlinking features
 - Replaced by HTTP protocol
- Later tools built upon HTTP: e.g. Mosaic, Mozilla
- Mosaic was developed at the National Center for Supercomputing Applications (NCSA) beginning in late 1992
- NCSA released the browser in 1993, and officially discontinued development and support on January 7, 1997
- Led to Netscape and Mozilla
- NSF Network project BITNET

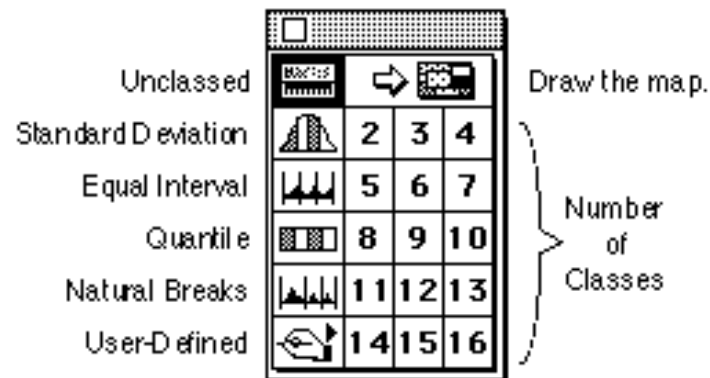


Apple's Hypercard "Stacks"

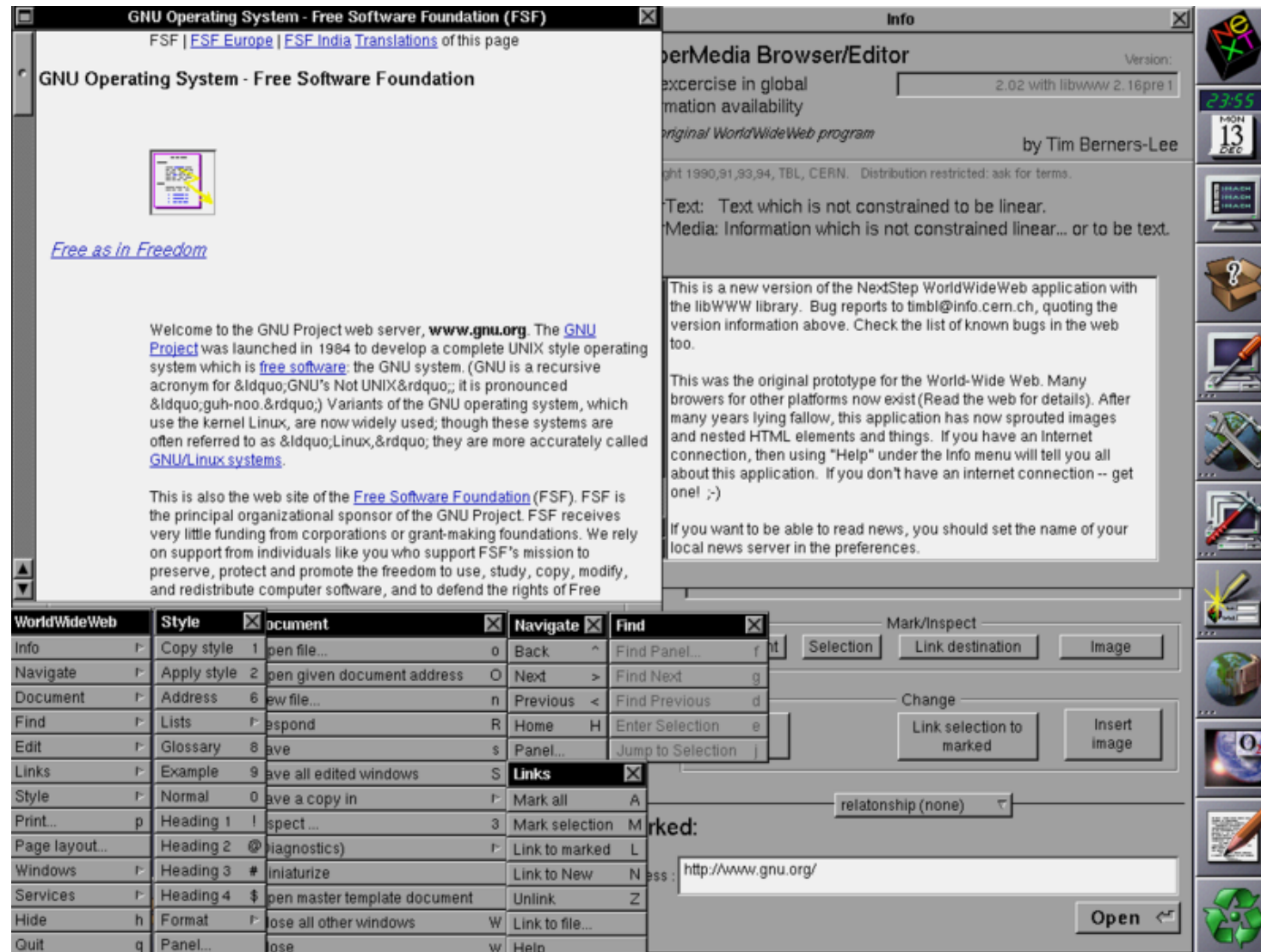


Interactive map software

- Mike Peterson Mapping with Small Computer Systems. *Plan and Print*, Vol. 55, No.10, 1982, pp. 43-45. (with Kenneth Lepczyk)
- Created interactive Choropleth mapping program using hypercard and Fortran: MacChoro 1986
- Added animation in 1988

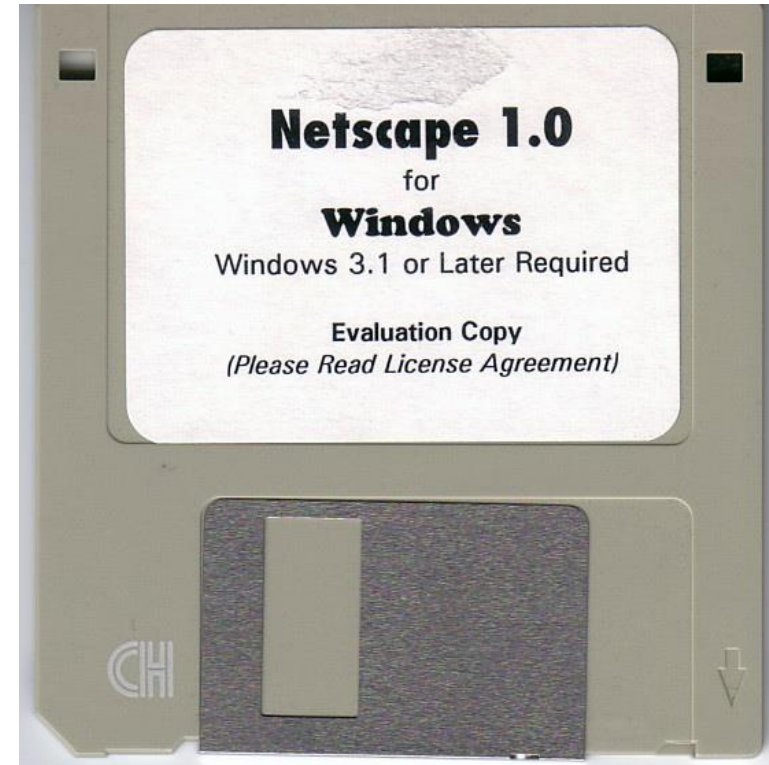
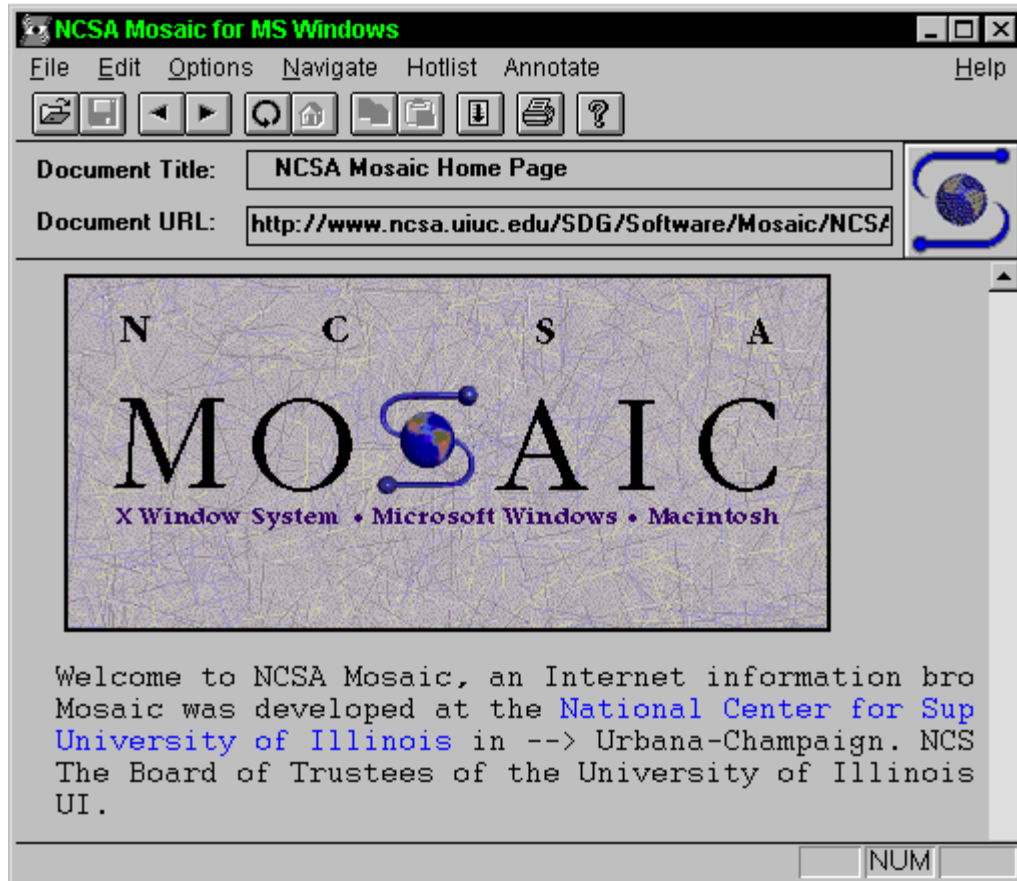


WorldWideWeb for NeXT (1991)

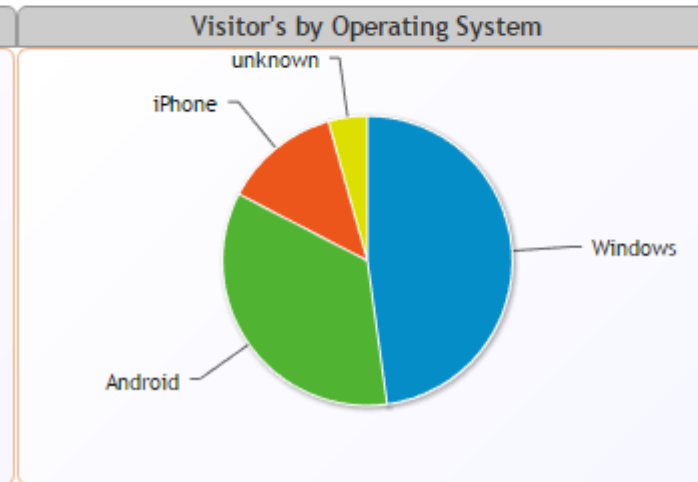
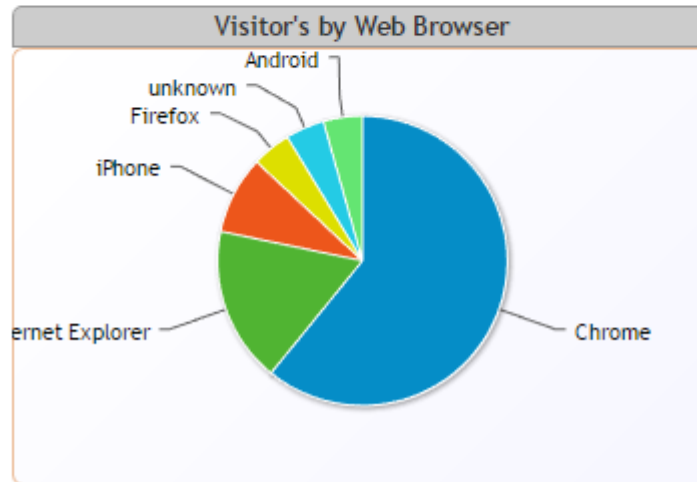


Arrival of the Browsers

From Computer Desktop Encyclopedia
Reproduced with permission.
© 2004 National Center for Supercomputing Applications

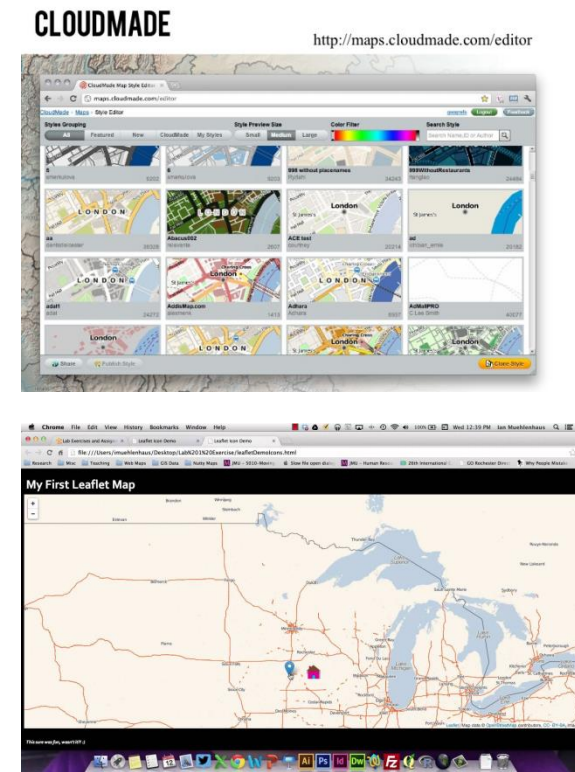


Browsers galore: MapMyUser



Web cartography would have been impossible without...

- The Internet
- Precise positioning
- Mobile computing
- Wireless communications
- Standards
- Open Source software



The first GNSS: GPS



Mobile computing



Wireless



The screenshot shows a web browser window displaying the UCSB interactive map. The browser's address bar shows "COX.net for Santa Ba...", "GauchoSpace", "Google Calendar", "CNN.com - Breaking N...", "BBC - Homepage", and "Geography BBS". The UCSB logo is visible in the top right corner of the page. A legend is open, listing various facilities and their symbols. A floor selection menu is also visible on the right side of the map.

Wireless	
Poor	Good

Floor
Level 1
Level 2
Level 3
Level 4
Level 5
Level 6
Level 7
Level 8
Default

Standards

The screenshot shows the Open Geospatial Consortium (OGC) website in a Firefox browser window. The browser's address bar displays www.opengeospatial.org. The website header features the OGC logo and the tagline "Making location count." Below the header is a navigation menu with the following items: Home, Standards, Programs, Participate, OGC Blog, Events, About OGC, and Member Login. A search bar is also present.

The main content area is titled "Geospatial and location standards for:" and lists various application areas on the left side:

- Aviation
- Built Environment & 3D
- Business Intelligence
- Defense & Intelligence
- Emergency Response & Disaster Management
- Geosciences & Environment
- Government & Spatial Data Infrastructure
- Mobile Internet & Location Services
- Sensor Webs

In the center of the page is a complex diagram illustrating the relationships between various geospatial standards and concepts. The diagram is organized into several interconnected nodes and branches:

- Open** (central node) branches into **Where** (with sub-nodes: Monitoring, Location, Map) and **Points of Interest** (with sub-nodes: Sensor Web, Shared Understanding).
- Interoperability** (central node) branches into **Share** (with sub-nodes: Information Integration, Geosynchronization) and **Open Data** (with sub-nodes: Time, Planning).
- Open** also branches into **Earth Observation** (with sub-nodes: Analysis, Navigation, CAD) and **Proximity** (with sub-nodes: BIM, Open Source, GIS).
- Open Data** branches into **Data Quality** (with sub-nodes: Weather, Alerts) and **Situational Awareness** (with sub-nodes: Visualization, Real Time).
- Points of Interest** branches into **Geoweb** (with sub-nodes: Geosemantics, Metadata) and **Global** (with sub-nodes: Place, Linked Data).
- Open Data** also branches into **SDI** (Spatial Data Infrastructure) and **GPS**.

The diagram uses various icons to represent these concepts, such as a globe for "Where", a building for "Points of Interest", a map for "Share", and a scale for "Data Quality".

The Windows taskbar at the bottom shows the Start button and several open applications: C:\Documents and Se..., L:\Geography126, CAMapSociety2012.ppt, and Open Geospatial Con... The system clock indicates the time is 2:51 PM.

Open Source Software



The screenshot shows the homepage of the Quantum GIS project. At the top left is the Quantum GIS logo, a stylized green 'Q' with a leaf. To its right is the text 'Quantum GIS'. Further right is a search bar with the placeholder text 'Search...' and a magnifying glass icon. To the right of the search bar are three small flags representing the United Kingdom, Germany, and France. Below the header is a navigation bar with links for 'Wiki', 'Forum', 'Planet', 'Chat', 'Bugs', and 'Shop'. The main banner features a colorful illustration of a medieval town and the text 'Quantum GIS Version 1.7.3 "Wrocław"'. Below the banner, on the left, is a 'Main Menu' section with a list of links: Home, About QGIS, Community, Documentation, Download, Commercial Support, Developer Meetings, User Meetings, Sponsorship, and Advanced Search. Below the menu is a 'Support QGIS!' section with a 'Donate' button. The main content area on the right has a heading 'Welcome to the Quantum GIS Project' followed by a paragraph describing QGIS as a user-friendly Open Source GIS licensed under the GNU GPL. It mentions that QGIS is an official project of the Open Source Geospatial Foundation (OSGeo) and runs on Linux, Unix, Mac OS X, and Windows. It also states that the latest release is QGIS 1.7.3 and provides a link to the release announcement. Below this is a heading 'Learn more about QGIS' followed by a paragraph describing the capabilities of QGIS, such as visualizing, managing, editing, and analyzing data, and composing printable maps. At the bottom of the main content area is a large blue button with the text 'Download Now Free!' and the Quantum GIS logo.

Quantum GIS
Version 1.7.3
"Wrocław"

Main Menu

- » [Home](#)
- » [About QGIS](#)
- » [Community](#)
- » [Documentation](#)
- » [Download](#)
- » [Commercial Support](#)
- » [Developer Meetings](#)
- » [User Meetings](#)
- » [Sponsorship](#)
- » [Advanced Search](#)

Support QGIS!

[Donate](#)

Welcome to the Quantum GIS Project

Quantum GIS (QGIS) is a user friendly Open Source Geographic Information System (GIS) licensed under the GNU General Public License. QGIS is an official project of the Open Source Geospatial Foundation (OSGeo). It runs on Linux, Unix, Mac OS X, and Windows and supports numerous vector, raster, and database formats and functionalities.

Our latest release is QGIS 1.7.3 you can read the release announcement [here](#)

Learn more about QGIS

Quantum GIS provides a continuously growing number of capabilities provided by core functions and plugins. You can visualize, manage, edit, analyse data, and compose printable maps. Get a first impression with some screenshots and a more detailed feature list.

Download Now Free!

Want to learn even more?

Isla Vista Wiki entry

The screenshot shows a web browser window displaying the Wikipedia article for Isla Vista, California. The browser's address bar shows the URL `en.wikipedia.org/wiki/Isla_Vista,_California`. The page title is "Isla Vista, California".

Article Content:

Isla Vista, California

From Wikipedia, the free encyclopedia

Isla Vista is an [unincorporated community](#) and [census-designated place](#) in [Santa Barbara County, California](#) in the [United States](#). As of the [2010 census](#), it had a population of 23,096. The majority of residents are college students at nearby [University of California, Santa Barbara](#) (located to the east of the community) or at [Santa Barbara City College](#). The beachside community lies on a flat plateau about 30 feet (9 m) in elevation, separated from the beach by a [bluff](#).

Isla Vista enjoys a [Mediterranean climate](#) and often has slightly less [precipitation](#) than either [Santa Barbara](#) or the adjacent community of [Goleta](#). Isla Vista is located on a south-facing portion of the Santa Barbara County coast, between Coal Oil Point and Campus Point in view of the [Channel Islands](#). During [El Niño](#) years, precipitation in Isla Vista can be excessive and potentially dangerous. Some homes and apartments built on the south side of [Del Playa Drive](#), most popular with students due to their direct ocean views, are in danger of collapse, since they are built on quickly-eroding bluffs thirty to sixty feet above the Pacific Ocean. Recent erosion has exposed foundation supports in several of the properties closest to the university campus, UCSB.

As Isla Vista is on the south coast of Santa Barbara County, which has some of the highest housing prices in the United States, the student population shares densely packed housing with a working Hispanic population. Since Isla Vista has not been annexed by either [Goleta](#) or [Santa Barbara](#), remaining unincorporated, only county funds are available for civic projects.^[2]

Isla Vista is home to a [student housing cooperative](#), the [Santa Barbara Student Housing Coop](#), as well as a food cooperative, the Isla Vista Food Co-op.


Coordinates: 34°24′48″N 119°51′39″W﻿ / ﻿34.41333°N 119.85806°W﻿ / 34.41333; -119.85806

Contents [hide]

- 1 Geography
- 2 History
 - 2.1 Early days
 - 2.2 World War II
 - 2.3 University
 - 2.4 1960s and 1970s
 - 2.5 1980s and later
- 3 Culture
 - 3.1 Dining
 - 3.2 Community efforts
 - 3.3 Halloween in Isla Vista
- 4 Demographics


Right Sidebar:

Isla Vista
census-designated place



A "welcome" sign at Isla Vista

Nickname(s): I.V.



Location in Santa Barbara County and the state of California

Coordinates: 34°24′48″N 119°51′39″W﻿ / ﻿34.41333°N 119.85806°W﻿ / 34.41333; -119.85806

Country: United States

Left Sidebar:

WIKIPEDIA
The Free Encyclopedia

Main page
Contents
Featured content
Current events
Random article
Donate to Wikipedia
Wikimedia Shop

Interaction
Help
About Wikipedia
Community portal
Recent changes
Contact page

Tools
What links here
Related changes
Upload file
Special pages
Permanent link
Page information
Wikidata item
Cite this page

Print/export
Create a book
Download as PDF
Printable version

Languages


geohack

overcommitted - Google X Yingjie Hu (@Yingjie_Hu) X GeoHack - Isla Vista, Calif X





Secure | [https://tools.wmflabs.org/geohack/geohack.php?pagename=Isla_Vista,_California¶ms=34_24_48_N_119_51_39_W_region:US_type:city\(23096\)](https://tools.wmflabs.org/geohack/geohack.php?pagename=Isla_Vista,_California¶ms=34_24_48_N_119_51_39_W_region:US_type:city(23096))

Apps Google 29 Google Calendar Breaking News, U.S. Breaking News and Web of Science [v.5.] The New GauchoSpa Course Login | Online eGrades ScholarOne Manuscript

GeoHack - Isla Vista, California



Popular:


[Bing Maps](#) [Google Maps](#) [Google Earth](#) [OpenStreetMap](#)

DMS 34° 24' 48" N, 119° 51' 39" W
Decimal 34.413333, -119.860833
Geo URI <geo:34.413333,-119.860833>
UTM 11S 237055 3811699

[More formats...](#)

Type city **Region** US

Article [Isla Vista, California](#)
([edit](#) | [report inaccuracies](#))



Contents: [Global services](#) · [Local services](#) · [Photos](#) · [Wikipedia articles](#) · [Other](#)

Views

- Template
- Talk
- View source
- History

Languages

- Afrikaans
- Alemannisch
- العربية
- Aragonés
- অসমীয়া
- Asturiano
- বাংলা
- Беларуская
- Беларуская (тарашкевіца)
- भोजपुरी
- Български
- Bosanski
- Brezhoneg
- Català

Global services

Service	Map	Satellite	More
ACME Mapper	Map	Satellite	Topo , Terrain , Mapnik
Apple Maps	Map	Satellite	
Arctic.io			Daily Satellite
Bing Maps	Map	Aerial	Bird's Eye
Blue Marble Navigator		Satellite	Night Lights
Fourmilab		Satellite	
GeaBios		Satellite	
GeoNames		Satellite	Text (XML)
Google Earth^{note}		Open	w/ meta data
Google Maps	Map	Satellite	Terrain , Street View
GPS Visualizer	Map	Satellite	Topo , Drawing utility
HERE	Map	Satellite	Terrain

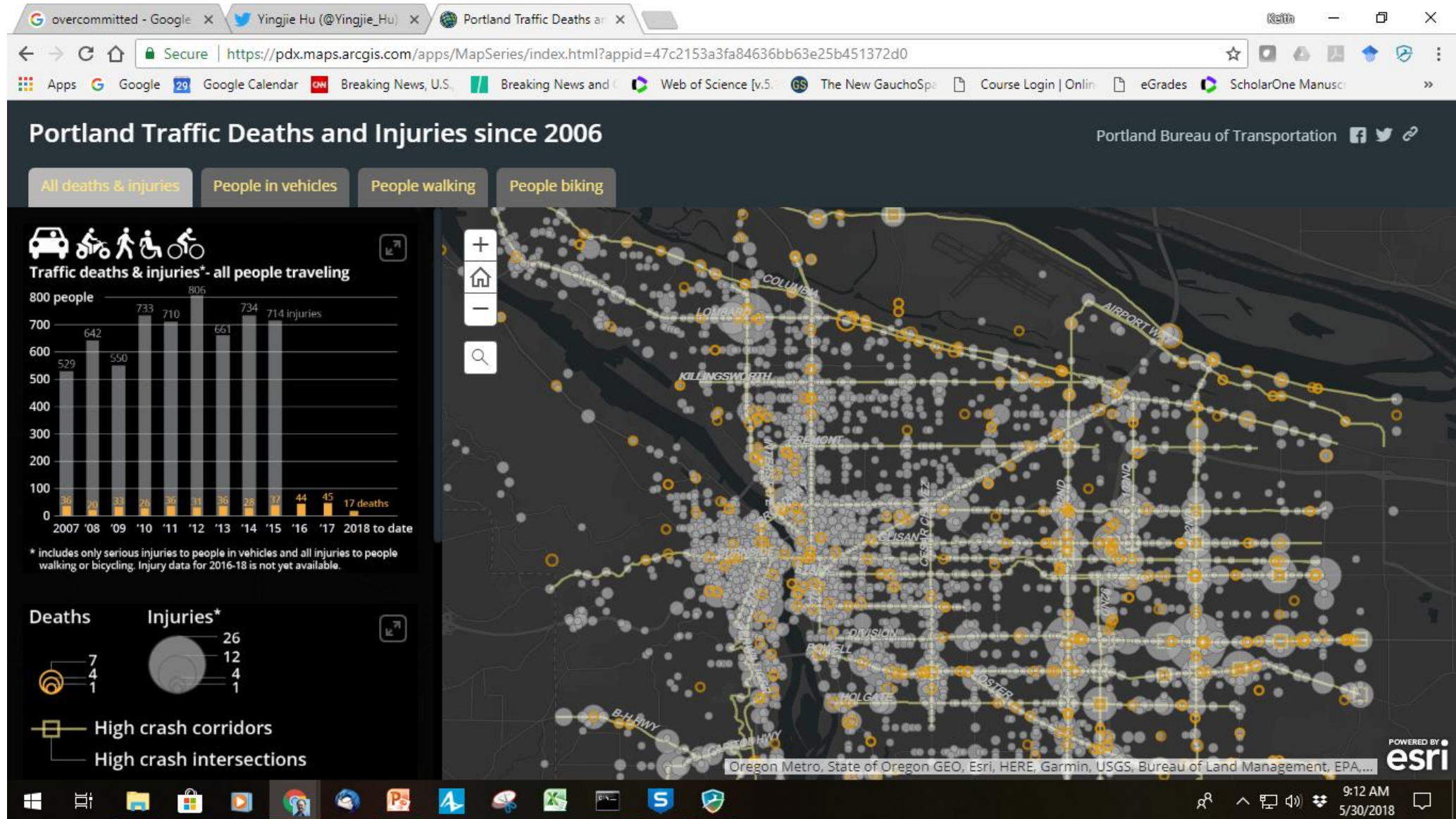
United States

Service	Aspect
ACME	Topo NEXRAD DOQ
CalTopo	Topo
GPS Visualizer	USDA Aerial , USGS Topo
Historic Aerials	Historic Aerials
NASA/MSFC GOES	Weather Satellite
National Weather Service	Area weather and forecast Graphical hourly pinpoint forecast
Natural Atlas	Topo
TerraFly	Satellite
TopoQuest	USGS Aerial , Topo
Trails.com	Topo
US EPA	Watershed Info
USGS National Map Viewer	Map , Legacy TNM

[See all regions](#)

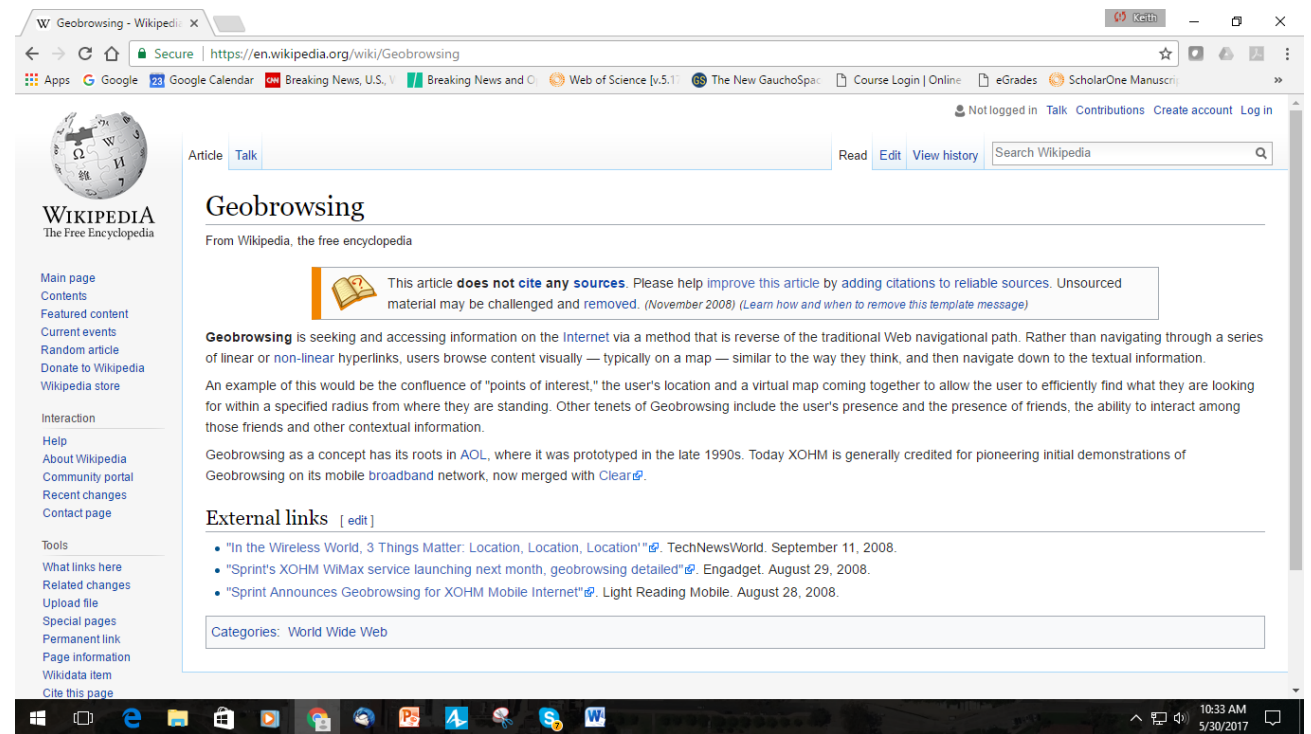
9:08 AM 5/30/2018

Software Mash-Ups

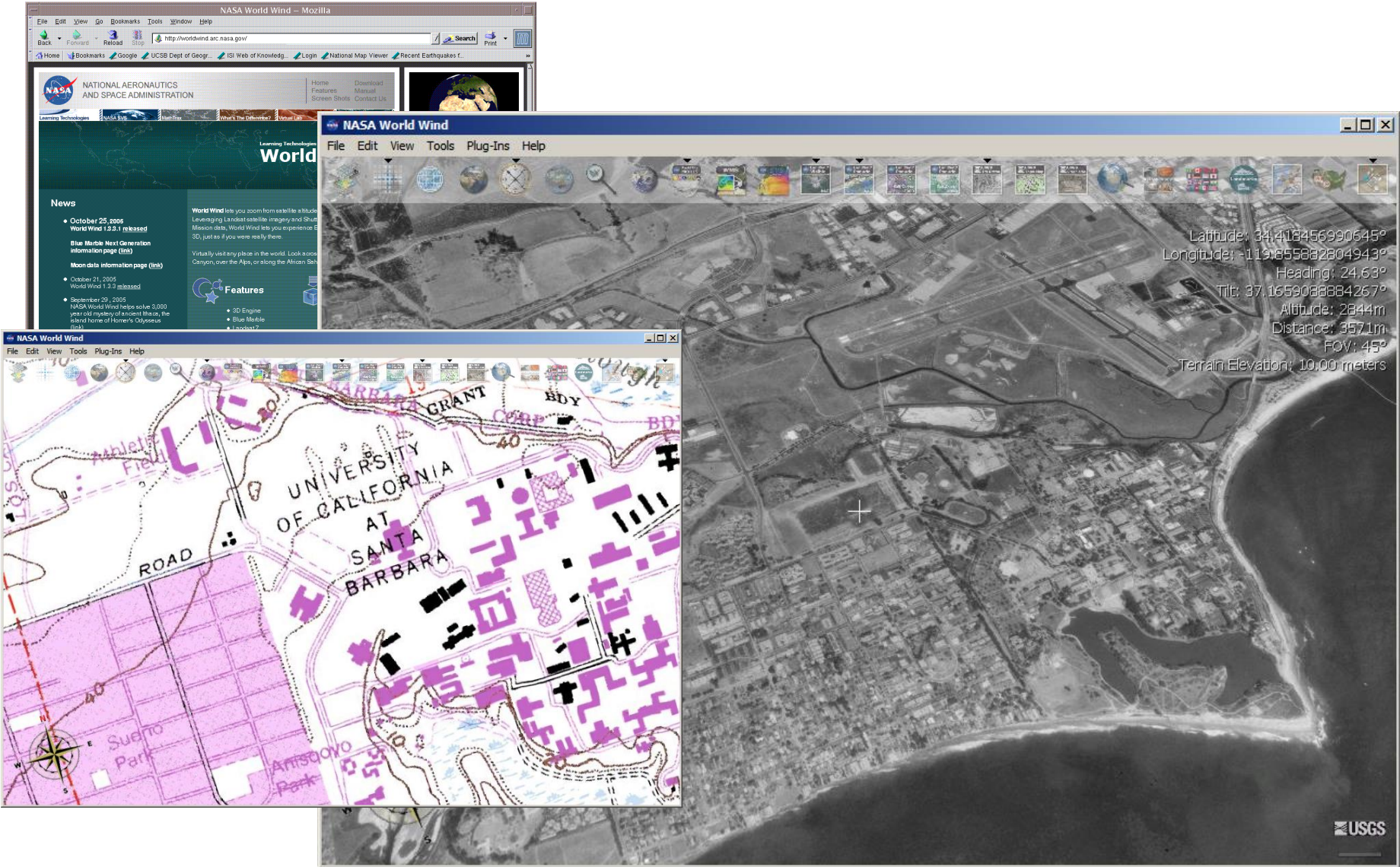


Enter the GeoBrowser

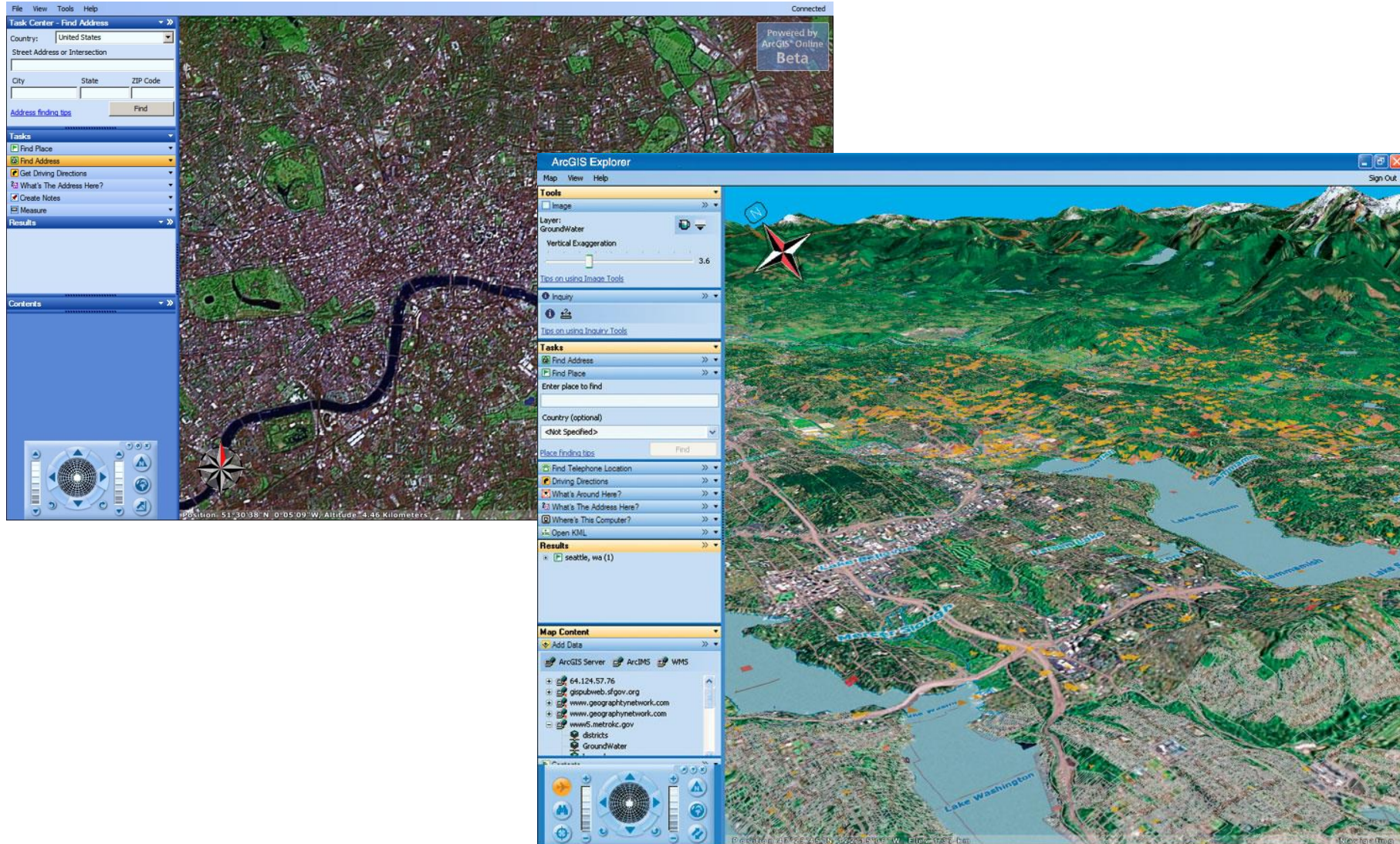
- Google Local 2004-5, Google Earth/Maps 2005
- Data “Portals”
- Data “Clearinghouses”
- NSDI -> GSDI
- Vision of Digital Earth



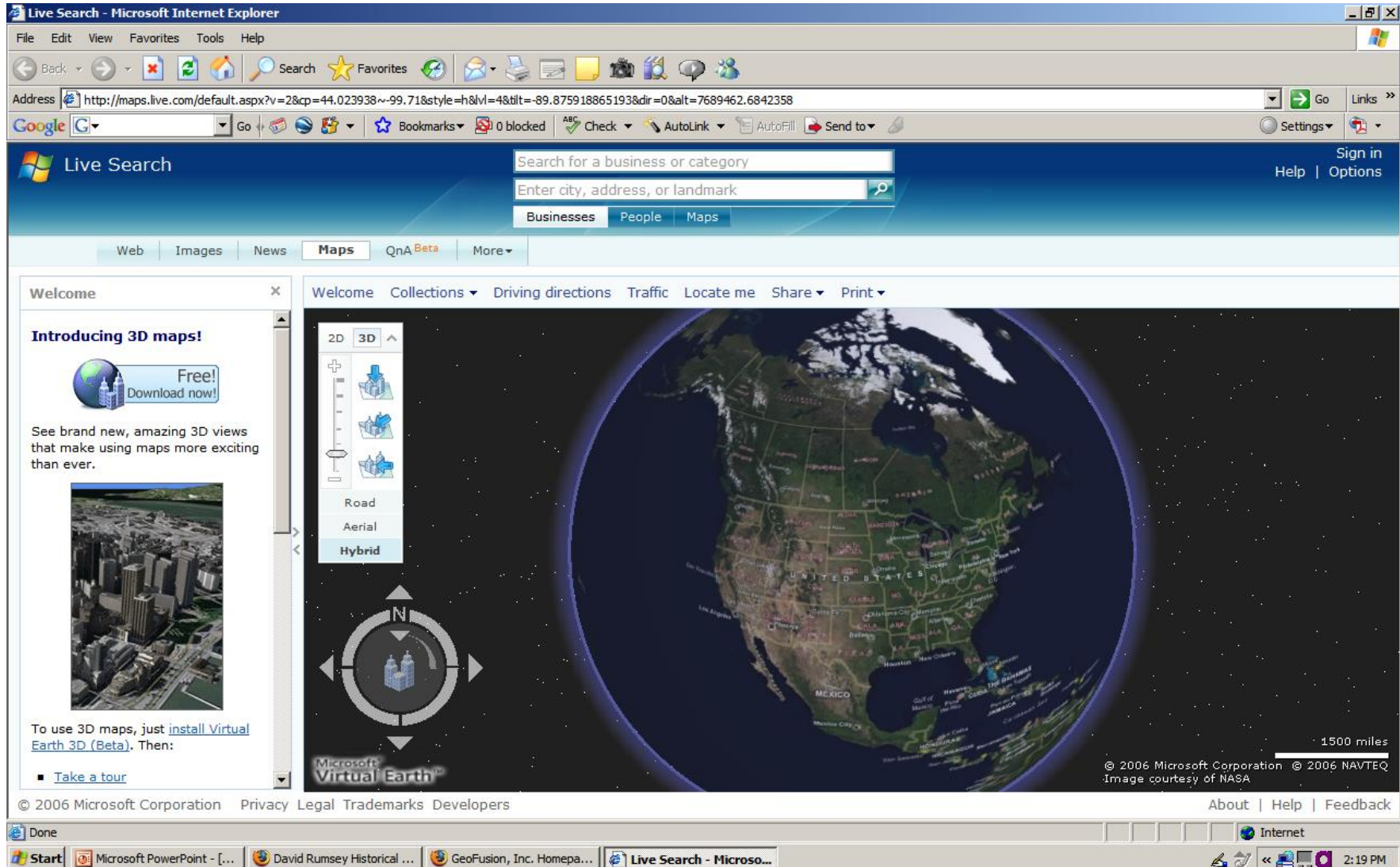
NASA World Wind



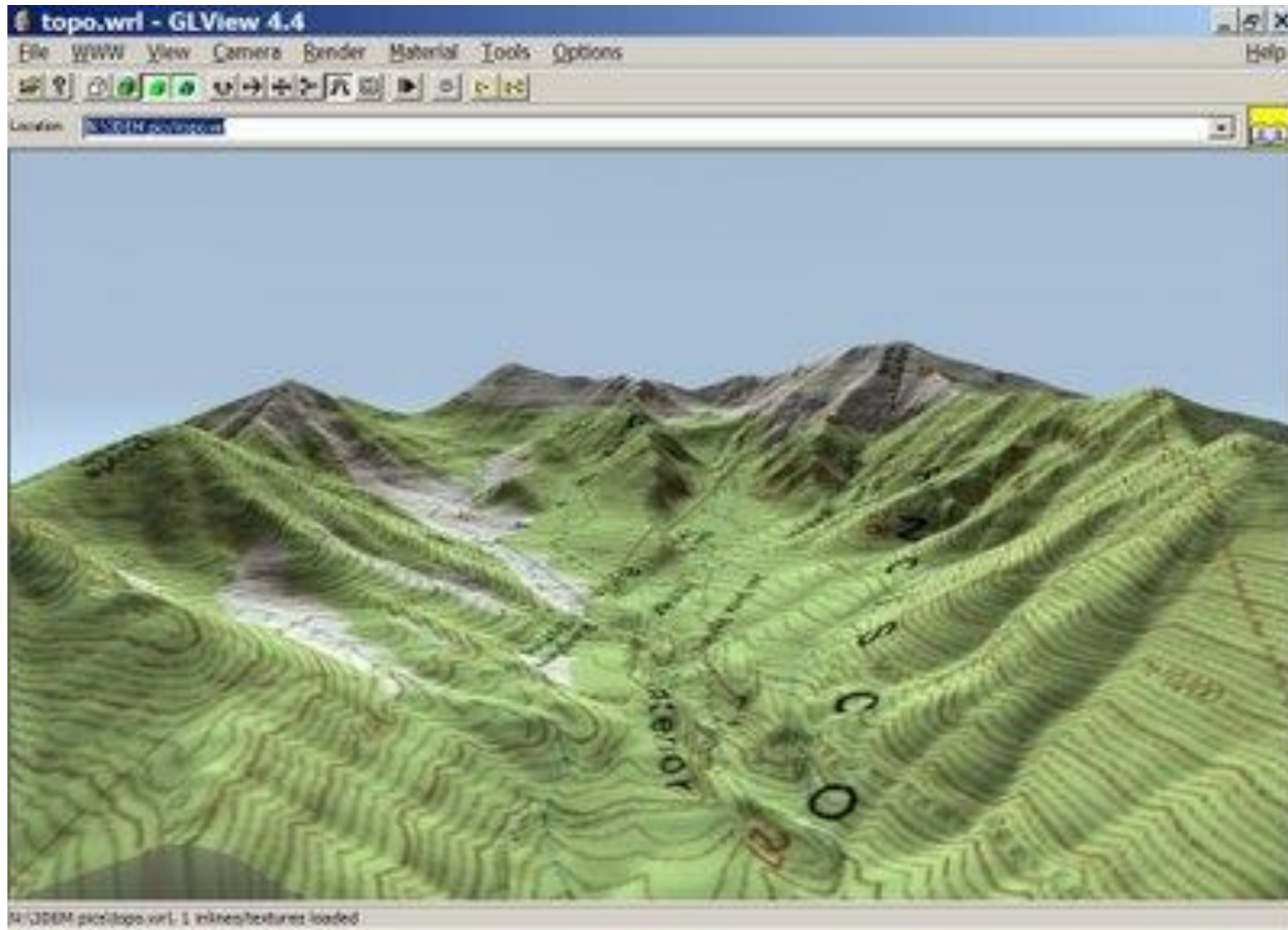
ArcExplorer (2006) -> ArcGIS Online



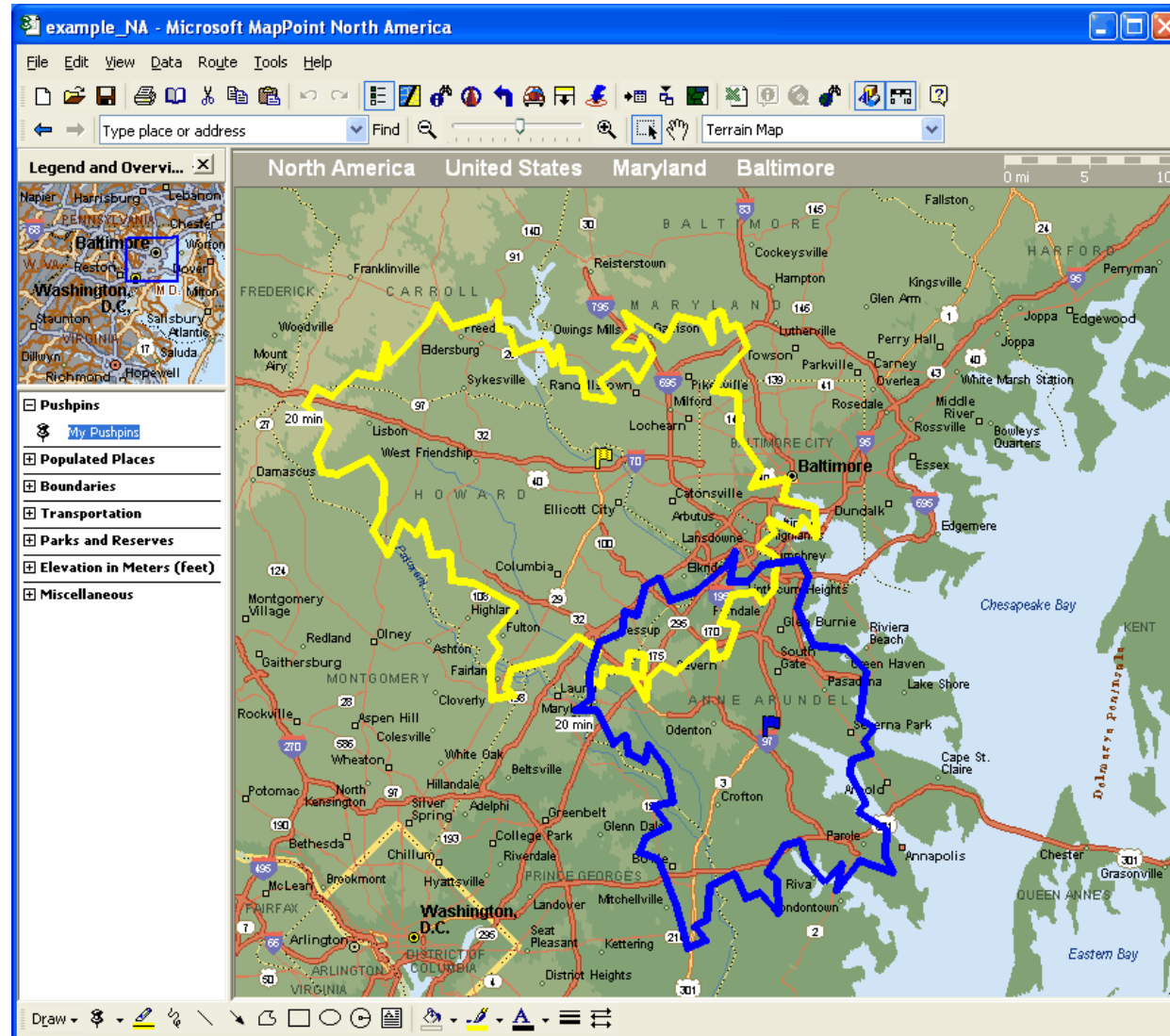
Microsoft: Virtual Earth



VRML and GeoVRML



GML (XML) and SVG



An example: Google Earth

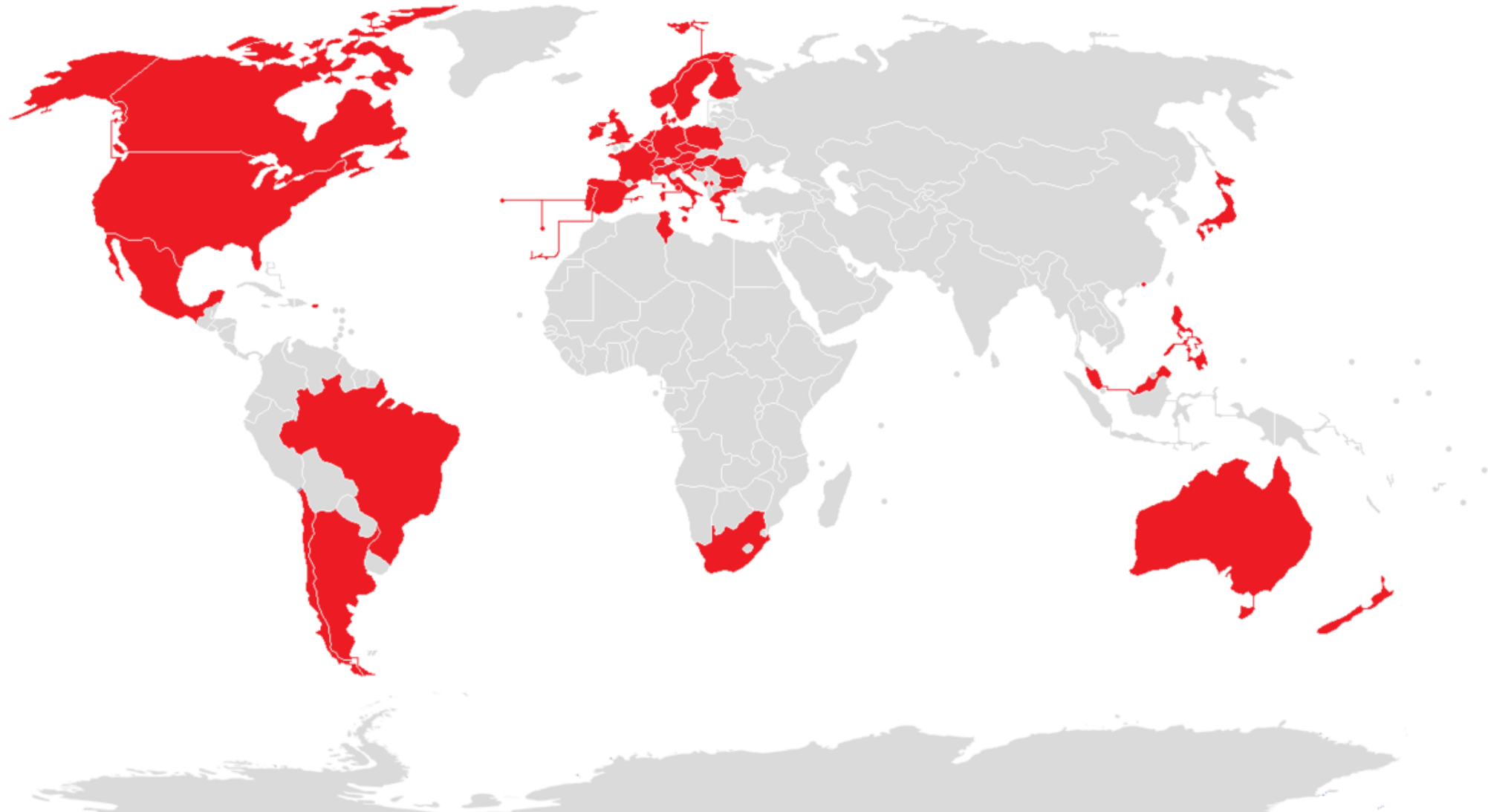
“We are like an iPod for Earth images.”

Michael T. Jones, Chief Technologist, Google Earth (Nov 2006)

Google Earth: A history

- Gore in the US Senate, 1985-1992. VP 1993-2001. Senate Select Committee on Intelligence
- Dayton Peace Agreement /Wright-Patterson Air Force Base, Ohio Dec 1995, ends war in Bosnia
- Google founded 1998
- Keyhole Earthviewer (2002) In-Q-tel funding
- Google buys Keyhole (Oct. 2004)
- 100 million downloads: Version 4 (Nov. 2006)
- 1 Billion downloads: Version 6 (2011)
- 4 Billion by about 2017
- An entirely redesigned version of the program; Currently only available for Google Chrome and Android. The desktop application continues to be Google Earth Pro, with regular updates

3D Google Earth Coverage



Keyhole EarthViewer 3D



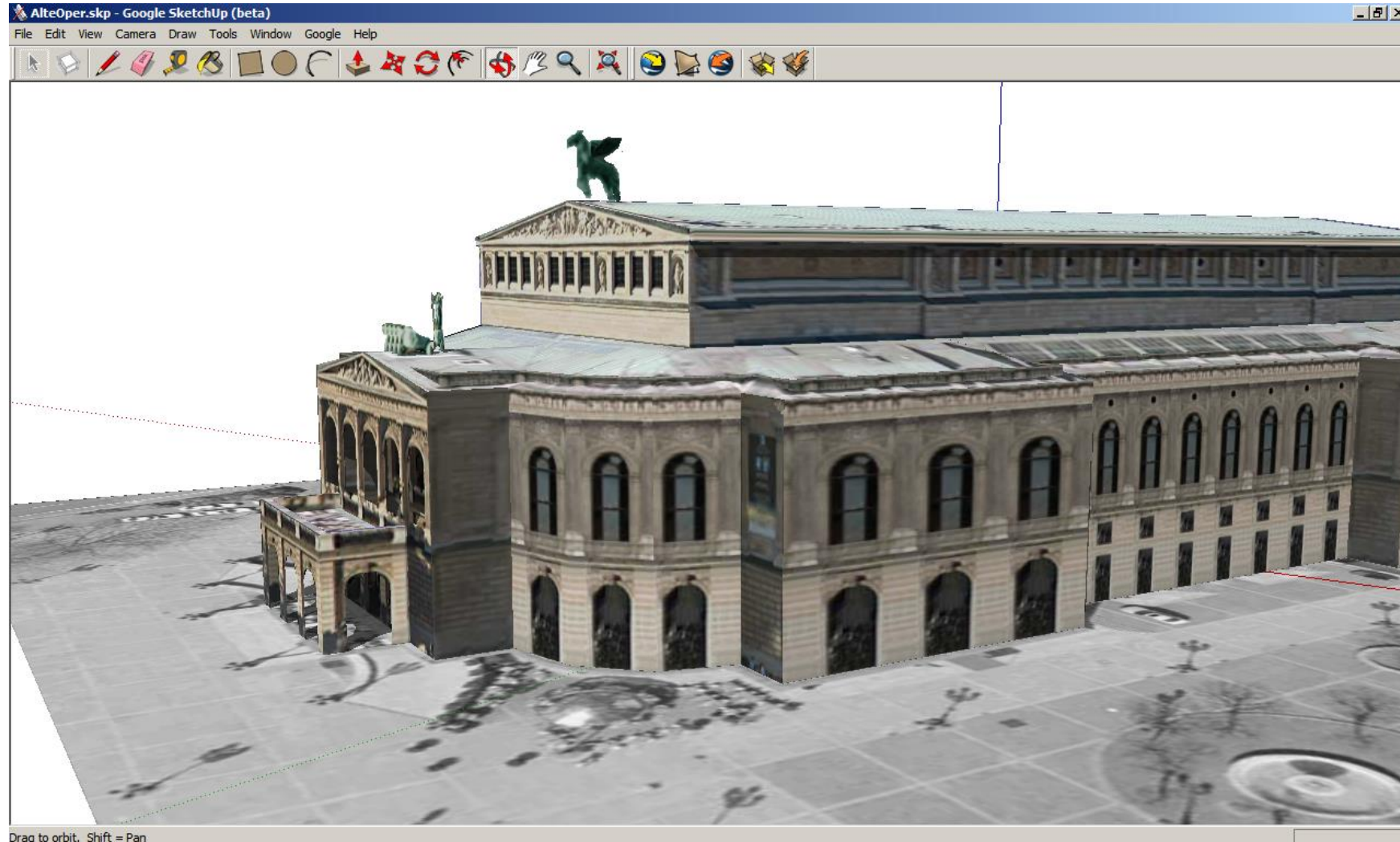
Google Earth Today

- Google Earth viewer 6
 - Timeline
 - Historical
 - Community Bulletin Board
- Google Earth Plus
- Google Earth Pro (now the standard, free)
- Google Earth Builder
- Google Earth Enterprise
- API support from Google ended in 2015

Google Earth Mania



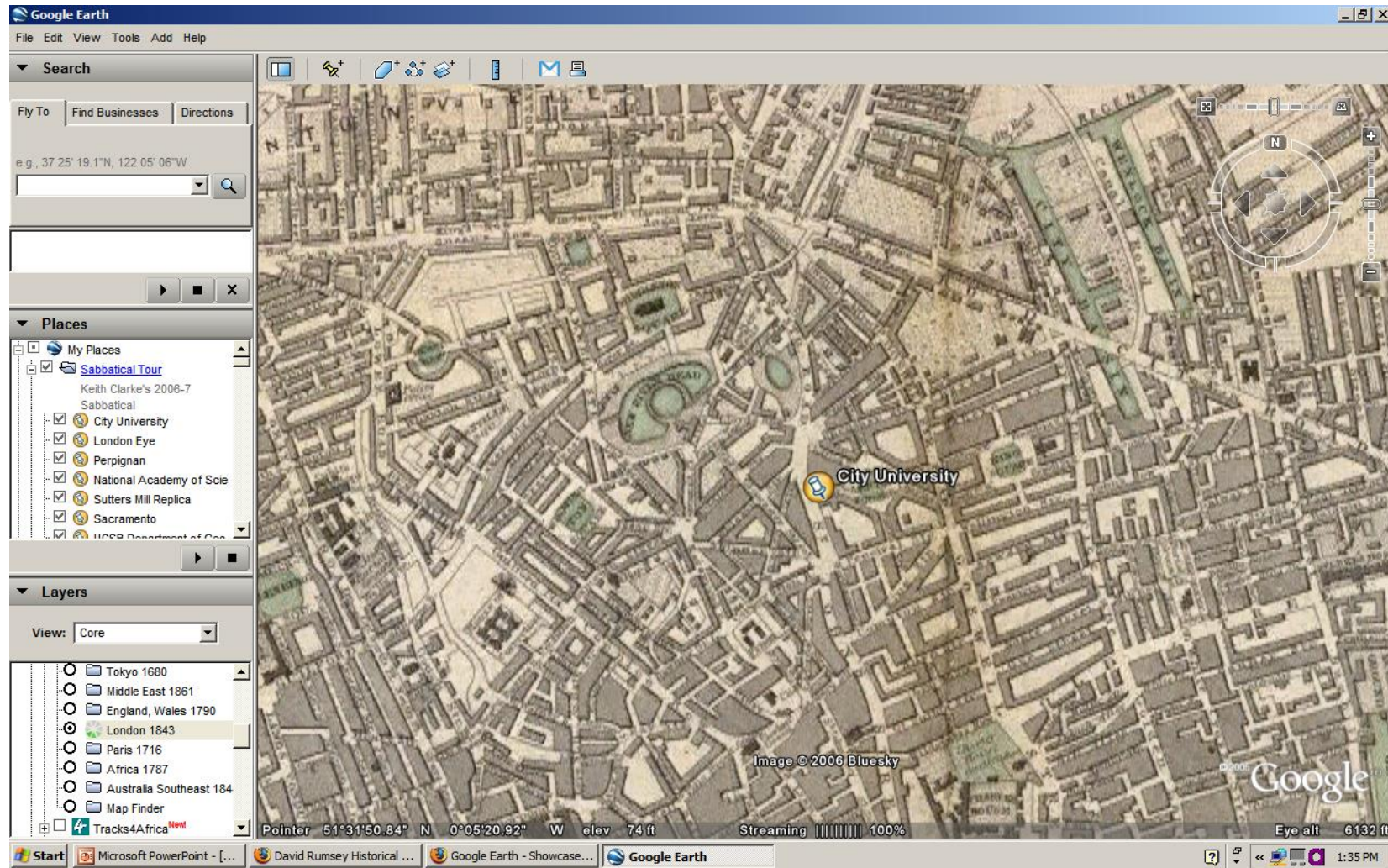
Google SketchUp Model of the Alte Oper, Frankfurt



3D Warehouse (ended 2015)



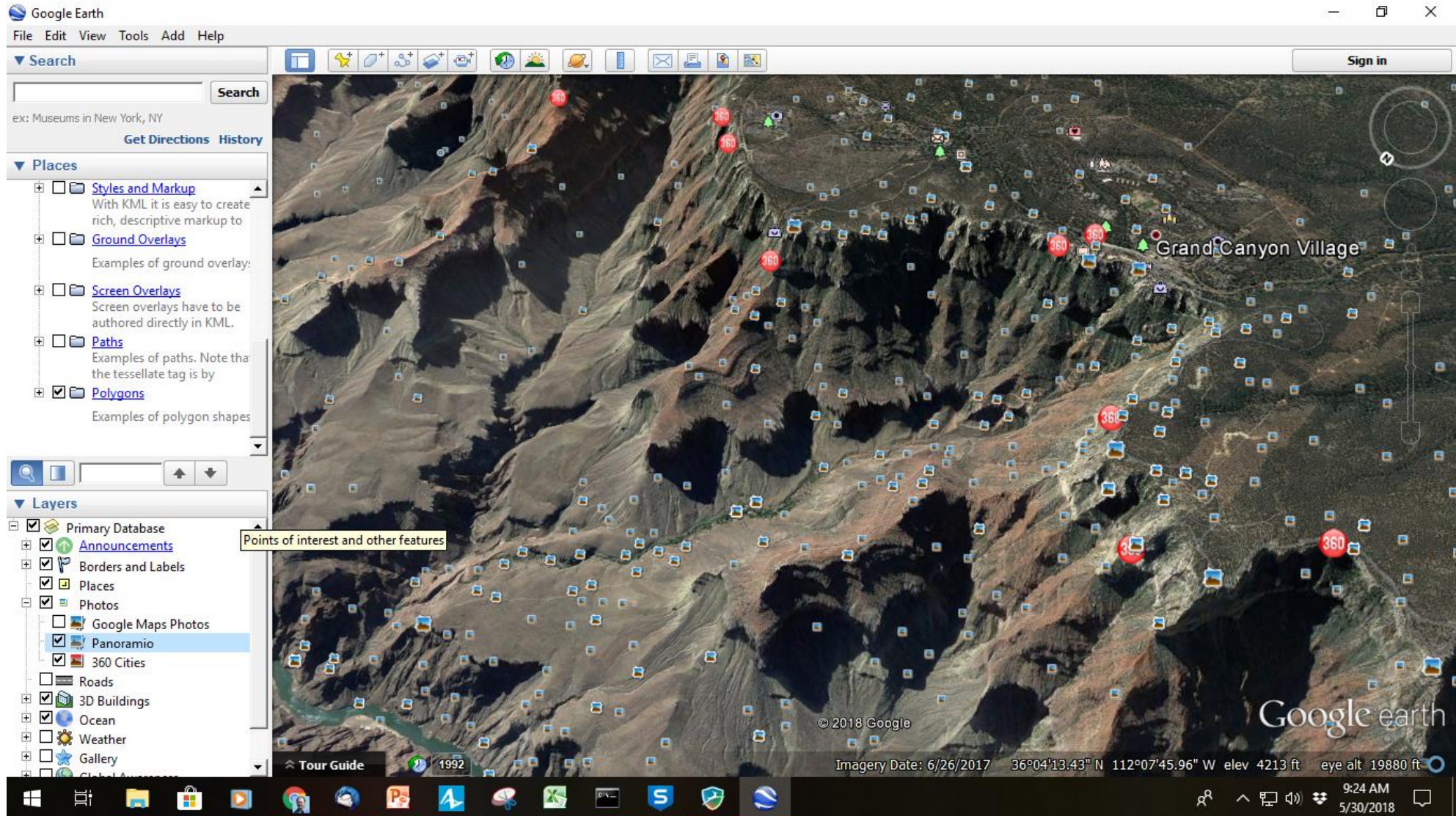
Multi-temporal: Rumsey Map Collection



Basic KML

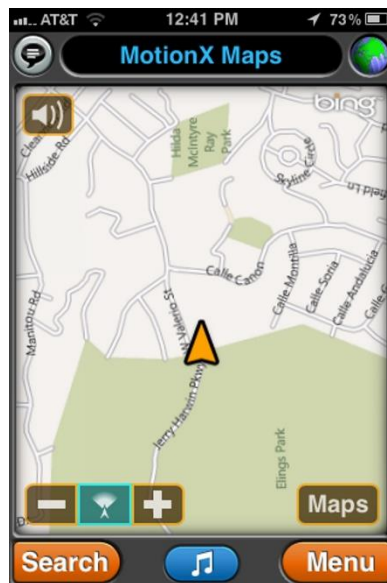
```
<?xml version="1.0" encoding="UTF-8"?>
  <kml
    xmlns="http://earth.google.com/kml/2.2">
    <Placemark>
      <name>Simple placemark</name>
      <description>Attached to the ground.
        Intelligently places itself at the height
        of the underlying terrain.</description>
      <Point>
        <coordinates>
          -122.0822035425683,37.42228990140251,0
        </coordinates>
      </Point>
    </Placemark>
  </kml>
```


Photos and 3D Panoramas



Computer mapping

- Now ubiquitous e.g. GoogleMaps
- Supports mobile applications and LBS
- Birth of Location Enabled Social Networking



Computer mapping

- Classic paper “Automation and cartography” W. R. Tobler 1959

AUTOMATION AND CARTOGRAPHY*

WALDO R. TOBLER

AUTOMATION, it would seem, is here to stay. Advantages in speed and accuracy seem likely to make the use of computing machinery more common, despite the relatively high initial cost. In view of recent developments in automation and high-speed data processing, it is appropriate to ask, Do possibilities for automation exist in cartography? And if so, where can these possibilities be found? In order to answer these questions, the preparation of maps should be viewed as a complex data-processing system. Certain similarities then become apparent between data processing in general and cartographic processing in particular.

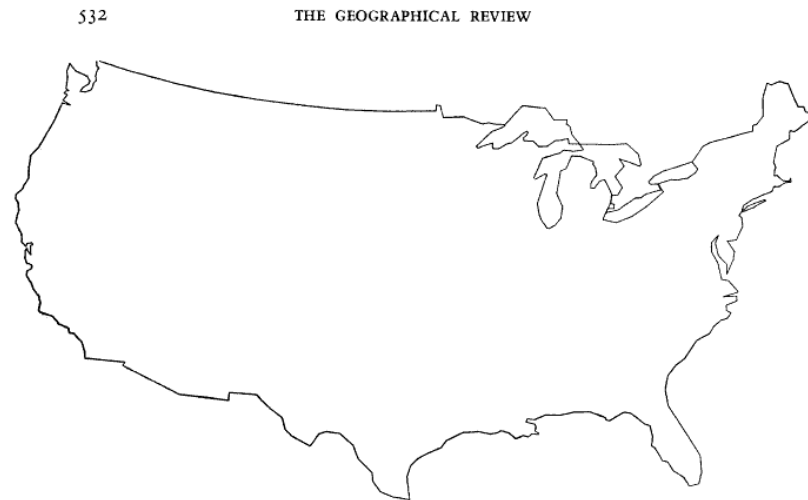


FIG. 7—Map of the United States drawn directly by machine from a deck of 343 punched cards. Plotting time, approximately 15 minutes. The map has been reduced, but not retouched. Bipolar oblique conic conformal projection (outline of original map from the American Geographical Society's Map of the Americas, 1:5,000,000). (Plotter courtesy the Benson-Lehner Corporation, Los Angeles.)

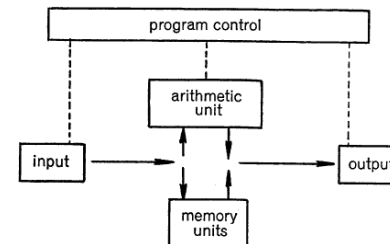
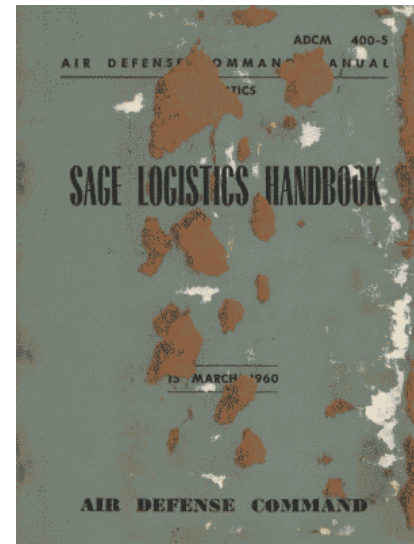


FIG. 2—The data-manipulation phase of a data-processing system.

THE MAP AS A COMPUTER INPUT

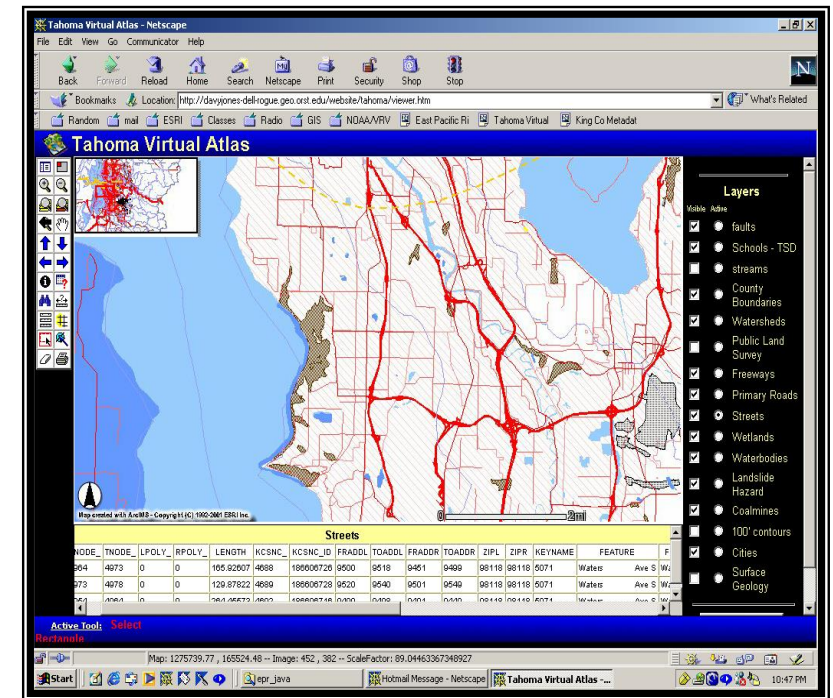
The conceptualization of a map as a data-storage medium leads directly to the concept of it as a computer input element (Fig. 4). Here two methods of use seem possible. In the simpler, data are extracted from a map, translated into some symbology that available machinery will accept, and then operated upon by the data-manipulation unit. Examples would include the

Automation and cartography

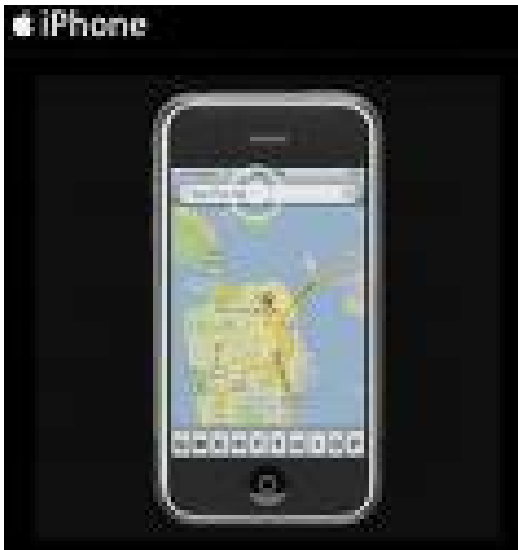


Arc Internet Map Server (ArcIMS)

- Advanced web GIS
- Product of ESRI
- Simplified ArcView
 - Basic GIS functions
- Single interface
- Uses ArcView Shapefiles



New mobile applications



Server-side applications today

The screenshot displays a web browser window with the URL `map.geog.ucsb.edu`. The page header features the University of California Santa Barbara logo and the text "INTERACTIVE CAMPUS MAP". Navigation and utility buttons include "Get Share Link", "About this map", "Like", "Share", and "Switch Basemap".

The main content area is a map of the UCSB campus, showing buildings, roads, and the UCSB Lagoon. A "Hide Menu" button is visible on the left side of the map.

On the left side of the map, there is a sidebar with the following sections:

- Reset Map**
- Legend**
- Layers**
- Search Map**

The **Search Map** section includes a "Search Text:" input field and a "Search" button. Below the search field, there are examples of search results:

- Examples:**
- Buildings:**
 - Ellison Hall building 563
 - 563
 - ELLSN
- Rooms:**
 - ELLSN 1710
 - Ellison Hall 1710
 - 1710 Ellison Hall
 - 1710 ELLSN
- Classes (Current Quarter):**
 - ** Section courses not listed **
 - GEOG 128

The bottom of the browser window shows a Windows taskbar with various application icons and a system tray displaying the time "11:56 AM" and date "2/23/2015".

Data discovery

The screenshot shows a web browser window with the address bar displaying <https://www.geoplatform.gov>. The browser's address bar includes navigation icons (back, forward, refresh) and search, star, and menu icons. Below the address bar, there are several bookmarked sites: Apps, Google, CNN Breaking News, U.S., Google Calendar, Web of Science [v.5.1], The New Gauchospace, Course Login | Online, eGrades, ScholarOne Manuscripts, and Geog183Syllabus. The GeoPlatform logo is visible in the top left, and a "Menu" and "Sign In" link are in the top right.

The main content area features a large background image of a globe. On the right side of this image, the text reads: "Welcome to the Geospatial Platform". Below this, a sub-header states: "The GeoPlatform provides shared and trusted geospatial data, services, and applications for use by the public and by government agencies and partners to meet their mission needs." A list of benefits follows: "GeoPlatform users have access to" a one-stop shop for trusted data and services, authoritative data for decision-making, reusable applications for government and non-governmental use, shared infrastructure for data and applications, and a focal point for visualizing data to inform national and regional issues. A "Learn More" button is positioned below the list.

Below the main content is a "Featured" section with three items:

- Elevation Marketplace Preview:** A screenshot of the Elevation Marketplace interface showing a map of the United States with various data layers. Below the screenshot, it says "Check out the preview site and provide feedback. Search here first to see if other FGDC partners have similar data needs and then collaborate to lower your costs!" and includes a "Launch" button.
- GeoCONOPS Community:** A screenshot of the GeoCONOPS website showing a "Home and Security Geospatial Concept of Operations" and a "GeoCONOPS Quick Start Guide". Below the screenshot, it says "A community to improve the coordination of geospatial activities across the Homeland Security Enterprise including authoritative data and best practices." and includes a "Launch" button.
- Cloud Hosting Services:** A 3D illustration of a cloud computing environment with servers and data centers. Below the illustration, it says "Learn more about the managed hosting services offered by GeoPlatform and FGDC for geospatial assets!" and includes a "Learn More" button.

The Windows taskbar at the bottom of the screen shows several open applications: Internet Explorer, Google Chrome, a folder, a media player, a globe icon, a blue application icon, a blue application icon, a task manager icon, and a presentation icon. The system tray on the right shows the time as 9:15 AM on 5/23/2016.

National Map Viewer

The screenshot shows a web browser window displaying the National Map Viewer website. The browser's address bar shows the URL `viewer.nationalmap.gov/launch/`. The website header features the USGS logo with the tagline "science for a changing world" and "The National Map Your Source for Topographic Information". On the right side of the header, there are links for "USGS Home", "Contact USGS", and "Search USGS". Below the header is a green navigation bar with "The National Map" text and a "Follow @USGSTNM" button.

The main content area is divided into several sections:

- Data Download and Visualization Services**: A green header for a section containing six sub-sections:
 - Maps**: Includes links for "Download Maps", "Explore Historical Topo Maps and Download", "Buy a Printed Map", and "CSV of Map Products".
 - GIS Data**: Includes links for "Download GIS Data", "Cloud Browse", "FTP Access", "Historical Data Archives", and "Hazards Events".
 - Visualization**: Includes links for "TNM Viewer (legacy)", "List of Map Services", "How to Use Map Services", "Map Service Status", and "Viewer Prototypes".
 - Applications**: Includes links for "TNM Download Client", "TNM Download Manager", "TNM Mobile (new)", and "USGS Streamer".
 - Tools**: Includes links for "Elevation Tools", "Point Query Service (PQS)", "Raster Conversion Tools", and "Topo TNM Style Template".
 - More Information**: Includes links for "How To Videos", "FAQs", "List of Datasets", and "TNMAccess API".
- What's New**: A scrollable list of updates:
 - 2016-04-22 00:00:00 **Changed TNM Viewer Default Projection from 102113 to 102100**: The default projection has been changed from 102113 (3785) to 102100 (3857) on the TNM Viewer.
 - 2016-04-21 00:00:00 **Removed "Bounding Box from Coordinates" Tool**: The Bounding Box by Coordinates tool has been removed from the TNM Viewer.
 - 2016-04-19 00:00:00 **Updated 3DEP Availability Services**: Updated services to reflect current data distribution.
 - 2016-04-19 00:00:00 **Redirected the viewer.nationalmap.gov Page to the Launch page.**: Changed the viewer.nationalmap.gov URL to Redirect to the Launch Page.
 - 2016-04-15 00:00:00 **Image Topo v3 - Final Production**: <http://basemap.nationalmap.gov/arcgis/rest/services/USGSImageTopo/MapServer>

The footer contains links for "Accessibility", "FOIA", "Privacy", and "Policies and Notices". It also includes the text "U.S. Department of the Interior | U.S. Geological Survey", the URL "http://viewer.nationalmap.gov/launch/", and "Page Last Modified: 17-May-16". A "Page Contact Information: The National Map" link is also present. The bottom of the image shows a Windows taskbar with various application icons and a system tray showing the time as 9:17 AM on 5/23/2016.

Earth explorer

The screenshot displays the Earth Explorer web application. At the top, the browser address bar shows the URL `earthexplorer.usgs.gov`. The page header features the USGS logo with the tagline "science for a changing world" and navigation links for "USGS Home", "Contact USGS", and "Search USGS". Below the header, the "EarthExplorer" title is followed by a "Page Expires In 1:59:50" timer and utility links for "Home", "2 New System Messages", "Login", "Register", "RSS", "Feedback", and "Help".

The main content area is divided into two sections. On the left, the "Search Criteria" tab is active, showing a "1. Enter Search Criteria" section. It provides instructions: "To narrow your search area: type in an address or place name, enter coordinates or click the map to define your search area (for advanced map tools, view the [help documentation](#)), and/or choose a date range." Below this are input fields for "Address/Place", "Path/Row", "Feature", and "Circle", with "Show" and "Clear" buttons. The "Coordinates" section includes tabs for "Predefined Area", "Shapefile", and "KML", and sub-tabs for "Degree/Minute/Second" and "Decimal". A message states "No coordinates selected." with "Use Map", "Add Coordinate", and "Clear Coordinates" buttons. The "Date Range" section has "Search from:" and "to:" fields with date pickers, and a "Search months:" dropdown menu.

On the right, the "Search Criteria Summary (Show)" section is visible, featuring a satellite map of North America. The map includes a coordinate display showing `(55° 10' 44" N, 081° 33' 45" W)` and buttons for "Map", "Satellite", "Options", and "Overlays".

The Windows taskbar at the bottom shows the system tray with the date and time: "9:18 AM 5/23/2016".

Openstreetmap.org

OpenStreetMap | Way: Goleta

www.openstreetmap.org/way/33113732

Apps Google Breaking News, U.S., V Google Calendar Web of Science [v.5.1] The New GauchoSpace Course Login | Online eGrades ScholarOne Manuscript Geog183Syllabus

OpenStreetMap Edit History Export

GPS Traces User Diaries Copyright Help About Log In Sign Up

Search Where am I? Go

Way: Goleta (33113732)

TIGER review and road adjustments

Edited about 1 month ago by Data411

Version #23 · Changeset #38684638

Tags

admin_level	8
border_type	city
boundary	administrative
is_in	USA, California
is_in:country	USA
is_in:country_code	US
is_in:iso_3166_2	US:CA
is_in:state	California
is_in:state_code	CA
name	Goleta
place	city

1 km
5000 ft

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9:19 AM
5/23/2016

GPS traces/User diaries

The screenshot shows the OpenStreetMap website interface. At the top, there's a navigation bar with the OpenStreetMap logo, 'Edit', 'History', and 'Export' buttons, and links for 'GPS Traces', 'User Diaries', 'Copyright', 'Help', and 'About'. There are also 'Log In' and 'Sign Up' buttons. Below this is a section titled 'Public GPS traces' with a sub-header 'Browse recent GPS track uploads' and links for 'Upload a trace' and 'See your traces'. The main content area displays a list of recent uploads, each with a small map icon, a title, point count, upload time, and user information.

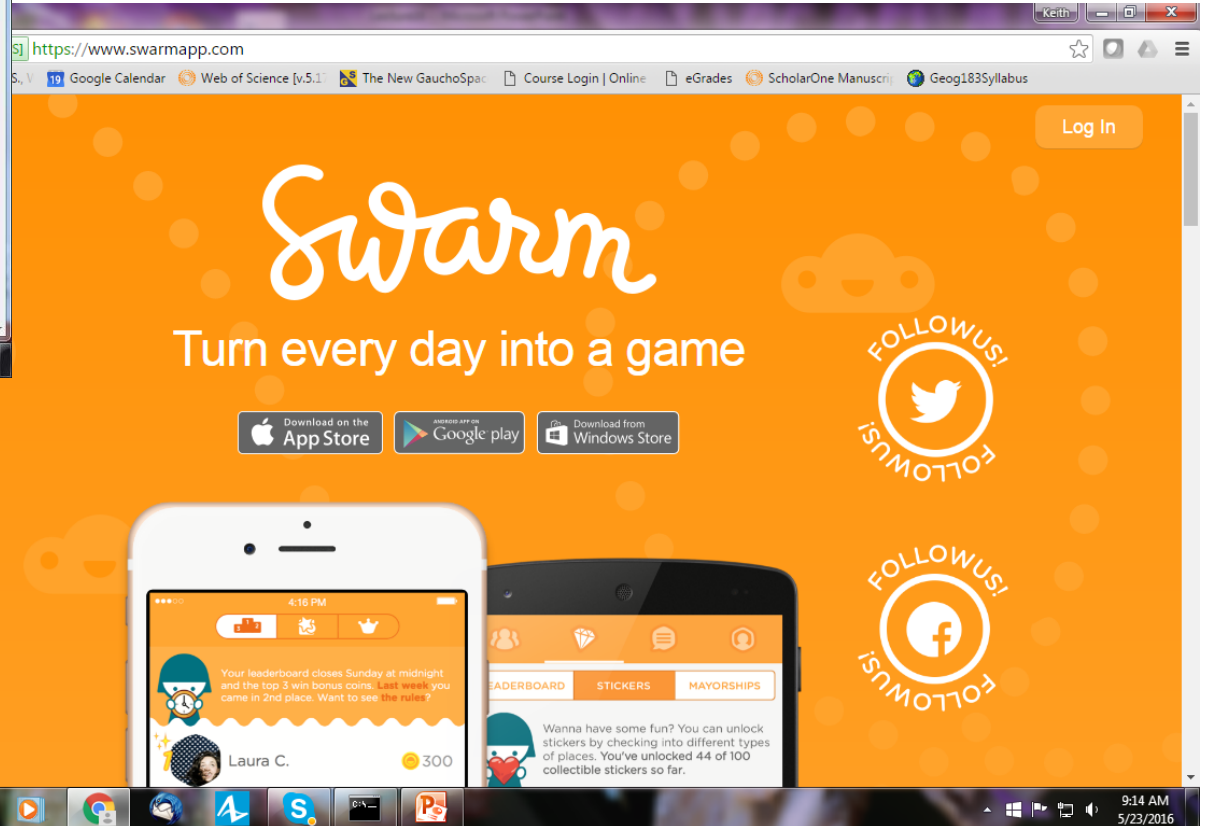
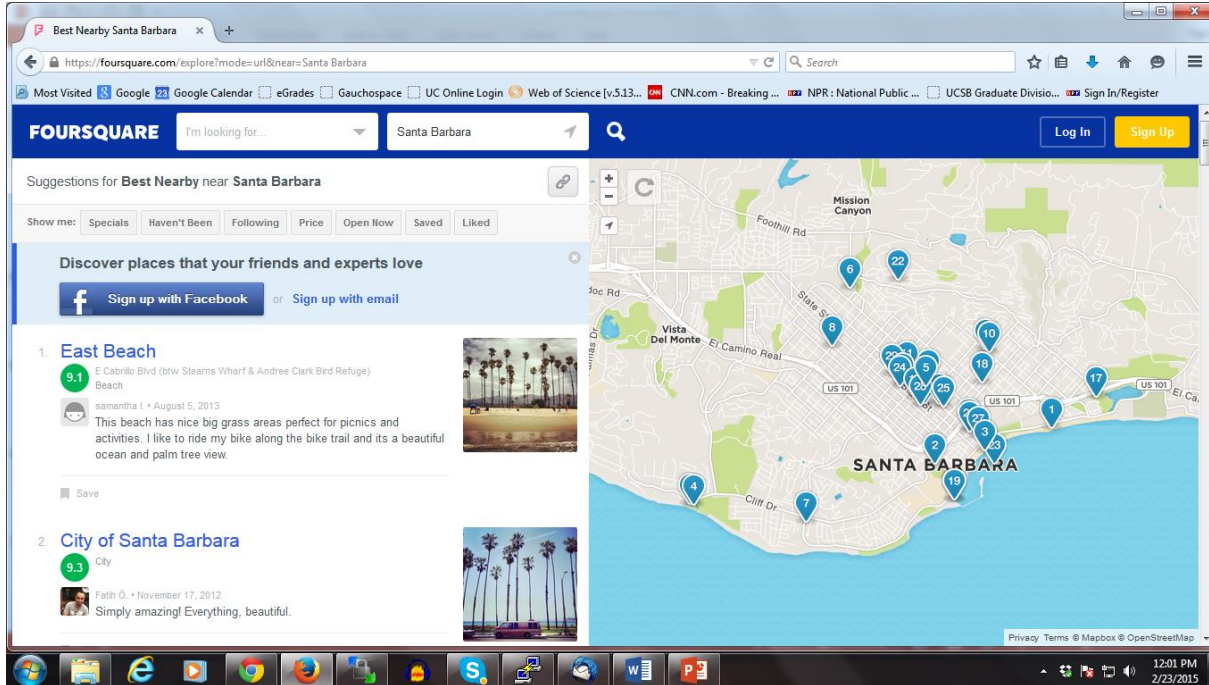
File Name	Points	Time Ago	Visibility	User
Drone_Down_2.gpst.gpx ...	638	2 minutes ago	IDENTIFIABLE	gecf343b1
Drone_down_1.gpst.gpx ...	421	3 minutes ago	IDENTIFIABLE	gecf343b1
23_maj_2016_15_00_51_2016_05_23_15_00_51.gpx ...	10,778	18 minutes ago	PUBLIC	km2bp in veien, bane
2016_05_20_13_30_Fri.gpx ...	1,046	31 minutes ago	PUBLIC	feolito
2016_05_22_16_00_Sun.gpx ...	1,401	32 minutes ago	PUBLIC	feolito
20160521_094915.gpx ...	485	43 minutes ago	PUBLIC	Elefant1606 in Berlin

The Windows taskbar at the bottom shows the time as 9:20 AM on 5/23/2016, along with various application icons.

Wikimapia

The image is a screenshot of a web browser displaying the Wikimapia website. The browser's address bar shows the URL `wikimapia.org/#lang=en&lat=34.432900&lon=-119.837100&z=12&m=b`. The page header includes the Wikimapia logo, navigation links for 'Edit map', 'Categories', and 'Login', and a search bar. The main content is a satellite map of the Goleta, California area, showing the coastline and surrounding hills. A white rectangular box highlights a specific area in the ocean, with the text 'Asphalt volcanoes, oil, gas, and tar seeps' overlaid on it. The map interface includes a zoom control on the left and a 'Wikimapia Satellite' button in the top right. The bottom of the browser window shows the Windows taskbar with various application icons and the system clock displaying '12:00 PM 2/23/2015'.

Foursquare/Swarm



Summary

- Examined history of Internet WWW and early web mapping
- Search -> Discovery, Static -> Interactive
- Evolution of the browser/geobrowser
- Importance of parallel technologies
- GIS and computer mapping goes web based (Client Server model)
- New applications possible, VGI, social media etc.