



# ***Science in the Era of the Internet***

*The Open Access Strategy*

*Chinese Academy of Sciences*

*Beijing, 24 May 2004*

*Theresa Velden*

*Executive Director*

*Heinz Nixdorf Center for Information Management (ZIM)*

*Max Planck Society*

# Overview

## 1 Challenges and Opportunities

- *trends in scientific publishing*
- *drivers of change*

## 2 The Open Access Strategy

- *what we mean by open access*
- *benefits of open access*

## 3 Realizing Open Access

- *the Berlin Declaration*
- *the Berlin Process*

## 4 Conclusions



# *Challenges and Opportunities*



# *Challenges and Opportunities*

## *- trends in scientific publishing -*

- *traditional publication and scholarly communication models increasingly inadequate*
- *1:1 translation from paper-based model to digital forms insufficient to support evolving research practices*
- *expect a complex and fundamental change in scholarly communication system*



# *Challenges and Opportunities*

## *- trends in scientific publishing -*

- *Drivers of change:*
  - *Journal crisis and loss of access to research results*
  - *Requirements of research in Era of eScience*
  - *Enabling Technologies: Internet, Grid Technologies*

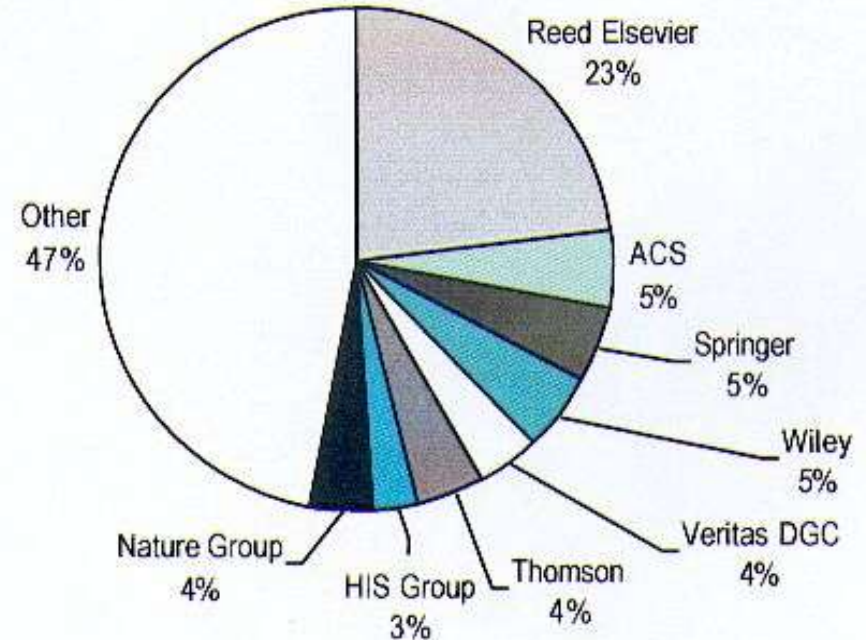


# Challenges and Opportunities

## - 1<sup>st</sup> driver of change: journal crisis -

- *decades of subscription cancellations and expenses for periodicals eating into monographs budgets*
- *the growth of science as well as 'publish or perish' policy is resulting in increasing research output while library budgets remain constant*
- *due to mergers and inelasticity of the market very high profit margins by industry and no end in sight*

*Reduced access to research results, less visibility and impact than theoretically possible in age of Internet*



# *Challenges and Opportunities*

*- 1<sup>st</sup> driver of change: journal crisis -*

- *Costs of restricted access to Science and Society:*
  - *unnecessary duplication of work*
  - *lost opportunities for individual scientist*
  - *lost opportunities on global scale (digital divide), less adoption and generation of new knowledge or applications*

***Contrary to idea of results of publicly funded research as a public good.***



# *Challenges and Opportunity*

## *- 2<sup>nd</sup> driver of change: eScience -*

- *Trends in research practice*
  - *Vast improvements in raw computing power, storage capacity, algorithms, network capabilities*
  - *Vast improvements in measurement techniques: online digital instruments & wide-area arrays of sensors*
  - *Powerful data-mining techniques, operating across huge datasets*
- *Implications*
  - *New approaches to discovery*
  - *Global networks link all this information together*
  - *More interactive and broader collaboration*

***Need dramatically new environments (e.g. collaboratories) and new capabilities of scholarly communication system***





# *Challenges and Opportunity*

## *- 3<sup>rd</sup> driver of change: WWW, Grid -*

- *WWW*
  - *since early 90s*
  - *invented at CERN*
  - *ubiquity, speed, democratization*
- *Grid Technology*
  - *evolving in 1<sup>st</sup> decade of 21<sup>st</sup> century*
  - *seamless and flexible access to resources, virtual, self-organized communities*
  - *International efforts under way*
  - *National German eScience and Grid Initiative about to be announced*

***Technology to support a fundamental transition of the scholarly communication system.***



# *Challenges and Opportunities*

## *- trends in scientific publishing -*

- *In the transformation of scholarly communication in the era of eScience the open access paradigm plays a crucial role to resolve current problems in access to information and to fully exploit the potential of the Internet.*



# *The Open Access Strategy*

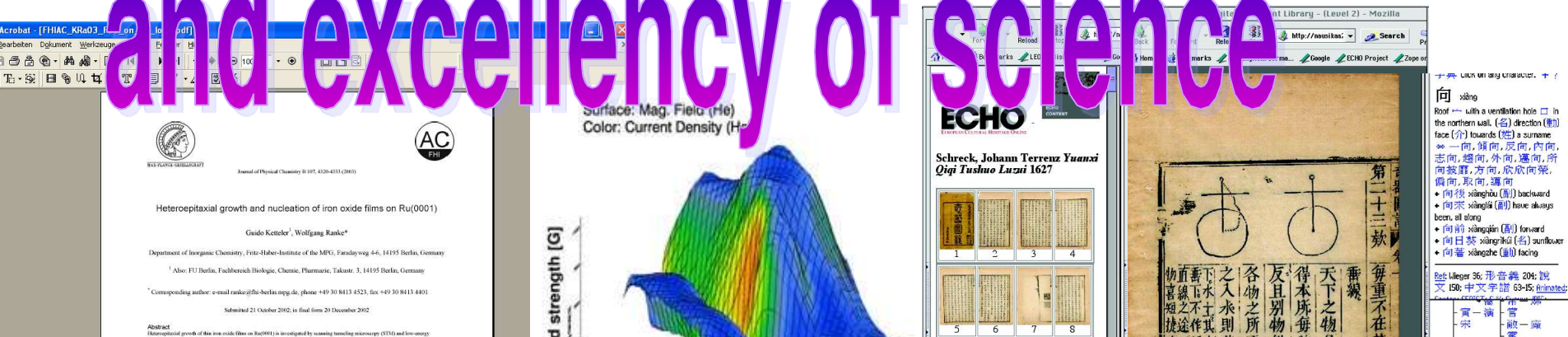


# The Open Access Strategy

## - what we mean by open access -

- Immediate unconditional free electronic access to research results:
  - data, objects and primary scientific literature (papers/books) of scholarly interest (incl. artifacts of cultural heritage)
  - interlinking of research findings with underlying data
- Standards (interfaces, formats) that support connectivity (e.g. to build Library Without Walls Services)
- Copyright agreements which support open access – Open access License dedicates work to public
- No compromise on quality: maintain good practice (like peer-review), can be improved and improve by new transparent and community specific approaches
- Ensure effective and persistent access through an open, sustainable, scalable and distributed infrastructure

Open Access increases quality and excellency of science



# *The Open Access Strategy*

## *- rationale -*

- *regard dissemination as research costs - compared to entire costs of conducting research, publication costs only a minor fraction*
- *unrestricted access to the global knowledge base reduces opportunity costs and risk of duplication*
- *ensure maximal impact and use of research results, no longer discriminate use of information*
  - *changing role of publisher (as service provider)*
- *benefits 'information consumers' reduces digital divide*
  - *Open access has been adopted also by World Summit on Information Society, Geneva December 2003*



# *Realizing Open Access*



# *Realizing Open Access*

## *- the Berlin Declaration -*

- *Conference 21-23 October 2003, Berlin, initiated by Max Planck Society to address lack of institutional commitment in open access movement*
- *History: Public Library of Science 2001, Budapest Open Access Initiative 2002, Bethesda Statement 2003*
- *Major organizations of science and culture declare their mission only half complete if the research results they produce are not made freely available to society under the open access principle.*
- *To date more than 40 organizations have signed, on 12 May 2004 CERN at follow-up meeting to Berlin Conference in Geneva*



# *Realizing Open Access*

## *- the Berlin Declaration -*

- *“The Internet has fundamentally changed the practical and economic realities of distributing scientific knowledge and cultural heritage. For the first time ever, the Internet now offers the chance to constitute a global and interactive representation of human knowledge, including cultural heritage and the guarantee of worldwide access.”*
- *“In order to realize the vision of a global and accessible representation of knowledge, the future Web has to be sustainable, interactive, and transparent. Content and software tools must be openly accessible and compatible.”*





# Realizing Open Access

## - the Berlin process -

- *Signing the Berlin Declaration is only the beginning*
  - *Continuous, open but focussed process of Berlin Signatories to realize the vision of the Declaration*
  - *Regular, 6-monthly meetings of Berlin Signatories*
    - *1<sup>st</sup> follow-up meeting at CERN, 12/13 May 2004*
- 1<sup>st</sup> Roadmap Proposal** [www.zim.mpg.de/openaccess-cern/](http://www.zim.mpg.de/openaccess-cern/)
- *Status reports, roadmap review, alliances for specific issues and mutual help*
  - *Model for processes within World Summit for Information: Geneva 2003, Tunis 2005*

# *Realizing Open Access*

## *- Max Planck Society -*

- *Sustainable, enabling Infrastructure: Open Access Platform*
  - *Seed money: Ministry for Education and Research*
  - *Pilot project in national eScience Initiative*
  - *Open for re-use (open source software and nucleus for national service)*
- *Continuous practical innovations & creation of new channels of dissemination*
  - *Living Reviews Journal Family (3)*
  - *ePublishing Tools*
  - *Living Einstein/Physics Project (2005 – Einstein Jahr)*
  - *European Cultural Heritage Online (EU, ECHO)*

*wide field of collaboration between signatory organizations of Berlin Declaration*



# *Conclusions*




# Conclusions

- *Open access is the replacement for the conventional scholarly communication paradigm and not its 2nd class counterpart*
- *The transition*
  - *will take a significant time and involve transformations in the traditional library/scientific information provision system including the re-definition of role and services of Publishers*
  - *is facilitated and accelerated by joint action of a global alliance of research and funding organizations committed to Open Access coming together in the Berlin Process*

Requires long-term  
commitment  
and readiness to  
share & collaborate.





***Thank You for Your  
Attention.***

*Theresa Velden*  
*contact: [velden@zim.mpg.de](mailto:velden@zim.mpg.de)*