WebDAV and DeltaV: Research, Adoption, Spinoffs

Jim Whitehead
University of California, Santa Cruz
ejw@cs.ucsc.edu
What are WebDAV and DeltaV?

- Two **protocols** that extend HTTP to provide:
  - **WebDAV**: Remote collaborative authoring
  - **DeltaV**: Versioning and configuration management

- An **infrastructure platform** for:
  - Software development
  - Document management
  - Web site authoring
  - Digital libraries
  - Electronic records management

- A **research project** initiated at UC Irvine
  - Standards work took place in the Internet Engineering Task Force (IETF)

- A significant **industry standard**
  - Adobe, FileNet, Microsoft, Apache, Oracle, Apple...
Collaborative Document Authoring

- Three collaborators, in different cities, use Word 2000 to collaborate on a report they are producing together.
Adoption
Filesystem View

- Exemplars: Web Folders, WebDrive, WebIFS, TeamDrive, Mac OS X
Document Authoring

- Exemplars: Office 2000/XP: Word, Excel, PowerPoint, as well as Photoshop, Documentor, and XML Spy

Office: uses filesystem metaphor for WebDAV location
Photoshop

- **Workflow** metaphor for WebDAV location
Remote Collaborative Annotation

- Acrobat 5 views a WebDAV location as a storage location for document annotations
  - Annotations are stored in resources separate from the PDF document
Spinoff: Containment Modeling
The Web

Web server

resource

HTML link

Stores

Multiple containment, single membership, unordered

Single containment, single membership, unordered,
inclusion

Single containment, single membership, ordered, inclusion
KMS

Observations
• HTTP and URLs (vs NFS and filenames) are the **big** difference
• Pattern for embedded linking

Stores

*Multiple* containment, single membership, unordered

**Single** containment, single membership, unordered, **inclusion**

**Single** containment, single membership, **ordered, inclusion**
• One of the most complex versioning unaware hypertext data models.

**HURL (SP3/HB3)**

- **Multiple** containment, single membership, unordered
WebDAV Research Cycle

- **Research**
  - Core standards work nearing completion
    - **WebDAV:** RFC 2518 (1999)
    - **DeltaV:** RFC 3253 (2002)
    - Access Control: imminent, Searching (DASL): late 2002

- **Adoption**
  - Strong adoption of WebDAV
    - Over 20,000 new WebDAV-enabled Apache sites per month
    - Most commonly used office applications support it
    - Core technology in Endeavors Magi P2P application
    - DeltaV adoption is off to a strong start
      - Subversion, Xythos, Merant PVCS are early implementors

- **Spinoffs**
  - Containment modeling mechanism
    - Insights for Software Configuration Mgmt., Hypertext, Document Mgmt.
  - *A strong example of industry and academia working together to the benefit of both.*