



ZOOM OUT BREW 2008 CONFERENCE

MyPlaces

Mark Boyns, Chand Mehta, Jeff Tsay

QUALCOMM



Agenda

- Team overview
- Tagging and geotagging concepts
- Introduction to MyPlaces
- Basic features
 - Tagging places
 - Finding places
 - Creating places
 - Voice tagging
- Community effect and social networking
- Advance features
 - Hotspots
 - Favorite places
 - Region tag clouds
 - Region profiling
- Recommendations
- Inside MyPlaces
- Challenges
- BREW and Java Demos
- Q&A



Team overview

- Who we are
 - The Pathfinder team in Qualcomm Internet Services is responsible for research into the future of BREW services
- Project team members
 - Mark Boyns
 - Chand Mehta
 - Jeff Tsay



Tagging Concepts

- A tag is a keyword associated with a piece of information that enables keyword-based searching and categorization [1]
- Folksonomy is the practice of collaboratively or socially managing tags to categorize information [2]
- Example tags:
 - family
 - restaurant
 - newyorkcity

1. <http://en.wikipedia.org/wiki/Tag>
2. <http://en.wikipedia.org/wiki/Folksonomy>



Tagging Concepts (continued)

- A tag clouds is a visual depiction of tags related to particular information. The font size of tags in the cloud varies depending on the tag weight within the cloud.
- Example tag clouds:
 - [Web 2.0](#)
 - [Flickr](#)
 - [del.icio.us](#)
 - [Amazon.com](#)



Geotagging Concepts

- Typically, geotagging is defined as the process of adding latitude/longitude information to websites or images. For example, adding latitude/longitude to a picture.
 - Phones and cameras are now able to automatically add latitude/longitude to photos as they are taken
- In our context, geotagging is defined as the ability to tag a geographic location with some information
 - Tagging location to information vs
Tagging information to a location
- Example geotags:
 - restaurant
 - italian
 - expensive
 - wifi

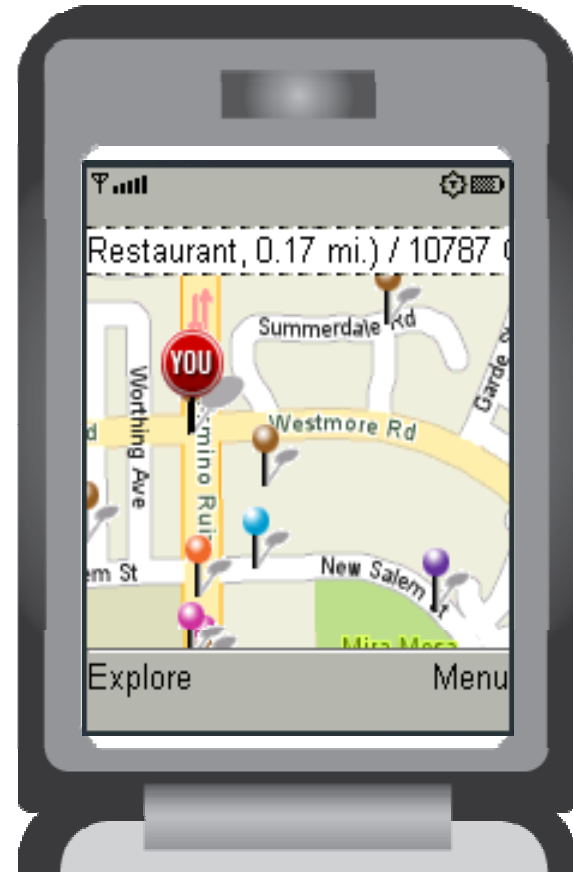


Going Mobile with Tagging

- Mobile devices are ideal platform for geotagging
 - Accurate location information
 - Always on
 - Always connected
 - Always with the user

Introduction to MyPlaces

- Exploring, extending, and creating geotagging services for mobile devices
- Integrating existing social networking sites
- Applying algorithms and recommendations to socially geotagged information
- Mashing all that up to see what happens



Tagging places

- Adding tags to a place:
 - Select a place to tag
 - Type or speak one or more tags relevant to the place
 - Assign rating and comments (optional)
 - Submit to geotagging server



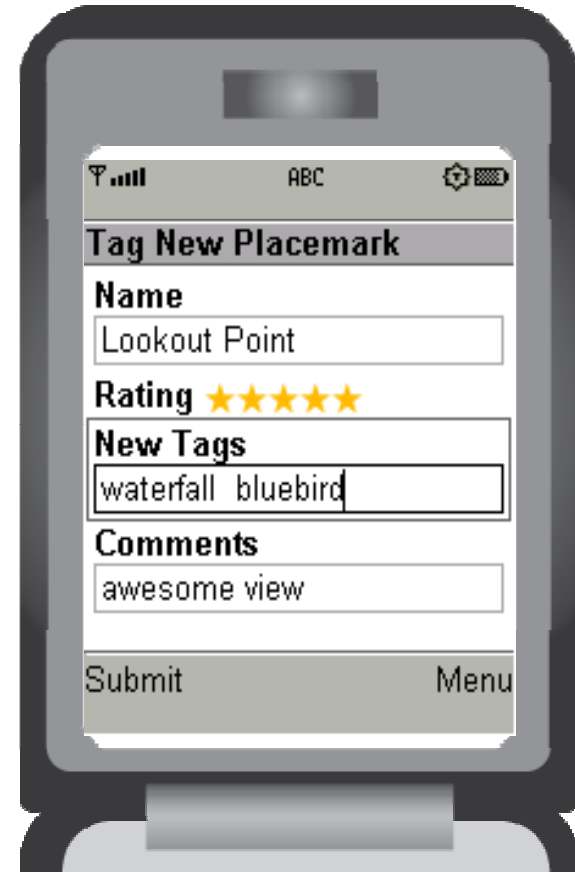
Finding places

- It's easy to find specific types of places with tags
 - Find nearby coffee shop that has wifi
 - Tags: coffee, wifi, internet, café
 - Find good italian restaurants
 - Tags: restaurant, italian, pizza, rating ≥ 4



Creating places

- Point of interest services typically contain static data that may be outdated or inaccurate
- Point of interest data generally contains only business and well known places
- Create a new point of interest
- Create places relevant to you
 - Create places on hiking trails
 - Create places in parks
 - Create place to mark your wedding
 - Create place where you and your friends live





Voice tagging

- Voice as a tagging user interface can be faster and easier to use
- Recognition accuracy can be improved since there is no real-time constraint
- Vocabulary can be built dynamically from previously used tags
- Voice memos can be stored for places
- Can also be used for search and other features



Autotagging

- Autotagging is a mechanism where the user location is periodically reported to the server
 - I am “here”
- Autotagging facilitates various scenarios that are useful for social networks
- Autotagging facilitates recommendations



Community effect

- The entire community benefits from tags added by community members
 - Mobile users can easily tag a place while visiting the place
 - Web users can augment with detailed comments
- Tags can be shared globally or only with friends
- Folksonomies have shown useful results [1]
- Friends within a community can be used to obtain potentially more relevant results
- Ratings and comments can be used to see what others think

1. flickr, last.fm, and delicious.



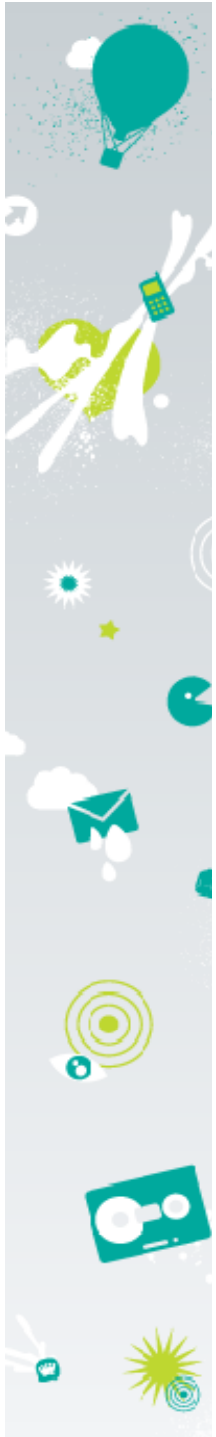
Thoughts on managing privacy issues

- What needs to be protected
 - User location (past and present)
 - User created content (tags and comments)
- Use access control policy for private, friends, family, groups and public
- Sharing location as either exact location (latitude/longitude) or relative distance
- Mobile device may only send behavior patterns and not exact locations
 - Only share places where the user has visited for longer periods of time
 - Only share visited location types, not specific locations
- Enable/disable location sharing
- Turn on and off sharing using a time based policy
- Additional rules apply to sharing of location history



Friends from a social network

- Show where your friends are
- Send message or call friends nearby
- Find places nearby that your friends have tagged
- Find places nearby that friends liked/disliked
- Share your experiences with your friends
- Finding more places:
 - Find pubs rated ≥ 4 by your friends
 - Find the most popular pubs
 - Find the most popular pubs rated ≥ 4 by your friends



So what's different?



Hotspots

- A hotspot is defined as a place where a community of users congregate
 - Popular restaurants, night clubs, theaters, shopping malls, etc.
- Hotspots are generated from autotags received from all users
- Places frequently tagged as “here” by many users are hotspots for the community
 - Hotspots can also change with the time of day and day of week
- Hotspots can be used to discover new places
- Places autotagged for a user suggest favorite places for that user



Favorite Places

- A favorite place is defined as a place that a user most frequently visits
- Home and work places can be estimated automatically
 - Home is the hotspot for the user during weekday evenings
 - Work is the hotspot for the user during work hours
 - However, it's not always that simple
- Favorite places let others know where you are likely to be

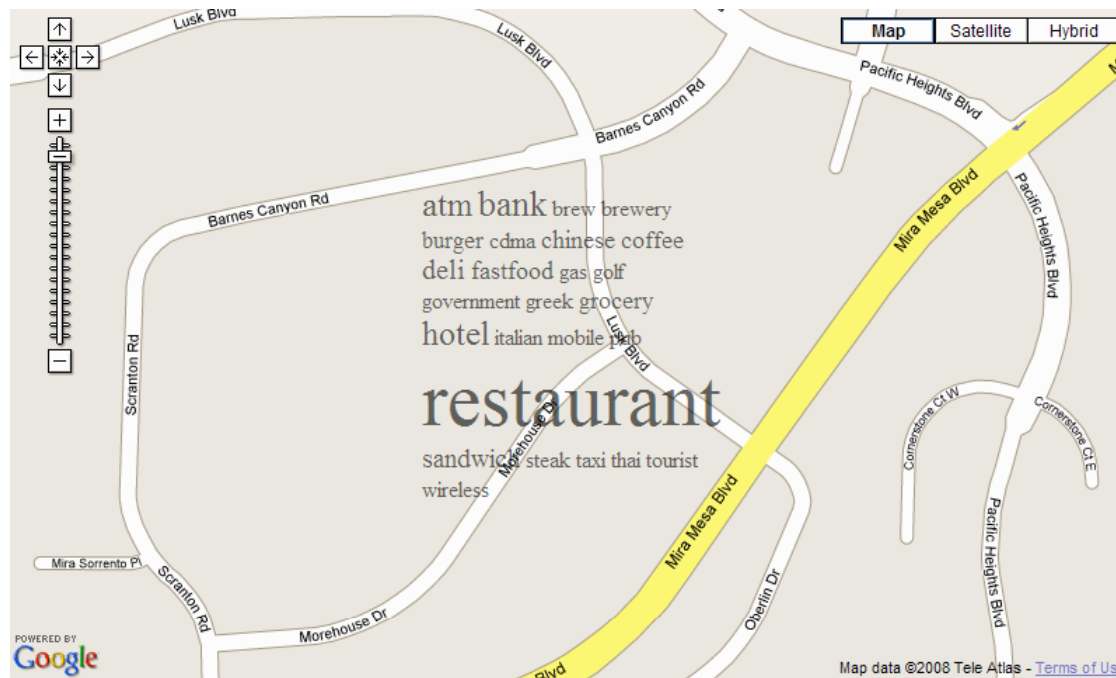


Uses of favorite places

- Let friends know you're at home, work or elsewhere
 - Automatically update user status as at home
- Finding a pizza place on the way home
 - Find places tagged with pizza between your home and work places, ordered by those closest to home

Region tag cloud

- A tag cloud for a region presents an overview of the area and what is available
- A tag cloud can be depicted in different ways to show region information

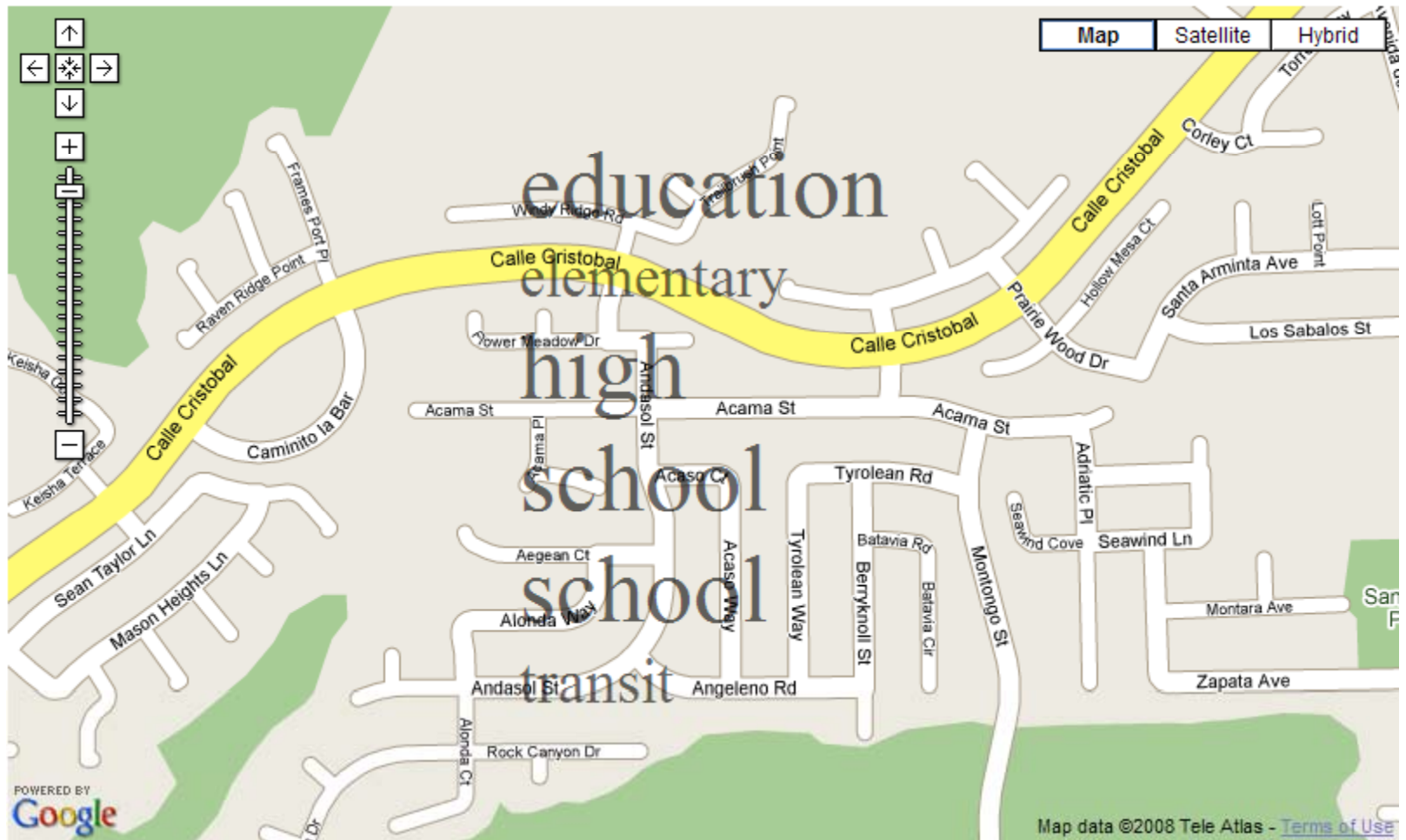




Region profiling

- Region profiles can be built based on the tag cloud for a region
- Examples
 - Residential regions have home, schools, parks, libraries
 - Business regions have offices, hotels, restaurants
 - Downtown regions have offices, banks, parking, restaurants, hotels, courts

Region profile example



Profile: residential(0.3) commercial(0) restaurant(0) downtown(0) other(0.7)



User Profile

- A user profile can be determined based on the following:
 - Favorite places
 - The profiles of these places and regions
 - The places the user has tagged
 - Friend's profiles
- The user profile can be used in recommendations



Recommendations

- Recommendations are based on hotspots, favorite places, user and region profiles
- The broad categories of recommendations are
 - Recommending places
 - Discovering things to do
 - Recommending user profiles



Recommending places

- Recommend popular places to go on Friday night
 - Based on history of favorite places on Friday/Saturday night
 - Based on hotspots for friends and the region
- Recommend a place like another place
 - Based on place tag cloud
 - Based on region tag cloud
- Recommend a new restaurant near your house
 - Based on social tags, ratings, and hotspots
 - Based on type of favorite places



Discover things to do

- Based on favorite places and hotspot history
- Recommend activities
 - Watch a movie
 - See a concert
 - Go bowling
- Plan for things to do when visiting new places



Recommending user profiles

- Recommending user profiles that are more likely to visit a type of place
- Recommend people for a new driving range
 - Recommend user profiles that are more likely to visit this driving range based on observations in other regions
- Agencies can use this information to reach the target customers in various ways



Inside MyPlaces

- Uses existing best of breed services as building blocks
 - Facebook for social networking
 - deCarta and Google for mapping
 - Yahoo for finding places
 - Other POI sources, geocoding, and reverse geocoding services
- Our services
 - Geotagging
 - Profiling
 - Recommendations
 - Privacy management
- Easy to use API for any type of device
 - HTTP with a RESTful interface
 - XML and JSON
- Clients available for BREW, Java, and the web



API example

REST call

GET /ws/1.0/placemarks { options }

Options:

lat – latitude

lng – longitude

dst – distance (miles)

tags – list of tags (optional)

rating – minimum rating 1-5 (optional)



Challenges

- POI services
 - Naming
 - Accuracy
 - Unique identifiers
- Tagging
 - Voice
 - Auto-completion
- Power consumption
 - Periodic fix rate
 - Network utilization
- Participation