Cascaded Speech Styles

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• Formatting conveys structure.

• Audio formatting.

• Separating presentation from content.
## Electronic Information

Documents not just for printing!

<table>
<thead>
<tr>
<th>Electronic</th>
<th>Printed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical Structure</td>
<td>Layout Structure</td>
</tr>
<tr>
<td>Dynamic</td>
<td>Static</td>
</tr>
<tr>
<td>Customizable</td>
<td>Fixed</td>
</tr>
<tr>
<td>Interactive</td>
<td>Non-Interactive</td>
</tr>
<tr>
<td>Active</td>
<td>Passive</td>
</tr>
</tbody>
</table>

Information Comes Alive!
Formatting Structure

Formatted output:

- Permits direct perception.
- Reduces cognitive load.

Enables effective communication.
| a, plus the fraction whose numerator is, b plus c, end numerator, and whose denominator is, d plus e, end denominator, plus x. |  |
Example

\[ a + \frac{b + c}{d + e} + x \]

a, plus the fraction whose numerator is, b plus c, end numerator, and whose denominator is, d plus e, end denominator, plus x.
Information is display independent.
Speech Enabled WWW

- Audio formatted WWW pages.
- Effective aural browsing.
- User customizable presentations.

Web surfing without a monitor!
Interface Design

Direct speech access.

- Speak information, not visual display.
- Exploit structure of WWW pages.

Tailor presentation to output medium.
Requirements

- Well structured WWW pages.
- Separate content from presentation.

Preserve client-server separation.
Enable users access information:

- Where they want,
- When they want,
- The way they want!
• Separate content from presentation.

• Enable consistent site design.

• Enable user to tune presentation.

Content survives browsers.
Speech Style Sheets

- Specify eyes-free presentation.
- Enable personal customizations.
- Consistent site-wide sound and feel.

Surf the WWW on a speech board!
CSS Advantages

Speech style sheets afford:

- Device independence.
- Research tool for audio formatting.

Design high-quality aural presentations.
Concrete Example

Speech styles have been implemented:

- Emacspeak and the Emacs W3 browser.

- CSS compliant implementation.

Provide direct speech feedback.
Obtaining Software

- **W3**:  
  [http://cs.indiana.edu/pub/elisp](http://cs.indiana.edu/pub/elisp)

- **Emacspeak**:  
  [http://cs.cornell.edu/home/raman](http://cs.cornell.edu/home/raman)