Fluid Annotations through Open Hypermedia

Using and Extending Emerging Web Standards

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Overview

- Previous work
  - Fluid Documents
  - Open Hypermedia Systems

- Fluid Open Hypermedia prototype
  - requirements for Web annotations
  - relation to and use of existing Web standards
  - demo

- Perspective
  - fluid annotations on the Web
  - future Web Standards

Fluid Documents

- Fluid Documents use animated typographical changes to show annotations in context
  - previous applications: hypertext, spreadsheets, eBooks, avant-garde fiction, reading instruction
- Fluid Links use fluid annotations to smooth the hypertext browsing experience
  - glosses = annotations on link anchors
  - help readers choose among links
- Previous prototypes focused on viewing experience
  - supported author-created glosses (stored in document) and automatically-generated glosses (fetched/derived from dest)
- User studies validated basic ideas of animation & context
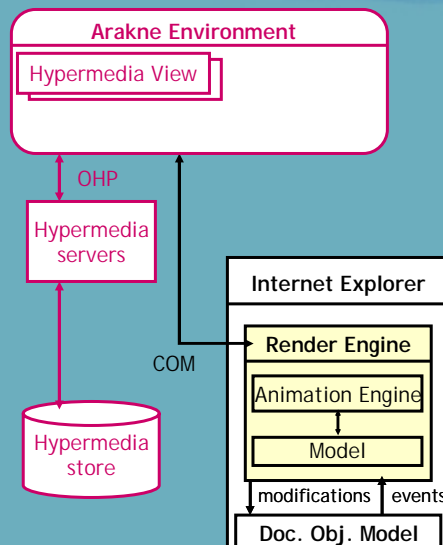
Open Hypermedia Systems

- Integrate third-party applications with hypermedia
  - allow users to create links between e.g. word-processing docs, email, and spreadsheets
    - Microcosm, HyperDisco, DHM, Chimera, HOSS
- Hypermedia structures stored outside documents
- Allow users to create hypermedia structures on existing Web pages
  - proxy modifies Web pages en route to the browser
    - DLS, DHMProxy
  - Web browser controlled to modify pages inside browser
    - Webvise, Arakne Environment

Requirements for Web Annotations

- Augment existing Web pages directly
- Support fine-grained annotations within page
- Allow readers to view glosses in context
- Allow control of salience of annotations
- Allow readers easy viewing control
- Allow readers to interact fully with glosses
- *... more in paper ...*

Fluid Open Hypermedia

- *Augment existing Web pages directly*
  - use Arakne Open Hypermedia System
  - allows users to add & share hypermedia structures via a general OHS architecture
   - links, annotations, guided tours, ...

Arakne Environment

Hypermedia View

OHP

Hypermedia servers

Hypermedia store

COM

Internet Explorer

Render Engine

Animation Engine

Model

modifications | events

Doc. Obj. Model

Fluid Open Hypermedia

- *Support fine-grained annotations within page*
  - use OHS LocSpecs (similar to XPointer) to specify within-page anchor locations
  - extend OHS PSpecs to specify:
    - presentation of anchor text
    - presentation of gloss content
    - placement of gloss
   - activating gloss
    - animating gloss opening/closing
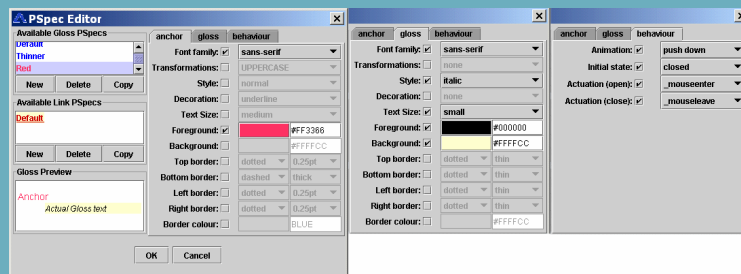
Fluid Open Hypermedia

- *Allow control of salience of annotations*
  - *anchors & glosses: blend in or be visually distinct*
  - use CSS to specify anchor, gloss appearance
  - cascade inherits easily from context if desired, and allows link/annotation anchors to compose
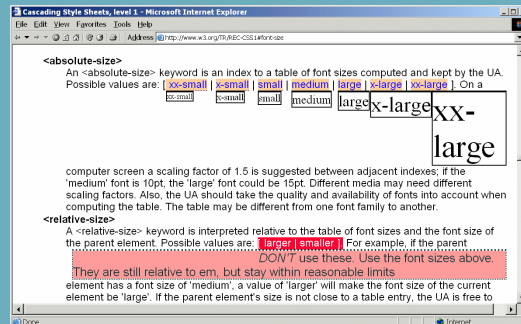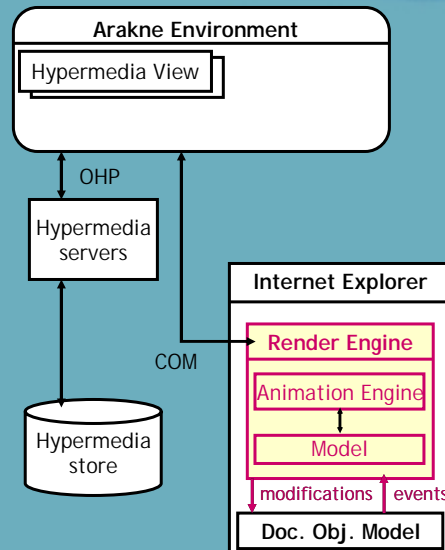
Fluid Open Hypermedia

- *Allow readers to view glosses in context*
  - *ideally: near anchor with minimal occlusion*
  - *animated opening/closing clarifies page changes*
  - glosses typically hidden, reader can interactively open
  - "push down" technique gradually reveals the gloss below the anchor, while the following lines are pushed down the page to make room
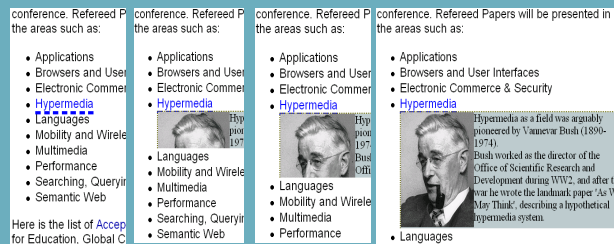

Fluid Open Hypermedia

- *Allow readers easy viewing control*
  - *ideally: multiple glosses open simultaneously*

- At open/close gloss events
  - AE animates gloss as specified
    - uses DOM & CSS to gradually change appearance
 - RE records gloss state in Model

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**Doc. Obj. Model**

Fluid Open Hypermedia

- *Allow readers to interact fully with glosses*
  - *insert/explore embedded links, annotations*

  - glosses expand to become temporary 1st-class page elements via dynamic changes to the DOM
  - glosses are HTML and can contain ordinary links, open hypermedia links and/or fluid annotations
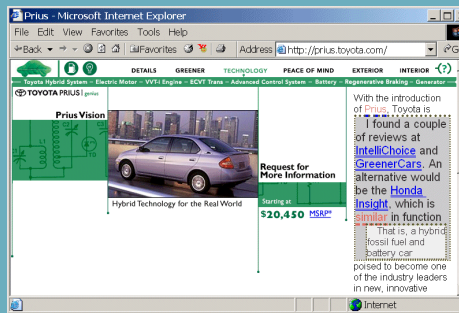
Demo: Open Fluid

Making Room for Glosses via DOM

- Glosses■ exist within white space boxes within a content box■, used to create and utilize available space on a page

Anchors

Content box

White Space box

Gloss boxes
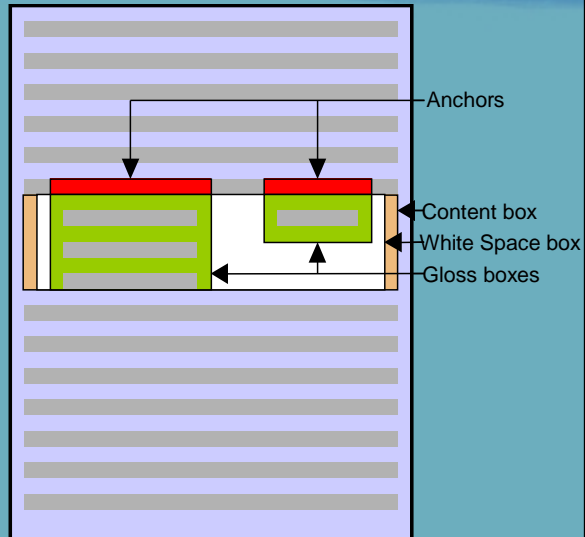
Open Fluid and Web Standards

- Existing standards are powerful, *especially when combined with custom programs*
  - cascade: provision for adding appearance
  - style sheets: good description of appearance
  - DOM: the necessary interface for accessing the page
- **Critique**: CSS1 & 2 are *static*
  - no support for dynamic markup
  - BECSS (Behavioral Extensions to CSS) holds promise for CSS3
- Ruby
  - could be used to support glosses
  - supported in IE6.0 through special `<ruby>` tag

annotations

Open Fluid and Annotea

- Annotea
  - Web-based shared annotation framework
  - available for Amaya, bookmarklets, & Annozilla

- Could be extended to support fluid behavior
  - presentation specification name space
    - (ignored if not supported by local platform)

- **Critique**: Annotea's notion of presentation is limited
  - both anchors and glosses

Extending Existing Standards

- Open Fluid relies heavily on DOM & CSS

- Dynamic behavior extends the reading experience
  - currently, little support for specifying dynamics
  - BECSS and ruby hold promise for CSS3

- Annotea
  - no provisions for complex presentation specifications
  - format can easily be extended

Conclusions

- Open Fluid provides fluid glosses on existing Web pages
  - implementation can handle complex HTML pages
  - gloss animations are responsive and smooth
- Readers can add their own glosses to existing Web pages
  - varied anchor and gloss appearance via CSS
- Behavior as exemplified in Open Fluid:
  - provides rich navigation and annotation
  - natural companion to Annotea, CSS, RDF, and XLink

Questions?