The Future of Scholarly Publication: Key Issues Facing Computing Research

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Topics

- You will decide which/how much time on each …
- Publishing "Culture"
  - Journals, Conferences, Workshops
  - Quantity, Quality, Impact
- Beyond the PDF (even beyond the .tex)
  - Publishing and archiving data, code, interaction
- Open Access Regulations and Policies
  - What does a department head or dean need to know?

Non-Goals …

- Reprising the Open Access Debate
  - We all know that people prefer:
    - Free to publish
    - Free to access
    - Quality reviewing / refereeing
    - Well-managed and robust permanent archives
- Another dissection of costs-of-publishing …

Our Panelists

- Jack Davidson, University of Virginia
  - co-Chair of ACM Publications Board

- Todd Green, Elsevier
  - Publisher, Computing and Digital Security

- Margo Seltzer, Harvard University
  - Past-President, USENIX

OK, Time to Choose

- Publishing "Culture"
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Computer Science Publishing Culture

We Want You to Get Credit for Participating …

- Questions on this topic should be anonymously submitted to three referees
  - Those selected for oral presentation may be listed on your c.v. as "other peer-reviewed works"

Yesterday's Panel

- Lamented the lack of complete scholarship and the overemphasis on quantity over quality and impact.
- Suggested shifting the focus in hiring and tenure to reading and assessing impact of a few most important papers (over lists of papers / venue prestige)
- Also suggested removing artificial constraints on paper length, particularly for methods, context, data, etc.
- And suggested reviving venues for presenting early-stage work (workshops without proceedings)

That, and More Too …

- No shortage of interest in those concepts, but also …
- Extensive experiments with journal/conference hybrid publishing models (including conference-to-journal, journal-first, journal-backup).

Journal-First Publication Model

- Some research communities are adopting a “hybrid” model of publication that moves away from deadline-driven, single-review cycle that is typical of conference publishing to a model that:
  - Provides open-ended review cycles (i.e., the possibility of major revision)
  - Is not strictly deadline driven
  - Allows opportunity to describe the work before one’s peers at a public presentation
- Proceedings of the VLDB, SIGGRAPH, and TACO

Proceedings of the VLDB

- Allows continuous submission throughout the year
- Accepted papers published and authors offered presentation slot at next available VLDB conference
- Large editorial board (200 or so)
- Short papers (no more than 12 pages)
- Papers reviewed by 3 editorial board members
- Major revision and follow-up review by same reviewers
- Rejected papers are barred from resubmission for one year

"PVLDB is designed to replace the traditional conference publishing for VLDB, with a much more flexible and better scalable submission process and a journal-style reviewing process with better quality assurance."

SIGGRAPH/Transactions on Graphics

- SIGGRAPH
  - 5 reviewers (two senior—primary and secondary, and 3 other experts—tertiary reviewers)
  - Rebuttal period for addressing factual errors in reviews
  - Full TPC determines action
    - Conditionally accept for presentation at next SIGGRAPH (aka minor revision)
    - Conditionally accept for publication in TOG (aka major revision). Paper published in TOG and may be presented at a later SIGGRAPH conference
    - Conditionally rejected from TOG. Enough merit that the reviewers encourage submitting a revision to either TOG or SIGGRAPH. Authors can request "reviewer continuity."
    - Rejected

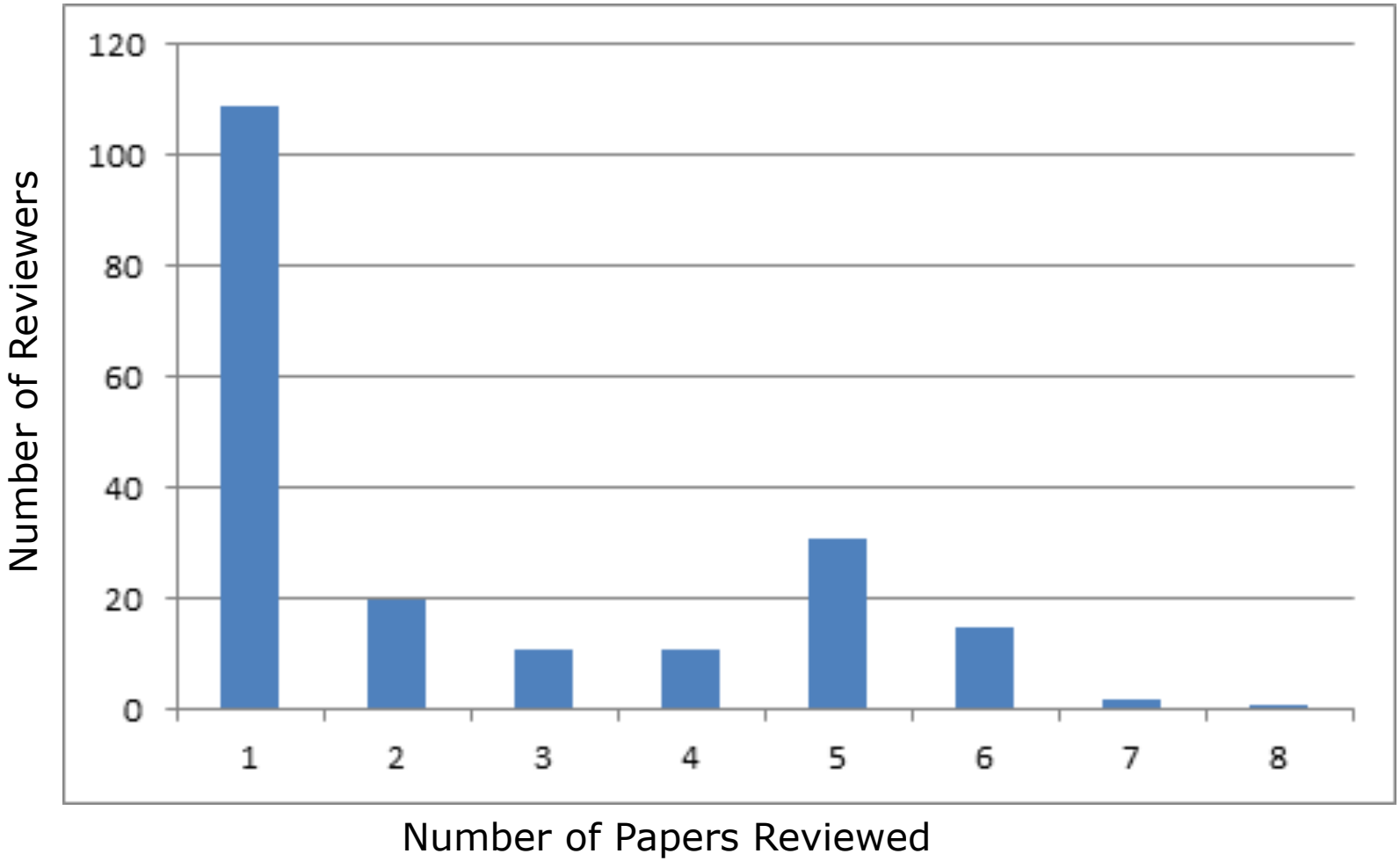
SIGGRAPH/Transactions on Graphics

- Transactions on Graphics has 3 submission categories
  - Previously unpublished research paper
  - SIGGRAPH accept with major revision
  - Resubmission of SIGGRAPH paper requesting reviewer continuity.

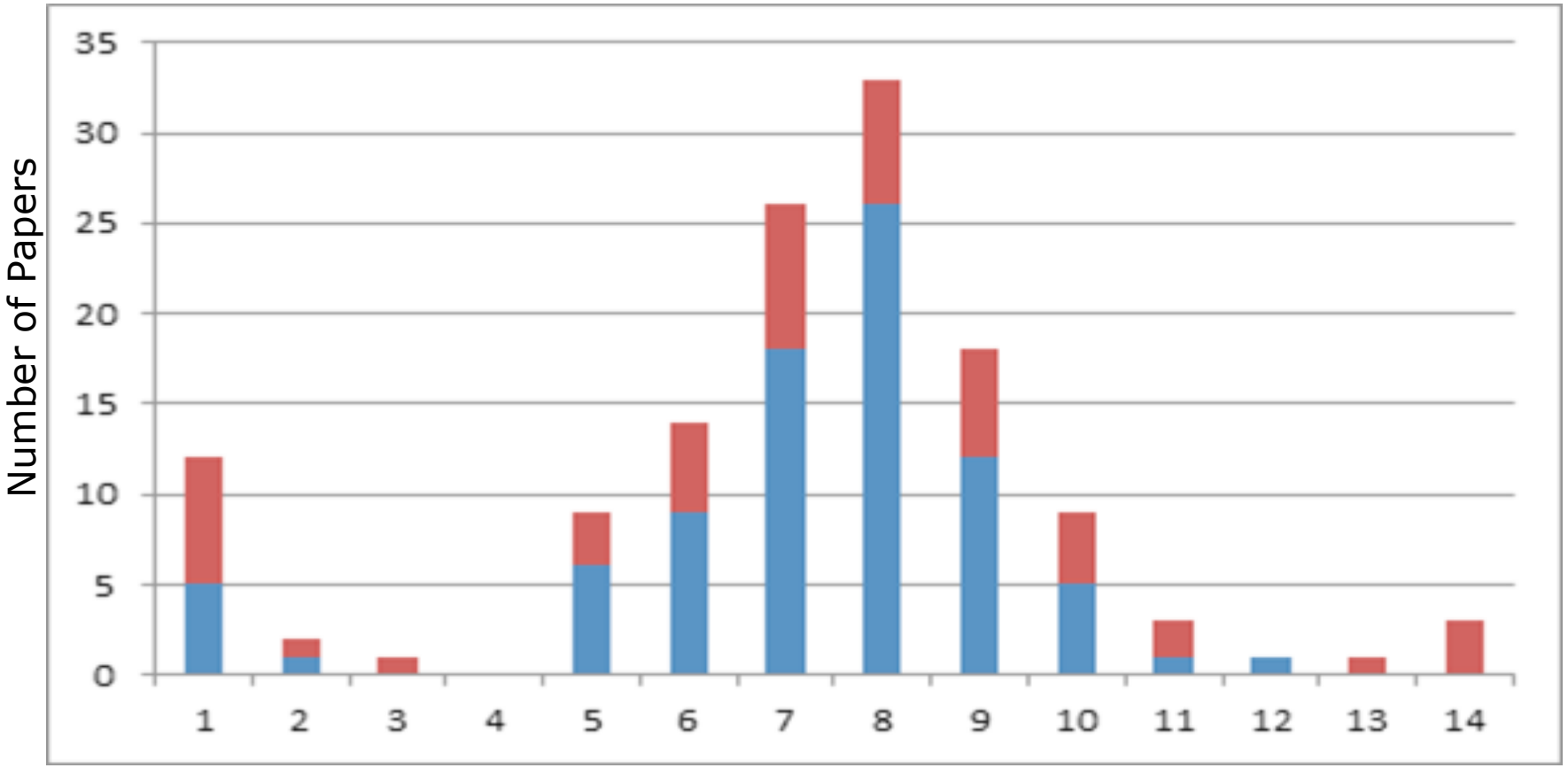
Transactions on Architecture and Code Optimization/HiPEAC

- Papers submitted in June (in response to HiPEAC CFP) are guaranteed two rounds of review before the HiPEAC cutoff of November 15th
- Review process
  - Distinguished reviewers (currently about 100)
  - Distinguished reviewers promise to do 4 or 5 reviews in 4 weeks; and then follow up reviews on any revisions
  - Website helps AEs assign papers to distinguished reviewers
  - Also seek other expert reviews
- Papers accepted to TACO (excluding conference paper extensions) are invited to present at HiPEAC

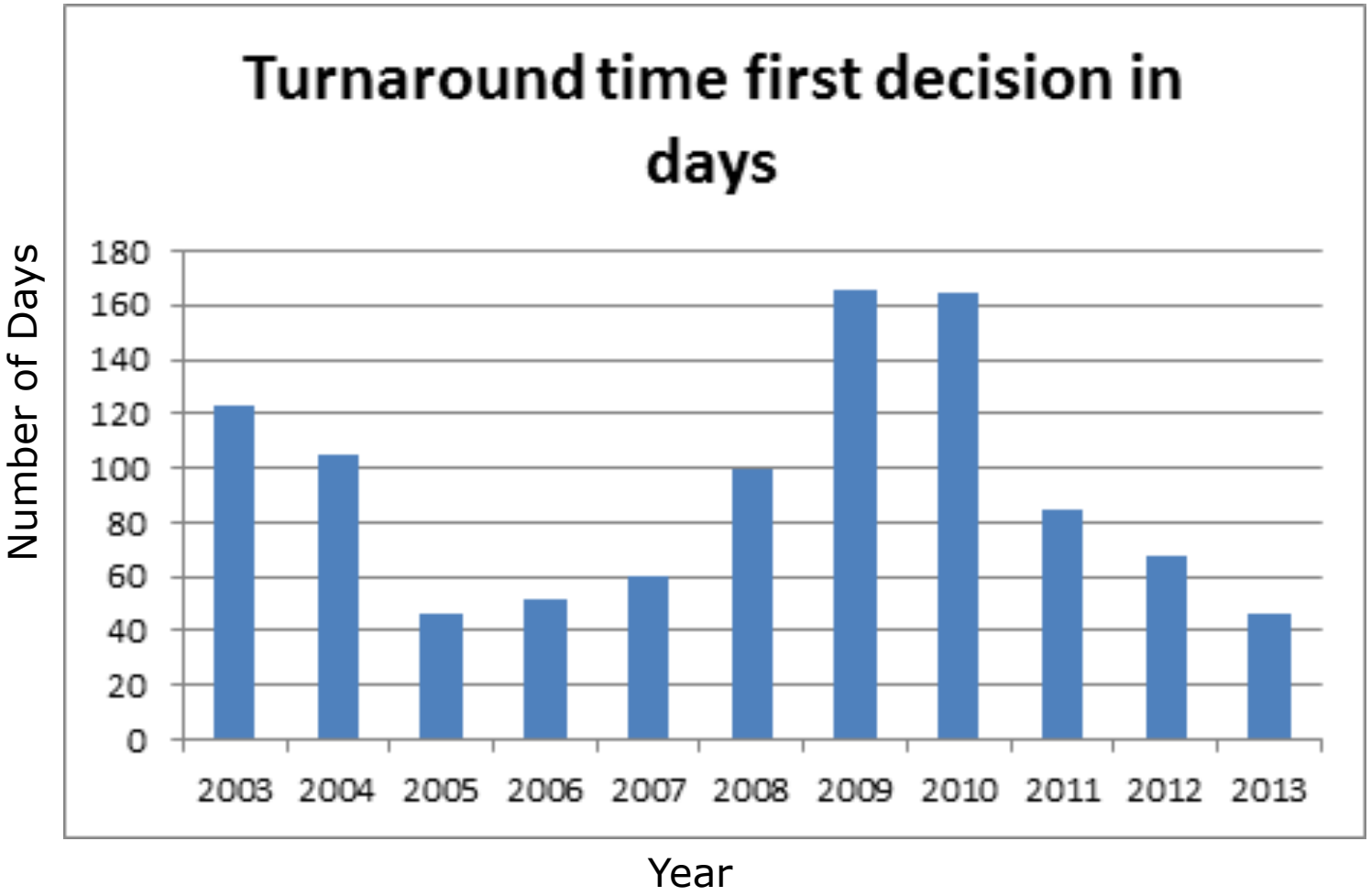
Distinguished Reviewer Paper Load Histogram



TACO Time to First Decision



TACO Time to First Decision



Summary

- Journal-first model offers numerous benefits
  - Engages community
  - Shifts publications from conference articles to journal articles
  - Conference becomes networking event
  - Less deadline-driven research/publication
  - No citation count dilution
  - Faster processes help all papers move through faster
  - Overall higher quality output and consistency (better review processes)
- Problems
  - How to scale to thousand submissions
  - Higher publication costs
  - Requires significant infrastructure support
  - Community buy-in

Multi-Stage Conference Review Experiment

CSCW

- The CSCW Conference (Computer Supported Cooperative Work and Social Computing) is in the third year of a multi-stage conference review experiment …
  - All papers get initial review cycle (two external reviewers, one PC member; meta-review by second PC member)
  - Three possible outcomes:
    - Fast-track (accept / accept with minor revisions) -- ~5%
    - Major Revisions -- ~35-55%
    - Reject – 40-60%
  - Second review cycle (same reviewers, additional if needed)
    - Accept or Reject
- Strong community support despite higher workload …

Beyond the PDF (++.tex)

Beyond the PDF???

- CS research often involves artifacts that are not richly represented in current print-oriented technologies:
  - Datasets (along with metadata, accessors, descriptors)
  - Code
  - Interactive Experiences (graphics, simulations)

- How do we capture, preserve, disseminate these as part of publication?

A Few Thoughts

1. This is a much bigger problem than simply "capture presentation videos" or even "capture demo videos".

2. Archival of working systems requires platforms that maintain their ability to run over a long period. Also need to address security and more!

3. Even just sharing and archiving datasets requires significant thought about rights, privacy, etc.

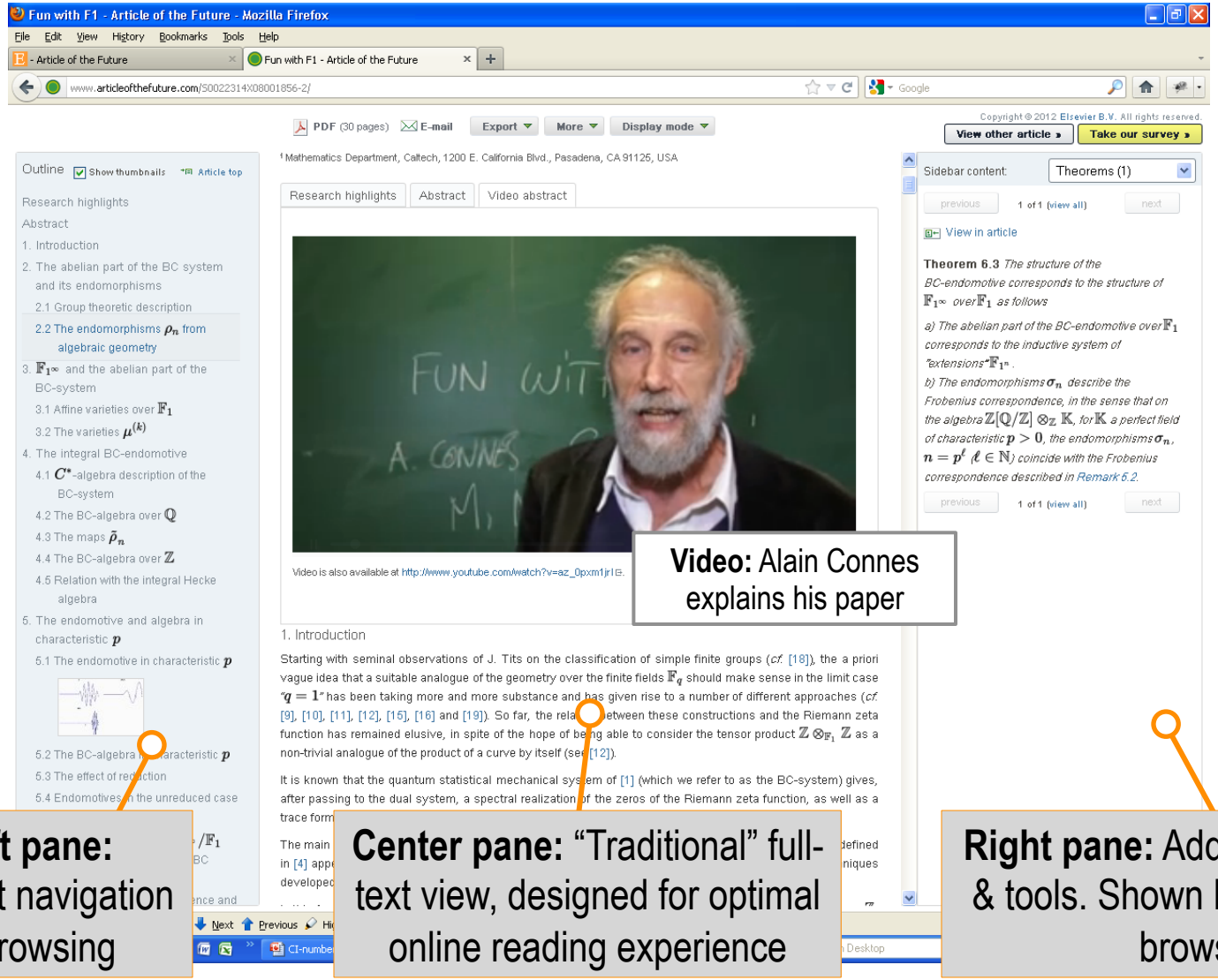
A Few Thoughts

4. How do we both minimize and incent the author's effort to publish/share these resources?

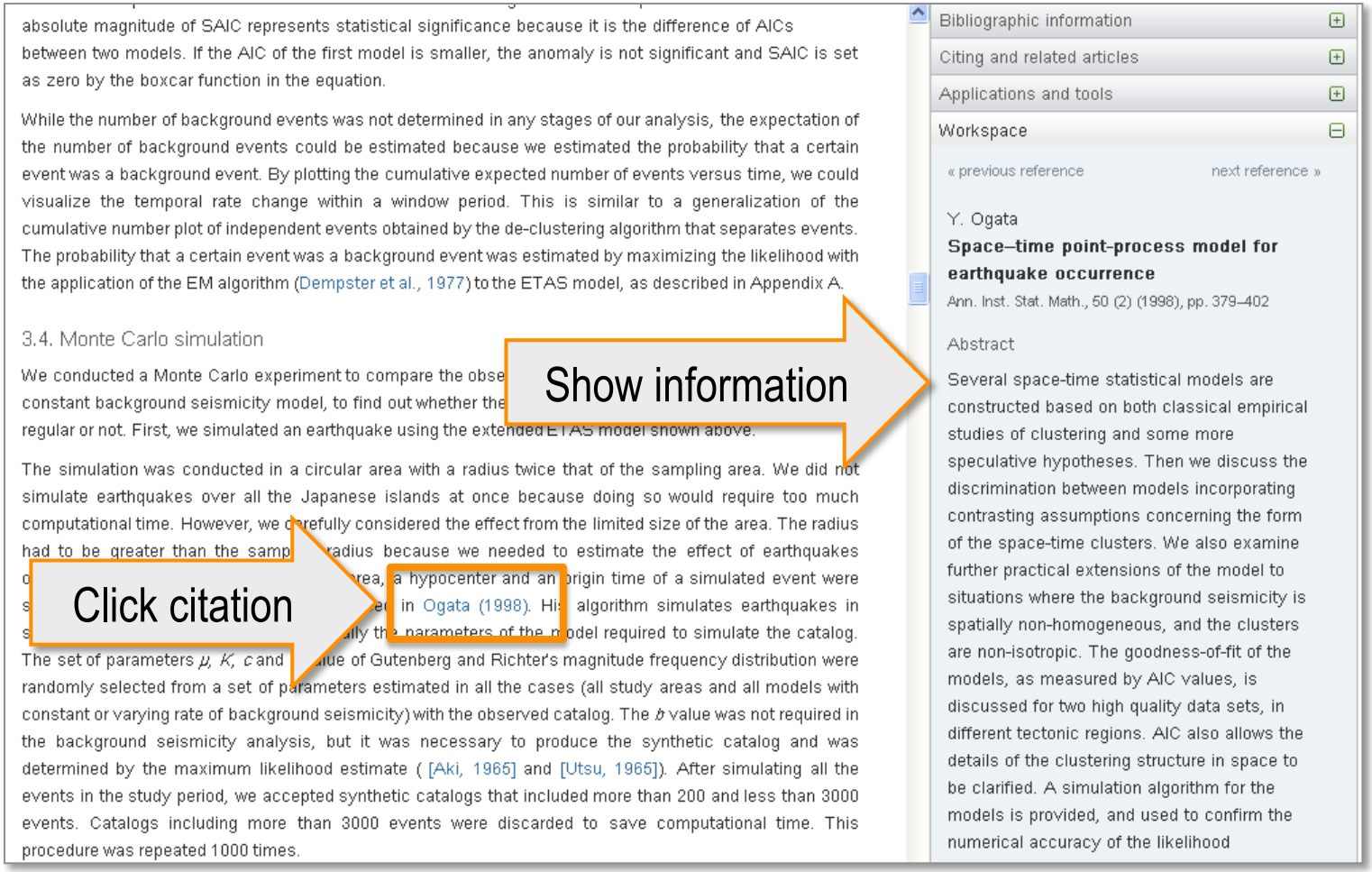
5. Should these resources be tied to published articles? Published separately?

6. One last thing … do we *want* to maintain everything running forever?

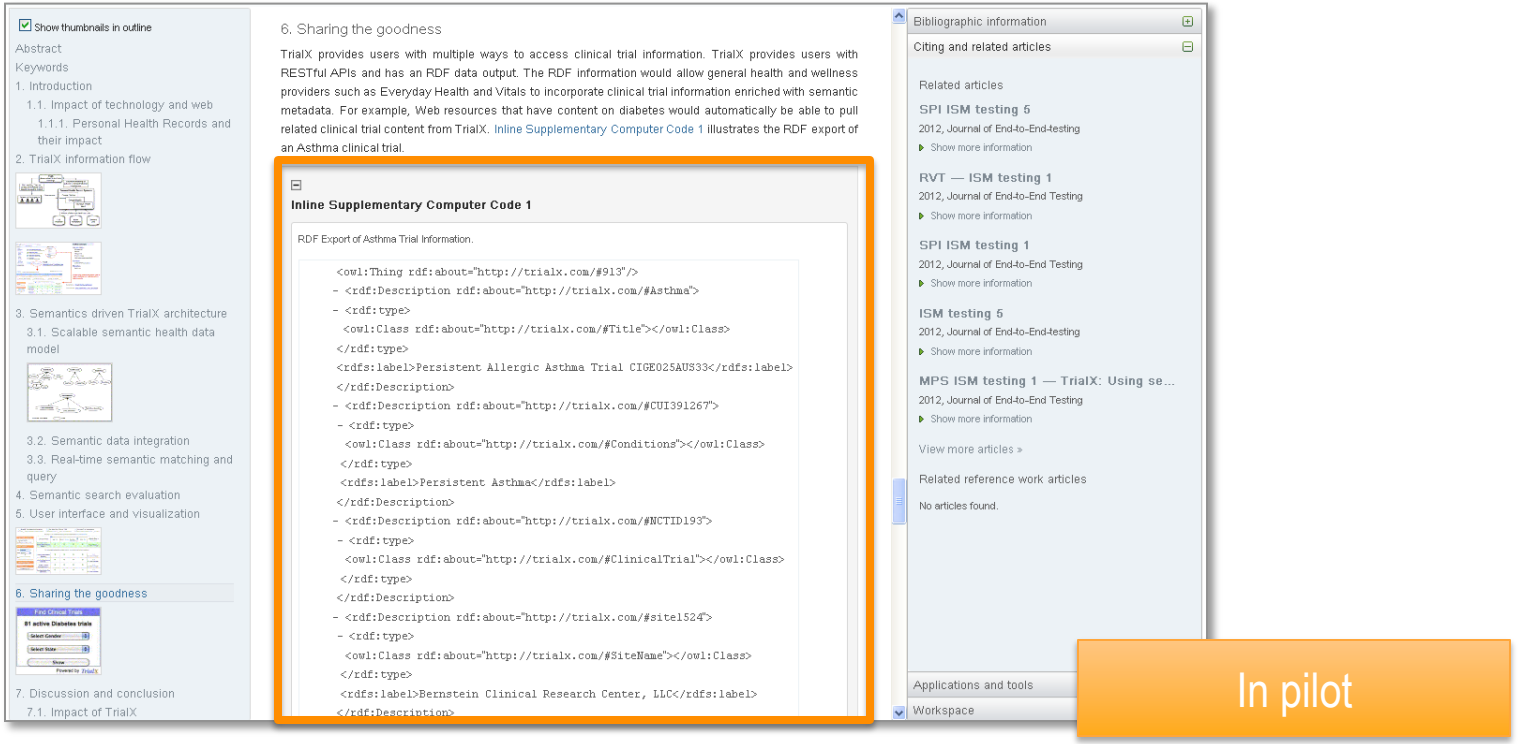
Article of the Future | Presentation
The three-pane format



Article of the Future | Presentation
Reference browser



Article of the Future | Presentation
Inline supplementary computer code

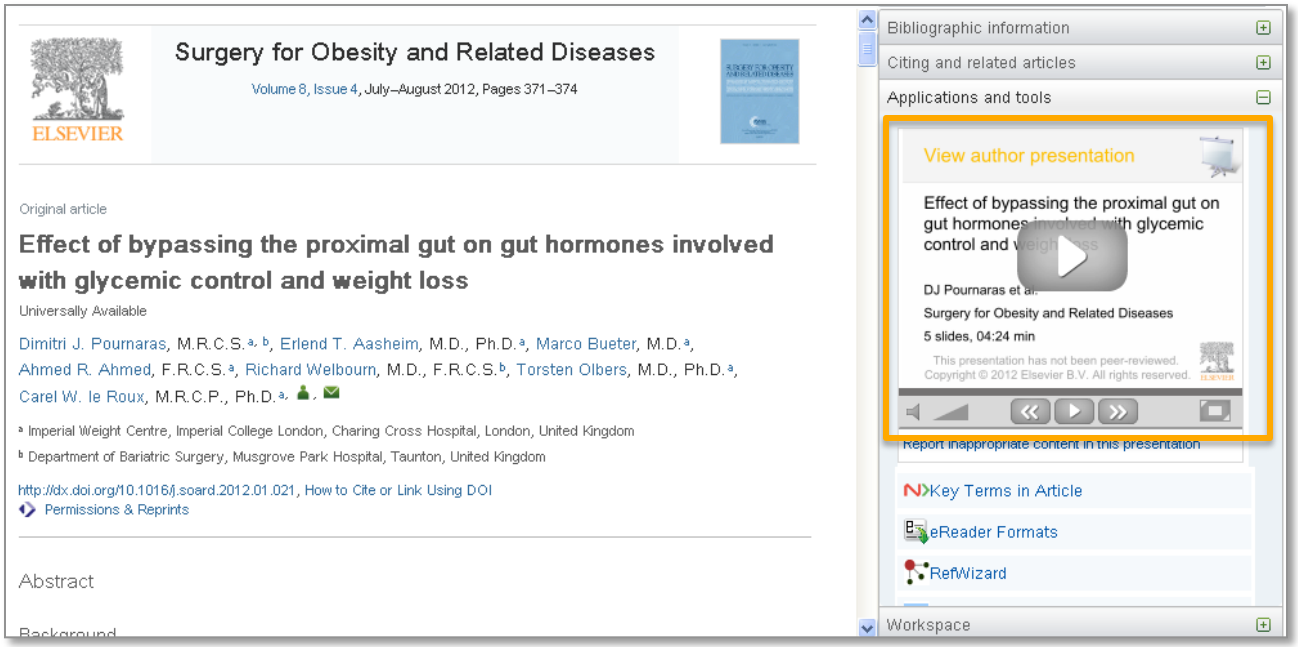


- Present computer code in context in the main article
- In expandable box, user can open or close
- Code can be copied to the clipboard for validation & re-use

http://www.elsevier.com/ism

Article of the Future: Content AudioSlides

Authors explain their paper in their own words



Audio Slides

- 1212 published 2013
- Positive feedback
- Non-peer reviewed
- SD and YouTube Gallery

- Short (5 min) webinar-style presentation, slides + audio
- Shown next to the article on ScienceDirect
- Created by author using online tool developed by Elsevier

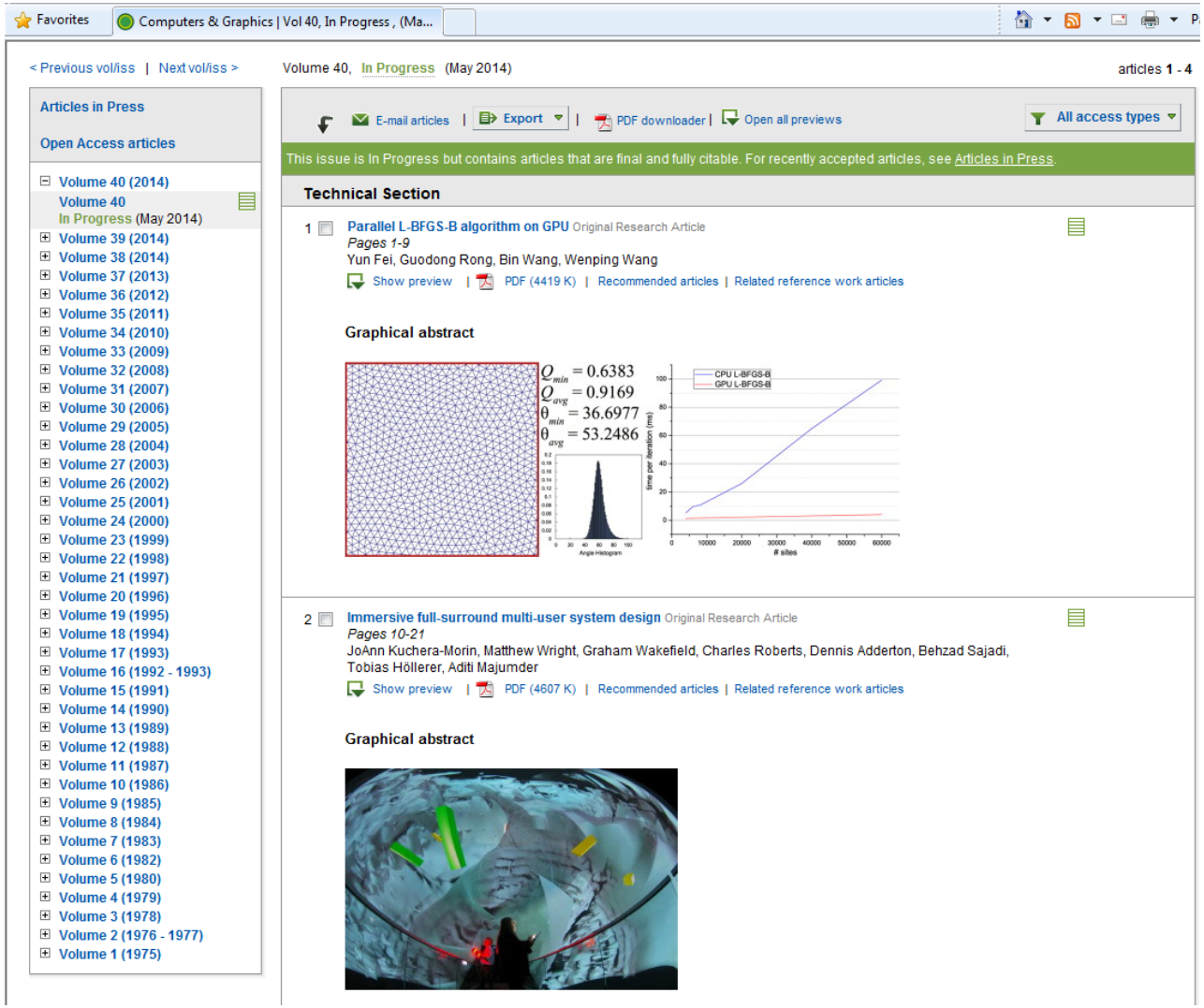
http://www.elsevier.com/audioslides

http://www.elsevier.com/about/content-innovation/audioslides-author-presentations-for-journal-articles/audioslides-gallery

Article of the Future: Graphical Abstracts

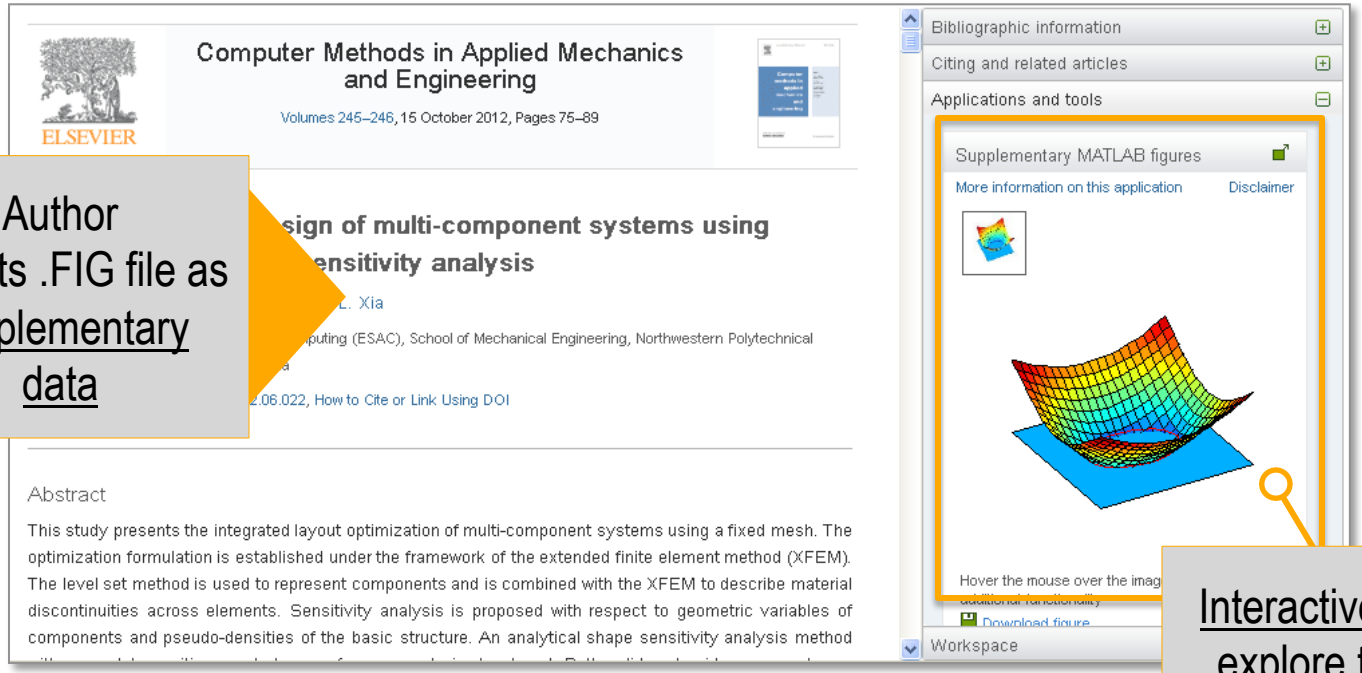
Graphical Abstracts

A single, concise, pictorial and visual summary of the main findings of the article. This could either be the concluding figure from the article or a figure that is specially designed for the purpose, which captures the content of the article for readers at a single glance



Article of the Future: Content
Interactive MATLAB .FIG viewer

Making plots more valuable for research



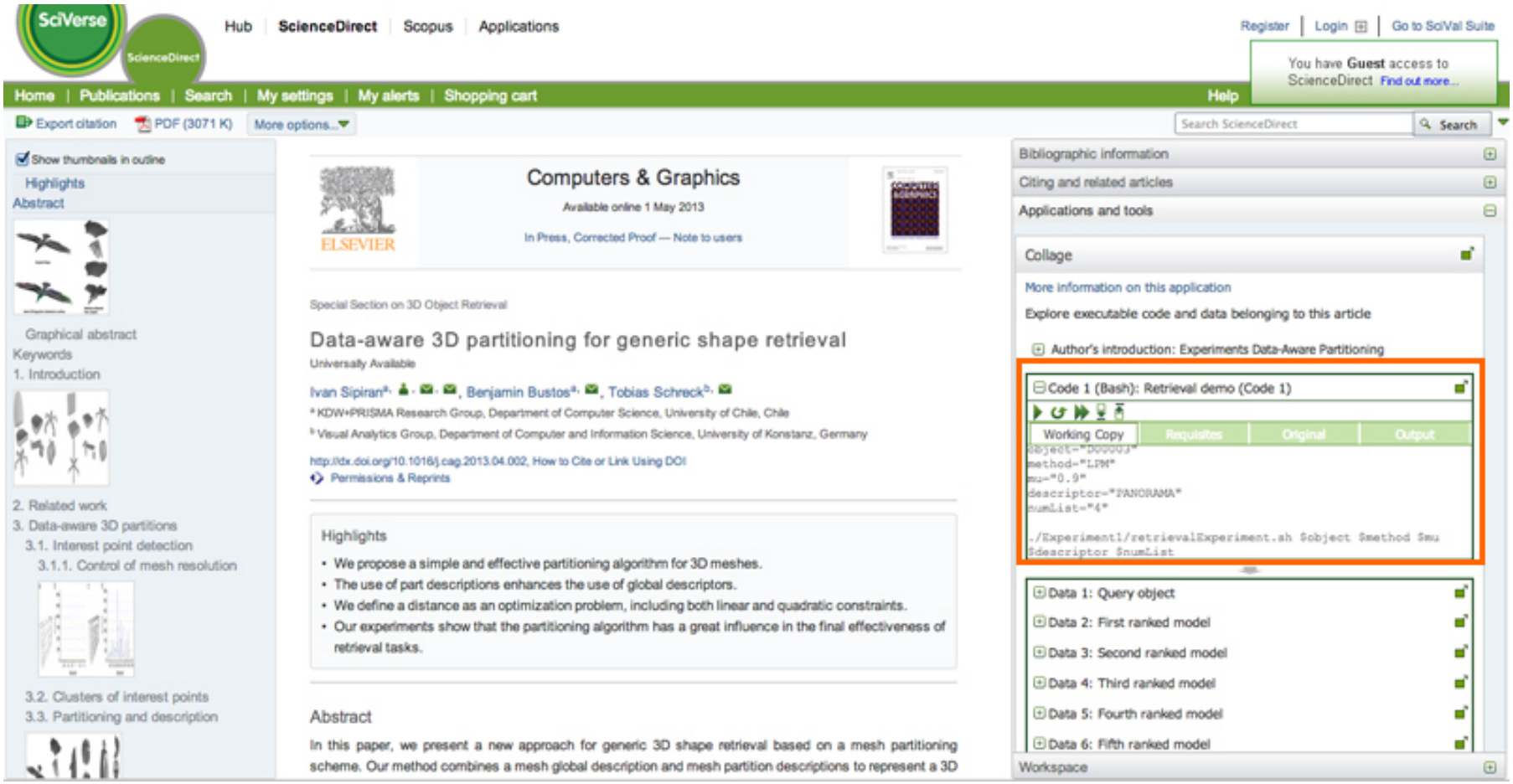
Author submits .FIG file as supplementary data

Interactive viewer explore the plot from within the online article

- Explore figures interactively – zoom, rotate, etc.
- Download underlying data for validation & re-use
- Currently in pilot phase for 5 journals

http://www.elsevier.com/matlab

Article of the Future: Content
Executable Papers - interface



http://www.sciencedirect.com/science/article/pii/S0097849313000484
http://www.elsevier.com/connect/executable-papers-in-computer-science-go-live-on-sciencedirect

Content: there's more!

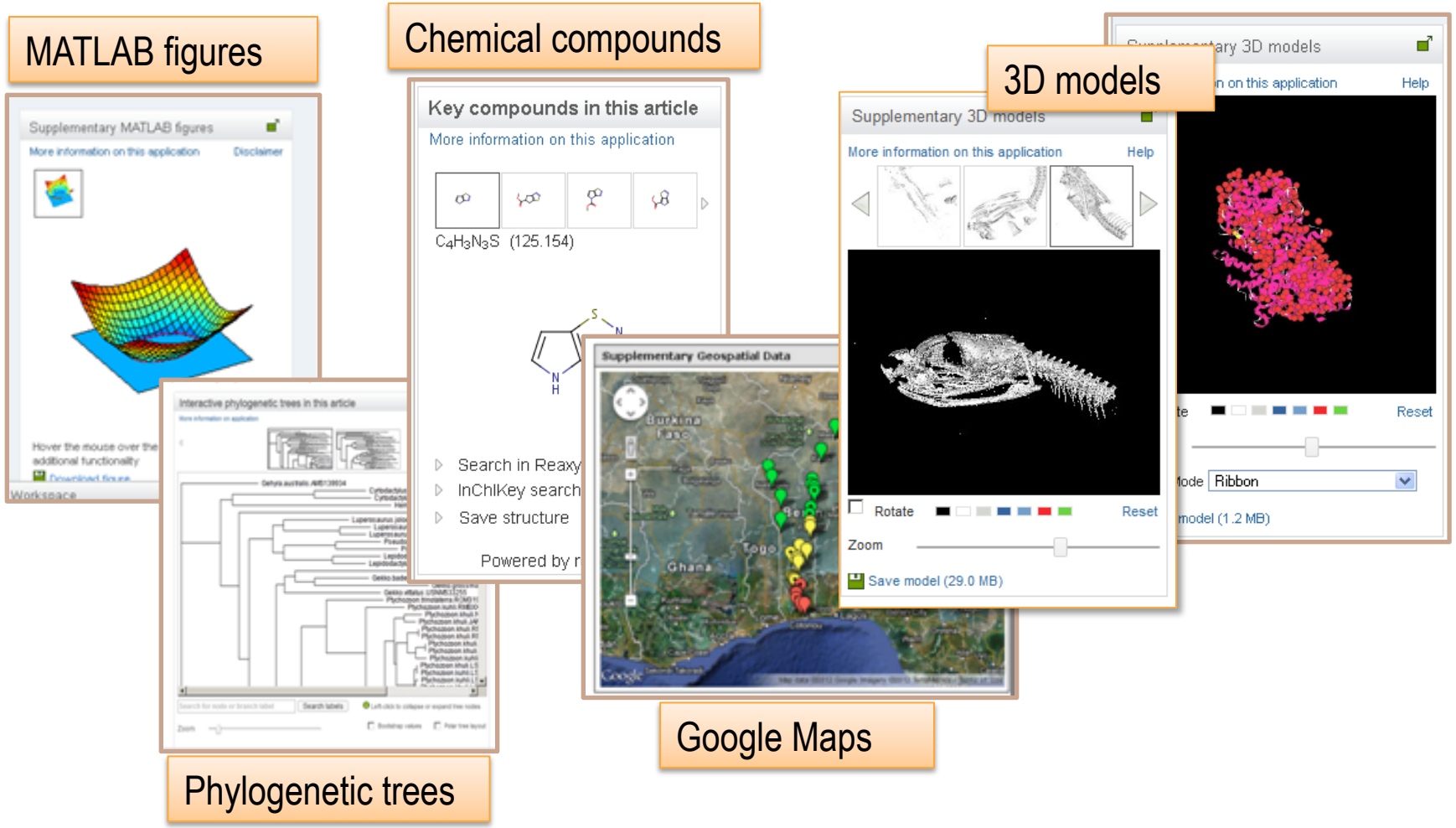
MATLAB figures

Chemical compounds

3D models

Phylogenetic trees

Google Maps



http://www.elsevier.com/about/content-innovation

Article of the Future: Context
Data-linking based on tagged Entities

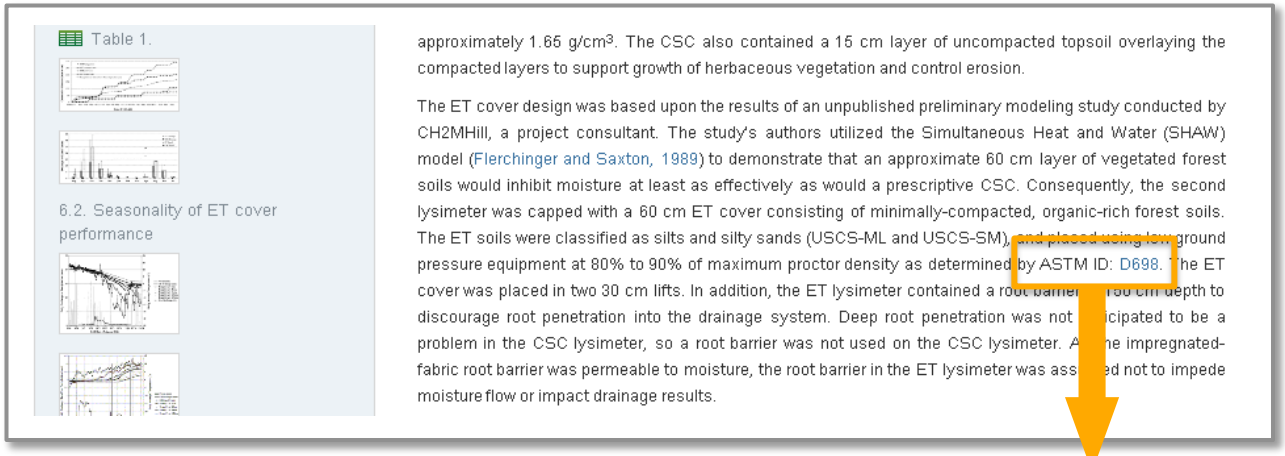


Table 1.

6.2. Seasonality of ET cover performance

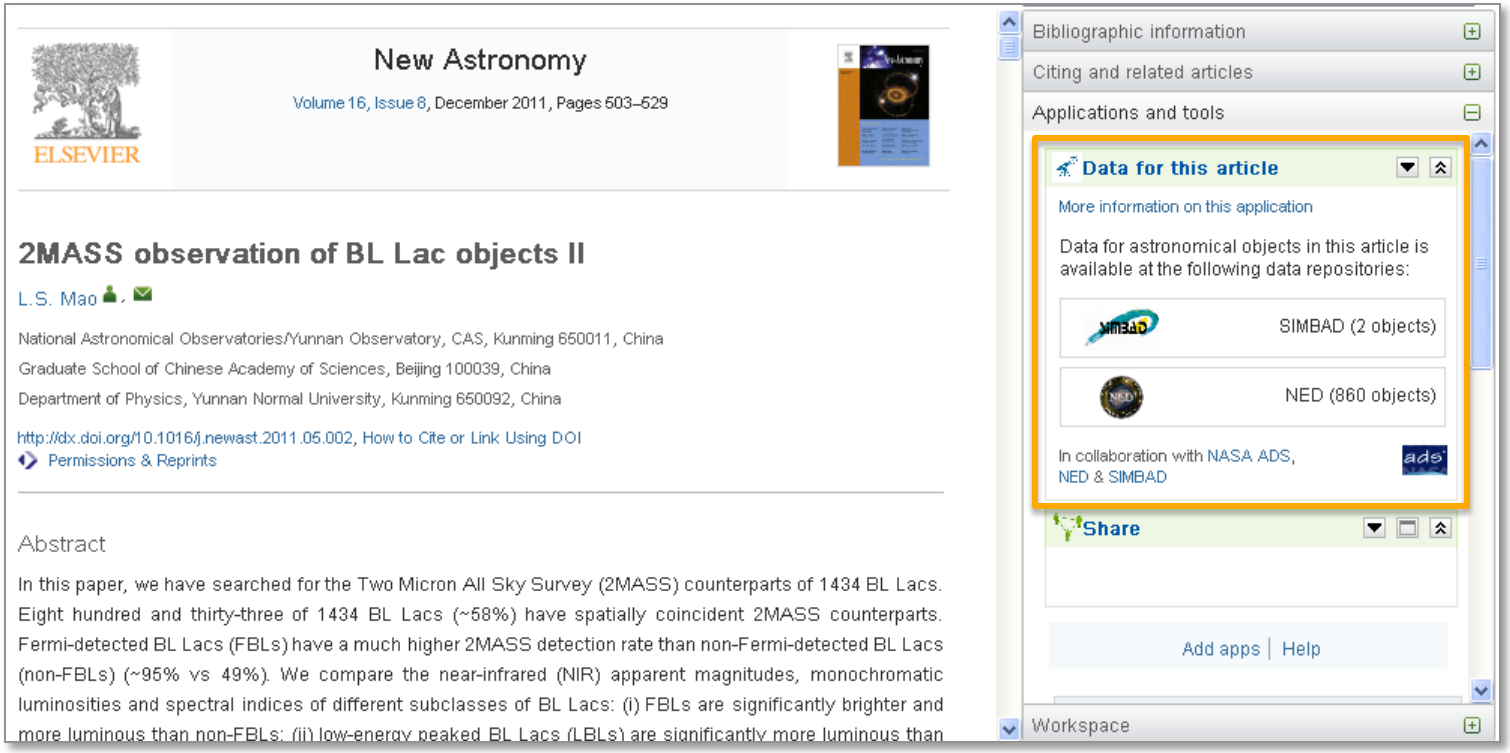
approximately 1.65 g/cm3. The CSC also contained a 15 cm layer of uncompacted topsoil overlaying the compacted layers to support growth of herbaceous vegetation and control erosion.

The ET cover design was based upon the results of an unpublished preliminary modeling study conducted by CH2MHill, a project consultant. The study's authors utilized the Simultaneous Heat and Water (SHAW) model (Flerchinger and Saxton, 1989) to demonstrate that an approximate 60 cm layer of vegetated forest soils would inhibit moisture at least as effectively as would a prescriptive CSC. Consequently, the second lysimeter was capped with a 60 cm ET cover consisting of minimally-compacted, organic-rich forest soils. The ET soils were classified as silts and silty sands (USCS-ML and USCS-SM), and placed using low ground pressure equipment at 80% to 90% of maximum proctor density as determined by ASTM ID: D698. The ET cover was placed in two 30 cm lifts. In addition, the ET lysimeter contained a root barrier [illegible] 30 cm depth to discourage root penetration into the drainage system. Deep root penetration was not [illegible]icipated to be a problem in the CSC lysimeter, so a root barrier was not used on the CSC lysimeter. A[illegible]he impregnated-fabric root barrier was permeable to moisture, the root barrier in the ET lysimeter was ass[illegible]ed not to impede moisture flow or impact drainage results.

- For entities (concepts) mentioned in an article – proteins, genes, standards planets, cities, etc. etc.
- Available for 10+ data repositories
- Author-tagged for precision

http://www.elsevier.com/databaselinking

Article of the Future: Context
Data-linking in Astronomy



- One-click access to relevant primary data
- Links to all data available at data repository for this specific article
- In collaboration with NASA ADS, SIMBAD & NED

Open Access Regulations and Policies: What you need to know

Aren't Acknowledgments Hard Enough?

- A wide variety of requirements and regulations about open access to published work
  - Governmental (mostly national, funding agency)
  - University (policies on institutional repositories)
  - Other funders, other stakeholders

- What do you need to know here?

Three Thoughts

1. Some good news: publishers generally work well with government mandates (e.g., CHORUS).

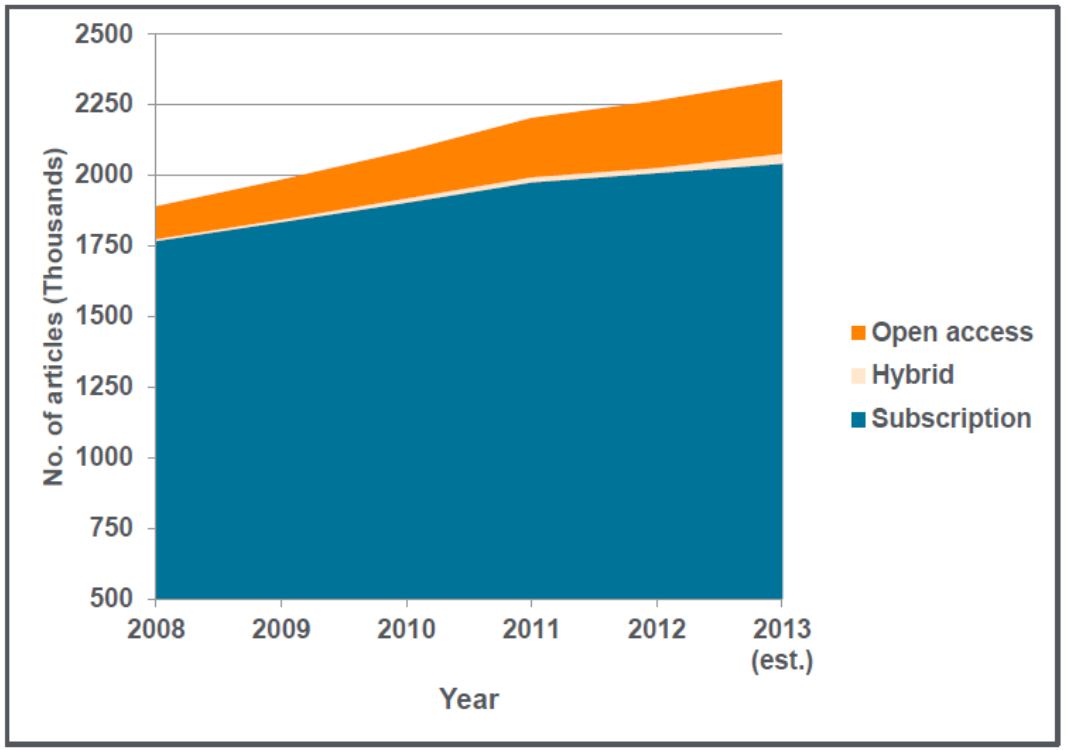
2. University policies often require some specific action with relation to publishers.

3. Some faculty care a lot about these issues, but most just want to publish in venues they care about – compliance may require support!

Challenge: New business and funding models

Total article growth by journal business model

There were in 2013, estimated worldwide 2,041,106 published subscription and 297,596 published open access articles



Open access content:

- Currently growing at approx. 20% in 2013
- Amounts to a total article share (hybrid + "pure" Gold) of approx.8.2% in 2013
- The total article share of all immediately accessible OA articles is 12.7% including subsidized open access
- Elsevier open access growth amounted to 3500 *extra* open access articles in 2013

Subscription content:

- Continues to grow year on year at approx. 3-4%
- Amounts to a total article share of approx. 87.3% in 2013
- Elsevier subscription growth amounted to 20,000 *extra* articles in 2013

Source: Calculation method draws on an approach pioneered in the 2013 BIS study and has since been proposed as the method to monitor uptake of OA in the UK.

Elsevier and Open Access

Elsevier is encouraged by the OSTP memo and directives

- It promotes gold open access funded through publishing charges and flexible embargo periods for green open access.
- It seeks to leverage publishing industry investments rather than duplicate efforts.
- It encourages collaboration.

Elsevier and Open Access

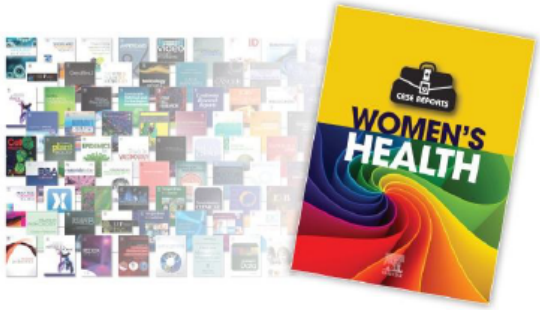
Gold open access

Expanding our gold options:

- Launching new open access journals
- Rolled out gold options in our established journals (over 1600 hybrid titles)
- Waiving policy in place for authors

Improving our systems

- Making the author publishing experience easier
- Improving open access labelling
- Working with our society partners



Green open access

- Posting policy enables the option to self-archive in all of our journals
- Toward a new posting policy:
  - Permit immediate internal use in institutional repositories
  - Public access after embargo of typically 12 – 24 months
- Piloting ways to facilitate green open access:
  - CHORUS
  - Agreements with funders and institutions
  - New repository tools such as embed PDF and metadata pilots

CHORUS

100
Open access journals

1600+
Offer gold open access options

3
Creative Commons licenses offered including CC BY

$500- $5000
(US Dollars)
Price range of our OA fees

Open Q&A

The Future of Scholarly Publication: Key Issues Facing Computing Research

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