Geography 12: Maps and Spatial Reasoning

Lecture 12:
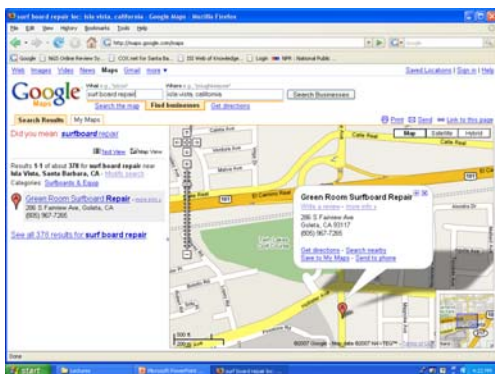Navigation: Location-based services and Web Mapping

Professor Keith Clarke
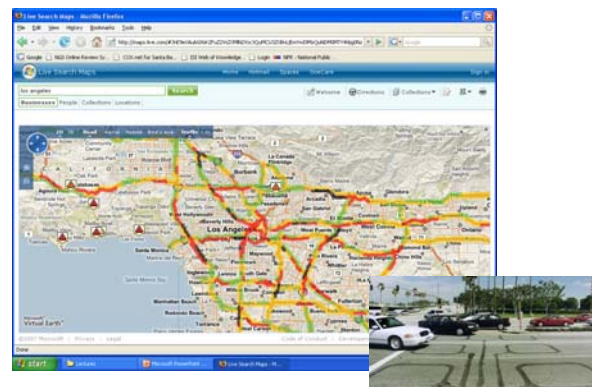
LBS-A new technology

- Services developed and distributed by wireless and other providers that provide information specific to a location.
- Users do not have to manually specify ZIP codes or other location identifiers to use location-based services.
- Examples:
  - Requesting the nearest business or service
  - Receiving alerts
  - Finding a friend
- LBS allows:
  - Resource tracking
  - Finding someone or something
  - Proximity-based notification (push or pull)
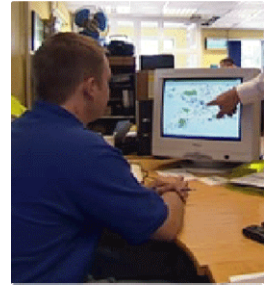 - Proximity-based actuation (push or pull)

Example: Nearest Business
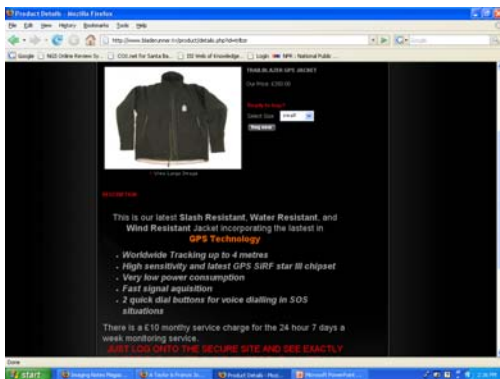

Receive alerts: Microsoft Bing
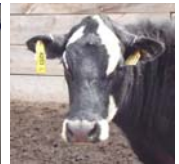
Find a friend, or a car

RFID tracking: Aeroscout

Bladerunner Jackets (UK)

RFID tag applications
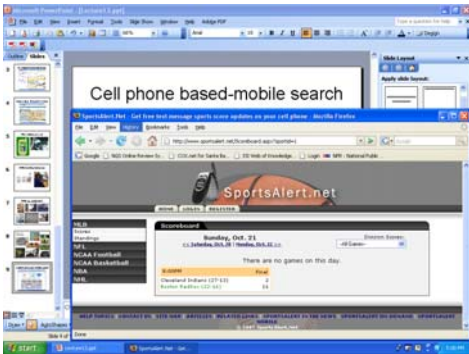
Precision Agriculture

GPS enabled innovation

Cell phone based-mobile search

Pull technology: e.g. sports alerts on phones
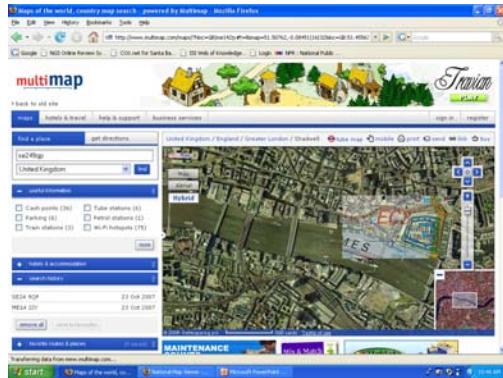

Push technology

Navigation tools

Some features

- Spoken street directions and turns
- Map update via internet
- Interconnectivity with cell phones
- Ability to update map and share
- Real time traffic and obstructions
- Proximity search
- Directions to..
- Bike, pedestrian versions

Map providers and services

Maps and directions

Sites for maps and directions

- Rand McNally driving directions Download **maps**, add multiple stops, check real-time traffic updates, avoid road construction, **...**
- Yahoo! Maps, Driving Directions, and Traffic.
- MapQuest. Find places. Maps, driving directions, and gas prices. View satellite maps and aerial photos. Display an address on a map, view nearby restaurants
- Googlemaps. Paste link in email or IM. Paste HTML to embed in website**.** Customise and preview embedded map
- Multimap Global mapping service including street maps of Europe, North America and Australia. Boungt by Microsoft to become Bing maps.
- National Geographic Map Machine
- Mapblast: Includes directions, maps, etc. Has simplified map feature (Now part of MSN)

Map Blast Line Drive (1995-2002)

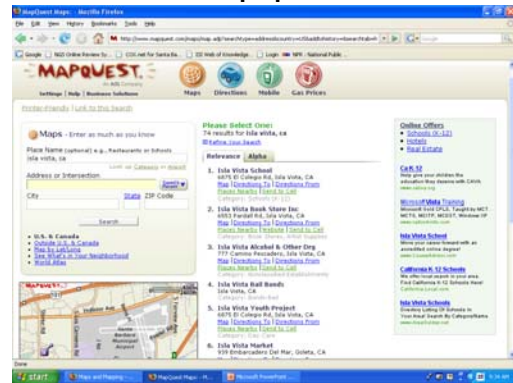## maps.google.com
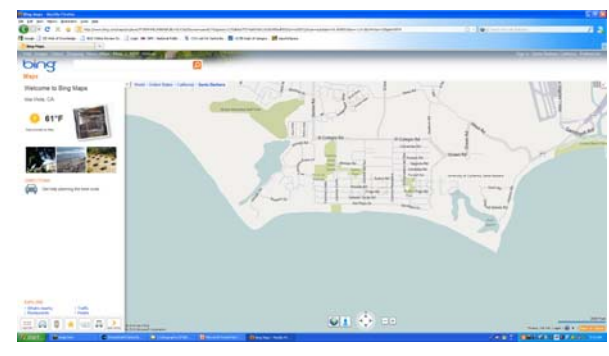

Map/Image Hybrid

Multimap floating hybrid

www.mapquest.com

National Geographic Map Machine

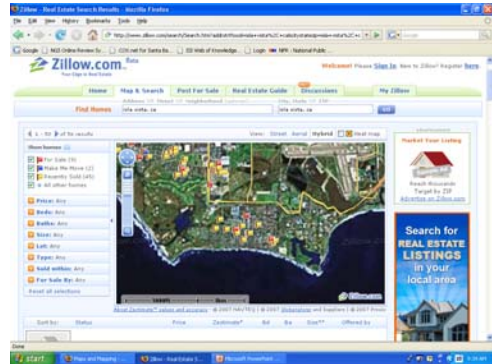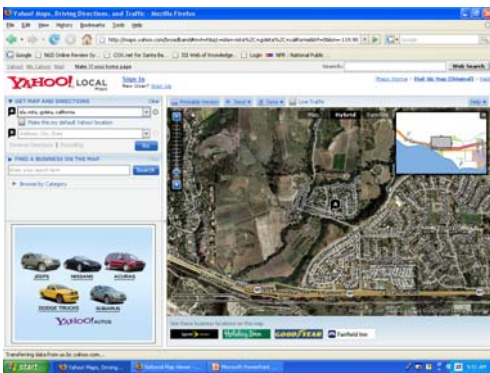## www.bing.com/maps
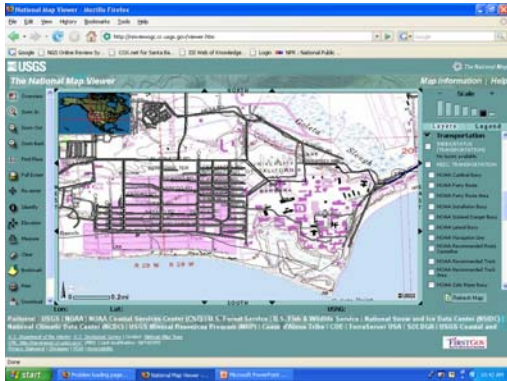
www.cairolocator.com

www.zillow.com
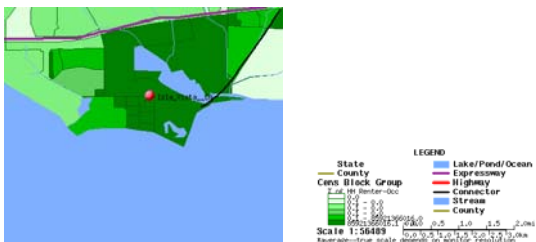

maps.yahoo.com

Place names gazetteer

The National Map Viewer

Place name searches

- Census Bureau
- Board on Geographic Names
- GNIS
- The National Map
- GeoNet Server: NGA
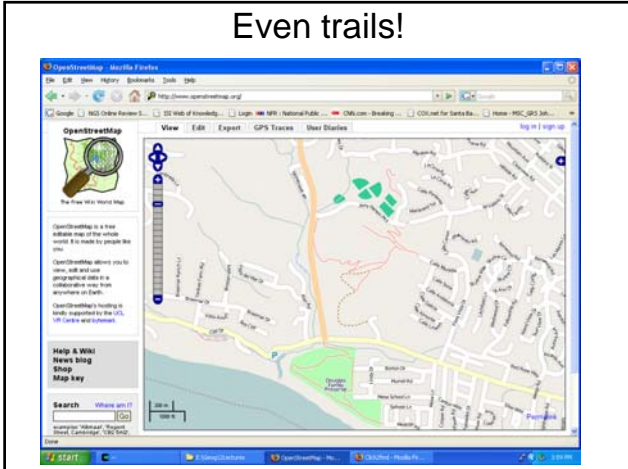
Census: TIGER Map Viewer

Mapping web users

GoogleEarth/Maps (MyMaps) fire self-reporting

OpenStreetMaps.org
October 2007

October 2008
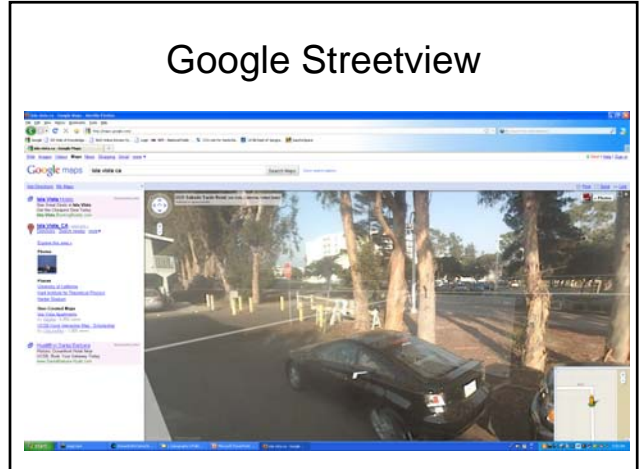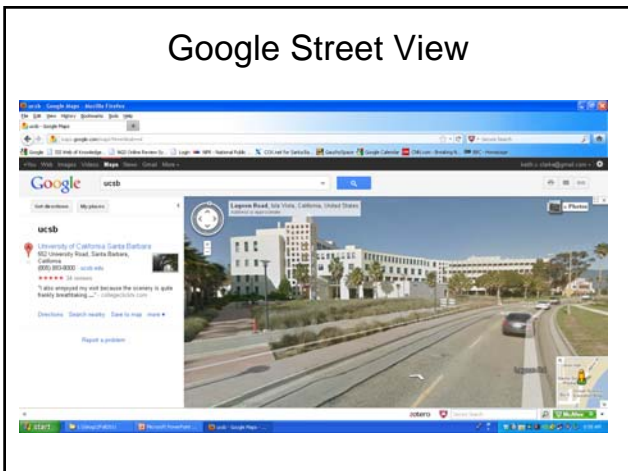

October 2010

Even trails!

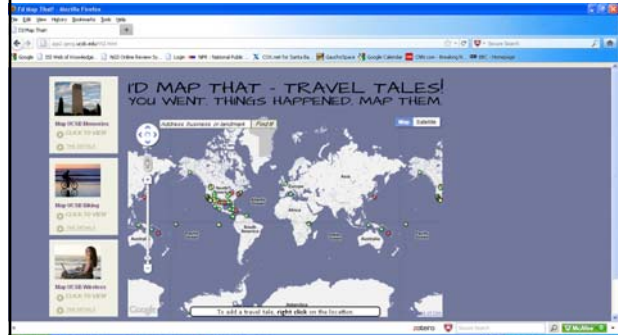## Google Streetview

Google Street View

GoogleEarth 3D

UCSB Interactive Campus Map

www.idmapthat.org

Summary

- Location-based services: a new industry
- Services can be push or pull
- Technologies include GPS, RFID, mobile devices, computers and phones
- Many web-based applications
- Place names are important for searching
- Web has led to volunteered geographic information