HTML5, WebRTC, and the Evolving Impact on Speech and Contact Centers

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HTML5 & WebRTC have support for sophisticated programmability and excellent speech quality, thus having the potential to change the landscape of both technology-based and agent-based customer service.
Strategic Planning Assumption:
By 2015, mobile Web technologies will have advanced sufficiently so that half of the applications that today would be written as native apps instead will be delivered as Web apps.

— Gene Phifer, Gartner
HTML5

- Extends the role of a browser from...
- A visual markup language interpreter

... to ...

An extended programmable platform for:

- Responsive visual client services
- Core-provided voice & video services
- Expanded programming capabilities, including off-line capabilities
Evolving Status of HTML5

- Industry Momentum: Major browsers support it: Safari, Firefox, Chrome, Explorer 9
- HTML5 definition is not final, but is closed to new issues.
  - As of December 2012, is a W3C Candidate Recommendation
- Three areas with different maturity:
  - Visual Interaction facilities, programming and control (near maturity -- several browser implementations)
  - Video and audio output (near maturity – but several codecs instead of original one)
  - Video and audio capture/encoding (Browsers now introducing support – zero to 12 months out)
Current Status Link:  [http://html5test.com](http://html5test.com)

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<th>Tablets</th>
<th>Mobile (out of 555)</th>
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WebRTC

- WebRTC is a “partner” to HTML5
  - Provides a container for media signaling and codecs
    - Signaling: Web sockets only
    - Codecs: Common (G.711) and internet-optimized (OPUS)
      Common (H.264 AVC), and alternatives (VP8)

- Google Media Engine (GME) has been called “WebRTC” — they’re not the same thing
  - GME is the basis of the Google media contributions to the Chrome WebRTC module, derived from GIPS
WebRTC Audio

Adopters of the Internet-optimized codec OPUS will enjoy a superior audio experience

- WebRTC requires two audio codecs: G.711 and OPUS
- What is OPUS?
  - Open source codec, standardized in IETF RFC 6176
  - Two codecs in one package: SILK and CELT
  - Best of internet and telephony characteristics
  - Good music on hold (Contact Center)
  - Good packet loss concealment (Internet)
  - Good transcoding (conferencing and warm transfers)
  - Spans the range from standard voice to HD quality
Desktop vs. Telephony IVR, and Sound Signal Bandwidth

- Compact Disc
- AM-Radio, Desktop, Super Wideband Codecs
- AM-Radio, Wideband Codecs
- Narrowband Telephone

Signal Bandwidth (Hz)

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OPUS Simulation Results – PESQ(Narrowband)

Narrowband @ ptime=20ms

- G.711 replacement
  ~ 18 Kbit

- G.729/726 replacement
  ~ 10-12 Kbit
Codec available via:
- Native in Chrome, Mozilla, and Firefox
- Plugin for Microsoft Internet Explorer and Apple Safari

Wide range of bit-rates available

Bottom line: Audio far superior to PSTN audio available in substantially less bandwidth

Implication:
- Server-based IVR-like speech processing will be significantly improved over past PSTN IVR systems.
- Simplicity of implementation and licensing for contact centers could spur development of speech dialogues
- Speech analytics (passive topic processing and passive biometrics) will substantially benefit
Example HTML5/WebRTC-Based Application Architecture

Public Domain

DMZ

WebRTC, plus Interactive and Real-Time Speech Analytics

Avaya Collaboration Environment and Avaya Media Server

Enterprise

Avaya Aura® Session Manager

Avaya Aura® Communication Manager

Avaya Aura® Call Center

Audio

Audio, SIP, Video

H.263, SIP

Avaya one-X® Agent

Avaya one-X® Communicator

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Example:
Dynamic Applications via HTML5, with Centralized Server-based Speech App via WebRTC

- Technical Support
- Type of issue
- Basic Troubleshooting
- Description of Problem
HTML5 Plus and Minus

+ Web application control using HTML5—responsive, but yet still thin client
+ Speech resources in enterprise using standard access via WebRTC and browser—no need for downloaded app
+ Complete understanding of application context

…but…

- Must be connected to Internet
- No additional optimization for device
- Simple apps can be done quickly—sophisticated ones not so easy
The Future of Customer Service

1. Often starts with Web or Mobile Application
2. Issue or question encountered
3. (Text chat from PC user)
4. Add voice (and video, if you want) to talk about issue
   – Today a callback
   – Soon, HTML5/WebRTC transport
5. Cobrowsing / remote control if needed
6. Resolution
Live Agent Contact Center Changes

- No need for IVR—
  - If you are just starting, visual choices are fast
  - If you are in an app, we already know where you are in your interaction with the company

- Move from “PBX ACD” to Work Assignment—the first work assigned might be that text chat!

- Likely codec is not G.711 / G.729—it’s OPUS, affecting:
  - Contact center endpoints
  - PBX systems
    (conferenced transfers, escalations, offsite agents)
  - Recording and review systems
  - Speech Analytics (post-call and real-time)
Summary

- HTML5 / WebRTC for audio is here
- OPUS is the new change in audio
- Applications can be thin client with speech easily
- Contact centers will embrace ‘Escalating Customer Service’
  - Adding voice is a natural step
  - Codec change will affect every component, but should increase understandability while reducing bandwidth needs
  - The positive change in agent efficiency could be huge