



Industry Signals on the Future of Search

Trend Summary Report

Date:
10 September 2010

Cheskin Added Value
255 Shoreline Dr., Suite 350
Redwood Shores, CA 94065
650-802-2100

Objective and Methodology

- Summary of interviews completed

Executive Summary

- Overview of trends

Detailed Trends Findings

Potential Implications

Other Trend Learnings

Objective

Identify insights and themes around emerging trends in industry, technology, and the market that may cause major shifts in the search landscape over the next 2-3 years.


Approach and Methodology

- Conduct interviews and synthesize insight into emerging trends.
- Conduct 54 one hour interviews in person or by phone with search experts in specific groups in US (39) and international (16) during July-August 2010.

Executive Summary

Summary of interviews completed to date

US	US	EMEA	Asia
Academia	8		
VC	7		
Search (database, vision, contextual, aggregate)		7	3
Microsoft Internal	2	3	
Start-up	4		
Entertainment (web, video, adult, publication)	4	1	
Mobile	3		2
Influential	3		
Local	3		
SEO	2		
Advertising	1		
Hospitality	1		
Sub total	38	11	5
Grand Total		54	


VALUE
THROUGH
STRUCTURE


VALUE THROUGH STRUCTURE

Social Data Will Be Structured
Not Everything Requires Freshness
Aggregation of Data Silos
Visually Rich and Structured Results


COMMUNITY
PARTICIPATI
ON


COMMUNITY PARTICIPATION

Q&A Will Be Important
SNs Will Bubble Up Information


PERSONALIZ
ED
INTERACTIO
N


PERSONALIZED INTERACTION

Using Context To Personalize Results
Queries Will Become Conversational
Users Give Up Privacy For Value


MOBILE


MOBILE WILL GROW

Mobile Will Enhance Context-based Search
Mobile Explores New Interface Options


VERTICALIZATI
ON

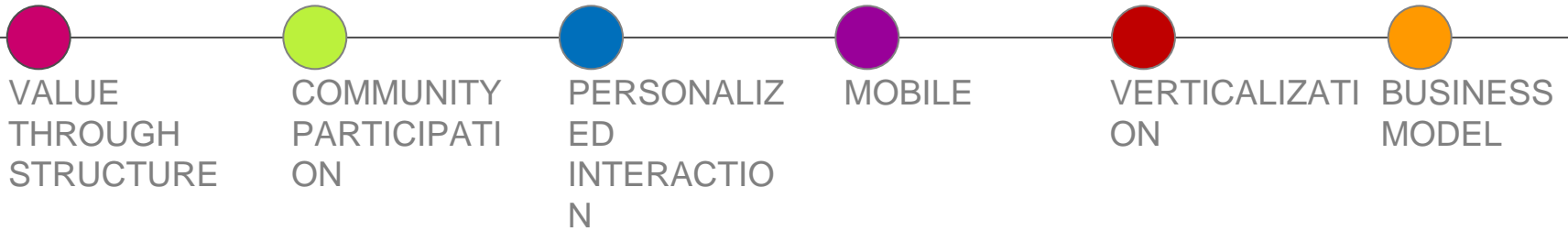
VERTICALIZATION

Specialized Vertical Search Sites Are Growing


BUSINESS
MODEL

BUSINESS MODEL

Search Engine Monetization Model Will Soon Change



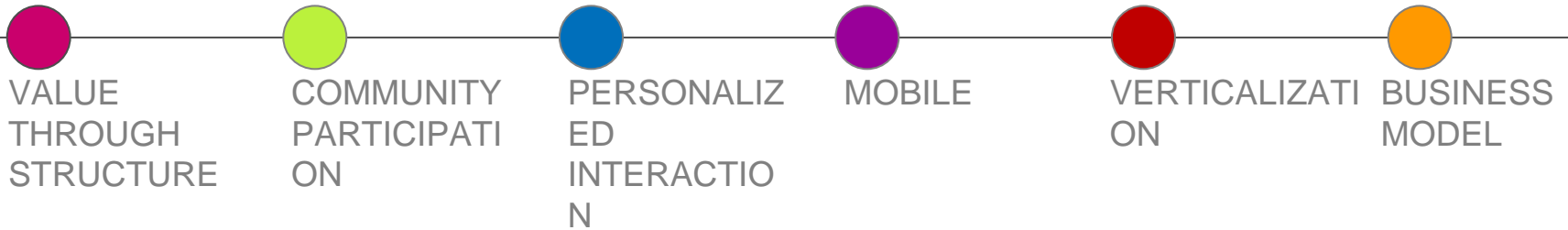
Value through Structure

Search will increasingly structure a wider range of data (social, UGC, video) leveraging it to higher value as more users demand quality over quantity. Users want more than links to sites and documents with matching key words. They expect the engine to do more of the heavy lifting, figure out what they really need. The bar will keep going up as we figure out how to better tap social data, the use of semantic/natural language, and cultural inference to understand what people are really seeking. This needs to happen on any platform (PC and mobile).

Community Participation Will Play A Greater Role In Search Quality

Human participation includes a variety of activities that filter or augment information, making it more useful -

- Using the social graph as a filter (nascent);
- Using UGC to augment search results (likes, ratings/reviews) (mainstream);
- Q&A (Parent forums, Fluthr, Yahoo Answers, Mahalo) (mainstream);
- Crowd sourcing to add tags, classify, check for errors-quality control (e.g. Wikipedia, crowdflower.com) (early).



Personalized Interaction

To deal with user frustration and difficulty in finding relevant search results, we will see a shift towards providing personalized results that leverage user history and context, conduct semantic analysis on the document web for sense-making, and anticipate user needs. Search engines will become more conversational as they go back and forth with users to refine a user's query.

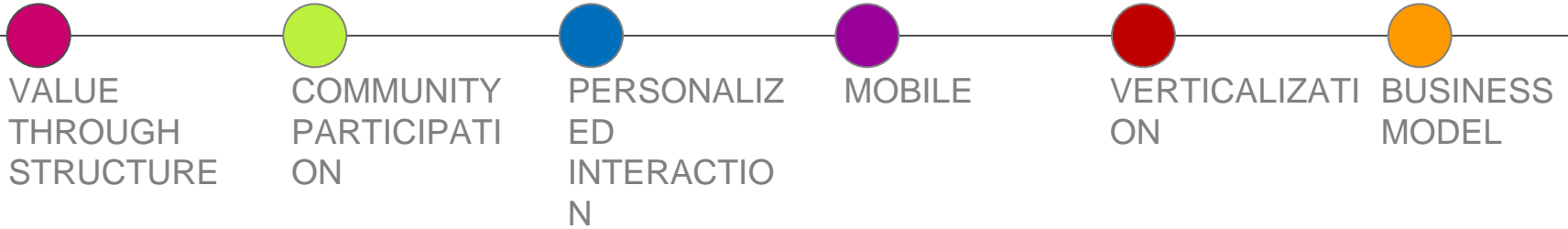
There Will Be An Expansion Of Search Activities On Mobile Devices

Mobile search will grow faster than PC search, but both will grow.

- Mobile searches will tend to be specific/task oriented and less about discovery, which is currently best suited for the PC/tablet.

As more mobile tools become optimized (apps and hardware), we will see an expansion of search scenarios revolving around contextual search, social media, and potentially more exploratory search.

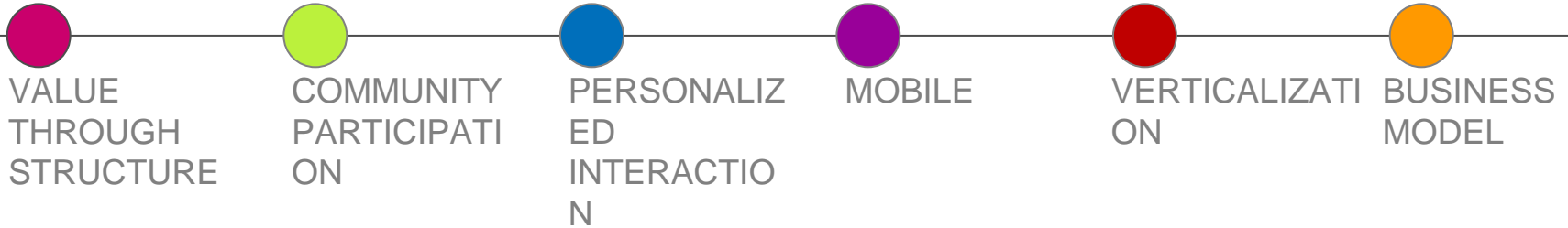
- Having the right answer is more compelling in the mobile space.
- HDMI for mobile could mean devices become a repository for bringing content in the cloud along to search and view wherever and whenever.



Specialized Vertical Search Sites Are Growing

Vertical sites like Yelp, Kayak and Amazon have become more popular, have brand recognition and maintain user data that cannot easily be accessed by search engines. Users use vertical websites and apps to get faster, more relevant and more streamlined results. Mobile vertical apps are becoming increasingly popular because they reduce the number of clicks required. Specialized vertical search is most likely to occur when:

- There is a need for more information to flow directly from application usage (e.g. finding a fix for an error message).
- There is a decision-making process with a lot of facts that users are trying to optimize (e.g. shopping).
- There are specialized vertical applications that hook directly to specialized databases (e.g. Adobe help is integrated into its products).



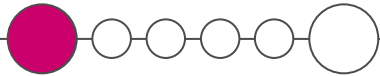
Search Engine Monetization Model Will Soon Change

- Potential for current search ad revenue to slow down.
 - Attribution analysis will track which ads people were exposed to as opposed to just what they clicked on. Econometric models will help advertisers figure out the media mix for advertising. This will make display ads more attractive.
 - Marketers will put their money in display ads and SNs. Display ads which provide more real estate are preferable for increased branding expenditures. SNs are easier to understand.
- The ongoing controversy continues about whether a transaction is needed for an advertiser to pay or whether clicks are good proxies for value.
- High value clicks are moving away from SEs to vertical sites that have specialized data and can complete the transaction. Some vertical sites are developing strong brands.
- It is more difficult to monetize mobile search because it is often a specific location search and wider searches have higher ad rates.

Detailed Trend Findings

Value Through Structure

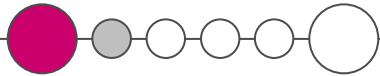
- Social Data Will Be Structured
- Not Everything Requires Freshness
- Aggregation of Data Silos
- Visually Rich and Structured Results



VALUE
THROUGH
STRUCTURE

Value through Structure

Search will increasingly structure a wider range of data (social, UGC, video) leveraging it to higher value as more users demand quality over quantity. Users want more than links to sites and documents with matching key words. They expect the engine to do more of the heavy lifting, figure out what they really need. The bar will keep going up as we figure out how to better tap social data, the use of semantic/natural language, and cultural inference to understand what people are really seeking. This needs to happen on any platform (PC and mobile).



VALUE
THROUGH
STRUCTURE

Social Data Will Be Structured To Make It Useful

There is an expectation we will be able to distill more social, real-time data to make it of value. The value-add to social data is more in the analysis to figure out what is valuable, e.g. Google's flu trends. There are different ways to structure social data:

- Relevance and sentiment analysis in social analysis engines;
- Letting data accumulate in order to categorize the unstructured data (e.g. Twitter Trends; what is the best sushi restaurant, Google flu tracker);
- Indexing the underlying information in real-time streams, e.g. location, linking tweets to the original article, linking comments to original data (e.g. Redfin);
- Semantic analysis of word use and context, e.g. "romantic place".

Social Data Will Be Structured To Make It Useful

interview quotes

“User generated content is going to be increasingly important. It comes down to figuring out the right way to index and access that kind of content.”
Nathan Eagle, MIT

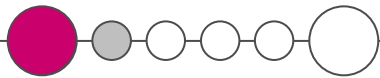
“Every piece of data can be structured. There’s probably a site for everything and this is increasing.” Venture Capitalist in the search industry

“In the next 10 years I can imagine seeing more apps sitting on top of unstructured and semi-structured data and providing a service – something very simple up front for the user, but very sophisticated behind the scene.” Oren Etzioni, Academia

“99.999% of what people write up is crap! But there is also a ton of stuff that’s dynamite – reading about the real truth about iPad by a former employee, for example.”
Andrew Yates, Silobreaker

“Twitter is a massive repository of content...But it can’t keep up more than 2 days.” Louis Gray, Palladin

“I believe that the first phase of search was really aggregation. I think we’re now moving into a sense-making phase. How do we make sense of all this information that we aggregated in the first phase. That’s really what’s going to make the difference for the user.” UK Search Aggregate Company

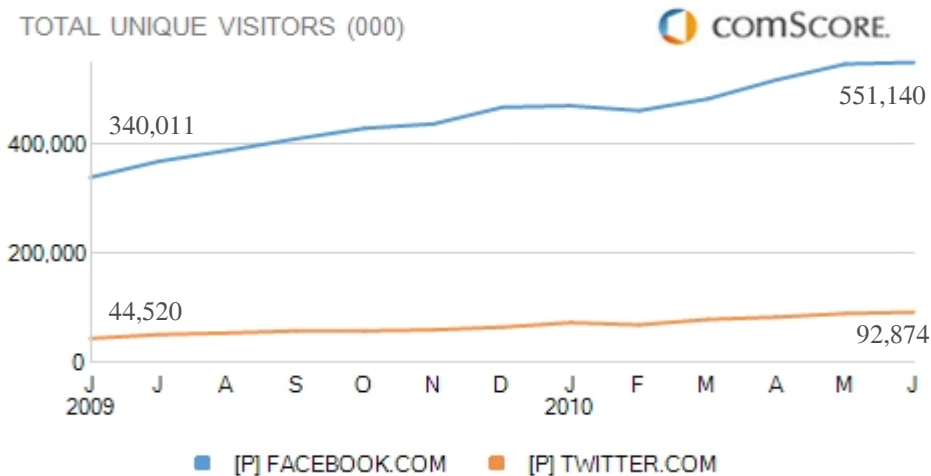


VALUE
THROUGH
STRUCTURE

Social Data Will Be Structured To Make It Useful

Drivers

- Growing use of Twitter and Facebook.



Created: 8/4/2010 © comScore Inc.

Worldwide ComScore, June '09 to June, '10

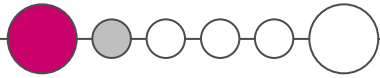
Facebook: 61 % change over '09

Twitter: 108.6 % change over '09

Note: Twitter recently announced they have almost 200m users, but ComScore shows about 100M visitors per month. The reason for this is many people sign up but don't visit regularly.

Barriers

- Disambiguation – how to distinguish if people are talking about the same thing; people have different profiles on different social site.
- Brand matters – users need to trust the search brand to collect and share their info in a way that will provide them benefit.

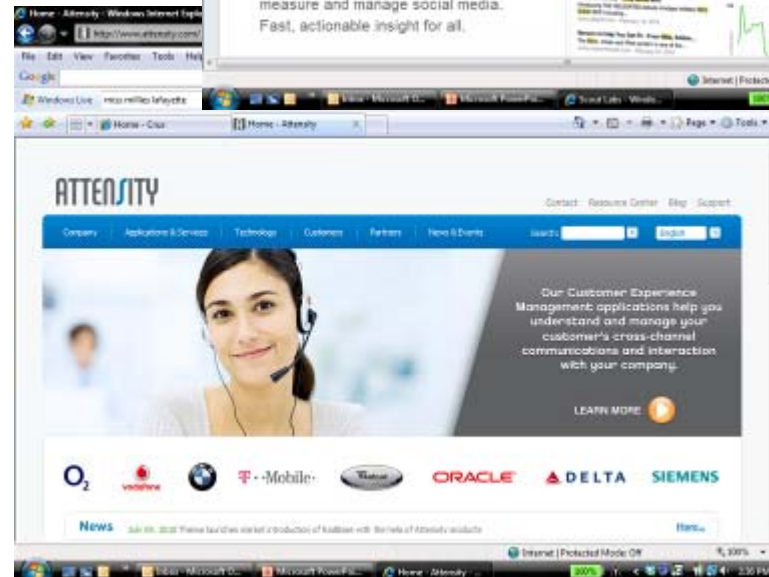
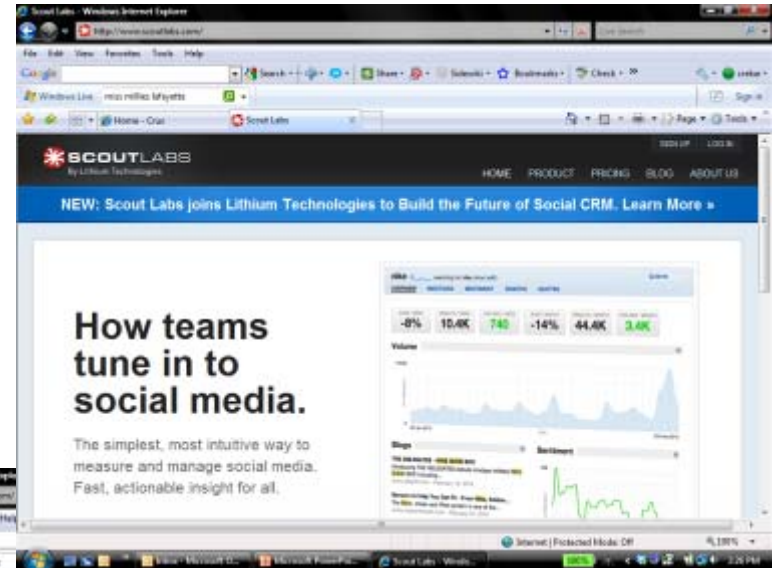


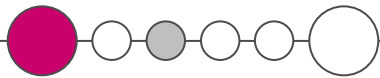
VALUE
THROUGH
STRUCTURE

Social Data Will Be Structured To Make It Useful

Early Signals

- Social media tracking engines like ScoutLabs, cymphony, Radian6.
- Attensity which analyzes conversations to draw insights and sentiments from conversations.
- Twitter Annotations allow developers to add metadata to a tweet.





VALUE
THROUGH
STRUCTURE

Real-time Search Will Grow, But Not Everything Requires Freshness

Explosion of real time information via Facebook and Twitter will drive user demand for fresh and new data. But everything does not need to be fresh to be actionable and interesting.

- Some data requires freshness, e.g. stock quotes or Hollywood gossip.
- Some benefits from more time to package or compare, e.g. recommendations on best sushi restaurant.
- Some has a longer life or is more highly curated, e.g. an investor presentation.



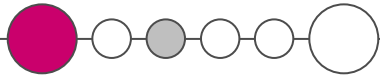
VALUE
THROUGH
STRUCTURE

interview quotes

“It is supply driven. People expect when they search for Tsunami photos the freshest photos show up regardless of your technology platform.”
Venture Capitalist who has worked in the search industry

“All this fresh content doesn't need to be made available immediately on publication. Not all fresh data is actionable or interesting. There is a downward sloping line of value against age, but it is kinked.” Michael Dearing, Harrison Metal

“ The importance of real-time search will grow, especially for shopping.” Siva Kumar, The Find

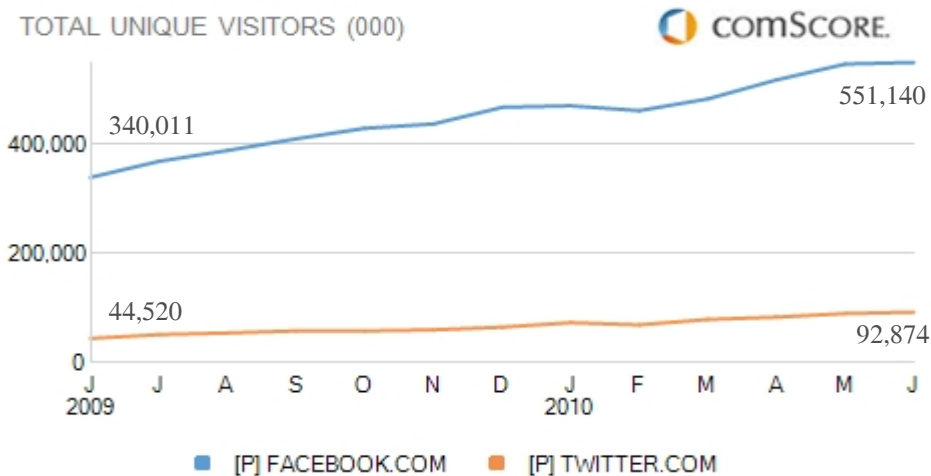


VALUE
THROUGH
STRUCTURE

Real-time Search Will Grow, But Not Everything Requires Freshness

Drivers

- Growing use of Twitter and Facebook.



Created: 8/4/2010 © comScore Inc.

Worldwide ComScore, June '09 to June, '10

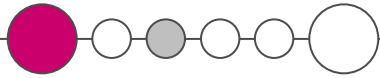
Facebook: 61 % change over '09

Twitter: 108.6 % change over '09

Note: Twitter recently announced they have almost 200m users, but ComScore shows about 100M visitors per month. The reason for this is many people sign up but don't visit regularly.

Barriers

- Dynamic pages – search engines crawl cached pages.



VALUE
THROUGH
STRUCTURE

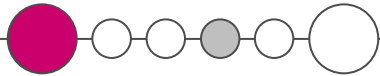
Early Signals

- Oneriot.com
- Huffingtonpost.com includes Twitter feeds.
- MIT Sensable Cities project allows users to access real time data streams captured via cell phones as they move in urban spaces <http://senseable.mit.edu/>.

senseable city lab

The real-time city is now real! The increasing deployment of sensors and hand-held electronics in recent years is allowing a new approach to the study of the built environment. The way we describe and understand cities is being radically transformed - alongside the tools we use to design them and impact on their physical structure.





VALUE
THROUGH
STRUCTURE

Aggregation of Data Silos

The search silo (index, history) will merge with other silos (social, location, purchase info, rich media, mobile apps) to give users what they want in fewer clicks.

- For a movie, you might want to show info from different silos – expert reviews, friends comments, show times.
- Search engine providers lose any information about what a person does on a mobile phone app.

Aggregation of Data Silos

interview quotes

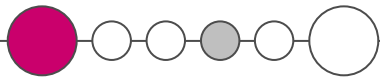
“There’s some really complex content types that are coming down the pipe and they’re happening now, whether it be with sort of live casting, and streams, or whatever. And you know, can you build an experience that really brings them together.” Venture Capitalist who has worked in the search industry

“We need to a much better job of knowing when apps [answer questions]. And hopefully being the broker of that.” Susan Dumais, Microsoft

“To do interesting discovery, you need access to social sites which have the raw materials.” Major web news site

“Apple probably purchased Siri to drop you into the appropriate app,” Major web news site

“You would have to offer (walled gardens) an incentive to share, e.g. mutually assured destruction - We won’t send you people unless you share information.” Eyan Adar, Univ. of Michigan



VALUE
THROUGH
STRUCTURE

Drivers

- Variety of live data streams are being created – e.g. trending topics on Twitter.




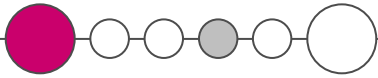
- Growth of photos/videos sharing sites such as Flickr, YouTube, etc.

YouTube, the leader in Internet video search, said on Sunday, viewers have are now watching more than 100 million videos per day on its site, marking the surge in demand for its “snack-sized” video fare.

Read more: <http://www.searchenginejournal.com/youtube-growth-is-almost-shocking/3641/#ixzz0vIxnAskU>

Barriers


- Competing walled ecosystems (Facebook, Apple iTunes) will lock out search engines from high value content
 - FB will enter search as next evolution of their business model.
 - Apple will offer whatever delivers the best user experience.
- Less of an issue in China since major sites are linking with Baidu. 
- Search engines may need to pay for access to walled ecosystems or other data sources, which may not be a good business model.
- Getting access to data in mobile apps so it is not lost to Bing.



VALUE
THROUGH
STRUCTURE

Aggregation of Data Silos

Early Signals

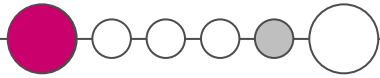
- Google provide results from social media and social circle for every search result.
- Bing Twitter.
- Huffington post integrating Twitter data.
- Image search technology (Cortexia, London).
-  Baidu open-platform for third party content/app providers.

The screenshot shows a Twitter search interface with the search term "San Bruno Fire". The results include three tweets:

- dontrythis**: Huge explosion in San Bruno CA. The fire dept needs O negative blood. Very sad. Many homes destroyed. Possibly nat'l gas. (13 hours ago from Echofon)
- sfgiants**: Please take a moment to send thoughts and prayers to the families affected and emergency workers responding to San Bruno Fire. (14 hours ago from TweetDeck)
- CALFIRE_PIO**: CAL FIRE has sent 4 airtankers, 2 air attack planes, and 1 helicopter in addition to 25 fire engines to an explosion and fire in San Bruno. (14 hours ago from TweetDeck)

Below the tweets is a "TOP LINKS" section with the following links:

- [San Bruno fire chief puts explosion death toll at 6 | L.A. NOW | Los Angeles Tim...](#)
- [Huge Explosion Rocks San Bruno | NBC Bay Area](#)
- [Video - Breaking News Videos from CNN.com](#)



VALUE
THROUGH
STRUCTURE

Visually Rich and Structured Results

In the coming three years, we will see the growth of different UI paradigms for displaying information that is more relevant to the context of specific search query. The results experience will move from text and links to visually rich results, surfacing, for example, maps, weather charts/tables and other visualization of data as part of the result. This will require more computational, back-end processing.



VALUE
THROUGH
STRUCTURE

interview quotes

“You know when I type weather in Homer Alaska, you know I want to see something that looks like weather in Homer Alaska not a link to something that I can then get weather in Homer Alaska.” Brad Feld

“Much more visual presentation of allowing associated metadata ...Be good if they showed some thumbnails.” Susan Dumais, Microsoft.

“The user experience needs to change dramatically for the user and we believe that search needs to move toward graphic representations in a much greater degree.” UK Data Aggregate Company



VALUE
THROUGH
STRUCTURE

Drivers

- Proliferation of visualization tools including, augmented reality, Google Squared, Msft Pivot, Twitter tools (TwitterSheep, 5k Twitter browser, ISParade, TweepKey).



- New devices like iPad that are creating more engaging forms of interaction (and the apps being developed for new devices).

Barriers

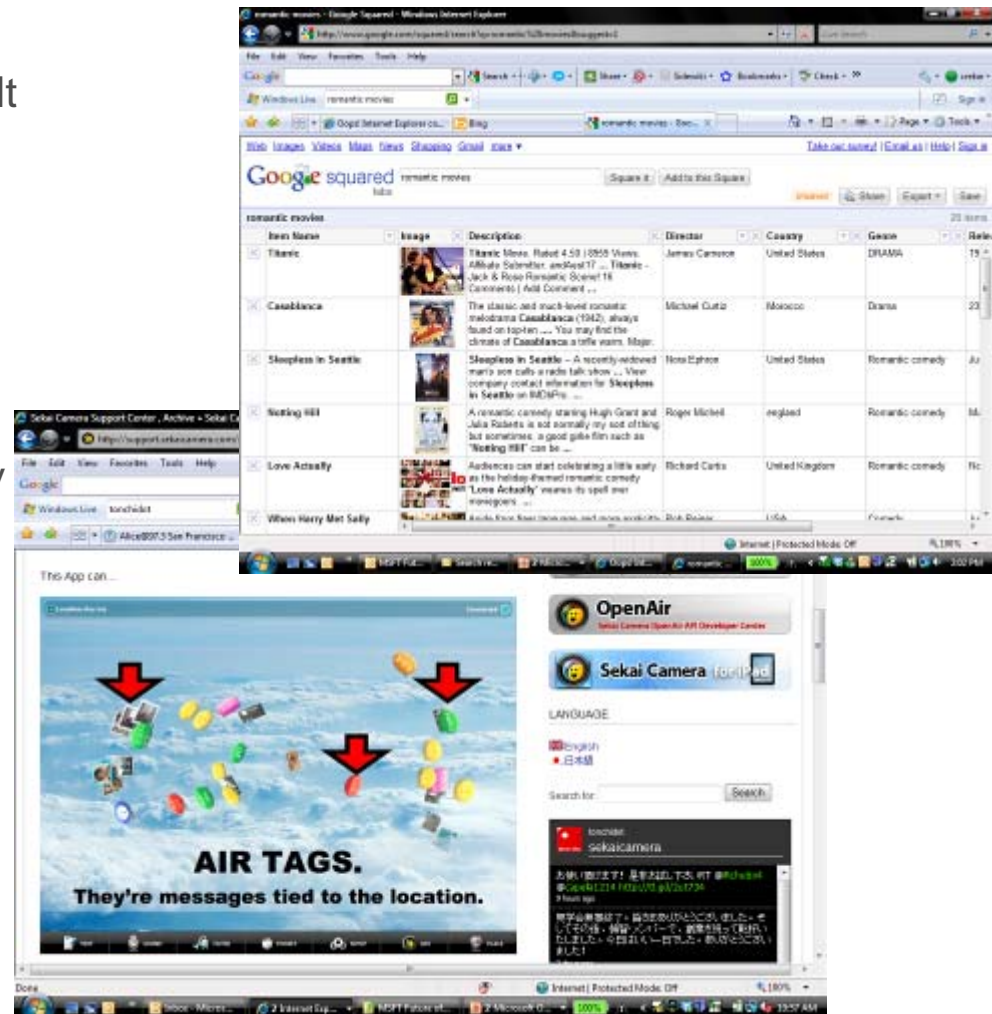
- Bringing video into a visually rich search experience will have certain challenges (indexing video to search for relevance).
- Image search tech is here (per Cortextia) but most experts do not think it will be ready in the near term.



VALUE
THROUGH
STRUCTURE

Early Signals

- Google Squared provides a query result in a table format (with predetermined columns).
- Tonchitot AR with Sekai camera “Air Tags” for iPad and iPhone.
- Msft Pivot.
- Image search technology developed by Cortextia, London.



Community Participation

- Q&A Will Be Important
- SNs Will Bubble Up Information



Community Participation Will Play A Greater Role In Search Quality

Human participation includes a variety of activities that filter or augment information, making it more useful -

- Using the social graph as a filter (nascent);
- Using UGC to augment search results (likes, ratings/reviews) (mainstream);
- Q&A (Parent forums, Fluthr, Yahoo Answers, Mahalo) (mainstream);
- Crowd sourcing to add tags, classify, check for errors-quality control (e.g. Wikipedia, crowdflower.com) (early).



COMMUNITY
PARTICIPATION

Community Participation Will Play A Greater Role In Search Quality

interview quotes

“Individual personal data is of limited value, but when you get a few million people together then you can do behavior analysis and that becomes valuable.” Jim Jansen, Penn State

“The goal is not to find existing information but to find somebody who can provide help about something.” Susan Dumais, Microsoft

“Key words and documents are basic blocks of search, but if you think about it in terms of entities and relationships, then there’s potential for a more powerful search experience.” Oren Etzioni, U of Washington

“It is a different experience to ask your own questions than looking for an answer to a similar question.” Ben Finkel, Fluther

“There is going to be a more human side of search – people will be seeking more avenues and move away from traditional search engines.” Ben Finkel, Fluther



COMMUNITY
PARTICIPATION

Community Participation Will Play A Greater Role In Search Quality

Drivers

- Human participation is already used indirectly with page ranks and click counts.
- Desire to cut through clutter and get to the right results faster.
- Amazon changed the way we're doing search via "participatory work" which has appeal for people who want to be part of something.
- In some contexts people trust their social network more than a 3rd party source.



This was not the general observation in UK and China. Experts are more credible in UK; authentic/authoritative in China where "knock-off" sites are an issue.

Barriers

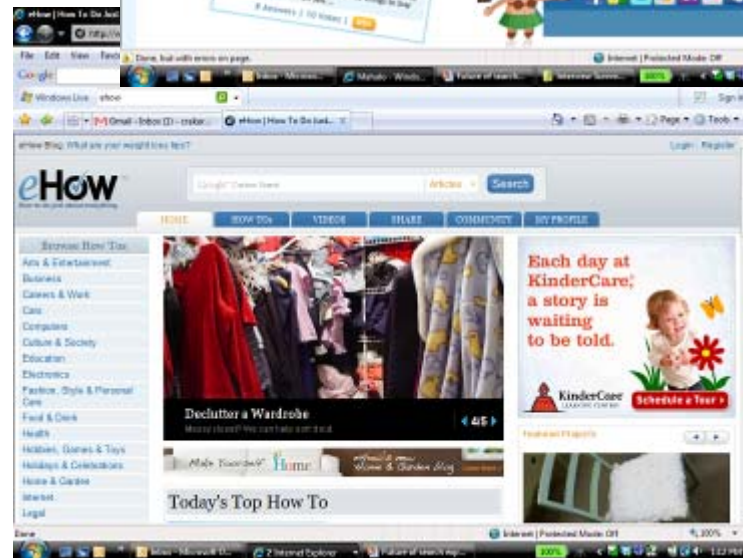
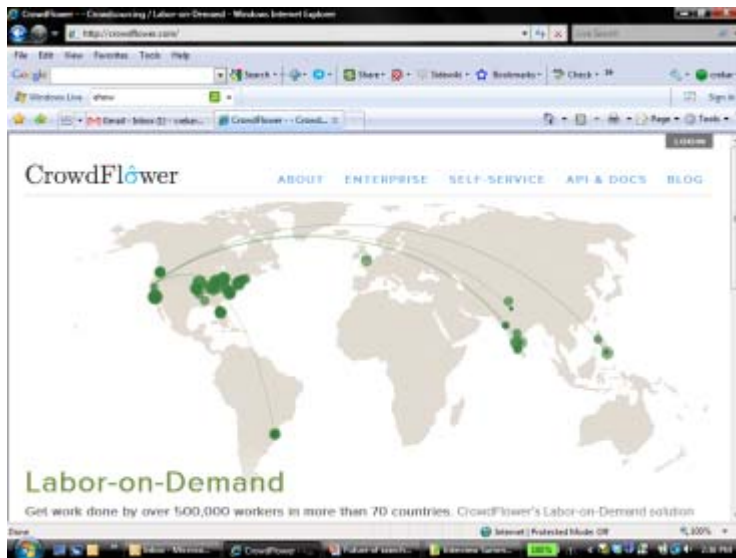
- Accessing and structuring social content in a meaningful way and making it searchable.
- User permission issue – getting trust in a brand to share personal information that will help SE serve up relevant information.
- Reputation and who you trust is a hard problem to crack -.
 - There are different expectations of reputation in different cultures;
 - Need to identify the source's social or expert status;
 - Need to know who is perceived as an authority.

COMMUNITY PARTICIPATION

Community Participation Will Play A Greater Role In Search Quality

Early Signals

- Mahalo using human filters for finding relevant search results.
- Crowdfower and eHow provide cheap labor for improving search results.





Q&A Will Be Important

The real potential of Q&A can be realized when you tap into the collective, including beyond your social graph. A key to making Q&A a viable option for search is through community building.

- Having a vibrant community is key to attracting high value users.
- Community management is built upon trust which is created when users see their questions answered by a community in a viable and useful manner.



COMMUNITY
PARTICIPATION

Q&A Will Be Important

interview quotes

“Individual personal data is of limited value, but when you get a few million people together then you can do behavior analysis and that becomes valuable.” Jim Jansen, Penn State

“The goal is not to find existing information but to find somebody who can provide help about something.” Susan Dumais, Microsoft

“It is a different experience to ask your own questions than looking for an answer to a similar question.” Ben Finkel, Fluther



Q&A Will Be Important

Drivers

- Desire to cut through clutter and get to the right results faster.
- In some contexts people trust their social network more than a 3rd party source.

Barriers

- Reputation and who you trust is a hard problem to crack -
 - There are different expectations of reputation in different cultures,
 - Need to identify the source's social or expert status,
 - Need to know who is perceived as an authority.


COMMUNITY PARTICIPATION

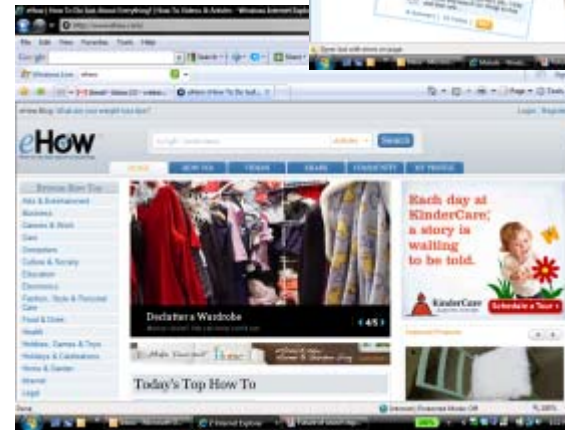
Q&A Will Be Important

Early Signals

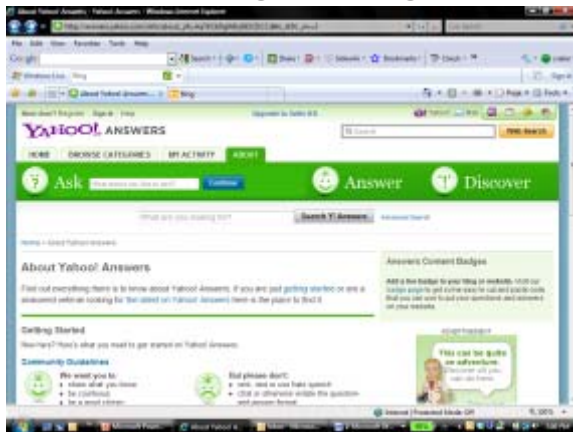
- Mahalo - uses human filters for finding relevant search results.
- eHow – online community of experts and everyday people sharing solutions and tips for day-to-day tasks and projects.
- Yahoo Answers – online community of UGC for sharing/helping others.



<http://www.mahalo.com/>



http://www.ehow.com/about_us/about_us.aspx#ixzz0wo2grPCo



http://answers.yahoo.com/dir/index;_ylt=AjGNFd9kZ8NXNlt.y_kNNe.e5HNG;_ylv=3



User's Social Networks Will Bubble Up Information

With users constantly plugged into multiple conversations on different social media platforms, information is flowing more seamlessly to them and useful information is bubbling up without users seeking or searching for it. Some users are not worried about missing anything because their network will repeat what is important – “human curated” search. This is the push model of search. The primary success criterion is choosing the correct people to be in your network. This adds a layer of social structure to the search based on the reputation of the author that is not possible in traditional search.



COMMUNITY
PARTICIPATION

User's Social Networks Will Bubble Up Information

interview quotes

“The world would have never discovered Paul the Octopus if not for Facebook alerts and Twitter updates.” Rajesh Lalwani, Owner, Blogworks India

“Social content can be useful if you choose your friends well. If you keep the circle of connections strong but not too large.” Louis Gray, Palladin

“Things can bubble up to you even if you are not searching. Newsfeeds need to be filtered socially. Social graph will get priority ratings – best friend, family members.” Timothy Chang, Northwest Venture



COMMUNITY
PARTICIPATION

User's Social Networks Will Bubble Up Information

Drivers

- Twitter search is becoming increasingly important. People search links circulated by people instead of an algorithm. There is more implicit meta data in past links than in the open web because there is a human endorsement that can be tracked.

Barriers

- People search: While Twitter has developed recommendation tools for who to follow, search on Twitter continues to be cumbersome, and it is still hard for users to find interesting people to follow.

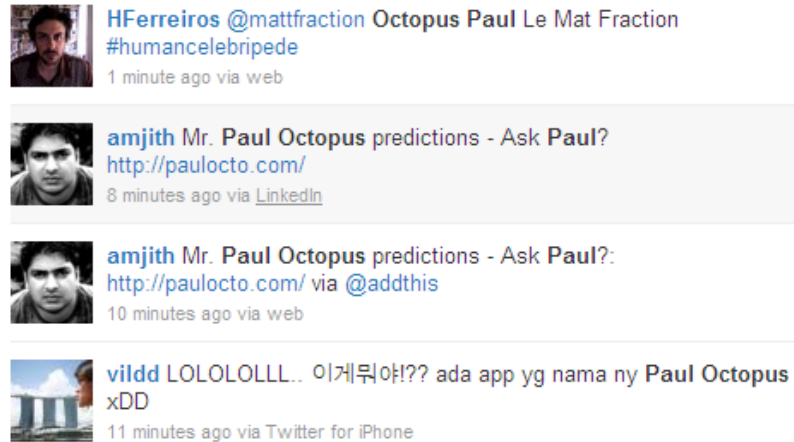


COMMUNITY PARTICIPATION

User's Social Networks Will Bubble Up Information

Early Signals

- Paul the Octopus, an octopus who was correctly “predicting” the outcome of world cup matches became a popular topic of discussion during world cup soccer.
- Many iPad owners discovered and downloaded iPad app Flipboard only after discussions about Flipboard appeared in their Twitter stream. Flipboard is an iPad app that aggregates data streams from one’s social network and creates a personalized magazine.



Source: www.twitter.com



Source: www.flipboard.com

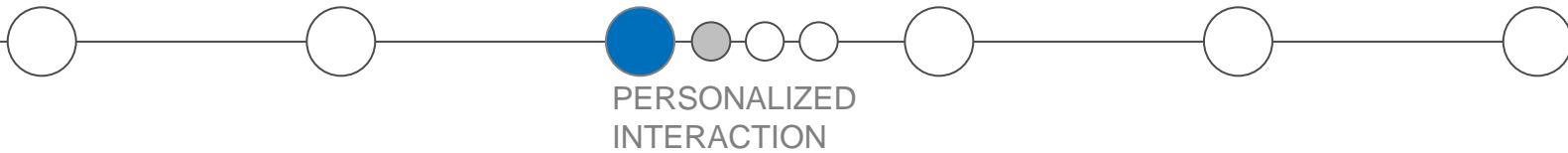
Personalized Interaction

- Using Context To Personalize Results
- Queries Will Become Conversational
- Users Give Up Privacy For Value



Personalized Interaction

To deal with user frustration and difficulty in finding relevant search results, we will see a shift towards providing personalized results that leverage user history and context, conduct semantic analysis on the document web for sense-making, and anticipate user needs. Search engines will become more conversational as they go back and forth with users to refine a user's query.



Using Context To Personalize Results

Search providers will have to model user behavior based on context and the content corpus to provide more personalized and relevant information. Users want to accomplish a task rather than just get a search result. Many forms of context can be used to interpret user queries and understand intent: environmental factors (time of day, location), device (mobile, PC, tablet etc), social graph (people like me), past behavior (personal likes and dislikes, previous queries and click history) and task context (what does the user want to accomplish). Semantic analysis will be required to distinguish, for example, Henry Ford the footballer from the industrialist.



PERSONALIZED
INTERACTION

Using Context To Personalize Results

interview quotes

“Build a model of who I am and what I’m interested in. It can be temporal model So you can provide more targeted results.” Chris Burges, Microsoft

“We’re at a place where people are starting to get better implicit content because of their explicit signal. When the right thing appears I feel like magic just happened.” Brad Feld, Foundry.

“Replace the index or mend it with some kind of other index that represents knowledge on a much higher level.” Chris Burges, Microsoft

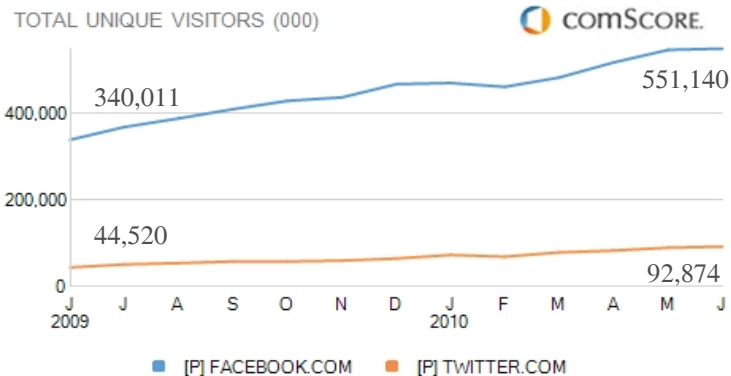
“Current search engines assume there is one right answer for everyone, but everyone has different preferences.” Louis Gray, Palladin

PERSONALIZED INTERACTION

Using Context To Personalize Results

Drivers

- Increasing user frustration with thousands of search results
- Growth of personal data on Twitter and Facebook



Created: 8/4/2010 © comScore Inc.

Worldwide ComScore, June '09 to June, '10
 Facebook: 61 % change over '09
 Twitter: 108.6 % change over '09

Note: Twitter recently announced they have almost 200m users, but ComScore shows about 100M visitors per month. The reason for this is many people sign up but don't visit regularly.

Barriers

- Privacy concerns



Demonstrators in Germany protesting against storage of personal data by Internet companies which they call Octopuses. Source: The New York Times

- Delivering targeted results that combine disparate contexts will be a challenge.
- Weaving two different sources – document and individual – into a quality result.

PERSONALIZED INTERACTION

Using Context To Personalize Results

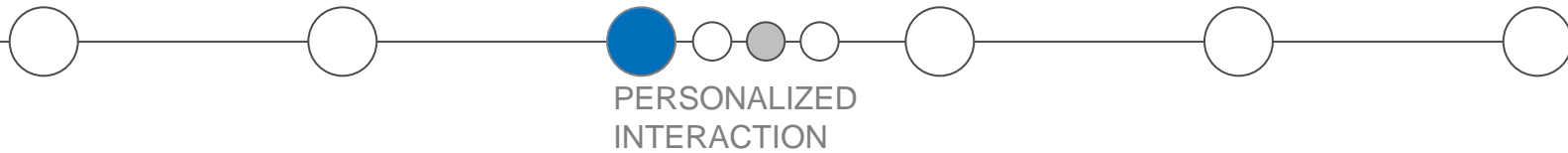
Early Signals

- Freebase is an online open source repository that is adding structure to data to distinguish information on the web. For example, it can distinguish between Henry Ford the industrialist and Henry Ford, the footballer.
- Startup Hunch builds a taste profile of each user based on their unique tastes and preferences, places and things around each user that he/she might like, and makes recommendations to them.
- Wavii is a Seattle-based stealth startup that approaches natural language processing in a new way. As popular tech blog, Tech Crunch reported it indexes the web and retrieves information based on how it relates to other information, both current and historical.



hunch personalizes the internet*





Queries Will Become Conversational

As search engines become more intelligent, they will be able to actively go back and forth with users to define user queries. This would enable users to interact with search engines in a more human and compelling manner. Search engines will be expected to anticipate user needs based on explicit history and experience with similar users. Users will expect to accomplish tasks rather than just get search results.

- For example, if user looks for restaurant recommendations, the search engine should not only provide restaurant information, but also give a link to the menu and provide an option for booking a table.



PERSONALIZED
INTERACTION

interview quotes

“There’s enough research and progress in this area where we will see this within five years, a conversational exchange with search, not starting over from scratch and entering key words.” Mark Torrance, Rocketfuel

“I can imagine the machine becoming a conversational partner, share a world view, knows what you like. An excellent concierge – perform duties more effectively.” Victor Zue, MIT

“I’ve heard many stories now of people believing they were talking to somebody real for a while. They were engaged for a while. There is this natural kind of affect of humans projecting humanness on other things.” Chris Burges, Microsoft

“If search will start answering questions that it can’t answer today, there is no ceiling. It is applied artificial intelligence.” Dave Patterson, UC Berkeley

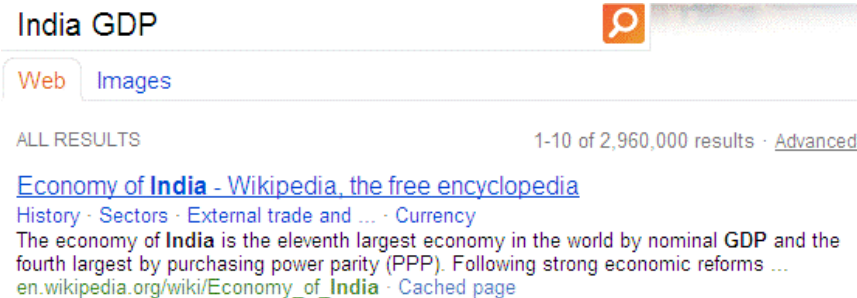


PERSONALIZED
INTERACTION

Queries Will Become Conversational

Drivers

- Increasing user frustration with current search paradigm of long list of results



A search on GDP of India on Bing gives back almost 3 million results.
Source: Bing

Barriers

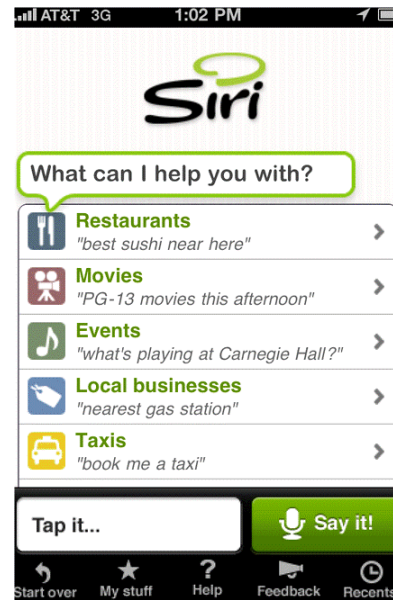
- Improvements in natural language processing have been slow. Most experts in the field believe that people's tolerance for bad understanding is even lower than getting a wrong/bad search result, and this is particularly true in the realm of local search.
- Privacy can hamper adoption
- Users might not want to get overly engaged in too long conversations since they have been trained to get search results within seconds
- The technology to get the service up and running

PERSONALIZED INTERACTION

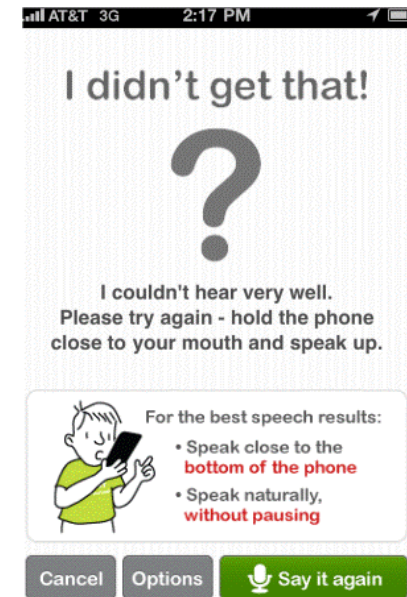
Queries Will Become Conversational

Early Signals

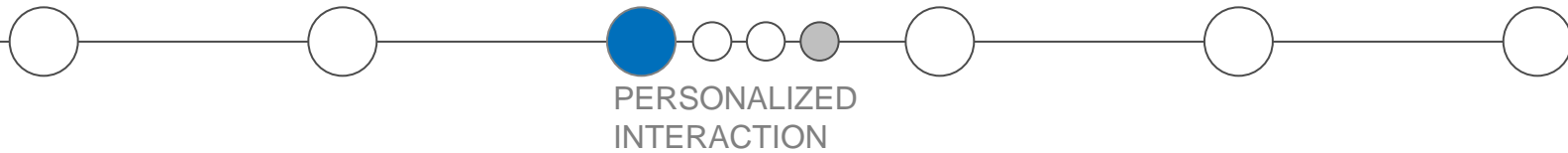
- Siri is a virtual personal assistant application that helps users do searches in a conversational format.
- Fluther is a Q&A website where users can ask questions from the community instead of doing search with keywords. Fluther has invested in building a community that answers questions, and often leads to back and forth among users.



Source: Siri



Source: www.fluther.com



Users Will Give Up Privacy In Return For Value

Even though privacy advocates will clamor against the use of personal data to provide more relevant and personalized results, users are thought to be willing to give up some of their personal information to get more personalized results. Privacy will not be a deal breaker as long as there are options and a sense of control over personal information.



PERSONALIZED
INTERACTION

Users Will Give Up Privacy In Return For Value

interview quotes

“For most people private information, sensitive information about themselves has a price and generally the price is really cheap. Convenience often satisfies that price.” Nathan Eagle, MIT

“People will trade a lot of their privacy even explicitly for a bright shiny object. There are enough bright shiny objects that people are offering them right now – discounts access etc that people will give up all sorts of stuff.” Jerry Michaliski, Sociate

“Privacy is massive in Germany. So when you suddenly have cars driving through the streets that are recording everything, people become really, really worried.” Jens Lapinski aiHit Ltd

“I’m skeptical of this. There’s talk but no one seems to care. Facebook is still popular.” Michael Cafarella, University of Michigan



PERSONALIZED
INTERACTION

Users Will Give Up Privacy In Return For Value

Drivers

- Increasing user frustration with current search paradigm of long list of results. Currently search yields thousands of links, and it is frustrating for users to dig deep into search results, and often searches are abandoned as users are unable to find relevant results.
- Use of keywords for search limits search engines ability to understand the intent of the user, and often users are unable to find relevant information.

Barriers

- Governments might step in to protect citizen's privacy. Google has come under fire from governments in Europe, especially Germany, for not protecting private user data.



PERSONALIZED
INTERACTION

Users Will Give Up Privacy In Return For Value

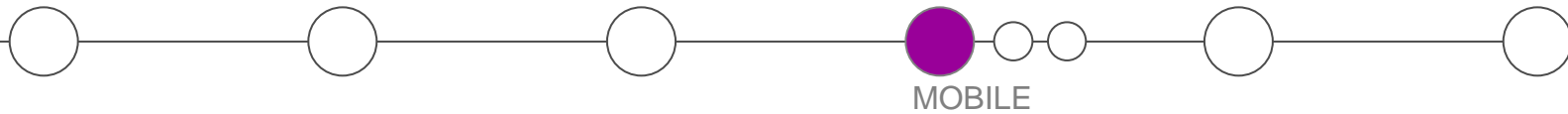
Early Signals

- Blippy is a service which lets users share their purchase/financial history in exchange for discovering interesting things others are buying.
- In December 2009, Google launched personalized search for all its users that customized search results based on search history of last 180 days linked to an anonymous cookie in the browser.



Google

Mobile



There Will Be An Expansion Of Search Activities On Mobile Devices

Mobile search will grow faster than PC search, but both will grow.

- Mobile searches will tend to be specific/task oriented and less about discovery, which is currently best suited for the PC/tablet.

As more mobile tools become optimized (apps and hardware), we will see an expansion of search scenarios revolving around contextual search, social media, and potentially more exploratory search.

- Having the right answer is more compelling in the mobile space.
- HDMI for mobile could mean devices become a repository for bringing content in the cloud along to search and view wherever and whenever.

MOBILE

There Will Be An Expansion Of Search Activities On Mobile Devices

interview quotes

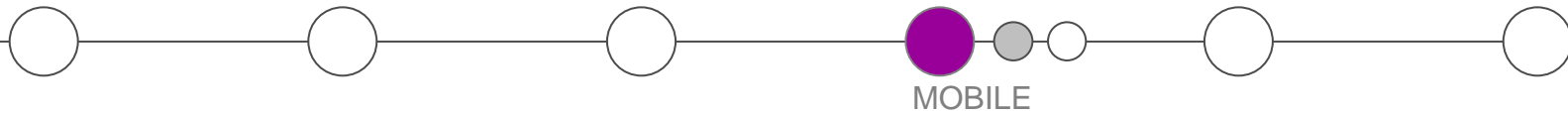
“Mobile makes relevancy important. Having the right answer is compelling in the mobile space.”
Lukas Biewald, Founder,
Crowdfunder

“The future is the mobile client in the cloud. The center of attention will have looped away from the PC to cloud devices in 2-5 years.” Dave Patterson, UC Berkeley

“Outreach of search on mobile platform is an extraordinary opportunity.” Dave Patterson, University of California, Berkeley

“Mobile will lead in search. It reached an inflection point last year. All the breakthrough ideas are in the mobile.”
Rob Coneybeer, Shasta Ventures

“Certain types of search will cannibalize search on PC (e.g. weather, movies), these will happen more on the mobile and less on PC. Things that lend naturally to the mobile. But there is still room for both. Some categories will live on the PC (immune to the phone).” Jake Seid, Lightspeed



Mobile Will Enhance Context-based Search Experience

As mobile search has access to different threads of contextual information (yours and friend's locations, photos, shopping, data stored in mobile apps), context will play a key role in the evolution of search on the mobile phone.

Mobile makes relevancy more important since most mobile searches are conducted in the context of looking to buy right now or getting recommendations in place, but within constraints of small screen size and keyboard.

MOBILE

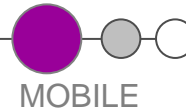
Mobile Will Enhance Context-based Search Experience

interview quotes

“Find[ing] out context of user, constant tracking will let you start to infer a lot from just people’s location. Gestures, microphone (Shazam) – there are these features on the device that can change search on the mobile.” Rob Coneybeer, Shasta Venture

“Mobile search gives you more clues about what the user is looking for based on their location. You can’t accomplish your tasks through the search engine on the web.” Timothy Chang, Northwest Venture

“Mobile will evolve and location will play a role. You’ll have an app that knows you like golf and it will give you the heads up while you drive near a golf shop (not invasive because you set it up this way). Groupon will lead the charge on this and Foursquare is starting to lead here, too.” Jeff Beard, Localeze

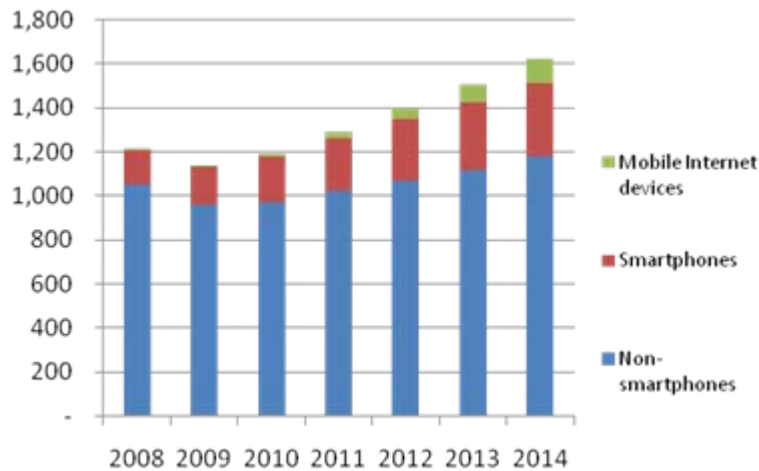


Mobile Will Enhance Context-based Search Experience

Drivers

- Growing adoption of smartphones worldwide.

Worldwide Handset, Mobile Device Shipments (millions)



Source: Morgan Stanley Report on State of Mobile

Barriers

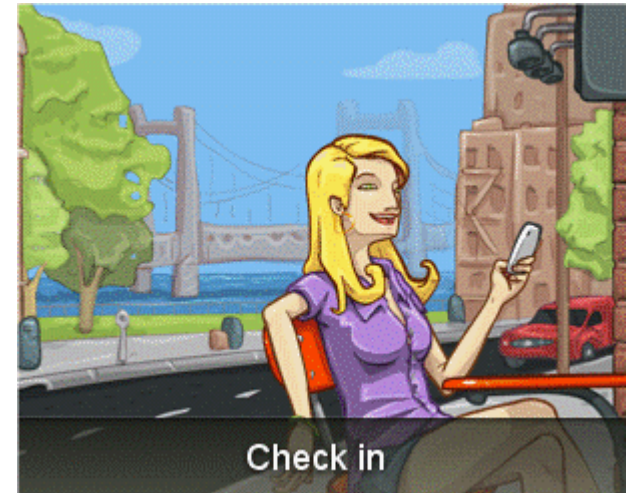
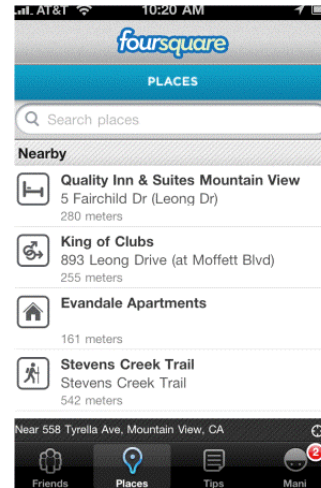
- Storing history and traffic might be an issue, especially if users don't trust the provider.
- Compared to the PC, the phone has a smaller screen real estate, making it difficult to display information.
- It is hard to structure user generated data (photos, videos, etc) captured on the mobile phone and make it searchable.
- Monetizing mobile search is harder because searches are in a specific place, while general searches have higher ad rates.

MOBILE

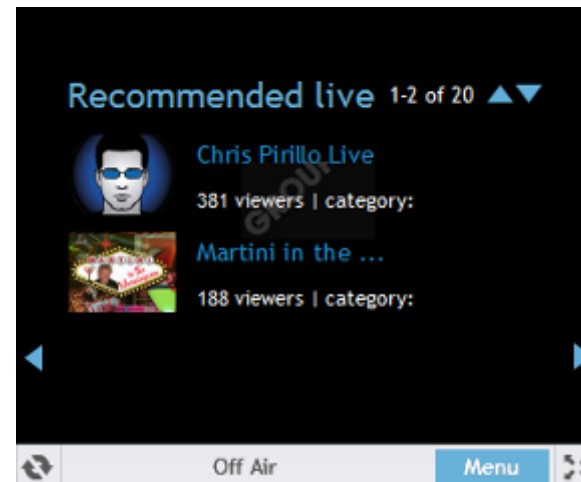
Mobile Will Enhance Context-based Search Experience

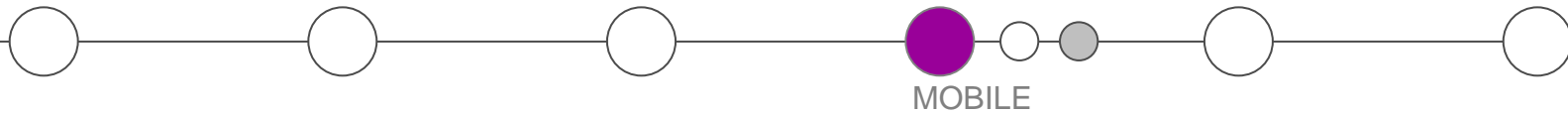
Early Signals

- FourSquare and Gowalla are popular location based application that use location as a contextual input, and let users check into places in return for badges and promotions from local retailers.
- Groupon offers daily deals to do something cool to do at an unbeatable price if you invite your friends so that enough people join that day.
- Facebook Places is their location check-in solution.



Source: FourSquare & Gowalla





Mobile Explores New Interface Options

The mobile experience is increasingly through apps, which could lead search behavior and impact expectations for PC search. Apps offer a focused way to get fast answers (directions, address, review, recommendations, social content, entertainment).

Voice for search will become increasingly important, especially in the US, while it is culturally less acceptable in Asia and much of Europe.

Using a camera for search remains a more niche activity.

MOBILE

Mobile Explores New Interface Options

interview quotes

“The average iPhone user has 44 apps and 26 of them are search.” Jens Lapinski.

“[mobile] Apps are a crutch for not being up to speed with the internet...web is a killer app, make the web experience better n the mobile device.” Jake Seid, Lightspeed

“Imagine if the search on the phone could be embedded into software and hardware of the phone – calendar, address book – we would be able to do cross application search. It talks to engines in a cloud that can search across cloud and searchable streams. “There will be a battle for smart search – smart will be added from the cloud.” Timothy Chang, Nor West Ventures

“Google voice technology on mobile is pretty good. It seems to get things write at least 95% of time. Voice for search will become increasingly important. But it is applicable only for certain use cases – while driving or crappy keyboard.” Rob Coneybeer, Shasta Venture

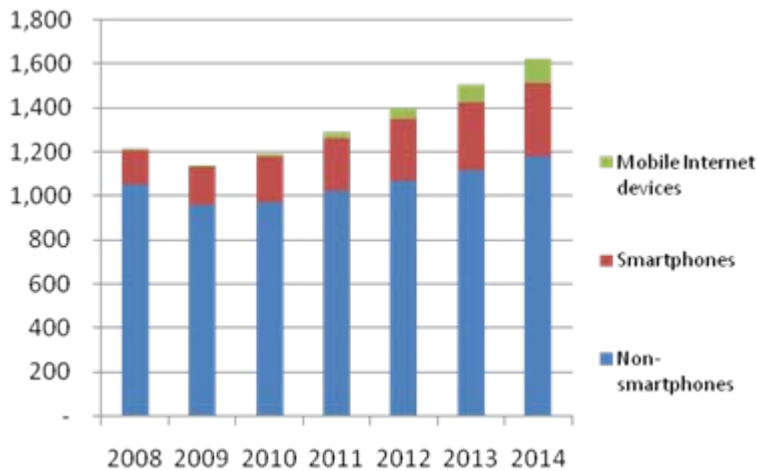


Mobile Explores New Interface Options

Drivers

- Growing adoption of smartphones worldwide.

Worldwide Handset, Mobile Device Shipments (millions)



Source: Morgan Stanley Report on State of Mobile

Barriers

- Storing history and traffic might be an issue, especially if users don't trust the provider.
- It is hard to structure user generated data (photos, videos, etc) captured on the mobile phone and make it searchable.



Mobile Explores New Interface Options

Early Signals

- Visual search company Cortexica has a Wine Finder app that enables price comparison using visual search.
- Augmented reality apps like Layar allow users to layer on a picture of what is around the user's location.



Verticalization




Specialized Vertical Search Sites Are Growing

VERTICALIZATION

Vertical sites like Yelp, Kayak and Amazon have become more popular, have brand recognition and maintain user data that cannot easily be accessed by search engines. Users use vertical websites and apps to get faster, more relevant and more streamlined results. Mobile vertical apps are becoming increasingly popular because they reduce the number of clicks required.

Specialized vertical search is most likely to occur when:

- There is a need for more information to flow directly from application usage (e.g. finding a fix for an error message);
- There is a decision-making process with a lot of facts that users is trying to optimize (e.g. shopping);
- There are specialized vertical applications that hook directly to specialized databases (e.g. Adobe help is integrated into its products).

 A slightly different case of verticalization is happening in China. Baidu is the main destination search but is integrating with other major websites to provide users with better service and authenticity to vertical sites. However, Taobao broke off from Baidu and is a major commerce destination.

VERTICALIZATION

Specialized Vertical Search Sites Are Growing

interview quotes

“Users are going to different vertical sites instead of a general search engine. This will compel SEs to focus and go deeper on verticals.” Venture Capitalist who has worked in the search industry

“You (SEs) need to delight the user regularly – they need to find something unexpected, something they were not looking for, but this is a murky area.”
Rob Hayes, First Round Capital.

“We should include some thinking about the type of categories that will emerge or already out there but could be better.”
Oren Etzioni, University of Washington.

“General web search is clearly here to stay and will grow as [?] volumes grow, but vertical search applications will also. I think, [it will] have a bright future because basically power users who are in a specific domain, that’s really where they want to see the advances.” UK Search Aggregate Company



VERTICALIZATION

Specialized Vertical Search Sites Are Growing

Drivers

- Users are already ahead of the search industry, and are conducting searches on vertical sites even referring to them as “knowledge honey pots.” This is especially true for Asia. For example, most users in China, instead of doing a search on Baidu or Google, go directly to websites like TaoBao.
- On mobiles, users are getting used to conducting searches on vertical apps since relevancy is key.
- Vertical sites, especially shopping and travel, have user data that can provide streamlined, faster and more relevant results.
- There is a general evolution from general to specialty merchants.

Barriers

- Since vertical websites like Amazon and Kayak are updated often, it is hard for search engines to continuously crawl and index them for providing fresh results.
- There is a possibility that vertical websites might lock out search engines from high value content.
- Currently, retail and travel sites have been ripe for verticalization. But it still needs to be seen which other types of sites will undergo verticalization, and where should search engines focus.

Specialized Vertical Search Sites Are Growing

Early Signals

- A Google search for Coach bag now provides results from vertical sites like Amazon.
- Vertical websites like Kayak, Expedia, Amazon have search capabilities making it easy to search for shopping or travel options. They also provide user generated reviews and recommendations making them the first destination for search for shopping and travel.
- Bing with Farecast technology has emerged as an attractive option for shopping for travel.

Shopping results for **coach bag**



[Coach Black White Signature Zoe Large Hobo Handbag 12674](#)

\$285.55 new - Amazon.com

[Coach Zoe Medium Signature Shoulder Bag - 12657 \(Black & White\)](#)

\$304.99 new - Amazon.com

[Coach Willis Bag](#)

\$298.00 new - Coach

Source: www.google.com



Business Model

Search Engine Monetization Model Will Soon Change

- Potential for current search ad revenue to slow down.
 - Attribution analysis will track which ads people were exposed to as opposed to just what they clicked on. Econometric models will help advertisers figure out the media mix for advertising. This will make display ads more attractive.
 - Marketers will put their money in display ads and SNs. Display ads which provide more real estate are preferable for increased branding expenditures. SNs are easier to understand.
- The ongoing controversy continues about whether a transaction is needed for an advertiser to pay or whether clicks are good proxies for value.
- High value clicks are moving away from SEs to vertical sites that have specialized data and can complete the transaction. Some vertical sites are developing strong brands.
- It is more difficult to monetize mobile search because it is often a specific location search and wider searches have higher ad rates.

Search Engine Monetization Model Will Soon Change

interview quotes

“Econometric modeling would actually provide reasonable recommendations on how to allocate media spend is in its infancy.... that actually run a platform with complex algorithms that make recommendations based on seasonality approach, etc., across all media.” Performance Marketing company

“Search has benefited from last click attribution since it’s inception. And I think what’s going to change over time, and when I say over time, it’ll start to have material change in the next 6 to 12 months and it will be considered commonplace in the next 24 months. Attribution analysis by influence will help assess the value of what you’re willing to pay for any kind of media.” Performance Marketing company

Search Engine Monetization Model Will Soon Change

Drivers

- Attribution analysis will track which ads people were exposed to as opposed to just what they clicked on.
- Econometric models will help advertisers figure out the media mix for advertising.

Barriers

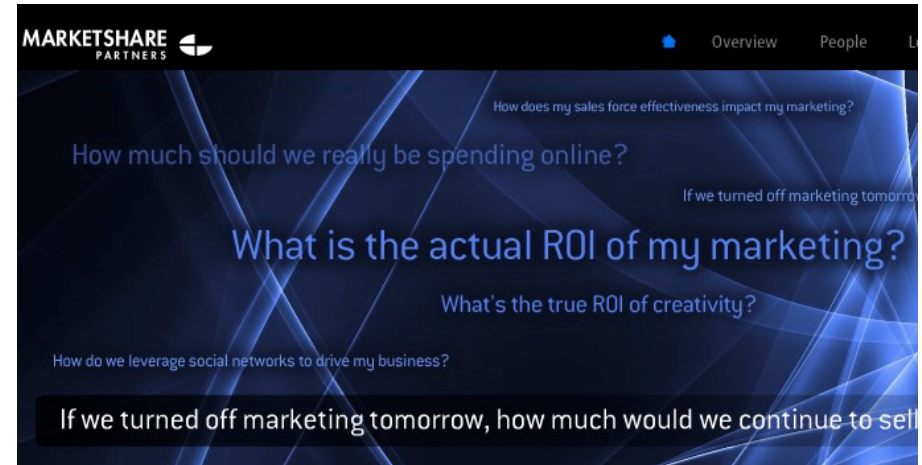
- Traditional agencies don't push online ads because their margins are higher for offline ads.
- Agencies have years of data showing the efficacy of traditional media, and similar data isn't available for online advertising.

Search Engine Monetization Model Will Soon Change

Early Signals

- “Compass™ generates specific, accurate and actionable recommendations about where you should be investing your marketing dollars based on facts about your business, your customers, and the industry you compete in.”

<http://www.marketsharepartners.com/>



Potential Implications

Trend	Implications
Value through Structure	The winners will be those who can 1) provide good access to data from different sources (e.g. Amazon, Facebook, real-time data); 2) do computations that cut across data types to figure out the meaning and join the dots; 3) present and structure the data.
Community Participation	Search results that are currently driven by algorithms will be augmented through human participation. Humans are good at pattern seeking and as the web move towards semantic analysis and sense-making, human participation will be key. SEs need to balance all the various elements of human participation.
	“Human curation” will replace some discovery in search.
Personalized Results	SEs need to “intuit” user preferences from what each actually does. SEs will have to index the web beyond key words to understand the context of the search.
	SEs need to place customer experience at the forefront of new search development thinking. SEs will gain value by starting to move toward a natural dialog.
Mobile	SEs have an opportunity to deliver increasingly intelligent and highly personal content in local search.
	Leveraging interfaces such as voice, camera (to some extent), and task-oriented apps is an opportunity.
Verticalization	There is a risk to SEs of losing high value traffic to niche sites, which own the transaction and the consumer. SEs continue to need to provide additional value.
Monetization	Search revenue growth will taper off because display ads /SNs will get a bigger chunk of dollars.

Other Trend Learnings

Use of voice as an input depends primarily on cultural factors

- Many cultures consider it impolite or an invasion of privacy to speak on the phone in public (Japan, UK, ???).
- In the US, many consider the technology to be good enough now. People are already trained to use voice in bill paying, etc.

There is mixed opinion on whether camera input will become important.

- Image recognition technology is still not developed enough.
- It's just as fast to type in a store name as take a picture.

Most people don't want to search on the TV.

- TV is seen as a viewing mechanism, and is passive.

Apps will be around for awhile.

- Apps have monetized usage and are often easier. Apps versus HTML5 is more a business case than a technical case.

IM has more power than social network sites and Twitter-like sites for social content sharing in China.

- This might be due to the continuous enhancement by Tencent, or the unique culture needs of Chinese people (IM is still a preferred way of communicating over Facebook).
- Tencent is expanding their business line and has created “fears” within the Chinese Internet industry.

There will be a shift of needs from more entertainment driven to more information/life/commerce driven.

- Driven by demographics – e.g. growing share of new users/young user/lower end users.
- As they mature, their online content needs will shift from primarily entertainment to life-based information (jobs, housing, commerce).

Thank you!