

# Seamless Astronomy

(in 7 minutes)

*Alyssa A. Goodman*

*Harvard-Smithsonian Center for Astrophysics  
Initiative in Innovative Computing @ Harvard*

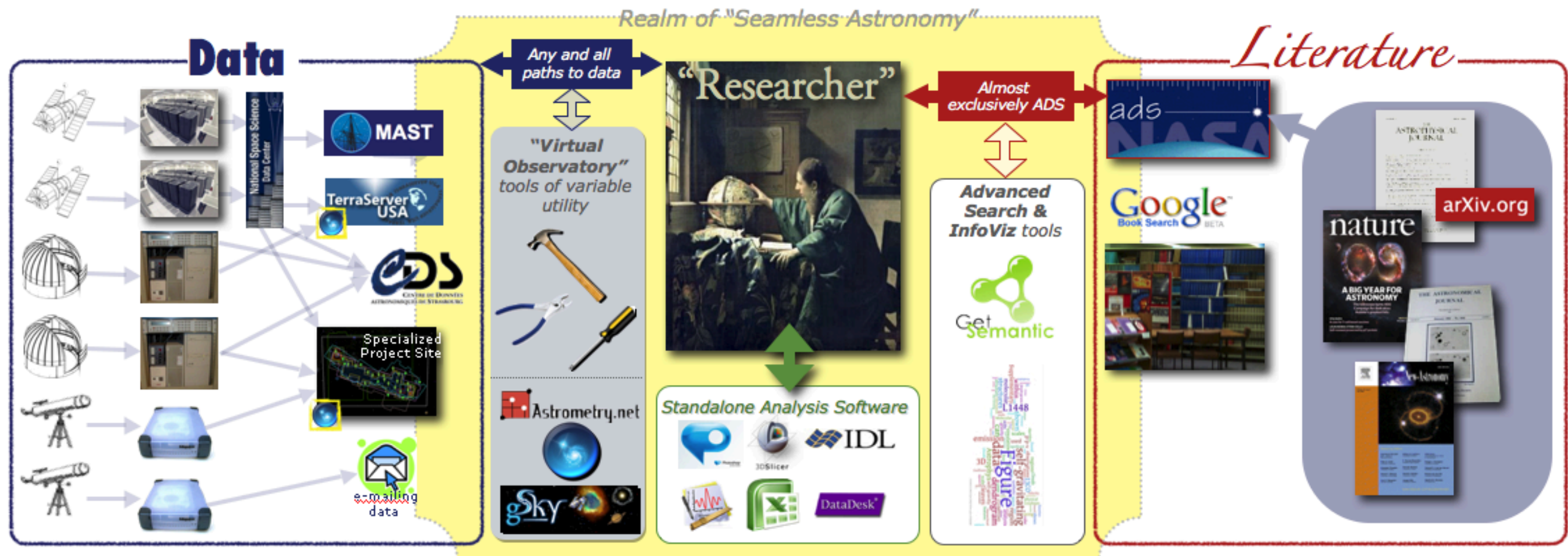
*Key Collaborators:*

*Curtis **Wong** & Jonathan **Fay**, Microsoft Research/WWT  
Gus **Muench**, Harvard*



# Seamless Astronomy

[www.cfa.harvard.edu/~agoodman](http://www.cfa.harvard.edu/~agoodman) and [worldwidetelescope.org](http://worldwidetelescope.org)

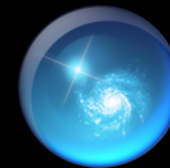
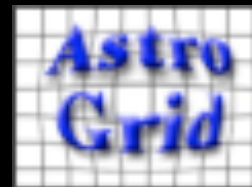


# International Politics (Pepi...) & Varied Technological Approaches

“Web Services”



Interoperable Desktop Apps  
(communication via  
“message-passing”, e.g.  
“SAMP”)



Custom Mashups, APIs



**Mixtures** of all others,  
transparent to user





# astrobitz?

terabitz every bit on real estate

Getting Started | Sign In

Enter Location

Street

optional

City, State or Zip

Ocala, FL

Go

[filter listings](#)

Drag and Drop icon to workspace below

Listings

Local

Market

Education

Safety

Financing

Professional

Misc

Google  
Local  
Search

Local  
Photos

Airports

Banks

Cafes

Cinemas

Fast Food

Gas Stations

Grocery  
Stores

Health Care

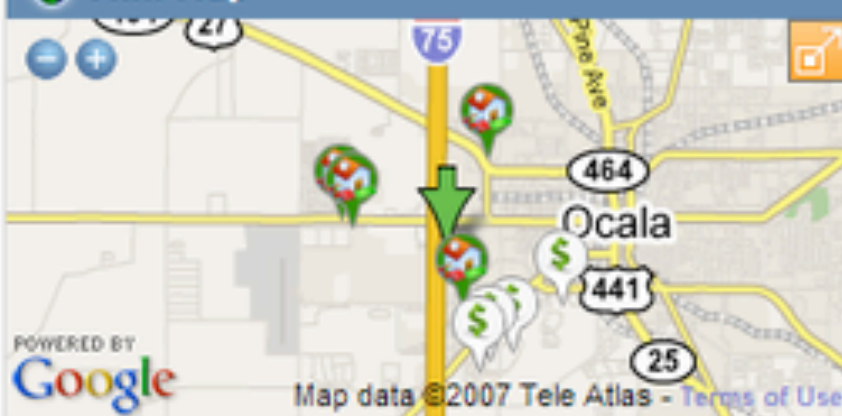
Libr

Take Snapshot

Dashboard

Map

Mini Map



For Sale Listings

2-Br 1-Ba	\$ 49,900
3116 Nw 17th St, Ocala, FL 34475	
3-Br 2-Ba	\$ 109,900
375 Nw 55th Ave, Ocala, FL 34482	
3-Br 2-Ba	\$ 124,900
280 Nw 53rd Ct, Ocala, FL 34482	
2-Br 2-Ba	\$ 150,000
3459 Sw 18th Pl, Ocala, FL 34474	

[filter listings](#)

[Map](#) | 90 results

Banks

Regions Bank	352-291-2965
3101 Sw College Rd, Ocala, FL	
Regions Bank	352-861-2342
2811 Sw 27th Ave, Ocala, FL	
Wachovia Bank	352-873-5010
3201 Sw College Rd, Ocala, FL	
Community Bank & Trust of ...	352-369-1000
1603 Sw 19th Ave, Ocala, FL	

[Map](#) | 20 results



# Seamless Astronomy

The mockup interface is titled "AstroNavigator" and features a top navigation bar with tabs for "Project 1", "Project 2", "Project 3", and "Edit".

- A Semantic Search:** A panel displaying search results for "QSO MgII absorption lines observed". It includes fields for "Authors" (listing Drinkwater and Webster R.L.), "Description" (The results of a large R-band), and a large black letter "A".
- B Literature Viewer:** A panel showing a list of search results from "SAO/NASA ADS Astronomy Abstracts". It includes links for "Find Similar Abstracts", "Electronic Refereed Journal Article", "Full Refereed Article (PDF/P)", "FIND IT @ HARVARD", and "arXiv e-print (arXiv:astro-ph/0004386)". A large black letter "B" is overlaid.
- C Info Viz for Search Results:** A panel displaying a network graph of search results. It shows nodes for "STARS WITH Nebula" and "ST Grains" connected by arrows. A large black letter "C" is overlaid.
- D Data Viewer (e.g. WWT):** A panel showing a large astronomical image of a nebula. It includes a toolbar with "Explore", "Guided Tours", "Search", "Community", "Telescope", "View", and "Settings". A large black letter "D" is overlaid.

Annotations with arrows point to each panel: "Semantic Search" points to A, "Literature Viewer" points to B, "Info Viz for Search Results" points to C, and "Data Viewer (e.g. WWT)" points to D. An additional arrow points to the "Archive Browser" section on the right, which includes a "HU" logo, "IC 348 Example Requires", and a "Inventory Images Footprint" section.

Mockup based on work of Eli Bressert, excerpted from NASA AISRP proposal by Goodman, Muench, Christian, Conti, Kurtz, Burke, Accomazzi, McGuinness, Hendler & Wong, 2008

**“GIS/Layering”**

**“Ontology”**

**“Search”**

*What’s needed...*

*is now common in daily life tools, but not in astronomy reserach.*

**“Progressive Resolve”**

**“Registration”**

**“Selection”**

**“Side-by-Side  
Comparison”**

**“Readable Labels”**

**“Highlighting”**

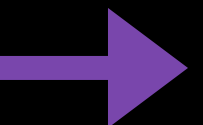
**“Zoom”**

**“Custom Site”**

**“Measurement”**

**“Off-the-Desktop”**

**“Inference”**









From: Yan Xu  
Subject: RE: (non WWT) press conference attendance for AG on Tuesday AM  
Date: December 31, 2008 2:56:23 AM EST  
To: Yan Xu , Alyssa Goodman , Megan Watzke  
Cc: Becki Culbert (Swift Group) , Curtis G. G. Wong <curtisgwong@msn.com> , Jens Kauffmann , Rosalind Reid

I just found Megan's earlier email, which mentioned that the press will be in room 204 of Convention Center. It is probably not too far from our room 308.

Our setup and presentation will be in the same room: #308 (Exhibition Hall C).

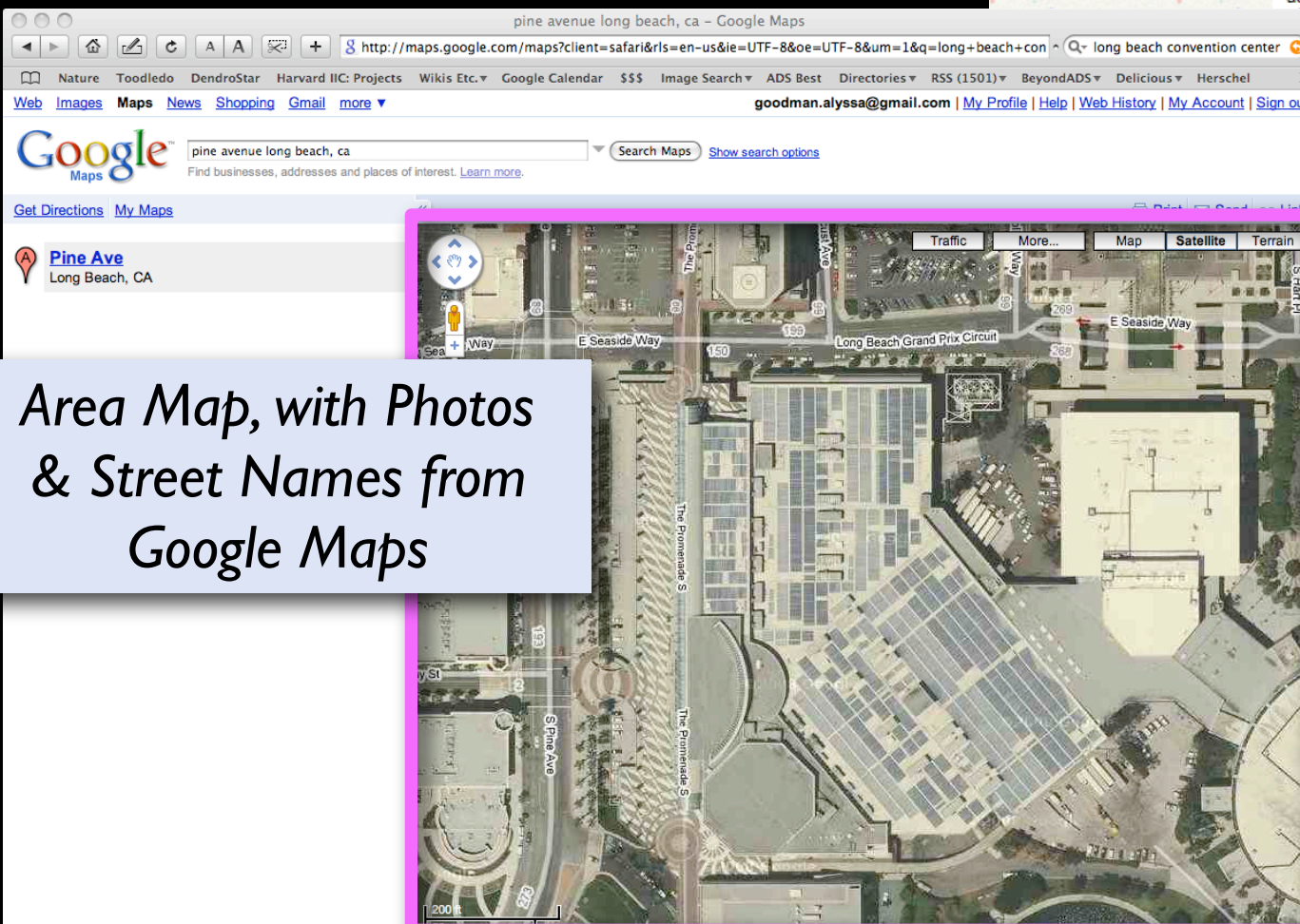
Thanks,  
Yan

Email with Room Numbers  
(result of search)

Requires “Ontology”

Interior Map on Long  
Beach CC Web Site

Requires “GIS/Layering”



Area Map, with Photos  
& Street Names from  
Google Maps

Ballroom & Meeting Room

http://www.longbeachcc.com/meeting.h

Nature Toodledo DendroStar Harvard IIC: Projects Wikis Etc. Google Calendar

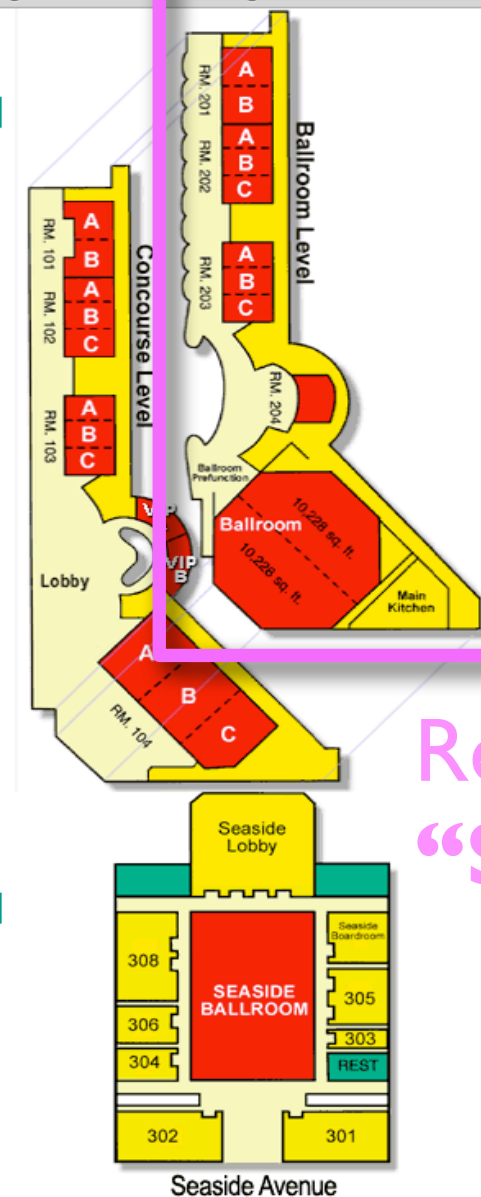
**SPECIAL SERVICES INCLUDED:**

- House lighting, ventilation, heat or air conditioning as required during open times. Energy conservation is of prime concern to the Convention Center and minimal light and comfort levels will be maintained during move-in and move-out periods. Rehearsals and similar pre-event activities will be maintained accordingly
- Housekeeping services during open hours in aisles, corridors, lobby, open spaces and restrooms, plus one thorough cleaning of these same areas during non-open hours. Meeting rooms will be cleaned between 12 AM and 11 PM unless prior arrangements are made with the Event Manager.
- Water service will be supplied to head tables and rooms only. All other water service needs must be ordered through your Catering Sales Manager.
- The basic set up is included with the daily rental. Additional set ups are charged based upon half of the daily rental.
- Real-time basic room set per rented event day. Meeting rooms included with an Exhibit Hall rental include a one-basic room set for the run of the event.
- Fully equipped first-aid facilities. Does not include a first-aid kit. An Emergency Medical Technician will be scheduled through your Event Manager.
- Use of the outdoor marquee, as available. The marquee is not to be used for information directly related to Licensee's activities within the Convention Center. All messages must be pre-approved by Convention Center staff. (Please see the marketing kit for all in-house Marketing and Public Relations details pertaining to your event).

**SPECIAL SERVICES NOT INCLUDED:**

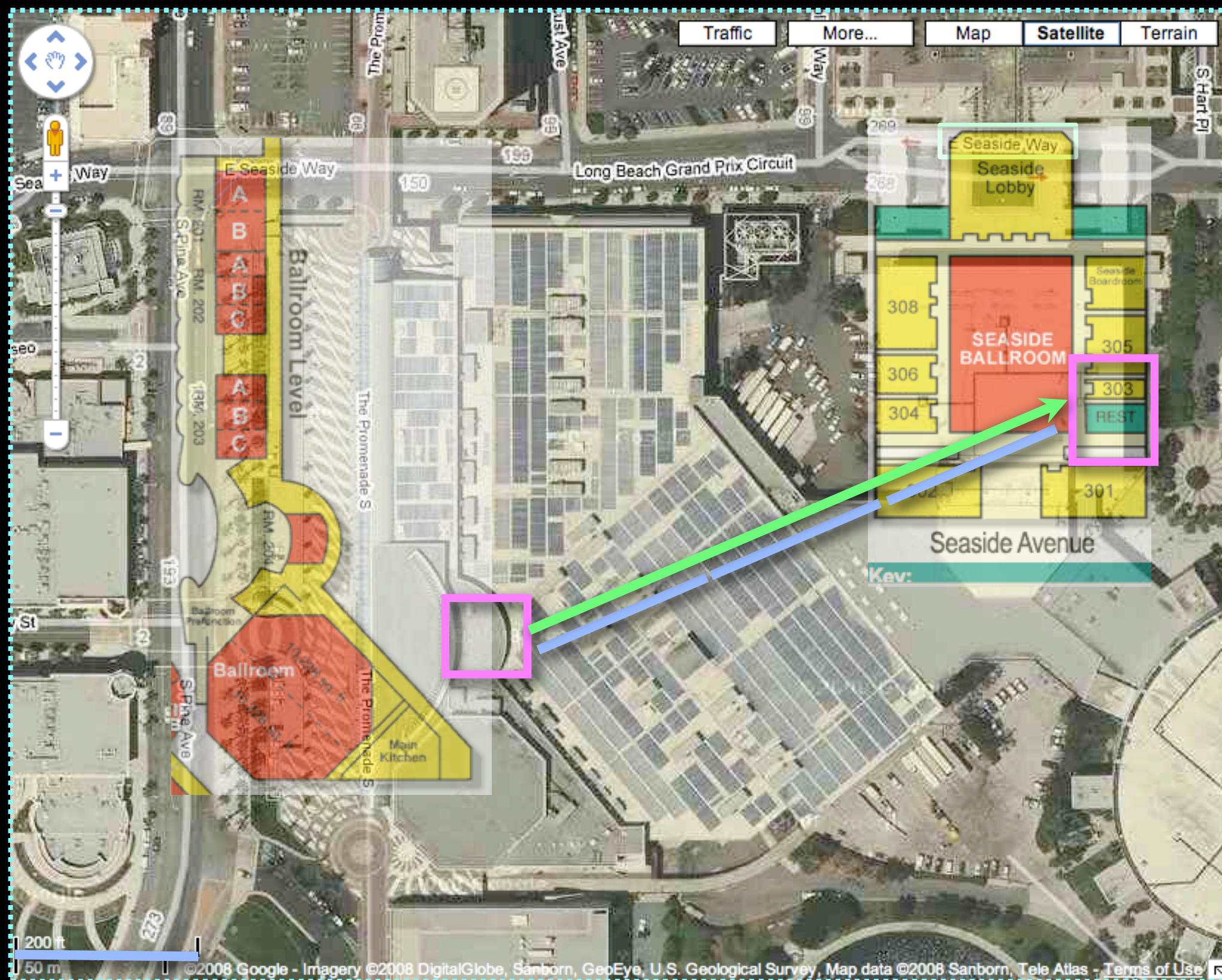
- First aid staffing with Emergency Medical Technician will be provided at current rates.
- Licensee is responsible for removal of bulk trash, crates, boxes, packing materials, lumber, etc. prior to show move-in and following move-out.
- Ticket sellers, ticket takers, ushers, security, stagehands, and event operations shall be provided by the Convention Center and billed to Licensee.
- Performance stages, exhibit tables and dance floors.

Seaside Meeting Room Key:



Requires  
“Search”





...requires: **“Selection”** ; **“Registration”**;

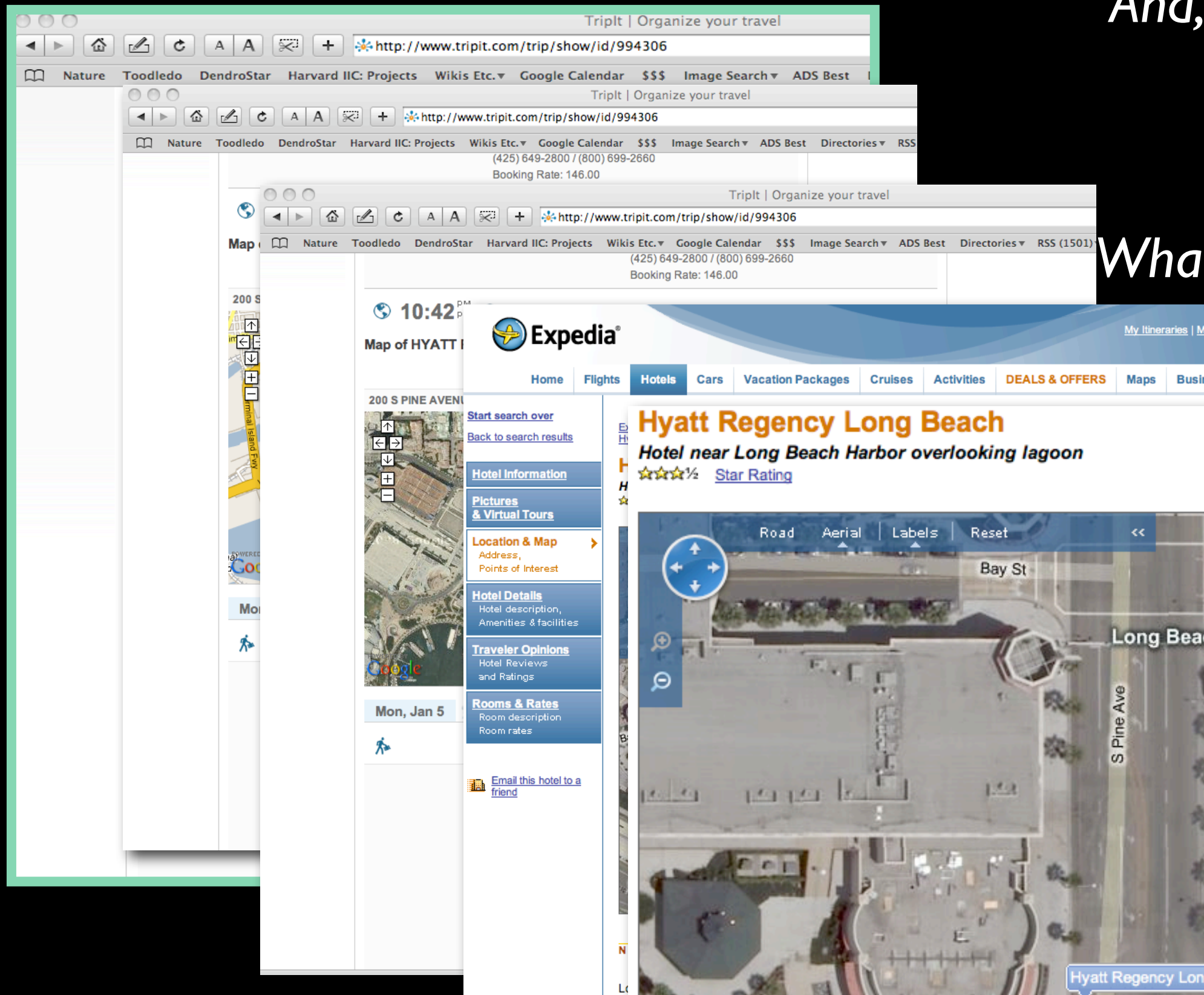
**“Readable Labels”** ; **“Highlighting”** ; & **“Measurement”**

in order to yield: **“Inference”**: ...Wow, that's about 600 feet, hope we can change the room!



And, what about that  
“**custom Triplt site**” I made to  
organize all this?

What about the hotel  
& its location?



Nearby Points of Interest









Over 20 million traveler reviews & opinions of hotels, vacations & more

My TripAdvisor Sign in

Register Now!

Hyatt Regency Long Beach Hotel

Home Destinations Fun & Games Free Travel Guides Vacation Ideas International Sites

Home → United States → California (CA) → Long Beach → Long Beach Hotels

## Search

 [Go](#)

Long Beach Overview

Long Beach Hotels

• **Hyatt Regency Long Beach**

Flights to Long Beach

Long Beach Deals

More On Long Beach

Before You Go

Things to Do

Restaurants

Map

Traveler Photos

Forum

Long Beach Deals

Discount Hotels

Hotel & Air

All Travel Offers

Free Newsletter

Interested in **Hyatt Regency Long Beach** and Long Beach?

We'll send you updates with the latest deals, reviews and articles for Hyatt



Hotel class: ★★★★★

Rooms: 510

[COMPARE PRICES](#)

[Hotel photos](#)

[Map this hotel](#)

[Hotel amenities](#)

[Virtual tour](#)

200 South Pine Avenue, Long Beach, CA 90802

Property Type: Hotel ?

Full service hotel with water views from rooms. Walking distance to 100 shops and restaurants, Aquarium of the Pacific. Centrally located for easy...

[more »](#)



Check Rates and Availability: **\$236** Avg. Price

Check-in:

10/2/2009

mm/dd/yyyy

Check-out:

10/9/2009

mm/dd/yyyy

Adults:

1

☒ Expedia.com

☒ LongBeach.Hyatt.com

☒ Travelocity

☒ Priceline.com

☒ Orbitz.com

☒ hotels.com

☐ HotelClub.com

☐ Gtahotels.com

[CHECK RATES!](#)

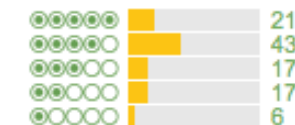
Opens one window for each offer. Please disable pop-up blockers.

TripAdvisor Traveler Reviews

TripAdvisor Traveler Rating:

TripAdvisor Traveler Rating: ?

104 Reviews



[Write a review](#)

TripAdvisor Popularity Index: ?

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[LongBeach.Hyatt.com](#) Best Rates Guaranteed. Book Direct.

▶ [Hyatt Regency Long Beach: Official Site.](#) [Smart Deal](#)  
[Hyatt Regency Long Beach](#) Best Rates

# *What's possible now?*

**“Progressive Resolve”**

**“Zoom”**

**“Search”**

**“Selection”**

**“GIS/Layering”**

**“Registration”**

**“Side-by-Side  
Comparison”**

**“Readable Labels”**

**“Highlighting”**

**“Custom Site”**

**“Inference”**

**“Off-the-Desktop”**

**“Ontology”**

**“Measurement”**



# We need to catch up to this & go beyond...

The image displays three overlapping web browser windows from April 14, 2009.

**Top Window: Facebook Profile**  
The browser shows the Facebook profile of Nicholas Suntzeff. The address bar is `http://www.facebook.com/profile.php?id=1438935116&ref=nf`. The profile header includes a photo of Nicholas and a bio: "Nicholas Suntzeff is in long beach, amazed at the number of smart, young astronomers. 12 hours ago". Navigation tabs for Wall, Info, Photos, and Boxes are visible.

**Middle Window: TerabitZ Real Estate**  
The TerabitZ website is shown with the search criteria "Ocala, FL". It features a "Mini Map" and two columns of listings:  
**For Sale Listings:**  
2-Br 1-Ba, 3116 Nw 17th St, Ocala, FL 34475, \$49,900  
3-Br 2-Ba, 375 Nw 55th Ave, Ocala, FL 34482, \$109,900  
3-Br 2-Ba, 280 Nw 53rd Ct, Ocala, FL 34482, \$124,900  
2-Br 2-Ba, 3459 Sw 18th Pl, Ocala, FL 34474, \$150,000  
**Banks:**  
Regions Bank, 3101 Sw College Rd, Ocala, FL, 352-291-2965  
Regions Bank, 2811 Sw 27th Ave, Ocala, FL, 352-861-2342  
Wachovia Bank, 3201 Sw College Rd, Ocala, FL, 352-873-5010  
Community Bank & Trust of..., 1603 Sw 19th Ave, Ocala, FL, 352-369-1000

**Bottom Window: Triplt Travel Itinerary**  
The Triplt website shows a travel itinerary for a trip to Los Angeles and Long Beach, CA. The itinerary includes:  
- **9:42 PM PST** Map of Los Angeles, CA  
- **10:32 PM PST** Your HYATT REGENCY LONG BEACH Lodging - Arrive  
- **10:42 PM PST** Map of HYATT REGENCY LONG BEACH - 200 S PINE AVENUE, Long Beach, CA, 90802  
- **Mon, Jan 5** Long Beach, CA (Edit) Avg: Hi 67°F / Lo 48°F  
- **AAS Meeting** 1/5/2009, Notes: Meeting Registration.jpg