Big Think. Small Screen.

How semantic computing in the cloud will revolutionize the consumer experience on the phone

Tom Gruber
CTO and co-founder
Siri, Inc.
The Big Think

If your computer were really smart...

It would understand you in your language.
It would make sense of your environment.
It would help you solve everyday problems.
It would be at your service, everywhere.

Will we see this in our lifetimes?
BASED ON A TRUE STORY
THE PERFECT STORM
Bringing Intelligence to the Interface

The Cloud
The Pipe
The Interface
The Ecosystem
Big computing powers the titans of Web 2.0.

Web 3.0 will require even more computation.  
And innovation.

Can the Cloud make this possible?
Cheap computing?

"The illusion of infinite scalability"

Hint: Lightning

Big Data?

"The illusion of omniscience"

Hint: Weather systems
Living in the cloud – personal data

The cloud is the new data center: Photos, docs, music, videos, email, calendars & more

Consumers are used to living in the cloud.
In 2010 3G will hit mass market tipping point

Source: Morgan Stanley 2009 Mobile Internet Report
The Second Wave: Mobile Bandwidth

- **Wireline Traffic**
  - ADSL 1Mbps
  - ADSL 3-5Mbps

- **Wireless Traffic**
  - 3G
  - 4G

Smart Phones are the new PC.

Most new phones will be Smart Phones.

What makes smart phones **Smart**?
Brilliant Interfaces: The Senses

- Touch: **Multitouch**
- Hearing: **Sound in and out**
- Sight: **Cameras**
- Proprioception: **GPS, accelerometer**
- Taste: **tasteful 😊**

- Brain?
The food chain of Web 2.0 starts with search.

What will feed the ecosystem of Web 3.0?
Structured data? Semantic Web?

Connection:
"The Gigantic Join"

Services? APIs?

Combination:
"The mother of all mashups"
The Gigantic Join

Linking Open Data cloud by http://richard.cyganiak.de/2007/10/lod/
The Ecosystem of APIs and Online Data

Over 1600 APIs growing at accelerated rate...

YahooImages YahooInternetLocationPlatform YahooLive
YahooLocal YahooMail YahooMapImage YahooMaps
YahooMessenger YahooMusic YahooMusicEngine
YahooMyWeb YahooPlacemaker YahooQueryLanguage
YahooRelatedQuery YahooSearchMarketing YahooShopping
YahooSiteExplorer YahooTerms YahooTraffic
YahooTravel YahooUpdates YahooVideo YahooWidgets Yelp
YesBroadcastDB YourMapperAPI YouTube YouTXT Zanox
Zazzle ZeeMaps Zemanta Zillow Zixxo Zoho ZoomIn ZoomInfo
Zooomr Zvents
API connectivity amplifies the power of services.

Compound Interest 😊

The Big Think Paradigm:
Language as Interface
Sensory Awareness
Problem Solving
Personal Services
Siri demo here

for video demos:
www.siri.com
Bringing the Big Think to the Small Screen

Web Services and APIs in the Cloud

Domain & Task Models

Intelligence at the Interface
What's New about Big Think?
Language as Interface
Sensory Awareness
Problem Solving
Personal Services
From Keywords to *Conversation*

**Language as Interface**

Sensory Awareness
Problem Solving
Personal Services
With Cloud Computing, Speech to text has arrived.
Speech + Semantics + APIs

I think you said...

Where can I see avatar 3-D IMAX

tap text to edit

That’s right!
Go

Where can I see avatar 3-D IMAX

I looked for IMAX movies named "avatar" that are in 3D playing near here... here's what I found:

Avatar: An IMAX 3D Experience
PG-13, Action/Adventure, Sus..., 160 min
8:15 8:45pm

Play Trailer

Tap it...

Say it!
"Tell my husband I'll be late."
Language as Interface

Consider the Context

**Sensory Awareness**

Problem Solving

Personal Services
Location Awareness

http://lifehacker.com/395171/how-your-location+aware-iphone-will-change-your-life
Looking Up By Looking At
Connect it to open data...

Unidentified flying objects 49 books, 1980

Publishing History

[Diagram showing publishing history with years and book counts]
Looking Up by Listening

http://www.shazam.com/music/web/pages/iphone.html
Language as Interface
Sensory Awareness

From Search to Solve

Problem Solving

Personal Services
More than Just the Facts, Ma'am

<table>
<thead>
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<th>Calories:</th>
<th>bagel</th>
<th>mean value</th>
<th>% daily value</th>
<th>range</th>
</tr>
</thead>
<tbody>
<tr>
<td>total calories</td>
<td>bagel</td>
<td>207 Cal</td>
<td>10%</td>
<td>(192 to 211) Cal</td>
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<tr>
<td></td>
<td>doughnut</td>
<td>224 Cal</td>
<td>11%</td>
<td>(191 to 254) Cal</td>
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<tr>
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<td>bagel</td>
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<td>(7.6 to 14) Cal</td>
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<td>doughnut</td>
<td>104 Cal</td>
<td>(91 to 121) Cal</td>
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</table>

<table>
<thead>
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<th>Fats and fatty acids:</th>
<th>mean value</th>
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<tbody>
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<td>bagel</td>
<td>1.3 g</td>
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<td>saturated fat</td>
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<td>211 mg</td>
<td>1%</td>
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<tr>
<td></td>
<td>doughnut</td>
<td>3.4 g</td>
<td>17%</td>
</tr>
<tr>
<td>trans fat</td>
<td>bagel</td>
<td>0 g</td>
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</tr>
</tbody>
</table>

*percent daily values are based on a 2000 calorie diet*
Applying multiple sources to solve a problem

I'd like a romantic place for Italian food near my office

Ok, I found these Italian restaurants which reviews say are romantic close to your work.

La Pastaia Ristorante & Enoteca
San Jose, 0.1 miles
Yelp - 63 reviews

Hotel De Anza, 233 W Santa Clara St
San Jose, CA 95113

I love this place! This place has the best food in such a great, romantic atmosphere! My favorite date
Language as Interface
Sensory Awareness
Problem Solving

Using your information for you

Personal Services
Pandora and Livekick: Delivering services based on you
Delivering Personal Services on Command

Send a taxi to my office at 7 PM

I just need a few details, and then I can get you a taxi.

When: Today at 7:00 PM
Address: 1 Almaden Blvd
City: San Jose

Tap it...
The Phase Transition:

**TIRED**
- keywords
- typing
- browsing
- information

**WIRED**
- Language as Interface
- Sensory Awareness
- Problem Solving
- Personal Services
Thriving in the Big Think Ecology

- connect and **combine**, don't accumulate
- address human **tasks**, not just information
- apply intelligence at the **interface**, context-aware and personalized
Coming Soon to iPhone

A Virtual Personal Assistant