

WebDAV and DeltaV: Research, Adoption, Spinoffs

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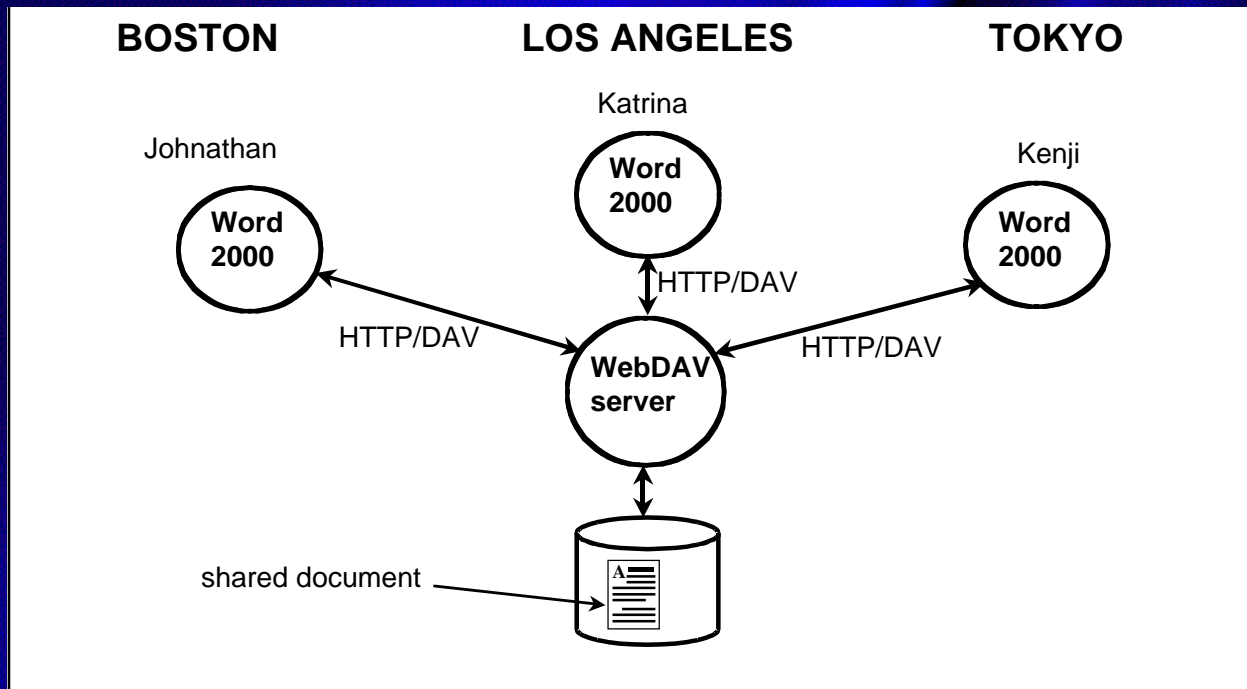
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What are WebDAV and DeltaV?

- 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

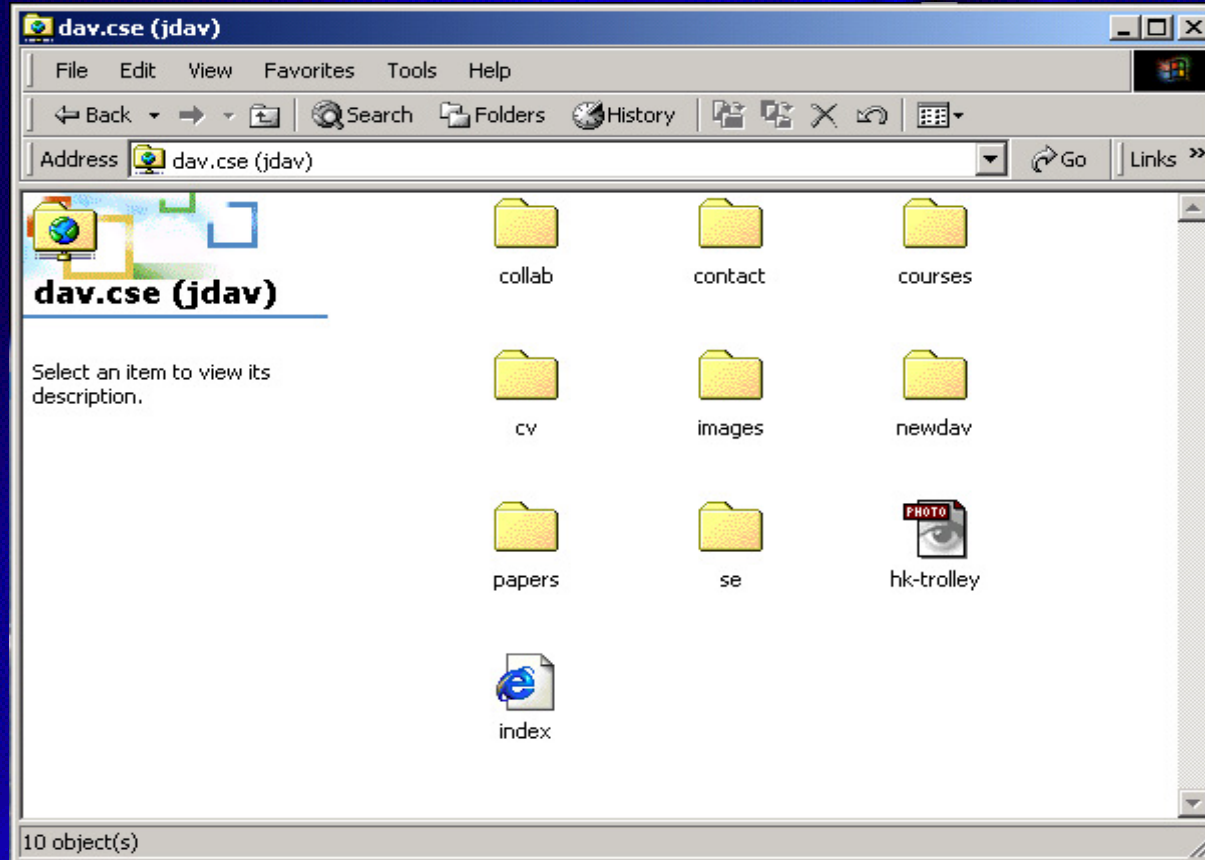
- Three collaborators, in different cities, use Word 2000 to collaborate on a report they are producing together.



Adoption

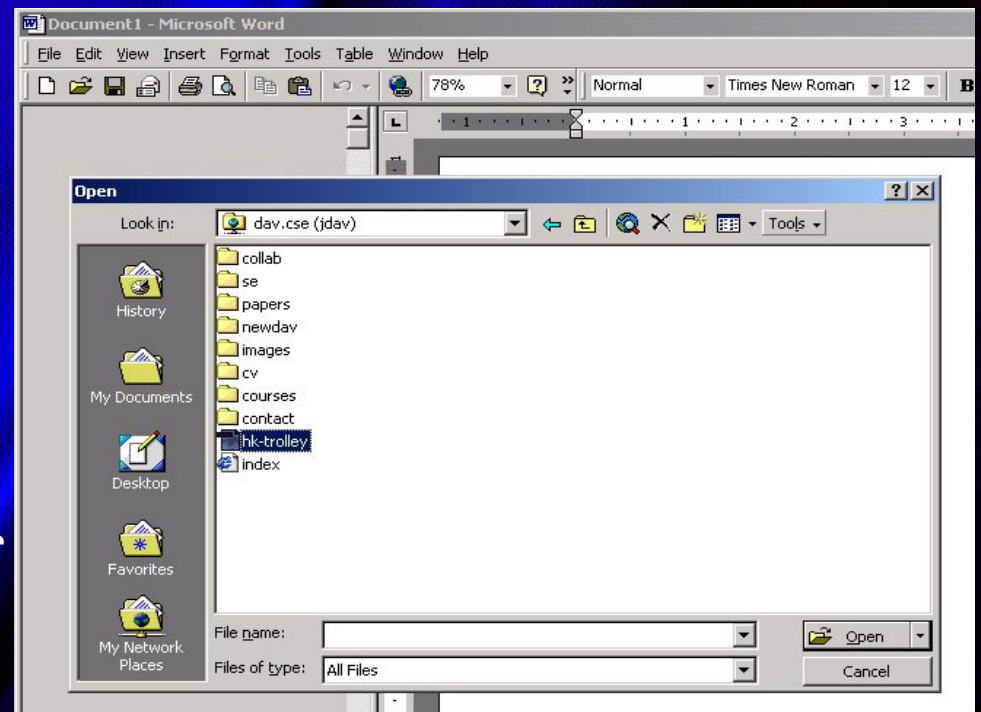
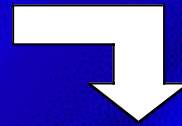
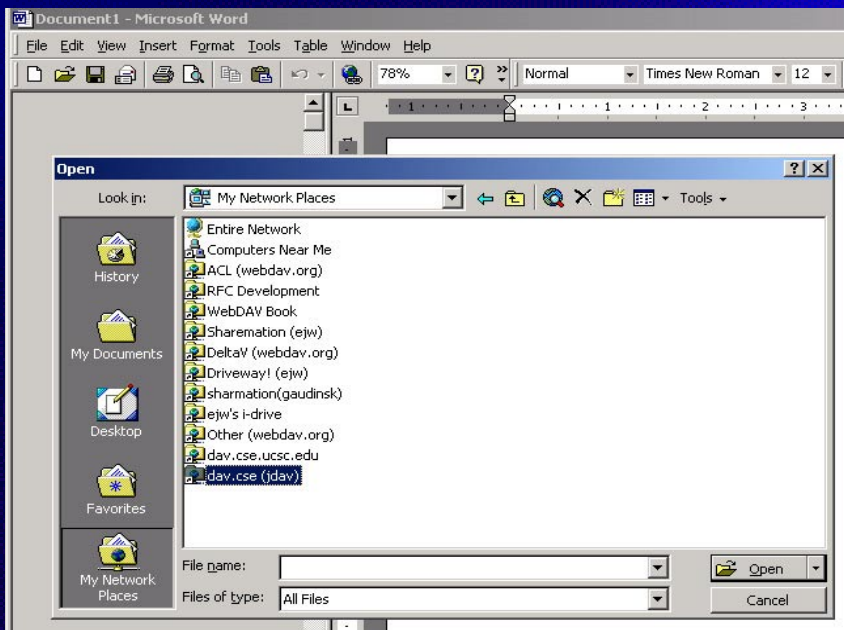
Filesystem View

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



Document Authoring

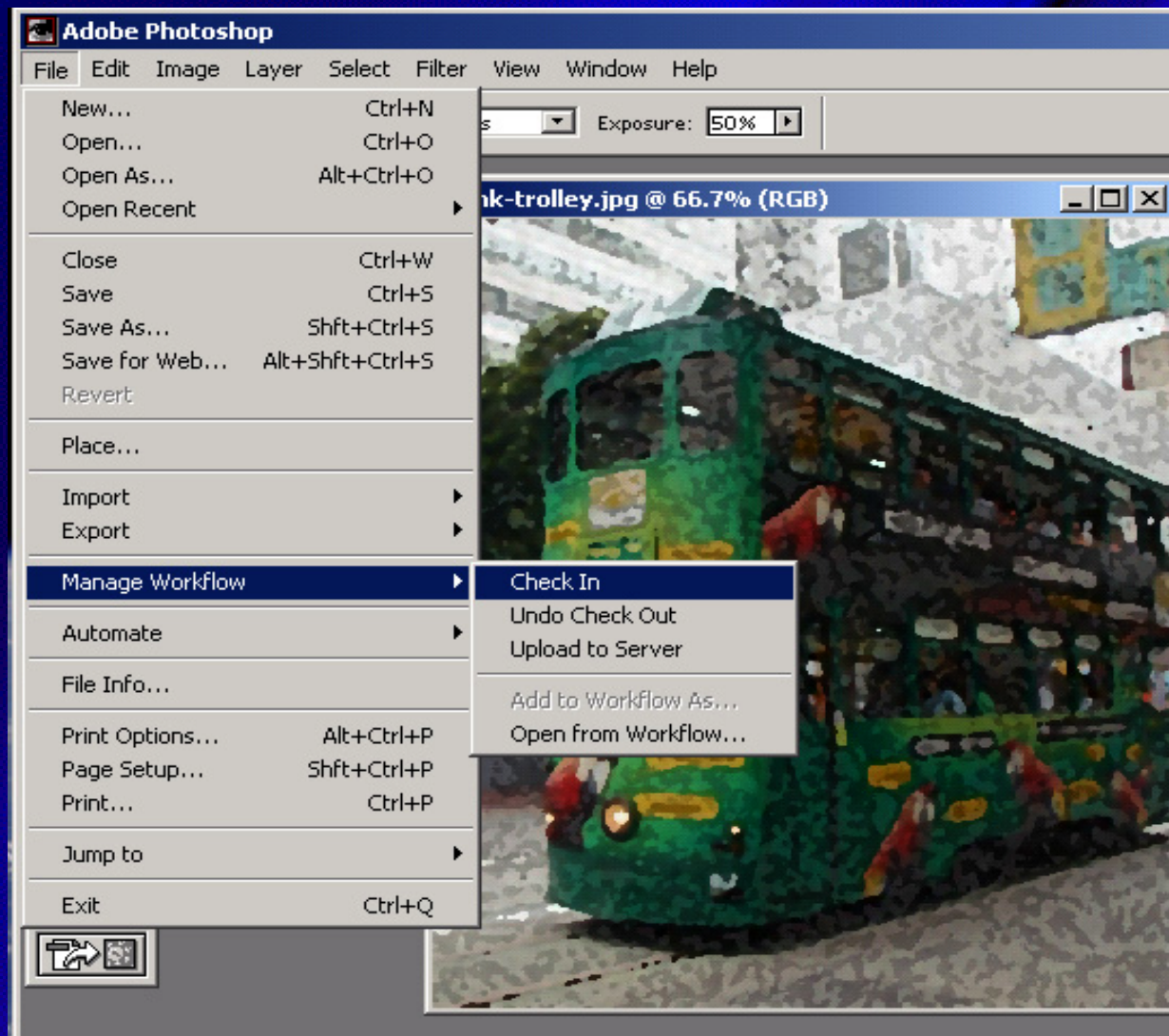
- Exemplars: Office 2000/XP: Word, Excel, PowerPoint, as well as Photoshop, Documentor, and XML Spy



Office: uses filesystem metaphor for WebDAV location

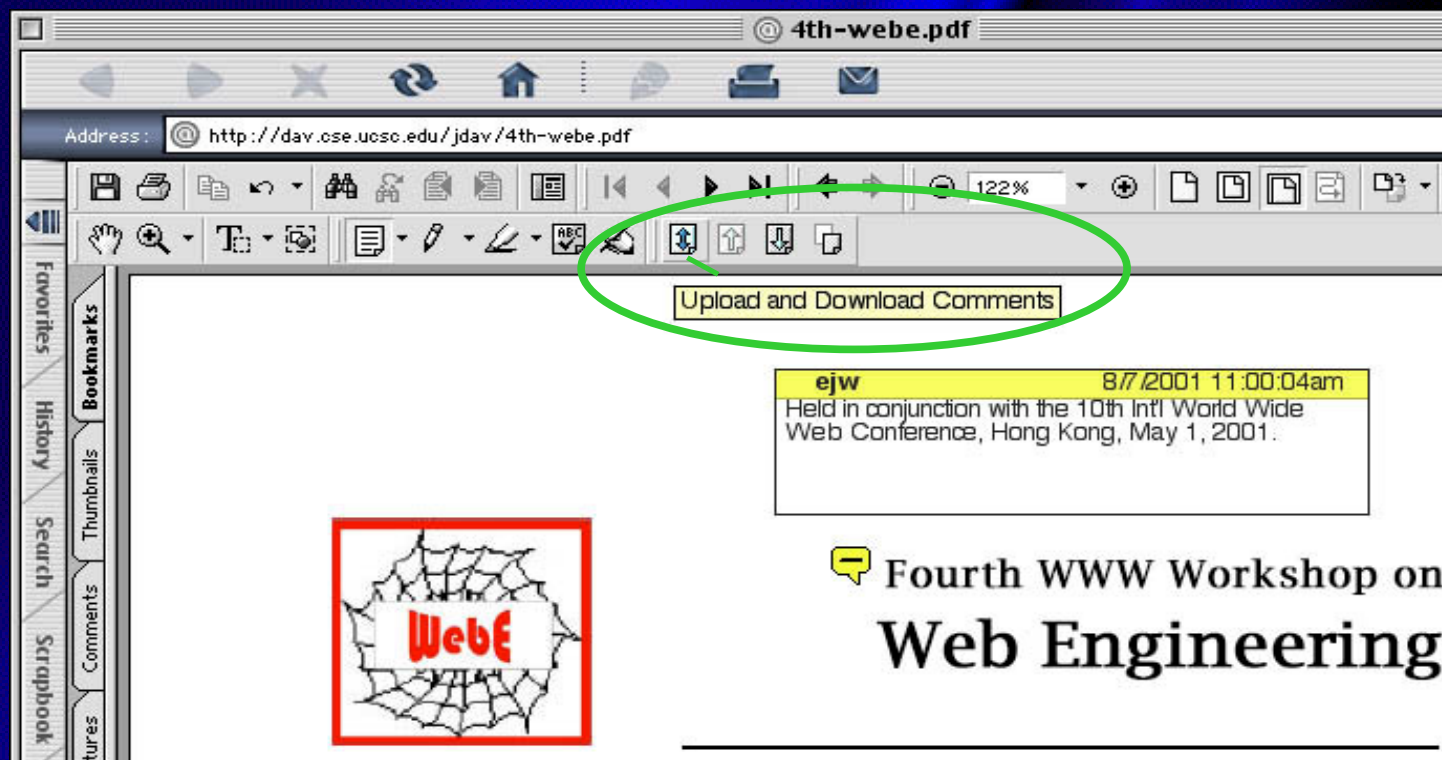
Photoshop

- **Workflow** metaphor for WebDAV location



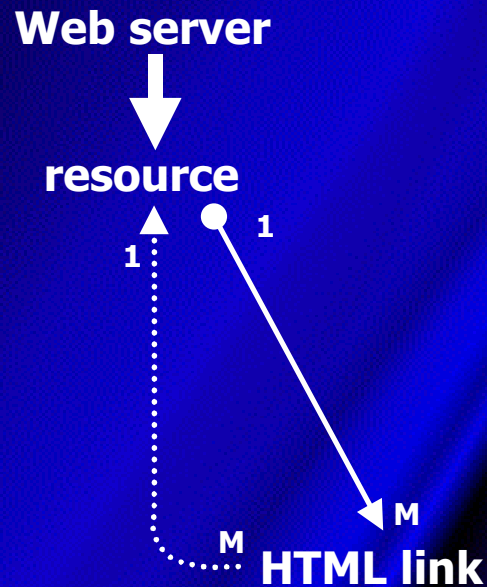
Remote Collaborative Annotation

- 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



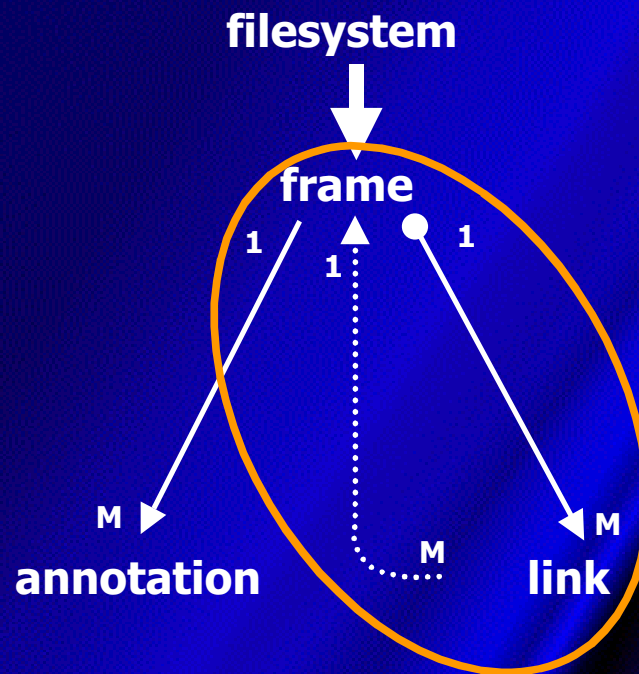
→ Stores

.....▶ **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

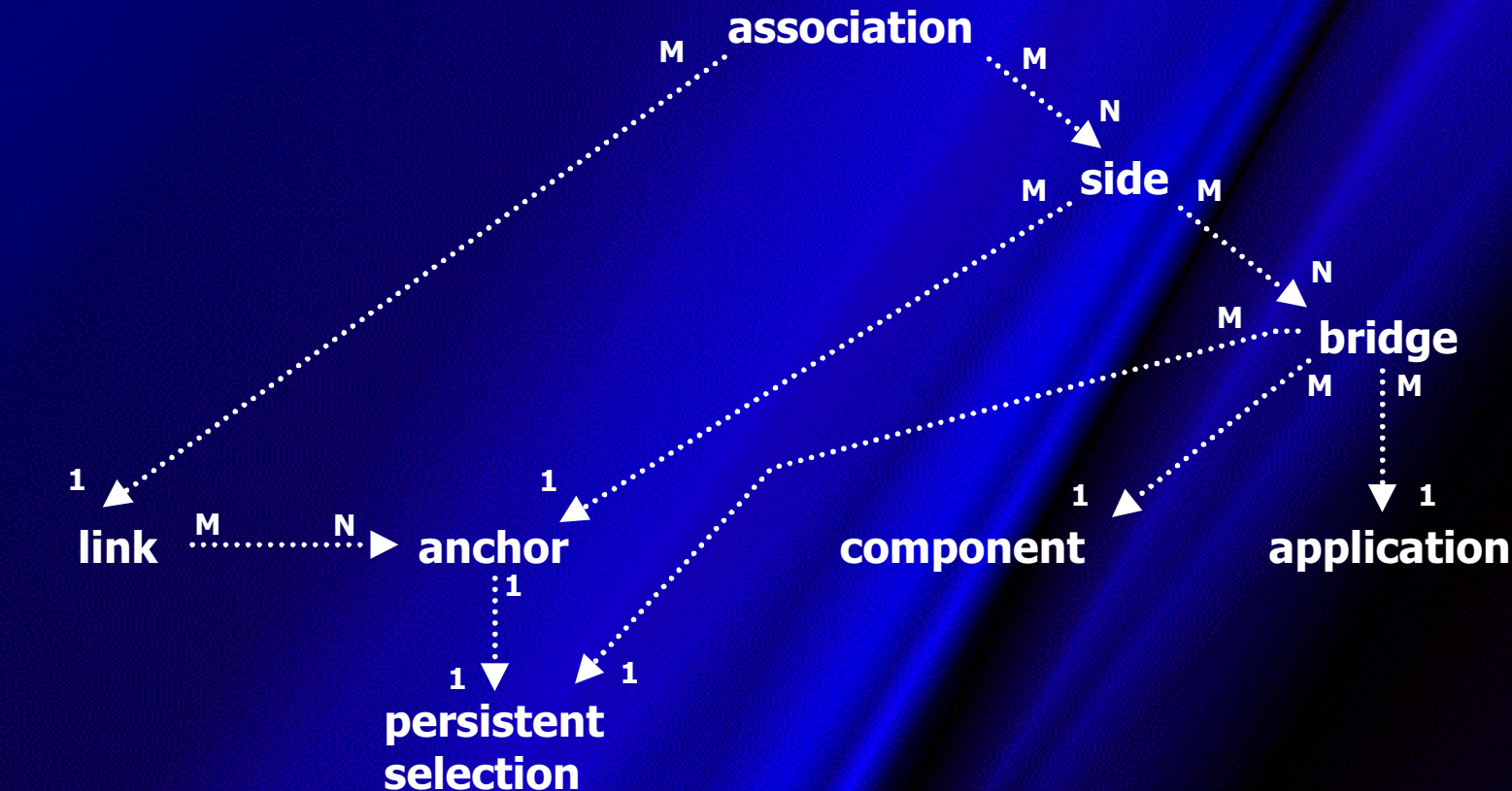
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●→ Single containment, single membership, **ordered, inclusion**

HURL (SP3/HB3)



.....▶ **Multiple** containment, single membership, unordered

- One of the most complex versioning unaware hypertext data models.

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.*