Meeting the Communications Needs of Physicists

AIP's Electronic Publishing Experiences

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Presentation Overview

- The physicist's quest for better, faster communication of scholarly research
- AIP's early experiences with electronic communications
- Development of AIP's *Scitation™* online hosting service, with a focus on linking
- Two projects that hint at what is to come
- A few words about Lorrin Garson

Contrary to Popular Belief ...

- Physicists did **not** invent the Internet (neither did **you**, Al Gore!)
  - But they **did** make early use of it for scholarly communication
- A physicist did **not** invent the World Wide Web
  - But Tim Berners-Lee (a computer scientist) **did** work for physicists (at CERN) when he invented the Web **and** he did it to help solve physicists' research communication needs

On the Other Hand, a Physicist ...

- **Did** invent the electronic pre-print (e-print) server
  - Paul Ginsparg, then at Los Alamos National Laboratory, invented the LANL Archive, now called arXiv.org
    - Great improvement over traditional paper-based, snail mail-enabled preprint system
    - Has changed the way research *moves forward* in high energy theoretical physics (and other disciplines)
    - Ginsparg received MacArthur Foundation “genius grant” for this in 2002

Early AIP Experiences With E-Publishing

- Searchable Physics Information Notices (SPIN)
- Atex electronic composition
- PINET (Physics Information NETwork)
- Xyvision electronic page makeup
- *Applied Physics Letters* – Online

Lessons Learned from E-Pub Expts

1. Skills required to publish articles electronically
2. Needs and wants of users/readers
3. “Value-adds” prized by users
   - Searchability (across issues, volumes, titles)
   - Linking to cited/citing papers

Building An Online Hosting Service

- Driven by needs/wants of physical sciences community
- Enabled AIP to continue its traditional role as service provider for physics societies
- Initial service replicated the print journal, but continues to evolve
- Linking has been an important part of the service from the very beginning

Brief History of Linking at AIP

1995: Links to bibliographic databases

- Provided abstract describing cited article

1996: Links to source articles

- But only to articles from same journal

1997: Links to source article from other journals

- But only if both journals on same online service

Brief History of Linking at AIP(2)

1998: Links to/from other databases

- LANL preprint server, ChemPort, etc.

1999: Links to journals of other publishers located on other servers

1999: Links to value-added resources

- ISI *Web of Science*

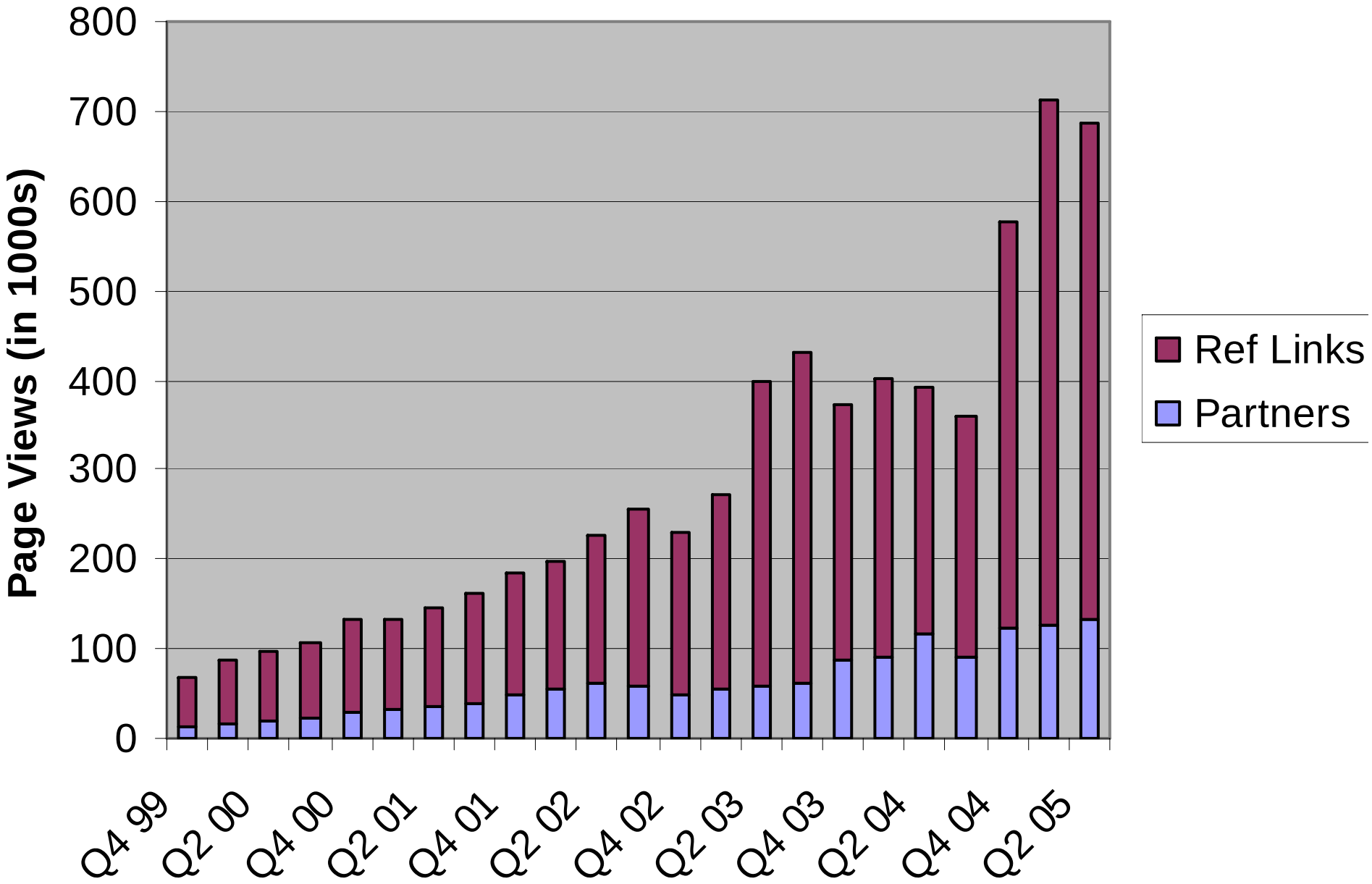
2000: CrossRef central linking facility is established

Since Birth of CrossRef in 2000

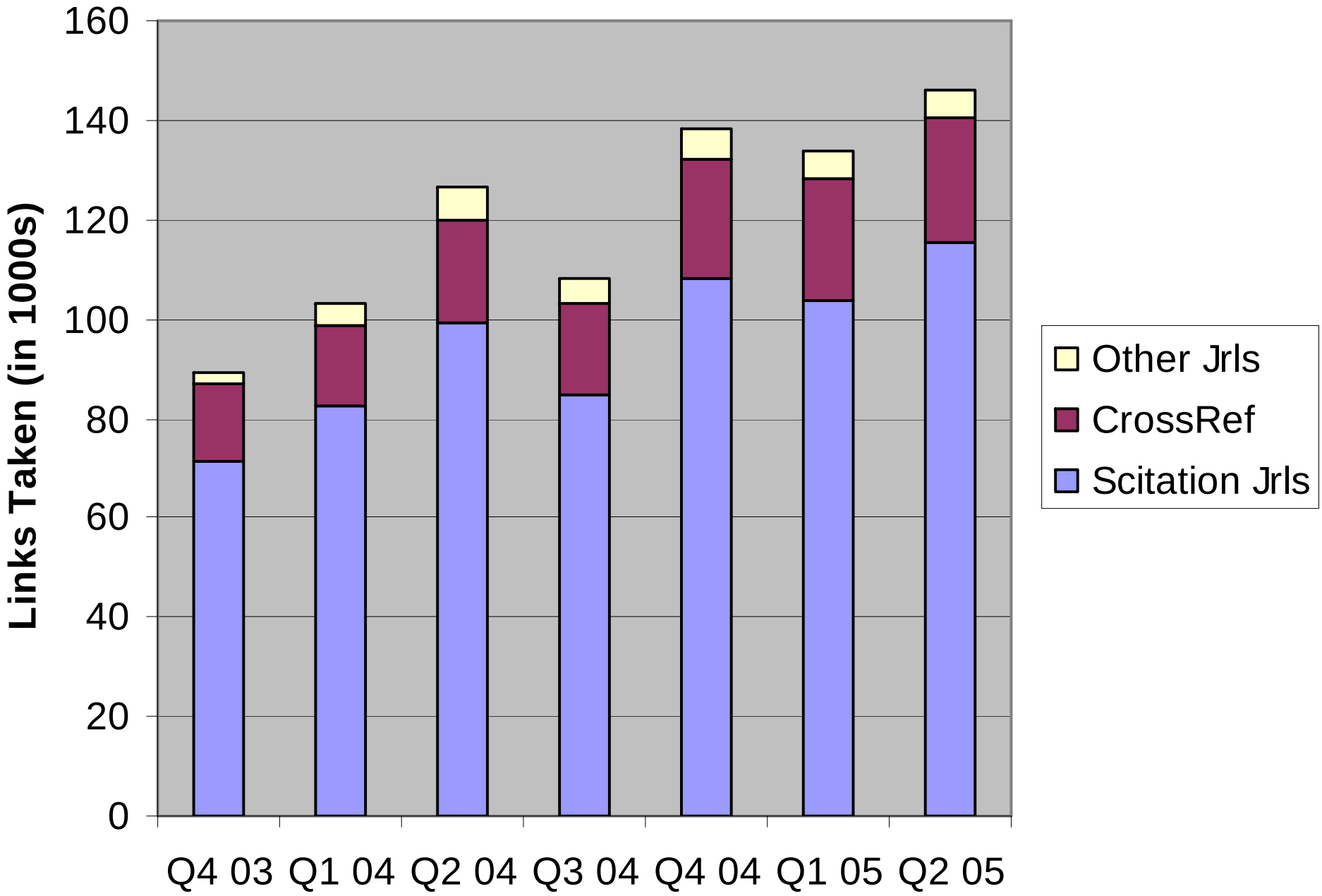
- 1,450+ participating publishers
  - 12,250+ participating journals
- Many publishers have completed back file digitization projects
  - More than 16.7 million articles are now linkable
- In 2005, readers expect everything to link

Example

Inbound Links to Scitation



Outbound Links from Scitation



Where Is E-Publishing Headed?

- I really have **no idea!**
  - Agreeing to speak at “future of publishing” sessions is a ***bad idea***
  - My track record for prediction

    2003 (made in 2000): 50%

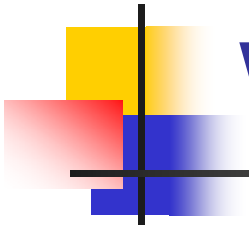
    2006 (made in 2000): 25% (0%, if totally honest)

    2006 (made in 2002): 0%
- But I can speak about two projects that will definitely influence the future

Let’s Return to 1993

- Journals produced in print only, with few exceptions
  - No such thing as a “Web browser”
  - No such thing as Acrobat or PDF
- Print journals used custom fonts and were produced on “phototypesetters”
  - Most publishers had huge investments in proprietary fonts

1994: Along Comes the World Wide Web and Acrobat



- Mosaic browser opened the way for online publishing of scientific journals
  - Rich linking
  - Multiple formats
  - ***However***, couldn't handle special characters or complex math (among other things!)
- At about the same time, Adobe Acrobat (*ne* Carousel) allowed standardization of fonts to be contemplated
  - PostScript fonts – Adobe Type1 format

1995: STIX Fonts Proposed

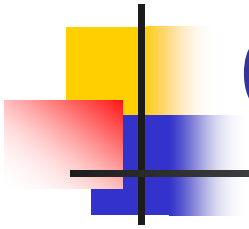
- Arie de Ruiter (Elsevier) proposed development of Scientific and Technical Information eXchange, or STIX, Fonts
- STI Pub group accepted Arie's proposal
  - STI Pub: informal group of large STM publishers

STIX Fonts - Primary Characteristics

- Unicode™ based (*lingua franca* of XML)
- Contain every character/glyph required for Scientific, Technical, and Medical publishing
- Delivered as OpenType™ font sets
  - Windows/Unix
  - Macintosh
  - TEX package (Type1 fonts)

How Will the STIX Fonts Be Used?

- Fonts will be provided for **free** download from STI Pub publishers' Web sites (and other sites)
- Readers will install STIX Fonts on their PCs/workstations
- Readers will configure their browsers to use STIX Fonts as default font
- Fonts will ***just work***
  - Process will be transparent to user
  - Unicode values must be used to access beyond the "basic" characters used in all Web pages



Current Status

- About 7,600 of required 8,000 glyphs are complete
- Beta test scheduled for October
- Final release of completed fonts planned for end of December 2005

Essential Information Objects

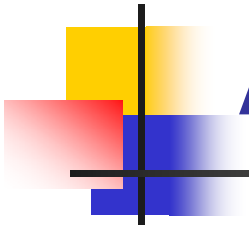
- Joint project of AIP and the American Physical Society (APS)
- Project goal: define procedures and practices required to incorporate non-text (or figure) elements into the digital archive of scholarly research communication
  - Simple definition: moving key multimedia elements from supplementary information to being part of the formal record of science

EIO Progress To Date

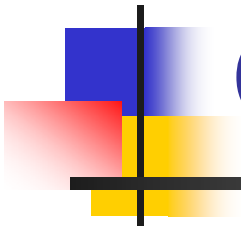
- Blue-ribbon panel developed set of principles for editors, authors, and referees
  - Evaluation criteria for what constitutes an “essential” element
- Working group of technologist convened to put principles into practice throughout publication process
  - Initial archival formats to be preserved have been identified
  - Detailed design/functional requirements definition under way

EIO Next Steps

- Changes must be put in place at each step in the publication process
  - Web submission and review
  - Data preparation/composition
  - Online publication
  - Data interchange (with business partners)
  - Digital archiving
- Guidelines must be broadcast within the physics community



About Lorrin Garson



Questions or Comments?

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