음성기술 현황 및 Business Model

2001. 3. 17
Index

• 음성기술 (Speech Technology)
• 시장
• 업체 및 현황
• Business Model
• Demo
• Q&A
Speech Technology

- 음성합성: Speech Synthesis (Text To Speech)
- 음성인식:
  - Speech Recognition (Automatic Speech Recognition)
    - 화자종속과 화자독립
    - 단어/가변어, 핵심어, 연속어 인식
- 화자인증: Speaker Verification
Speech Technology

• 핵심기술 & 기반기술
  ▪ MIT；21C 10대 기술
  ▪ WEF；미래 7대 기술

• 관련응용산업
  ▪ 정보통신산업, 자동차산업
  ▪ PC/Pocket-PC산업
  ▪ 가전산업, 게임산업
  ▪ Robot, 동시통역분야
Market Size

- The market is still in its early stage,
- But the overall growth is healthy and rapid.
- 2003년 전세계적으로 약 $380억 추정

### Revenues from advanced speech technology products in telephony, world wide ($Million)

<table>
<thead>
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<tbody>
<tr>
<td>Speech recognition</td>
<td>235.19</td>
<td>408.72</td>
<td>970.87</td>
<td>2,093.64</td>
<td>4,899.98</td>
<td>11,623.57</td>
<td>21,496.81</td>
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<td>Speaker verification</td>
<td>3.02</td>
<td>10.56</td>
<td>27.98</td>
<td>77.63</td>
<td>165.44</td>
<td>284.68</td>
<td>461.38</td>
<td>747.29</td>
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<tr>
<td>Text-to-speech</td>
<td>58.67</td>
<td>82.96</td>
<td>131.30</td>
<td>231.96</td>
<td>292.47</td>
<td>306.71</td>
<td>385.34</td>
<td>501.58</td>
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<tr>
<td>TOTAL</td>
<td>296.88</td>
<td>502.24</td>
<td>1,130.15</td>
<td>2,403.23</td>
<td>5,357.89</td>
<td>12,214.96</td>
<td>22,343.53</td>
<td>38,071.63</td>
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</tbody>
</table>

### 국내시장

- 2000년 ; 200-250억원 (SW Engine부분)
- 2001년 ; 350-450억원 추정
- 음성기술과 연관된 시장규모는 약 8천억원-1조로 추정
Market Trends

- Better and more robust speech and voice systems
  - Larger vocabulary and greater accuracy
  - Increase in processing power
- New standards such as VoiceXML*
- Expansion of wireless subscribers and enhanced services
- Growth of wireless phone use and internet connectivity

VoiceXML Forum; 1999.8월 AT&T, IBM, Lucent, Motorola에 의하여 결성된 Forum으로서 인터넷을 음성으로 조회하는 Markup language
Market Segments

- Services
- Hosting
- Application Software
- Middleware
- Transport
- Platform
- Speech Technology

<<The Food Chain>>
Market Segmentation

- Telecommunications systems:
  - IVR, CTI, Call Center, UMS, Voice portal, VAD 등
- Embedded 분야:
  - Consumer and personal electronic devices (Post PC)
  - In-vehicle systems (Telematics)
  - Interactive toys/Robot
- Desktop and Server 분야:
  - Voice Browser, Voice Game
  - Dictation/Translation
  - 교육용
Voice-enabled Application

- Voice portal, Telematics, e-Commerce
<table>
<thead>
<tr>
<th>Company</th>
<th>Speech recognition</th>
<th>Speaker verification</th>
<th>Text-to-speech</th>
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<tbody>
<tr>
<td>Aculab</td>
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<tr>
<td>Applied language technologies</td>
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<td>AT&amp;T</td>
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<td>BBN technologies</td>
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<td>Bell atlantic</td>
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<td>Bellcore</td>
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<td>Centre National d'Etudes</td>
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<td>CSLT S.P.A</td>
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<td>CSLU</td>
<td>O</td>
<td>O</td>
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<td>Dragon systems(Consolidation with L&amp;H)</td>
<td>O</td>
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<td>DSC communications</td>
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<tr>
<td>IBM</td>
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<td>ITT industries</td>
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<td>Keyware technologies</td>
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<td>Lernout &amp; Hauspie speech products</td>
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<td>Linkon corporation</td>
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<td>Locus speech</td>
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<td>Lucent Technologies</td>
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<td>NEC</td>
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<td>Northern telecom</td>
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<td>NTT</td>
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<td>Nuance</td>
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<td>Panasonic</td>
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<td>Philips</td>
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<td>Purespeech</td>
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<td>Speechworks</td>
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<tr>
<td>Voice control system</td>
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<tr>
<td><strong>Voiceware(Korea)</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
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</tbody>
</table>

- IBM, MS, AT&T, Philips
- **Intel**
  - Realize intelligent, connected, listening and talking computers
- MIT, CMU, ...
- **Speechworks**
- **Nuance**
- **L&H (파산)**
Company

- Nuance, Speechworks의 globalization

### US

#### US 1999

- Others: 20%
- PSP/VCS: 17%
- Speech Works: 16%
- Lucent: 14%
- L&H: 8%
- Nuance: 25%

Source: Frost & Sullivan, 2000

### Europe

#### Europe 1999

- Others: 28%
- PSP/VCS: 42%
- Speech Works: 9%
- Entropic: 5%
- Nuance: 16%

Source: Frost & Sullivan, 2000
국내현황

• 현재 국내에는 약 10여개의 Engine개발업체와 100여 개의 application개발업체
  ▪ TTS/ASR/SV 엔진개발업체 ;
  ▪ Application개발업체 ;
    ❖ Telecommunication분야;
    ❖ Embedded분야;
    ❖ Desktop분야;
  ▪ Hosting & Service업체; HeyAnita.Com, Voician.Com
• 외국 Engine개발업체의 진출
  ▪ L&H,Speechworks,Nuance Korea,Fonix, Conversay, Philips
국내현황

• System Integration Business
  ▪ Must need가 아닌 Value added
• 엔진개발업체; 수익화 및 경쟁력 확보 방안
  ▪ Engine성능향상
  ▪ 자연어처리를 통한 성능향상
  ▪ 엔진성능/안정성/속도
• Application개발업체; 수익화 방안
  ▪ Human factor를 고려한 design
  ▪ Killer Application개발
• 외국 major players의 선점을 위한 공격적인 진출
정부의 추진현황

• 산자부
  ▪ 한국음성정보기술산업협회 창립(2001.2)
    ❖ 음성기술산업 육성

• 정통부
  ▪ 음성정보처리산업협의회 창립(2001.2)
    ❖ 음성기술산업 육성

• 과기부
Business Model

Telecommunication System
Embedded System
Desktop system
Business Type

- Engine
  - B2B
  - B2B/B2C
  - Application
    - Port
    - License
    - Royalty
  - Hosting/Service
    - B2B
    - B2C

- B2B
- B2C

- B2B/B2C
Telecommunication

- CTI (Computer Telephony Integration)
  - ARS (Automatic Response System)
  - IVR (Interactive Voice Response System)
  - Call Center
  - eCRM (Customer Relationship Management)
- UMS (Unified Messaging System)
  - Email reader
- VAD (Voice Activated Dialing)
- Voice portal
Voice portal

- Revenue model?
Voice portal

- 미국현황
  - Tellme.com
  - Yahoo! By Phone
  - AOLAnywhere
  - MSN
  - Heyanita

- 국내현황
  - Voician.com
  - Heyanita Korea
  - Telco(SK/Dacom/한통) 준비중
Tellme Networks helps people and businesses connect over the phone more efficiently and conveniently than ever before. By combining the power of the Internet with the ubiquity of the telephone, we are able to provide the world’s largest voice application network benefiting both the individual and the enterprise.

FOR THE INDIVIDUAL
Call 1-800-555-TELL to reach the people, information, and services you need everyday.

FOR THE ENTERPRISE
Discover how your business can deliver superior customer service over the phone with reduced cost and complexity.
Yahoo! By phone

1-800-MY-YAHOO (1-800-699-2466)

When you sign up for Yahoo! by Phone you get:

Free e-mail by Phone

Free voice mail

Free Phone Access to Yahoo!
information on 1-800-MY-YAHOO

Signing up is simple:
AOL Anywhere

What is AOL by Phone?

AOL by Phone is a new service that allows AOL members to access their favorite AOL features like email, news, restaurant reviews and movie listings OVER THE PHONE. The service is powered by the latest voice recognition technology, and you speak to it in "plain English". AOL by Phone makes it possible to access all your favorite AOL features ANYWHERE you have access to a telephone.

Is AOL by Phone free? Are there any hidden costs?

For the next few months, AOL will be free to all AOL subscribers to use and enjoy. The service will grow and expand, and in April of 2001, the service will cost users a flat monthly rate of $4.95.

Do I need the internet or a computer to use AOL by Phone?

You will need to register to use the service at KW. AOL by Phone. You will also be able to set preferences for things like email and stocks at this key word. After you register for the product however, you do NOT need a computer to use AOL by Phone! You can reach AOL by Phone from your home, office, cell or even a payphone - anywhere in the United States. You can even call AOL by Phone from a rotary phone!

How does AOL by Phone work?
Embedded

- Telematics (Auto PC)
- Cellular phone/Post-PC/IMT2000
- 완구/Robot
- 음성인식Chip
- Cyberapt
- Home-automation
Telematics

- Intranet
- Personalized Service
- Internet
- Telco
- GPS

- Emergency
- Navigation
- Information
Telematics

- **Market size**

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<th>Year</th>
<th>Moderate</th>
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<tr>
<td>2000</td>
<td>258</td>
<td>408</td>
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<tr>
<td>2001</td>
<td>492</td>
<td>901</td>
</tr>
<tr>
<td>2002</td>
<td>1,105</td>
<td>2,219</td>
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<tr>
<td>2003</td>
<td>2,825</td>
<td>5,897</td>
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<tr>
<td>2004</td>
<td>5,394</td>
<td>9,156</td>
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<tr>
<td>2005</td>
<td>10,447</td>
<td>14,396</td>
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Market for In-Vehicle Information Systems (Global Moderate and Aggressive Forecasts)
Telematics

• 해외현황
  ▪ GM의 Onstar: 현재 service중
    ❖ Safe, Work, Fun car concept
    ❖ 벨애틀랜틱/GTE, Motorola
  ▪ Ford
    ❖ Sprint의 Voicedialing
    ❖ Qualcomm사와 Wingcast설립
  ▪ 에릭슨
    ❖ 비아샛(ViaSat)사와 제휴
    ❖ Delphi Automotive Systems사와 제휴
    ❖ 볼보, 텔리아와 합작법인인 WirelessCar설립
  ▪ MS: Window CE for Automotive, Car.net
  ▪ SUN: Java2 Micro edition

■ 국내현황
  ▪ 현대/기아자동차; LG텔레콤과 전략적 제휴
    ❖ AVICS 추진, 단말기 개발 추진중
  ▪ 대우자동차; 한통신리텔
    ❖ Dreamnet service; 보안,교통,생활편의정보 서비스
  ▪ 약 10여개의 업체가 단말기 개발중
    ❖ LG, SS, Hyundai, SK
GM’s Onstar

ABOUT ONSTAR : SERVICES : PERSONAL CALLING

Need to make a phone call? Just press the OnStar White Dot button in your vehicle!

OnStar's Personal Calling provides you with nationwide wireless service at the touch of a button. Simply say each digit of the telephone number you want to call and the voice-recognition system will dial the number for you. Use the memory feature to store numbers and speed dial by calling out the names of those you have saved. You can receive calls, too!

The one-touch wireless connection and easy, hands-free communication provide you with a superior blend of safety, security and convenience.
Value chain for Telematics

- Car Manuf.
- Wireless Carrier.
- Telematics Device Manuf.
- Service bureaus
- System Integr. & Content
- After Market Suppliers

- 현대자동차
- 대우자동차
- SKT
- KTF
- LGT
- A社
- B社
- .....  
- 현대 AVICS
- Portal
- .....  
- 한국IBM
- LG-EDS
- SK n-top
- .....  
- X社
- Y社
- .....
Telematics

• Motorola의 Fun car diagram
You've reached ClubAIBO, Sony's party headquarters for the AIBO Entertainment Robot. If you already own an AIBO, come on in and share your knowledge with fellow owners. Not an owner yet? ClubAIBO has tons of information about everyone's favorite robot buddy. You can also trade messages with our ultra-cool community of current owners.

**ClubAIBO - February 2001**

- **Boston AIBO Fair**
  The next stop for the AIBO Fair is Boston, MA on March 3. Check the Playing section for further details.

- **AIBO Carrying Bag – Now available**
  Travel in style with the new AIBO Carrying Bag. Now available at www.sonystyle.com and through the AIBO Adoption Line.

- **AIBO an object of desire**
Desktop

- Voice Browser
- Voice Game
- 교육용
- Cyber agent
- Translation
About Voiceware

- 1999.12.22일 설립
- 38명 employees(박사-3명, 석사-16명)
- 국내 최고의 음성기술 벤처기업
  - 음성합성; M/S 약 70-80%
  - 음성인식; M/S 약 40%
- 핵심역량
  - 약 10여간의 걸친 연구 및 5년여에 걸친 개발
  - 우수인력 및 다양한 경험 보유
  - 최다의 Partner보유
Demonstration

- What is TTS?
- What is ASR?
- What is SV?
Q & A

Thank you

(주)Voiceware
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