
CODATA Global Information Commons for Science Initiative

20th CODATA Conference

Beijing, China

25 October 2006

by

Paul F. Uhler

**Director, Office of International Scientific and Technical
Information Programs**

The National Academies

Washington, DC

USA

puhler@nas.edu

CODATA Global Information Commons for Science Initiative

Comparison of some key characteristics of the print and digitally networked paradigms

PRINT

- (pre) Industrial Age
- fixed, static
- rigid
- physical
- local
- linear

- limited content and types
- distribution difficult, slow
- copying cumbersome, not perfect
- significant marginal distribution cost
- single user (or small group)
- centralized production
- slow knowledge diffusion

GLOBAL DIGITAL NETWORKS

- post-industrial Information Age
- transformative, interactive**
- flexible, extensible
- “virtual”
- global**
- non-linear, asynchronous, with time/space collapsed**
- unlimited contents and multimedia
- easy and immediate dissemination
- copying simple and identical
- zero marginal distribution cost**
- multiple, concurrent users/producers**
- distributed production**
- accelerated knowledge diffusion**

What is an information commons?

Digital information originating principally from government or publicly-funded sources, made freely available for common use online, either in the public domain or with only some limited rights reserved, typically organized thematically through an institutional mechanism.

CODATA Global Information Commons for Science Initiative

Existing information commons models:

- **Open data centers and archives (e.g., GenBank, space science data centers);**
- **Federated open data networks (e.g., World Data Centers, Global Biodiversity Information Facility, South African Environmental Observation Network);**
- **Virtual observatories (e.g., the International Virtual Observatory for astronomy, Digital Earth);**
- **Open access journals (e.g., PLOS + > 2500 scholarly journals, many in developing world—SciELO, Bioline International);**
- **Open institutional repositories for an institution's scholarly works (e.g., the Indian Institute for Science, + > 100s/Ks? globally)**
- **Open institutional repositories for publications in a specific subject area (e.g., the physics arXiv, Qi Ji, PubMedCentral);**
- **Free university curricula online (e.g., the MIT OpenCourseWare);**
- **Discipline-based commons (e.g., conservation commons).**

CODATA Global Information Commons for Science Initiative

Advantages of information commons for science:

- **Facilitates transfer of information North -> South and South <-> South;**
- **Promotes capacity building in developing countries;**
- **Promotes interdisciplinary, inter-sector, inter-institutional, and international research and cooperation;**
- Avoids duplication of research and promotes new research and new types of research;
- Reinforces open scientific inquiry and encourages diversity of analysis and opinion,
- Allows for the verification of previous results,
- Makes possible the testing of new or alternative hypotheses and methods of analysis;
- Facilitates the education of new researchers;
- Enables the exploration of topics not envisioned by the initial investigators;
- Facilitates automated digital knowledge discovery and diffusion;
- **Generally helps to increase the research potential of digital technologies and information, thereby providing greater returns from the public investment in research;**
- **Many other economic, social, and good governance advantages.**

CODATA Global Information Commons for Science Initiative

Key obstacles to creating information commons:

- Assessing and communicating the value on the commons approach
- Development of adequate incentives at the individual, community, institutional, and governmental levels
- Long-term financial sustainability of different information commons models
- Legitimate legal restrictions (protection of national security, privacy, confidentiality, and IPRs)
- Effective technical and organizational implementation

Failure to overcome these obstacles leads to compromises in achieving the ideal commons approach and may frequently result in the creation of “semi-commons”.

CODATA Global Information Commons for Science Initiative

The objectives of CODATA's GICSI are to:

- ***(1) Improve understanding and increase awareness of the societal and economic benefits of easy access to and use of scientific data and information, particularly those resulting from governmental or publicly funded research activities;***
 - ***(2) Identify and promote the broad adoption of successful institutional and legal models for providing open availability on a sustainable basis and facilitating reuse of data and information;***
 - ***(3) Encourage and help coordinate the efforts of the many stakeholders in the world's diverse research community who are engaged in devising and implementing effective approaches to attaining these objectives, with particular attention to the circumstances of the developing as well as developed countries.***
 - ***(4) Promote all of the objectives of the Initiative through the development of an online "open access knowledge environment".***
-

CODATA Global Information Commons for Science Initiative

Key milestones:

- GICSI concept developed at the U.S. NAS and CODATA 2002-2005
- Initiative formed at CODATA Workshop at UNESCO, in September 2005
- Initiative formally announced at WSIS in Tunis in November 2005
- GICSI workshops held in Dublin, Brussels, and Beijing in 2006
- Funding currently being solicited to establish Secretariat and regional offices to implement the GICSI objectives

- We welcome your suggestions and participation!

Contact: codata@dial.oleane.com

CODATA Global Information Commons for Science Initiative

Additional background reading (available freely online):

- ***Bits of Power: Issues in Global Access to Scientific Data (NAS, 1997)***
 - ***The Role of S&T Data and Information in the Public Domain (NAS, 2003)***
 - ***Reichman, J.H. and Paul F. Uhler, "A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment, 66 Law & Contemporary Problems 315-462 (2003)***
 - ***UNESCO Policy Guidelines for the Development and Promotion of Governmental Public Domain Information (2004)***
 - ***Open Access and the Public Domain in Digital Data and Information for Science (NAS, 2004)***
-