Fluid Annotations through Open Hypermedia

Using and Extending Emerging Web Standards

Niels Olof Bouvin          Polle T. Zellweger
Kaj Grønbæk              Jock D. Mackinlay
Aarhus University, Denmark  Xerox PARC

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, ...

![Diagram of Arakne Environment and Hypermedia View](image-url)
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

- 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
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.

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
Open Fluid and Annota

- **Annota**
  - 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
- **Annota**
  - 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?