Internet Access to IEEE Journals: The September Trial

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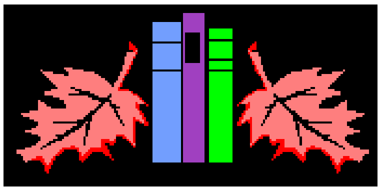

Dokumente in Öffentlichen Netzen, Darmstadt, Germany; November 30, 1995

Overview

- electronic publishing for *scientific papers*
- motivation, technical changes
- copyright issues
- IEEE September trial
- first experiences and measurements

Advantages of Electronic Scientific Publishing

- lower distribution costs (paper, printing, postage)
- timely delivery, particularly to overseas subscribers
- less shelf filing space
- customized notification of subscribers (“virtual journals”)
- enhancements for scientific publishing

Enhancements for Scientific Publishing

- color graphics, photos
- multiple views (by author, topic, …)
- multiple levels of detail ➠ no more omitted proofs
- links to references
- audio, video samples
- data behind curves
- active papers (Java simulation)
- end user conversion to Braille, audio
- reader annotations

enhancements require work from author ➠ only top few likely

Role of Author Copies

For scientific publishing:

- publishers: distribution $\rightarrow$ "seal of approval"
- authors: few paper preprints $\rightarrow$ servers of own/group/…material
- author wants far-reaching, fast, cheap distribution of ideas
- no postage, currently no network charges for outgoing bytes
- author has no monetary or other interest in limiting distribution
- interesting papers usually available as electronic preprints
- maintaining "authoritative" version

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Copyright Policies

ACM: "Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or direct commercial advantage and that copies show this notice on the first page or initial screen of a display along with thefull citation."

- network transmission is copying
- recipient cannot copy without permission
- links are citations
- authors maintain only links to definitive version, not copies
- if $< 1\%$ of membership have access ➠ no permission needed
- access to all publications to ACM members

IEEE: "Personal use of this material is permitted. However, permission to reprint/republish this material for advertising or promotional purposes

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or for creating new collective works for resale or redistribution to servers or lists, or to reuse any copyrighted component of this work in other works must be obtained from the IEEE." Servers with own material allowed with disclaimer.

commercial: Usually more restrictive, role of author copies unclear.

Copyright Protection

many scientific articles, each of low-value *per article* (few \$) ↔ confidential information, specialized reports, popular software
Protection:

Access: currently passwords, challenge-response to come

Transit: SHTTP for HTTP, SSL for TCP, IPv6 security

Recipient: protected application (Acrobat), restricting copying, annotation, access

Once at receiver, limited protection of *content* ➠ can always do screen dump, OCR
∼ software protection.
Most copying/redistribution today is local!

Payment Options

- pay per view ➠ local hoarding
- pay once per article ➠ maintain long-term records
- free to members, subscribers, …
- free to all, sponsored by advertisers
- free to all

Payment Mechanisms

Under consideration:

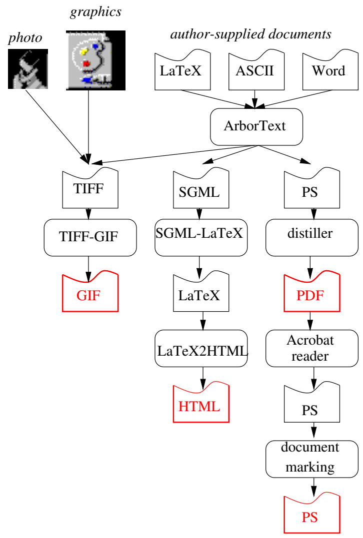
- credit card over secured link
- First Virtual: "indirect account", with email confirmation
- electronic cash

The September Trial

http://www.research.att.com/jsac/

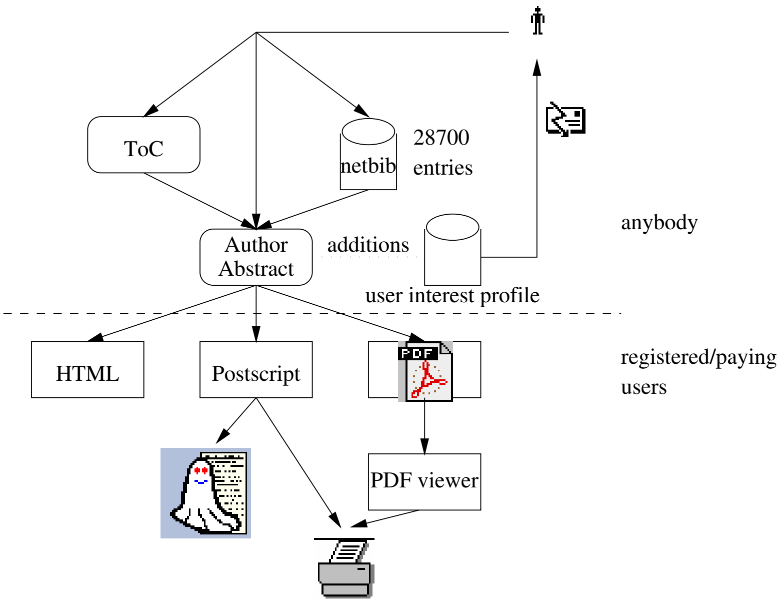
- IEEE Communications Society trial
- realization by group at AT&T Bell Laboratories
- use regular issue of *IEEE Journal on on Selected Areas in Communications*
- topic: *The Global Internet*
- experiment with access, conversion, charging, marking
- free access to abstracts; reading full papers requires registration
- currently about 900 registered users; 57% are not IEEE members

September Document Preparation



➠ 50 MByte per issue

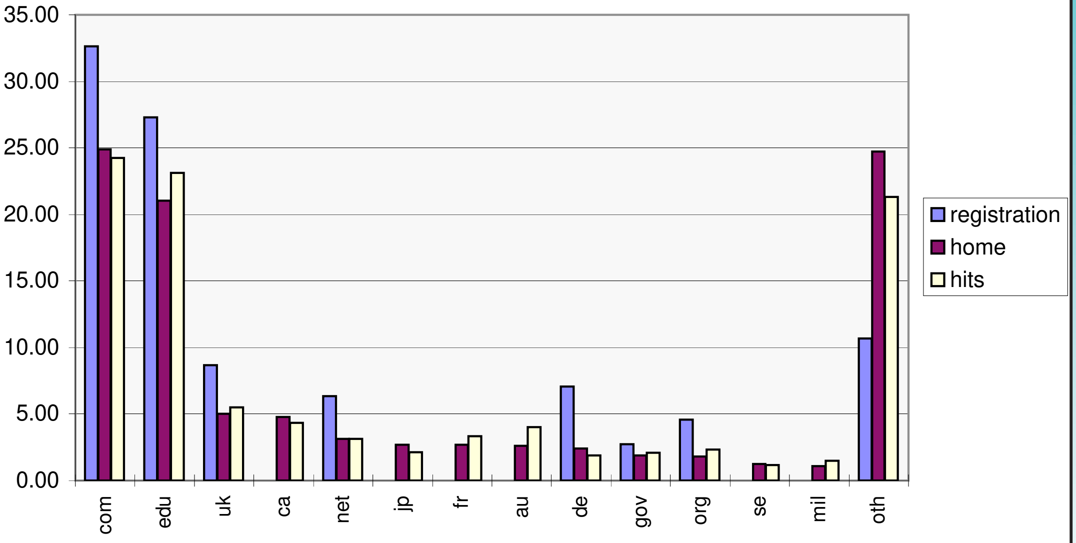
Access to Documents



Document Marking

- marking has been used for maps, directories to catch copyright infringers
- goal: make document redistribution unattractive, not impossible
- allow to trace document back to original purchaser
- slight, invisible changes (one pixel, 85 μm) in line or character spacing
- code identifier for original recipient into shifts: about 19 bits/page
- survives repeated copying
- hard to remove without image scanning and manual intervention
- easier to remove for electronic documents

September Users



1485 unique hosts

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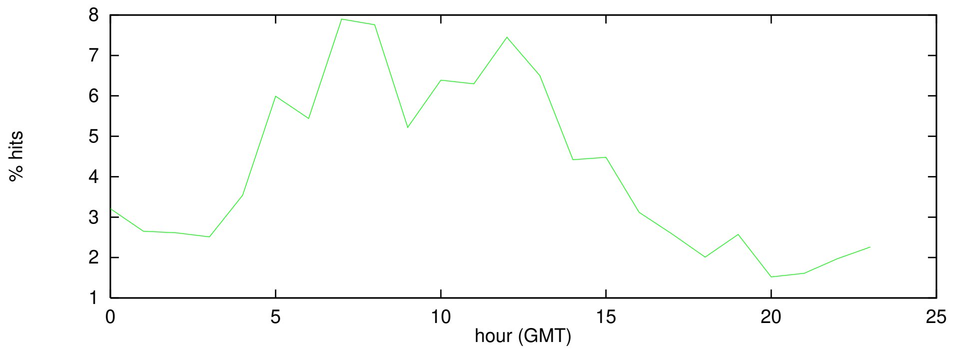
September Access Times



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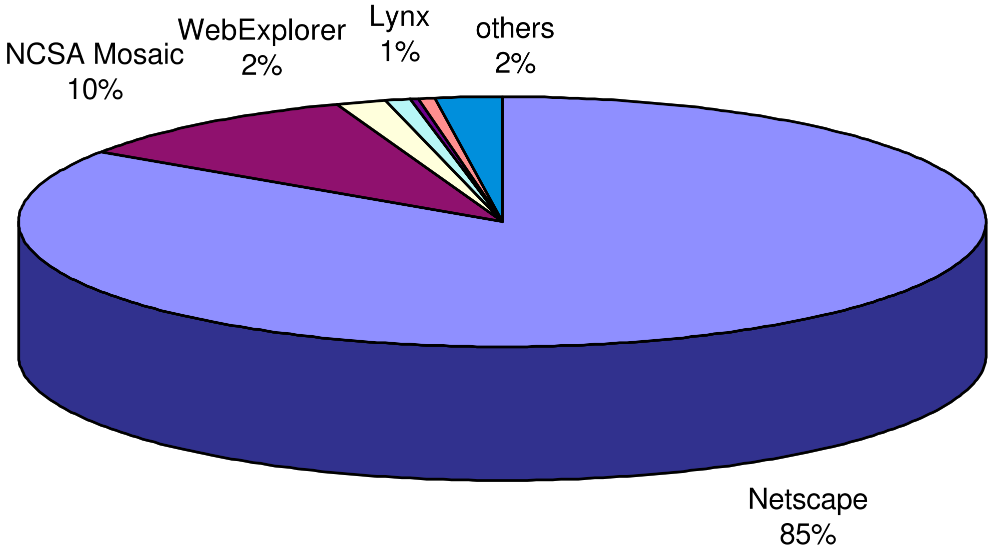
Type of Documents Retrieved

Total hits	34102
Abstract	2030
Biography	608
Printable	1167
PDF	470
Top-level html	1583
HTML sections	1316
HTML subsection	937
Account summary	533

Browsers



16% of accesses are through proxy

Lessons Learned & Open Issues

- user support is major effort, mostly general technical problems
- conversion from author-supplied electronic text cumbersome
- support of mathematics and tables in HTML will complicate translation
- nesting depth of HTML articles?
- what are users willing to pay?
- privacy of billing records (sensitive corporate information)
- local caching

Conclusion

- digital production, low-cost transmission $\leftrightarrow$ high paper, postage costs
- first print medium to migrate partially
- not just supplement $\leftrightarrow$ newspapers
- successful experiment with electronic access
- conversion from one-shot experiment to continuous operation
- organizational rather than technical problem
- copyright issues only a problem if extremely expensive
- marking can discourage wholesale redistribution
- need business model – support through advertisements not feasible

Additional Materials

A number of other IEEE journals, transactions and magazines are experimenting with electronic access. The current issue of *IEEE Spectrum*, for example, will be available electronically starting in early 1996. There are already a number of specialty journals in the fields of medicine and communications that are available only electronically.

WWW server logs also contain the `Referer` field, which indicates from where a particular visitor approached the current WWW page. Some browsers send the last visited location, even if the URL for the journal was entered manually. This can lead to the disclosure of the user's browsing habits unrelated to the electronic publication.

See

http://www.acm.org/pubs/copyright_policy.html

for ACM and

http://www.ieee.org/copyright/copyright_draft.html

for IEEE draft copyright policies.

See http://www.digicash.com/ for electronic cash, http://www.fv.com/ for First Virtual, http://www.digicash.com/~nick/commerce.html for general information on electronic payment systems and Internet commerce.

User-configurable viewing preferences are demonstrated by

http://irss.njit.edu:5080/papers/option1.html.

There are a number of services that send email notifications when a particular web page changes, e.g.,

http://www.netmind.com/URL-minder/URL-minder.html.

Cornell University offers a service that sends electronic mail when new technical reports matching a given profile are entered into their library. *Wired* magazine (www.wired.com) allows registered users to create customized tables of content, showing new material in selected categories.