Voice User Interfaces—unlocking Data Service on Mobile Phones
March 2008
Vision

Unlocking access to mobile content with mobile Voice User Interface

- Mobile Internet held hostage by 12 keys
  - Less than ⅓ use mobile web browsers\(^1\)
  - Less than ¼ download applications\(^2\)
  - Barely half (54%) have bought ringtones, games, or other content
  - 85% of mobile TV users abandoned the service after just one viewing, underscoring the user interface difficulties facing mobile multimedia services\(^3\)
  - > 70% of subscribers who signed up for content bundles failed to actually consume any mobile content, indicating that usability, not price, was the culprit\(^3\)

Statistics are US only

(1) Merrill Lynch, June 2007
(2) Telephia bill & survey analysis of subscriber behavior during Q1 2007
(3) Cellular News - Ease-of-use Outranks Price As Key Barrier to Mobile Data Usage, Feb 2008
Carriers are looking to data as the primary source of ARPU growth

### US Data ARPU Projections

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Data ARPU</th>
<th>SMS</th>
<th>IM</th>
<th>MMS</th>
<th>Other Data</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>$8.73</td>
<td>$3.60</td>
<td>$0.44</td>
<td>$0.84</td>
<td>$4.26</td>
<td>$8.73</td>
</tr>
<tr>
<td>2008</td>
<td>$12.00</td>
<td>$3.96</td>
<td>$0.44</td>
<td>$1.13</td>
<td>$10.57</td>
<td>$12.00</td>
</tr>
<tr>
<td>2009</td>
<td>$14.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>$16.00</td>
<td>$3.96</td>
<td>$1.13</td>
<td>$1.13</td>
<td></td>
<td>$16.00</td>
</tr>
<tr>
<td>2011</td>
<td>$18.00</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### US Data ARPU Breakdown

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Data ARPU</th>
<th>% of Total ARPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>$8.73</td>
<td>100%</td>
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*Source: IDC, Gartner*
Why vlingo?

• Vlingo's unique breakthrough user experience
  – Only voice UI that can work seamlessly across all apps
  – Unmatched accuracy
  – Adapts and improves with users and usage
  – User not constrained to particular grammars

• Simple integration
  – ASP business model eliminates upfront costs
  – No training required
  – Not tied to specific application
In a report published on February 6, 2008, vlingo was identified by IDC as one of "Ten Emerging Mobile Players to Watch in 2008".

“IDC believes that voice/speech technology will continue to play a critical role in mobility for both the consumer and enterprises. vlingo has assembled a strong field of technology experts and experienced managers to address the need to deploy speech technology across a broader set of applications, in a more efficient and rapid manner and across a more open environment.”
**End-User vlingo Press Reviews**

<table>
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<th>Review</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>The New York Times</em></td>
<td>Vlingo’s service lets people talk naturally, rather than making them use a limited number of set phrases. It was all fast and efficient. Vlingo is designed to adapt to the voice of its primary user.</td>
</tr>
<tr>
<td><em>Xconomy</em></td>
<td>The system works—in fact, it works so well that vlingo officials who wanted to show me how easy it is to correct an error couldn’t get the system to make a transcription mistake in the first place.</td>
</tr>
<tr>
<td><em>PCWorld</em></td>
<td>I was impressed with vlingo</td>
</tr>
<tr>
<td><em>Scobleizer</em></td>
<td>This is the first thing I’ve seen for mobile phones that might get me to not buy an iPhone.</td>
</tr>
<tr>
<td><em>ars technica</em></td>
<td>Its voice-powered interface for mobile phones that makes voice recognition both magnitudes easier to use and learns from its mistakes.</td>
</tr>
</tbody>
</table>
Demo
Technology

New Technology
Automatic Adaptation
No up-front user training

Acoustic Models
(what speech sounds like)

Pronunciations
(what words sounds like)

Vocabulary
(what words people say)

Language Model
(how words go together)

Speech Recognition Engine

Data Network

Usage Data

Samsung phone

Say business or category, followed by city and state. Ex: "order in Dallas, TX"
Adaptive HLMs

- HLMs = Hierarchical Language Models
- Based on Statistical Language Models
- 10 Patents filed
- New approach which efficiently scales to millions of words
  - General Web Search
  - Directory Assistance / Yellow pages / Local Search
  - Navigation Destination Entry
  - Messaging
  - Social networking

- Adaptation
  - Per user
  - Across users
Better User Interface—
Allows for Adaptive Loop

- Drop down list for possible mis-
  recognitions for easy corrections
- Speak type over words to correct them
- Freely mix talking and typing

- Corrections captured at vlingo server to
  improve recognition for individual users
  and across users
- Network effect— the more users the
  better the system, creating barrier to
  entry
Business Model

• **ASP model**
  – Quickly voice enable mobile apps
  – Developer program

• **Revenue model**
  – Subscription per user per month
  – Usage based-pay per session
  – Revenue share
Go to Market

• Initial targets: mobile app providers
  – Local search
  – Navigation
  – Content

• Future targets: wireless operators

• Per user per month revenue model

• First deployments Q108
  – Local search
  – Navigation
Experience

Executive Management

Dave Grannan, President & CEO
- General Manager, Nokia
- President & CEO, Geoworks
- AVP & General Manager, Sprint PCS

Mike Phillips, Co-founder & CTO
- CTO, ScanSoft (Now Nuance)
- CTO and founder, SpeechWorks
- Research background MIT and CMU

John Elliott, VP Sales
- Director of Service Provider Sales, Nuance
- VP and Founder, Vision Forge Ventures
- National Accounts Manager, AT&T Wireless

Charlie Rutledge, VP Operations & Customer Support
- VP of Professional Services, SpeechWorks/ScanSoft
- Sr. Manager, Accenture
- Systems /Telecomms /Operations, Exxon & USX

John Nguyen, Co-founder & VP Engineering
- VP of Engineering, Groove Mobile
- Sr. Director, Network ASR, ScanSoft/Speechworks
- Ph.D. Computer Science, MIT

Experienced Team

35 Headcount as of February 1, 2007
- 27 engineers 4 PHD’s
  - Top MIT and CMU speech scientists
- 8 Sales/Marketing
  - 5 with 12+ years in carrier/software

Investors & Board

Izhar Armony, Charles River Ventures
Bob Davoli, Sigma Partners
Jeff Dunn, Former CEO Nickelodeon Enterprises