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Opening up Access to Online Documents using Essentiality Tracks

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22nd May 2006

Loughborough University
Current Problems

Information Exclusion

Standards Compliance

̸ Usability [Mohamad et al., 2004]

Information Overload [Hiltz and Turoff, 1985, Berghel, 1997]

On the other hand...

The DRC2004 [Disability Rights Commission, 2004] provides us with motivation to use accessibility as a benchmark for site usability – 35% of sites are easier for everyone to use if they are made accessible!
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Introducing Essentiality and Proficiency

Essentiality and Proficiency 

Tool [Dhiensa et al., 2005].

System for web page mark-up and display.

Designed for uses such as:

- Mobile 'phone and PDA users.
- Accessibility improvements.
- Useful for when space or time is at a premium.

Essentiality filtering and personalised rendering is carried out as a proxy service.
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Basic Principles

A page contains information of varying relevance to the reader. This is marked up by the author against a certain scale. The page can then be displayed at the desired level of essentiality. All items with an equal or more important essentiality rating are then displayed. Rendering subject to “Proficiency” of the user or device. User profiles stored centrally.
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- Rendering subject to “Proficiency” of the user or device.
- User profiles stored centrally.
Example: User’s Point of View – Before
Example: User’s Point of View – After

- home
- banking
- credit card
- insurance
- investments & pensions
- loans
- mortgages
- savings

[ View https://co-teach.lboro.ac.uk/corgs/essen/nationwide/default.html without filter ] [ Essensity filter Home ] [ Essensity level: 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10 ]
Example: Author Mark-Up

Updates

2005/10/19: Beta 4.1 has been released.
Check out RecentChanges for more detailed update information.

Research

Are you interested in funding research that will change the way we deal with information and improve accessibility issues for the blind and vision-impaired? Please visit my home page for more information and become one of the first to benefit.

The AGRIP Project

Welcome to the AGRIP Project's Wiki. This site was created so that the community can learn about how to install, use and develop the software we produce.

Our aim is to provide access to the mainstream gaming community not by producing specialist "accessible games" but by making mainstream games - and their associated extension and development tools - accessible. We want blind people to not only play the games that sighted people do, but to be involved in the online communities that surround them and to extend them, creating new games and applications with them; something that sighted people have enjoyed a great deal over the years.

Over the past two years, we have developed an accessible version of Quake and QuakeWorld which allows both single and multi-player games, including the collection of online player statistics. In the future we will add immersive 3D audio
Benefits and Limitations

- Only one version of site needed.
- Helpful to "normal" as well as disabled users.

Dynamic Content

- "Facts"
- "Prose"
Benefits and Limitations

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▶ Scalability
A standard (DTD) for writing (technical) documentation.

A set of filters (XSLT) to convert DocBook to many other formats.

Separation of content from formatting.

(Easy) Extensibility.

A simple implementation of essentiality was added to DocBook XML.

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The Problem of Context I

Under no circumstances must any employee:

- Stay in the building after the alarm has sounded. Leave the building immediately if there is a fire.
The Problem of Context I

<essn level="7">
  <para>Under no circumstances must any employee:</para>
</essn>

<essn level="5">
  <itemizedlist>
    <listitem>
      <para>
        Stay in the building after the alarm has sounded. <essn level="9">Leave the building immediately if there is a fire.</essn>
      </para>
    </listitem>
    . . .
  </itemizedlist>
</essn>
The Problem of Context II

Under no circumstances must any employee:

- Leave the building immediately if there is a fire.

These problems can be avoided.
Sample (X)HTML output from the above DocBook XML source,
Sample (X)HTML output from the above DocBook XML source,

if user-specified essentiality level is between 6 and 9...
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if user-specified essentiality level is between 6 and 9...

<p>Under no circumstances must any employee:</p>
<ul>
  <li>Leave the building immediately if there is a fire.</li>
  . . .
</ul>
Sample (X)HTML output from the above DocBook XML source,

if user-specified essentiality level is between 6 and 9...

Under no circumstances must any employee:

- Leave the building immediately if there is a fire.

These problems can be avoided.
What are Essentiality Tracks?

A way around the problem of scalability.

People have different roles.

Mark the document up with respect to these roles.

Essentiality rating becomes two-dimensional.

<essn track="manager" level="3">
...
</essn>

<essn track="developer" level="4">
...
</essn>
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```xml
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Expected improved productivity.
Benefits and Limitations

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- Expected improved productivity\(^1\)

\(^1\text{ currently being tested }\)
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Benefits and Limitations

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- Helpful to “normal” as well as disabled users.
- Expected improved productivity\(^1\)

- More complex
  - for the author
  - filtering algorithm

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Proposed Implementations

- Interface
Proposed Implementations

- Interface
  - Web Form
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- Interface
  - Web Form
- Transformation
Proposed Implementations

- Interface
  - Web Form
- Transformation
  - Central Proxy
Proposed Implementations

- Interface
  - Web Form
- Transformation
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  - Client
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- Interface
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- Delivery (and Proficiency)
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- **Interface**
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- **Transformation**
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  - (X)HTML
Proposed Implementations

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- Transformation
  - Central Proxy
  - Client
- Delivery (and Proficiency)
  - (X)HTML
  - PDF
Proposed Implementations

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  ▶ Web Form
▶ Transformation
  ▶ Central Proxy
  ▶ Client
▶ Delivery (and Proficiency)
  ▶ (X)HTML
  ▶ PDF
  ▶ Plain Text
Example Web Form

Browser Menu and Toolbar

Document Retrieval Form

Your role

Essentiality

Profile

Custom font

Custom colours
The Proxy Approach: Challenges

Popular criticisms of proxy approach, including those cited by other related work [Hanson and Richards, 2004, Mohamad et al., 2004].

- Transformations overridden
- Bandwidth
- Lots of “Undoing” work
- Tolerance of non-compliant sites
- Most web sites are not annotated to provide extra accessibility information

Application in the “Real World”
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All style information is embedded in XSLT/CSS. Bandwidth or processing time (on the client) can be saved. No “undoing” work is necessary; only the transformations appropriate to the user are carried out. No tolerance of non-conformance is required. No absolute need for annotation, but already established a business case for it.
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  - Track Relationships
Future Work

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- Adoption
Essentiality and Proficiency
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How they can be applied in other areas
Summary

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- How they can be applied in other areas
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- Possible uses
Thanks for listening!
Any Questions?


A web accessibility service: update and findings. 

Structuring computer-mediated communication systems to avoid information overload. 