

# **Content Management Strategies for the Digital Era:**

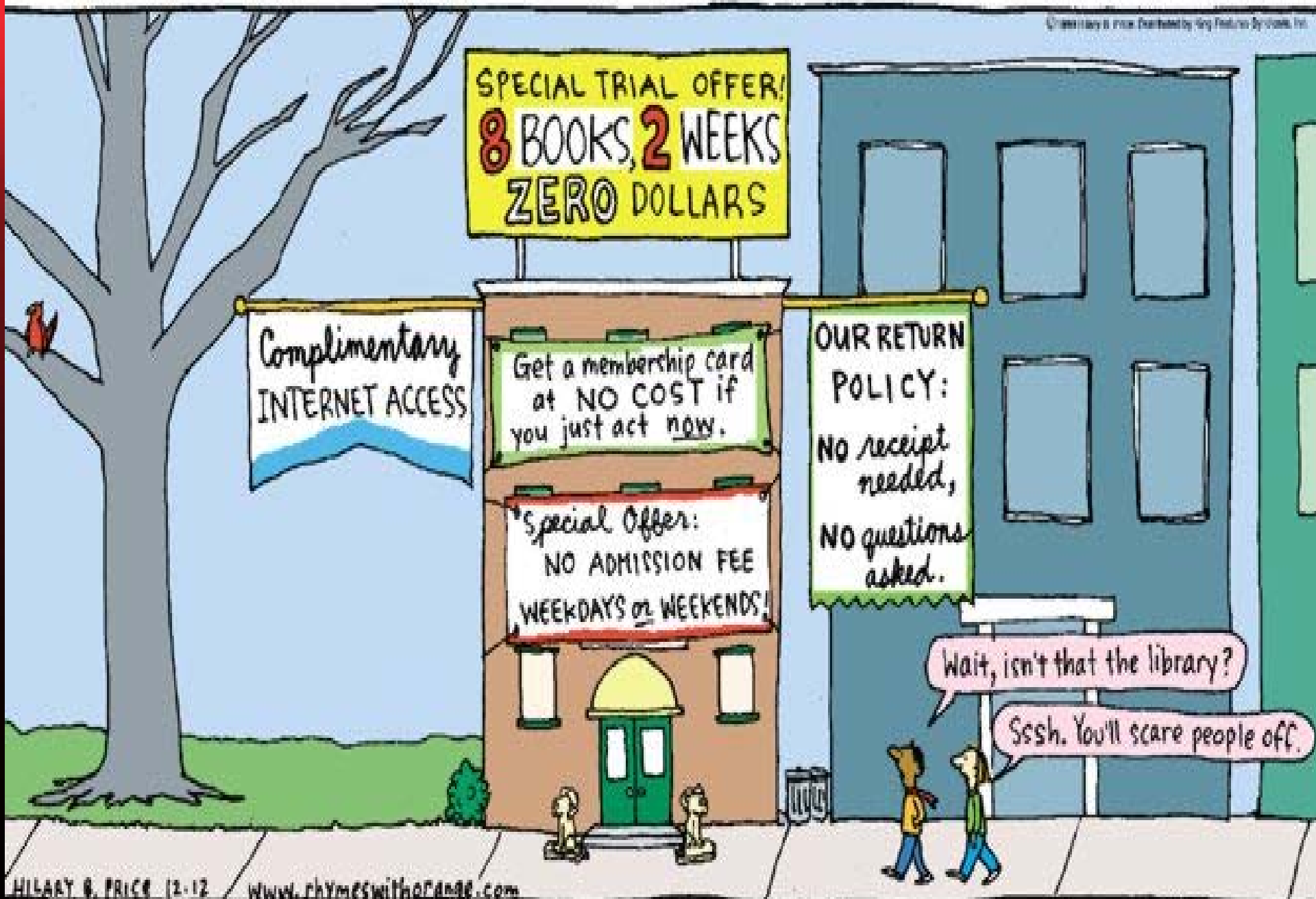
**Opportunities and Best Options  
for (learning) Organizations**

**Dr. M.G. Sreekumar**

**UNESCO Coordinator, Greenstone Support for South Asia  
Librarian & Head, CDDL, IIM Kozhikode**

# Agenda

- The Information Paradigm – Some Thoughts
- Information Management Trends in Libraries
- (Best) Practices in LIS
- Library Automation – the ‘KG’ thing of LIS Modernization
- Digital Libraries – Overview
- Open Access – Overview
- Open Access Archives – Institutional Repositories
- Information Aggregation and Integration Strategies
- Emerging Technologies



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POLICY:  
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needed,  
NO questions  
asked.

Wait, isn't that the library?

Sssh. You'll scare people off.

# Future Libraries?

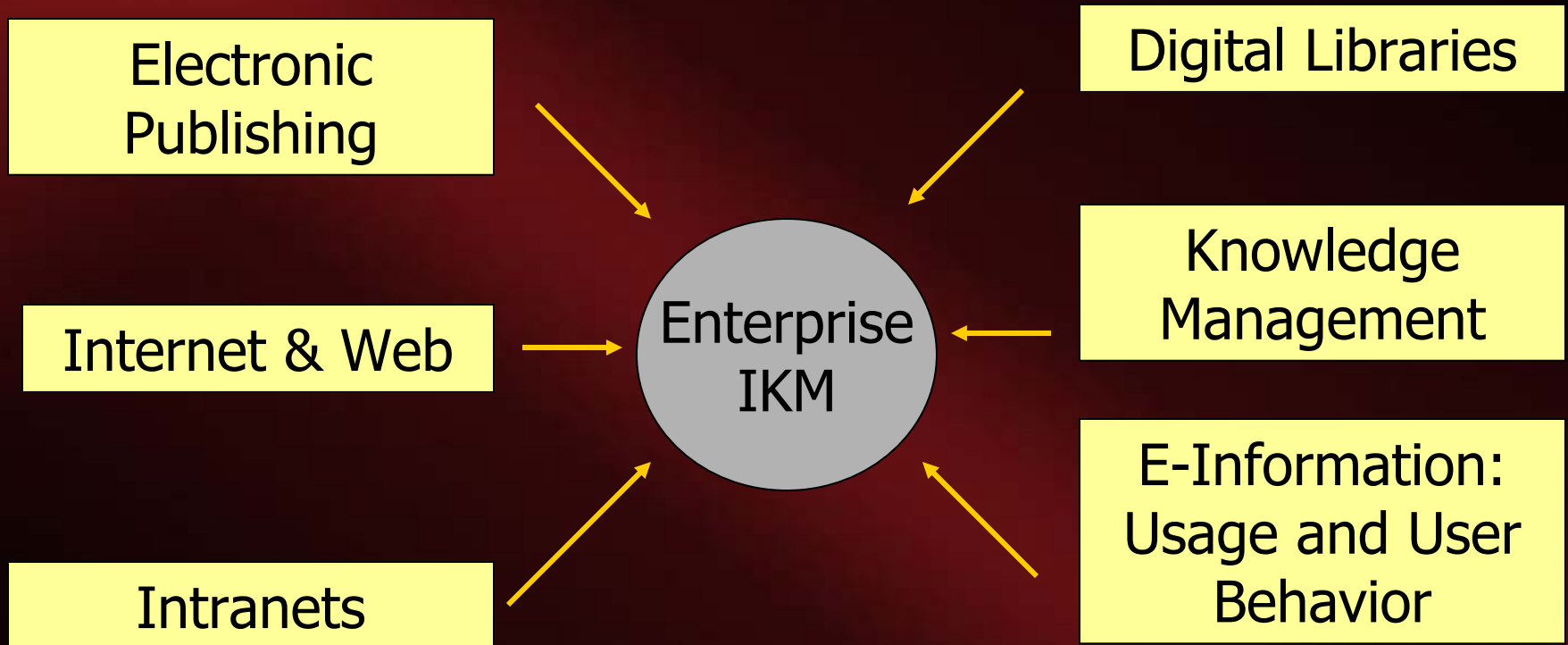
## What is a library and what should it be in 2012, 2020 and beyond...

- What does the academic library of the future look like?
- Where do its walls begin and end?
- On campus?
- On our desktop?
- At home?
- Does it still have a function as a separate and distinct space?
- Or has it become the first step to an all-virtual future?
- Libraries have never been more interesting, difficult and challenging...

# Challenges of the Day

- ✓ **Relevance of Libraries in the Google Era**
- ✓ **Retention of Users, especially the New Gen**
- ✓ **Proliferation of Content**
- ✓ **Diverse Datastreams - Content Categories, Publication Types**
- ✓ **Multimedia, Polymedia, Multiformats**
- ✓ **Collection Building – Acquisition, Subscriptions, Licensing...**
- ✓ **Copyright, Intellectual Property, Fair Use...**
- ✓ **Technology Complexities, Infrastructure Issues**
- ✓ **Publishers' Stringent Policies / Monopolies**
- ✓ **Integration of legacy systems and the new genre**

# Factors of Change



Experiences? Lessons? Impact? Implications?

# IM: Key Goals

- Develop and manage a dynamic, unified information resource base (content repository) that gathers and organizes relevant internal and global information resources, based on a taxonomy of information needs of the enterprise, and make these available for learning and informed decision making.

# IM : Key Goals...

- Support different manifestations of information sources – implicit/explicit, print/digital, local/remote, free/commercial, etc.
- Support for delivering personalized information services to staff, both on demand and in anticipation.



# TIME

PERSON OF THE YEAR



Yes, you.  
You control the Information Age.  
Welcome to your world.

- User Generated Internet Content:
  - Blogs
  - YouTube
  - MySpace
  
- And the same is TRUE with Scholarly Communication too!!

# Concerns

- In an information world in which **Google** apparently offers us everything, what place is there for the traditional, and even the digital, library?
- In a library environment which is increasingly moving to the **delivery of online rather than print resources**, what of the academic library's traditional place at the heart of campus life?
- What about the impact of repositories and open access on the delivery of library resources?
- And the need to digitise and make more widely accessible key scholarly resources?
- And what of the calls for libraries to play a central role in the promotion of 'information literacy'?

# The Google Generation



# Magic of the Web

- The universe (which others call the Web) is the place where society keeps the sum total of human knowledge. It's where we learn and play, shop and do business, keep up with old friends and meet new ones ...
- Today we stand at the epicenter of a revolution in how society creates, organizes, locates, presents, and preserves information ...
- .... It's all the Web ....

*Ian Witten et al. in "Web Dragons"*

# New Drivers for Change - Environment

- Ubiquitous use of the Web
- “Simpler” search techniques (Google)
- “Information to go”
- Same data, different presentations
- Open access and new publishing models

# New Drivers for Change - Environment

- Social, personal and work activities blurred
- Information users as information providers
- Interactive do-it-yourself capability of the Web is at odds with highly-wrought library systems
- Technical/licensing/copyright issues
- A volatile landscape of rapid change

# New Drivers for Change - Students

- Integration of library with VLE
- Web 2 and social networking
- Amazon/supermarket profiling approach
- The digital native generation
- Students as paying customers

# New Drivers for Change - Research

- Access to deep web
- Underlying data important for research
- Re-use of data is possible
- Deposit in institutional repositories
- Mass digitisation (Google, MS, JISC)





**information behaviour of  
the researcher of the future**

11 January 2008





# Google Syndrome

- Can we assume that a search engine will – intrinsically – teach students how to find, manage and interpret information ??

# Google Syndrome

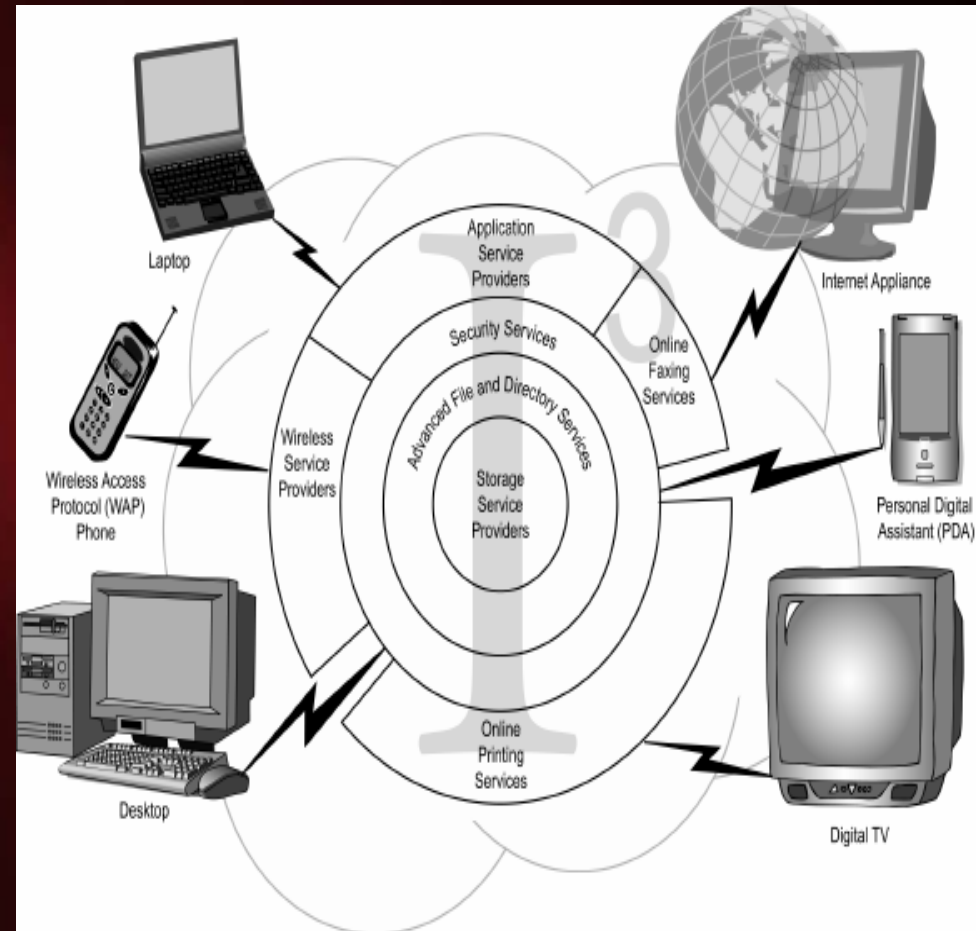
- If a generation of students in primary and secondary schools, particularly in the state sector, are “managing” education without a properly funded library and the help of qualified librarians, then not only will literacy levels and examination results suffer, but so will our universities and workplaces.

# Top Tech Trends in IT / LIS

- Web 2.0 / Library 2.0
- Blogs / RSS Feeds / Wikis / Podcasts / Webcasts
- Open Source Software, Open Standards, Open URL
- User Tagging, Automated Tagging
- Web OPACs, and Interface Design
- Seamless Integration / Aggregation
- OA -> OAP + OAA
- Open Resource Discovery Tools - Google Scholar
- E-Books, E-Journals, E-Resources
- Harvesting, Federation, Metasearching
- Digital Rights Management

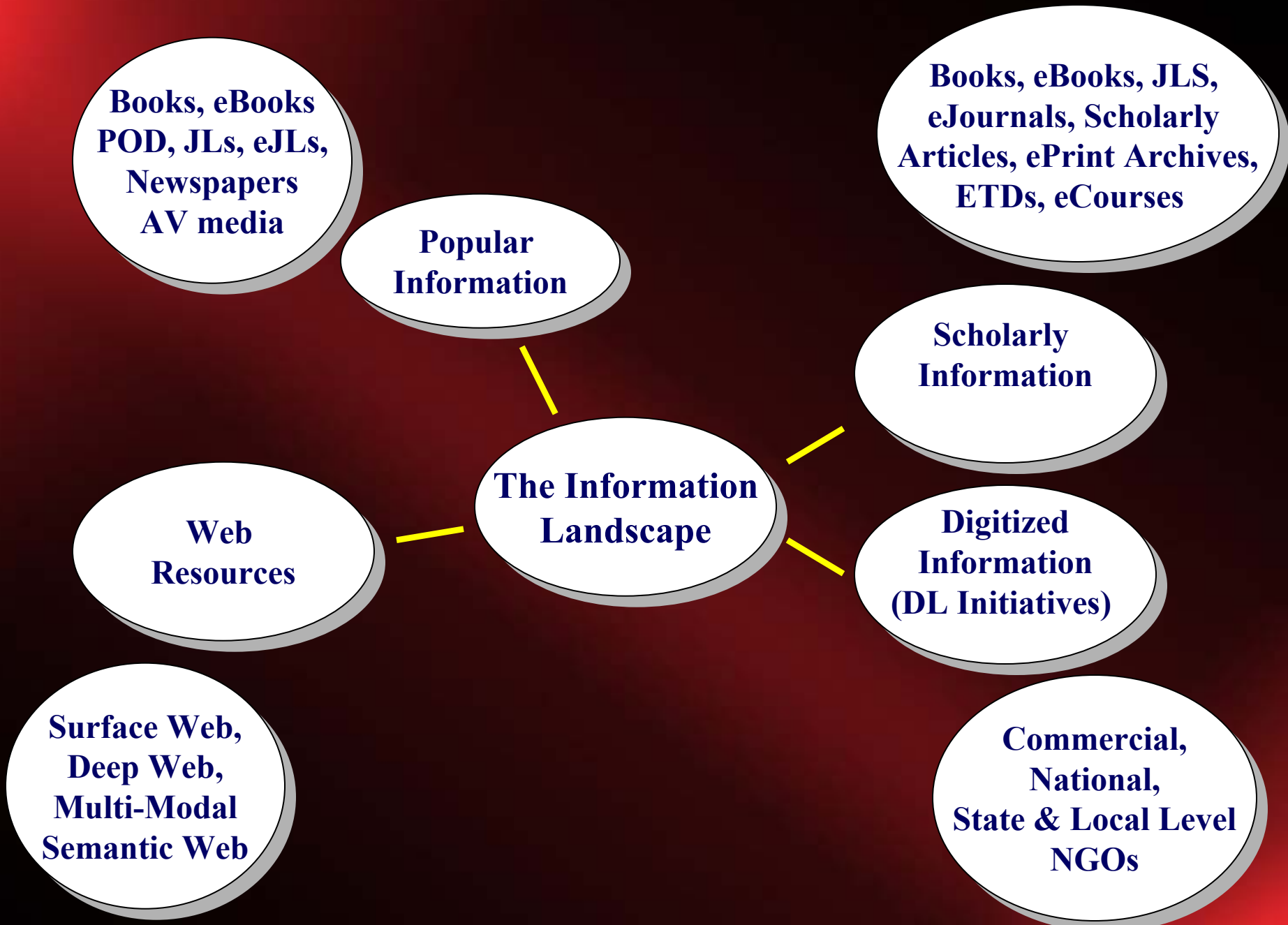
# Emerging Publishing/Access Models and the I<sup>3</sup>

- **Open Access Archives**
  - Open Archives/Initiative OAi / OAI
- **Open Access Publishing**
  - OA Journals
- **Open Source**
- **Open Standards**
- **OpenURL**
  - Open URL Framework



# Information Strategy Tips

- ✓ **Context** = Scenarios, Paradigms
- ✓ **Constant** = Change
- ✓ **Technology** = Facilitate, and **NO** intimidate
- ✓ **Information** = The Big Picture - Landscape
- ✓ **Content** = Aggregate, Integrate
- ✓ **Service** = Markup, Market
- ✓ **Capital** = Human, Tacit, Values, and Users



**Popular Information**

**Books, eBooks  
POD, JLS, eJLS,  
Newspapers  
AV media**

**Books, eBooks, JLS,  
eJournals, Scholarly  
Articles, ePrint Archives,  
ETDs, eCourses**

**Scholarly Information**

**The Information Landscape**

**Digitized Information  
(DL Initiatives)**

**Web Resources**

**Commercial,  
National,  
State & Local Level  
NGOs**

**Surface Web,  
Deep Web,  
Multi-Modal  
Semantic Web**



# Lib2.0

<b>L 1.0</b>		<b>L 2.0</b>
Closed stacks	-->	Open stacks
Collection development	-->	Library suggestion box
Preorganized ILS	-->	User tagging
Walk-in services	-->	Globally available services
“Read-only” catalog	-->	Amazon-style comments
Print newsletter mailed out	-->	Team-built blog
Easy = dumb users	-->	Easy = smart systems
Limited service options	-->	Broad range of options
Information as commodity	-->	Information as conversation
Monolithic applications	-->	Flexible, adaptive modules
Mission focus is output	-->	Mission focus is outcome
Focus on bringing ‘em in	-->	Focus on finding the user
ILS is core operation	-->	User services are core

# Penetration of E-Content in Libraries

## PUBLICATION TYPES

- E-Books, E-Journals...
- Aggregated Scholarly E-Journal Databases
- Databases, CBT/ WBT
- Portals, Vortals...
- Value added services
- Preprints, Eprints, E- Documents....

## DOCUMENT FORMATS

- ASCII, RTF, HTML, SGML, Postscript, PDF, Proprietary, Native Application Formats
- Images, Graphics
- Audio
- Video
- XHTML, ASP, PHP, XML...

# Major Drivers

- Information/Knowledge - Proliferation
- Technology Progress (push)
- Open Standards / Technologies
- Open Source Software
- Market Demands
- Community / Society

# The Changing (challenging) Role of Information Professionals

Book keepers



Bit Keepers

(Book/Journal) Stores  
Officers/Custodians



Information providers



Content / knowledge providers



Content / knowledge sellers



# Award Winner, ASIST - SIG III - International Paper Contest, 2005

The International  
Information &  
Library Review

[www.elsevier.com/locate/iilr](http://www.elsevier.com/locate/iilr)

## Seamless aggregation and integration of diverse datastreams: Essential strategies for building practical digital libraries and electronic information systems

M.G. Sreekumar\*, T. Sunitha

*Center for Development of Digital Libraries (CDDL), Indian Institute of Management Kozhikode (IIMK), IIMK  
Campus P.O., Calicut 673570, Kerala, India*

# **Strategy Facets - for an excellent hybrid ambience**

- 1. Value and Preserve the Traditional Systems while Embracing Technology for Development**
- 2. Aggregation / Integration Strategies**
- 3. Library Automation** (integration of the traditional library activities/collection)
- 4. Digital Library** (creation of efficient information systems using digital collections for effective browse, search, retrieval and long-term preservation)
- 5. OA Archives** (pooling the organization's intellectual capital)
- 6. Library Portal** (seamless integration of the organization's entire knowledge base—traditional, paper as well as electronic technologies)
- 7. Consortium Approach to Library Subscriptions**

# Strategic Planning

- How to map / scale (assess) the information needs / requirements of the Organization
- How to Communicate this to the Management
- How to build infrastructure – Planning, Execution
- How to Collect, Consolidate, Build and Preserve Local Content
- How to build E-Resources / Published Content
- Information Literacy to Information Professionals
- Information Literacy for Users

# Libraries - Shifts

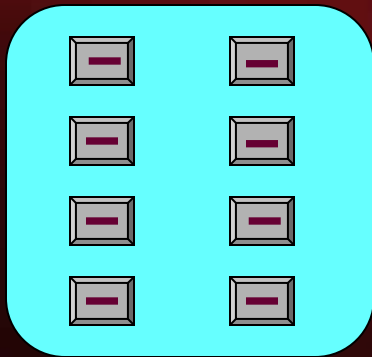
- Traditional / Automated
  - » Organization is physical
  - » Shelving of documents - Based on Subject Cln
  - » Key - Index / Catalogues / Cards / Digital Catalgs
  - » Cards - Real/Virtual - Author, Title, Descriptions
- Digital
  - » Organization in terms of digital files /objects
  - » Contains material digitized form
  - » Contains digital material
  - » Architecture
  - » Key - Metadata



# Shift in Approaches

**Traditional**

**Limited/ Rigid**



**AACR2**

**CCC**

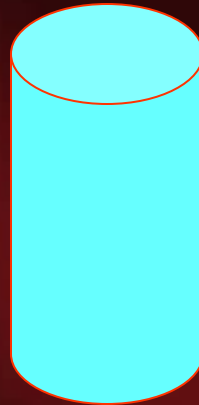
**CC / LCCS**

**DDC / UDC**

**Thesauri/LCSH**

**Automated**

**Improved**



**AACR2**

**ISO 2709**

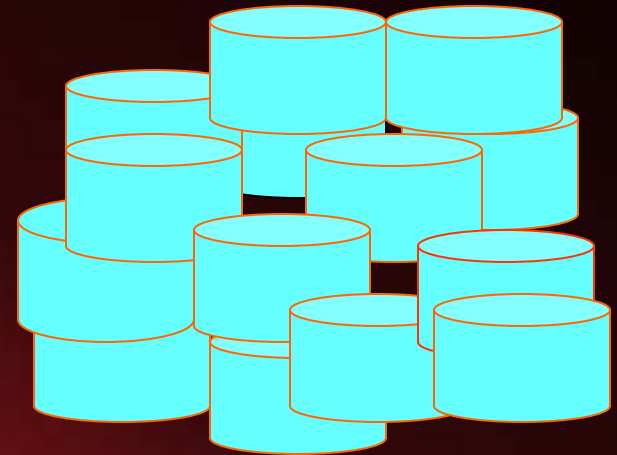
**CCF**

**MARC**

**Thesauri**

**Dig. Library**

**Efficient/ Flexible**



**Metadata**

**DCMI -- W3C**

**EAD, TEI, DTD**

**METS,MODS,**

**Z39.50**

**MARC21**

**OAI-PMH**

# Digital libraries ... features

- Knowledge/content management
  - Manage and access internal information assets
- Scholarly communication, education, research
  - E-journals, e-prints, e-books, data sets, e-learning
- Access to cultural collections
  - Cultural, heritage, historical & special collections, museums, biodiversity
- E-governance
  - Improved access to government policies, plans, procedures, rules and regulations
- Archiving and preservation
- Many more ...

# The Greenstone Software

- Software suite for building, maintaining, and distributing digital library collections
- Comprehensive, open-source
- Developed by New Zealand Digital Library Project at the University of Waikato
- Distribution and promotion partners:
  - UNESCO
  - Human Info NGO, Belgium
  - NCSI, Bangalore; UCT, Cape Town; Dakar, Senegal; Almaty, Kazakhstan; ...
  - You!



# Features of Greenstone

- Open Source Philosophy
- Interfacing & Content Delivery via Web
- Multi S/W Platform
- Multi Lingual Support
- Multi Formats
- Structured Metadata in XML using DC
- Metadata Extraction
- Searching & Browsing
- Plug-ins for Documents

- Full-text mirroring
- Text Level Penetration
- Data Compression
- Password protection
- Administrative Functions
- Concurrent & Dynamic Content Development
- Uniform Presentation
- Publishing on CDROMs
- International Presence

# Greenstone Features contd...

- Easy Installation
- Easy Maintenance
- Content Development (3 alternate ways)
- Predominantly GLI now - since (V. 2.41)
- Hierarchy Structure
- Interface Customization
  - Front Page Design, Header for the Digital Library, Collection Icon, Cover Images
- Collection Configuration (Collect.cfg) File
- Scalability, Flexibility
- Interoperability (Crosswalk), OAI Compliance
- Lifeline : Listserv / E-Group / Archives

# Greenstone DL Software

- Access
- ✓ Accessible via any Web browser
  - ✓ Server runs on Windows and Unix
  - ✓ Collections can be published on CD-ROM

- Searching/  
browsing
- ✓ Full-text and fielded search
  - ✓ Flexible browsing facilities
  - ✓ Metadata-based (Dublin Core)
  - ✓ Collection-specific
  - ✓ Hierarchical phrase browsing supported
  - ✓ Creates all access structures automatically

- Extensible
- ✓ Plugins — new document, metadata formats
  - ✓ Classifiers — new metadata browsers

- Multilingual
- ✓ Documents *and* interfaces
  - ✓ Chinese, Arabic, Maori, Russian etc (+ European, Indian Languages)
  - ✓ Multimedia: video, audio collections exist

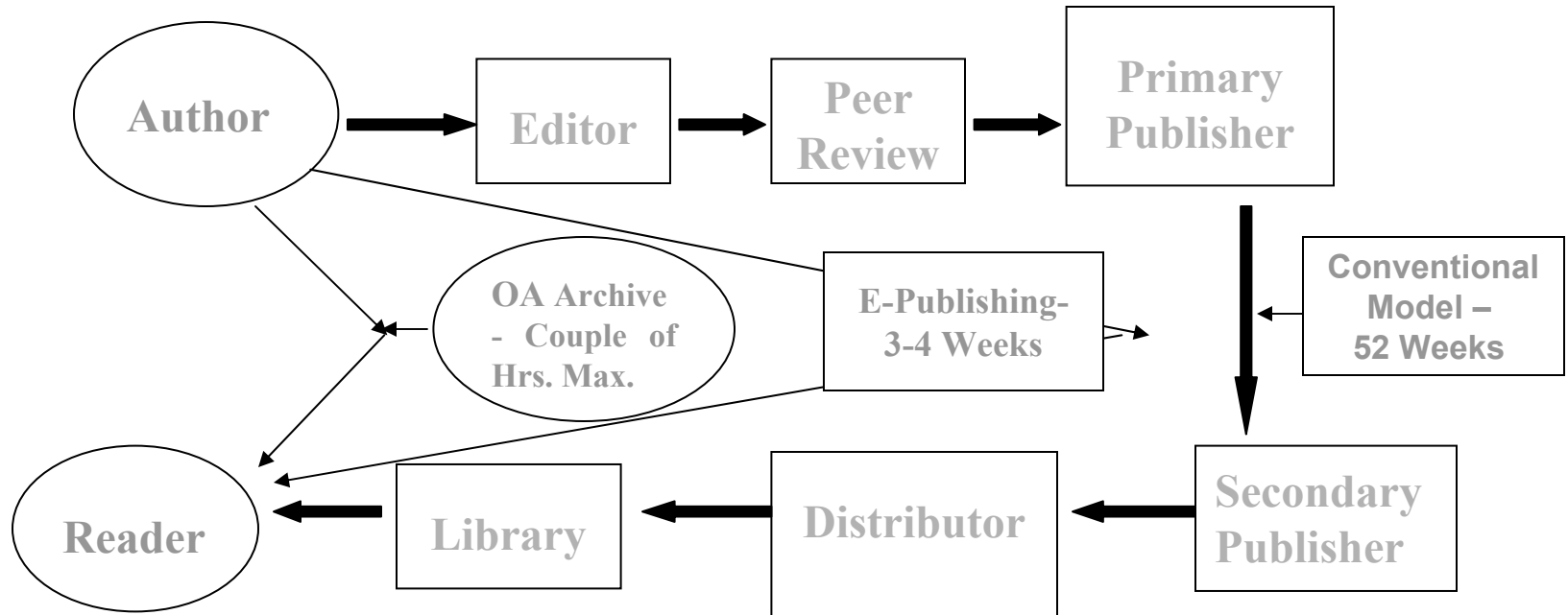
# **A Word About Open Access**

# Ground Realities

- World Over, Institutions / Agencies Fund Research (mostly Govt.s & NGOs)
- Authors want to publish/share their findings/thoughts with peers
- Authors give Copyright to Publishers
- Publishers do not give Authors access to the paper by default
- If your Institute/library is not subscribing to the Journal, you will have to be satisfied with the Offprints the publishers give



# Upcoming Models of Scholarly Communication Value Chain



**OA Archive (2 - 3 hours)**

**E-Publishing (3 - 4 weeks)**

**Conventional Publishing (52 weeks)**

# Institutional Scholarly Knowledge

- **PUBLISHED**

- Journals / Journal Articles
- Conference / Symposium Papers
- Books / Book Chapters
- Patents
- Cases
- ...

- **UNPUBLISHED**

- Theses / Dissertations
- Working Papers
- Technical Reports
- Coursewares
- Classroom Presentations (Videos, Audios, PPTs...)
- Lecture Notes
- Guides / Manuals
- ...

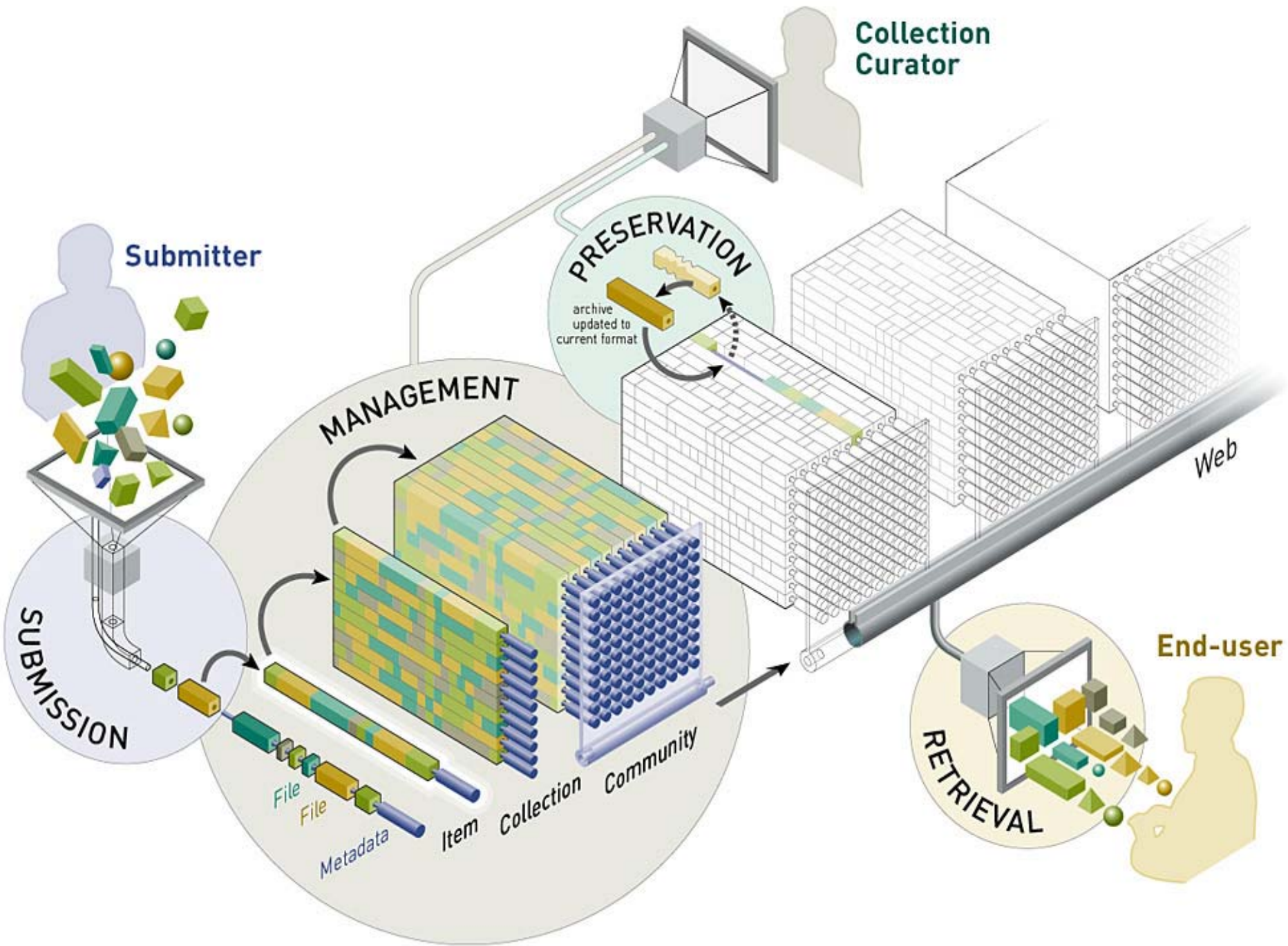
# Open Access

- ❖ Open Access Publications (OAP) – Golden Road
- +
- ❖ Open Access Archives (OAA) – Green Road



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YOU REVIEW THE PAPERS...

**WHY SHOULD YOU PAY TO READ THEM ?**



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# OpenDOAR

Directory of Open Access Repositories

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## The Directory of Open Access Repositories - OpenDOAR

[Search for repositories](#) | [Search repository contents](#) | [List of repositories](#) | [Repository Statistics](#)

OpenDOAR is an authoritative directory of academic open access repositories. Each OpenDOAR repository has been visited by project staff to check the information that is recorded here. This in-depth approach does not rely on automated analysis and gives a quality-controlled list of repositories.

As well as providing a simple [repository list](#), OpenDOAR lets you [search for repositories](#) or [search repository contents](#). Additionally, we provide tools and support to both repository administrators and service providers in sharing best practice and improving the quality of the repository infrastructure. Further explanation of these features is given in a project document [Beyond the list](#).

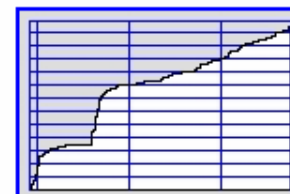
The current directory lists repositories and allows breakdown and selection by a variety of criteria - see the [Find](#) page - which can also be viewed as [statistical charts](#). The underlying database has been designed from the ground up to include in-depth information on each repository that can be used for search, analysis, or underpinning services like text-mining. The OpenDOAR service is being developed incrementally, developing the current service as new features are introduced. A list of [Upgrades and Additions](#) is available.

Developments will be of use both to users wishing to find original research papers and for service providers like search engines or alert services which need easy-to-use tools for developing tailored search services to suit specific user communities.

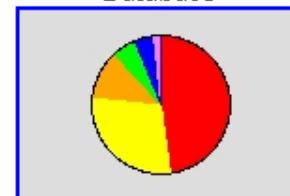
The importance and widespread support for the project can be seen in its funders, led by the [Open Society Institute](#) (OSI), along with the [Joint Information Systems Committee](#) (JISC), the [Consortium of Research Libraries](#) (CURL) and [SPARCEurope](#).

OpenDOAR has also been identified as a key resource for the Open Access community ([K.B.Oliver & R.Swain, 2006](#) - PDF), and was one of the services which contributed to SHERPA being awarded the [SPARC Europe Award for Outstanding](#)

**OpenDOAR has  
over 1200 listings!**



Growth of the OpenDOAR Database



Repositories by Continent





# Open Access Initiatives In India

- **Institutional Repositories( evolving)**
  - <http://casin.ncsi.iisc.ernet.in>
  - Software: DSpace, E-Prints
- **Subject Specific Repositories**
  - Science/Technology – EPrints@IISc  
<http://eprints.iisc.ernet.in>
  - Engineering / Technology  
<http://eprint.iitd.ac.in/dspace/>
  - Librarian's Digital Library (LDL)  
<http://drtc.isibang.ac.in/DRTC/index.html>
  - OpenMed@NIC <http://openmed.nic.in>
  - Management – DSpace@IIMK  
<http://dspace.iimk.ac.in>
- **Electronic Theses and Dissertations**
  - INFLIBNET and UGC <http://dspace.inflibnet.ac.in>
  - Vidyanidhi <http://www.vidyanidhi.org.in>
- **Cross Archives Search Services for Indian Repositories (CASSIR)**  
<http://ardb4.ncsi.iisc.ernet.in/oai>

# Open Access Initiatives In India...

- Open Access Journals
  - Indian Academy of Sciences (11 journals)  
<http://www.ias.ac.in/pubs/journals>
  - Indian National Science Academy (4 jls)  
<http://www.insa.ac.in>
  - Indian MEDLARS Centre ( NIC) (38 jls)  
<http://medind.nic.in/>
  - MedKnow Publications (28 jls)  
<http://www.medknow.com/journals.asp>
  - Indianjournals.com (7 jls)  
<http://www.indianjournals.com>
  - Kamala-Raj Enterprises (5 jls)  
<http://www.krepublishers.com/KRE-New-J>

# Open Access Literature (Resource Discovery)

- **Directory of Open Access Journals (DOAJ) - 3270+**  
<http://www.doaj.org/>
- **Open J-Gate – 3000+ Journal, Millions of Citations**  
<http://openj-gate.com/>
- **Open DOAR – 1000+ OA Archives**  
<http://www.opendoar.org/>
- **ROAR: Registry of Open Access Repositories – 1000+OAA**  
<http://archives.eprints.org/>
- **Scientific Commons – 901 OAA, 18029988 Articles, 2356949 Authors**  
<http://www.scientificcommons.org/>
- **OAister – 934 OAA + 14,673,867 records**  
<http://oaister.umdl.umich.edu/o/oaister/>
- **DMOZ - 59 OAA**      [http://dmoz.org/Science/Publications/Archives/Free\\_Access\\_Online\\_Archives/](http://dmoz.org/Science/Publications/Archives/Free_Access_Online_Archives/)

search

## Scientific Commons

### Details at a Glance

Publications	18029988
Authors	7356949
Repositories	901

### Recently added Publications

[Greek tragedy : a literary study / H.D.F. Kitto \(1961\)](#)

[Kitto, Humphrey David Findley](#)  
Include indice

[Team incentives in public organisations; an experimental study \(2006\)](#)

[Koning, P., Vyrastekova, J., Onderstal, S.](#)

Using a simple production game, we investigate whether public firms perform better when they increase the power of their workers? incentive schemes. In a laboratory experiment, subjects choose...

[Measuring the Effectiveness of Public Employment Service \(PES\) Workers An Empirical Analysis Based on the Performance Outcomes of Regional Employment Offices \(2006\)](#)

[Koning, P.](#)

In this paper, we measure the effectiveness of the Dutch public employment service (PES) for various performance measures, ranging from outflow rates to the timeliness of the benefits allocation...

[Simulation of Free Surface Compressible Flows Via a Two Fluid Model \(2008\)](#)

[Dias, Frédéric, Dutykh, Denys, Ghidaglia, Jean-Michel](#)

The purpose of this communication is to discuss the simulation of a free surface compressible flow between two fluids, typically air and water. We use a two fluid model with the same velocity,...

[Comparison of the Discriminatory Processor Sharing Policies \(2008\)](#)

[Osipova, Natalia](#)

Discriminatory Processor Sharing policy introduced by Kleinrock is of a great interest in many application areas, including telecommunications, web applications and TCP flow modelling. Under the DPS...

# **DSpace Software / Utilities**

- 1. Java SDK 1.4.2**
- 2. Apache 2.0.54**
- 3. Tomcat 5.0.28**
- 4. mod\_jk 2.0.4**
- 5. Apache Ant 1.6.5**
- 6. PostgreSQL 8.0.2**
- 7. DSpace 1.5x / 2.x**



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**For more info/help contact**

[Dr Jagdish Arora](#)  
Librarian, IIT Delhi.  
OR  
[Mr Ashok Kumar Rai](#)

# Information (Content) Aggregation / Integration

- Library Automation
- Library Portal
- Digital Library
- Institutional Repository
- Library Consortia

# Need for Content Integration / Organization

- Assuring Seamless Access to the Content
- Need for a single Info. Gateway / Access Point
- Multi - Formats, Media, Platforms (Content / Data in different formats)
- Data encoding (role of markup languages)
- Role of Metadata (role of Standards)
- Structured Metadata (role of XML)
- Need for Interoperability
- Interface / Delivery / Presentation
- **Exorbitant cost of proprietary DL S/W**



# KM Systems - Flaws

- Historically, the goal of knowledge management has been to create, capture, preserve, and distribute information to drive finite and tangible objectives, such as improving competitiveness, fostering innovation, and streamlining organizational effectiveness.
- However, most knowledge management solutions exist merely as passive repositories.

# KM – Next Progression

- It is the confluence of **content management systems**, **knowledge management systems**, and **social tools to create networks of knowledge**.
- Once an organization's knowledge repositories combine with the "wisdom of the community," a fundamentally new approach to socializing knowledge and enhancing an organization's innate intelligence is created.
- **Called "Social Intelligence"**.
- That taps into an organization's social intelligence through the creation of **social knowledge networks**



## 2.0-style Service Examples

- Blogging
- User tagging
- Folksonomies
- User comments
- User ratings
- RSS feeds
- Feed aggregators
- Wikis
- Skypecasts
- Community citation services
- Community photo services
- Community book services

## Other Websites with 2.0 Characteristics

- Flickr
- eBay
- De.licio.us
- Second Life
- CiteULike
- Librarything
- Connotea
- LiveJournal
- MySpace
- Technorati
- Netflix

# Key Library 2.0 Concepts

- The library is everywhere\*
- The library has no barriers\*
- The library invites participation
- The library uses flexible, best-of-breed, component-based systems
- The library is a human-centered organization

\* Also stated as the concept of the library as a place of unrestricted access to information (McDonald, 2006)

# Common Traits of 2.0 Services

- Interactivity
- Respects and leverages user contributions
- Complementary/compatible/cross-referential
- Treats information as a conversation
- Emphasis on ease of use
- Sharing—use/reuse/remix/mashups encouraged

# Another angle on 1.0 versus 2.0...

- Library 1.0 is a **pull** model
  - Acquire / store / lend / find
  
- Library 2.0 is a **push** model
  - Acquire / store / **broadcast / converse**

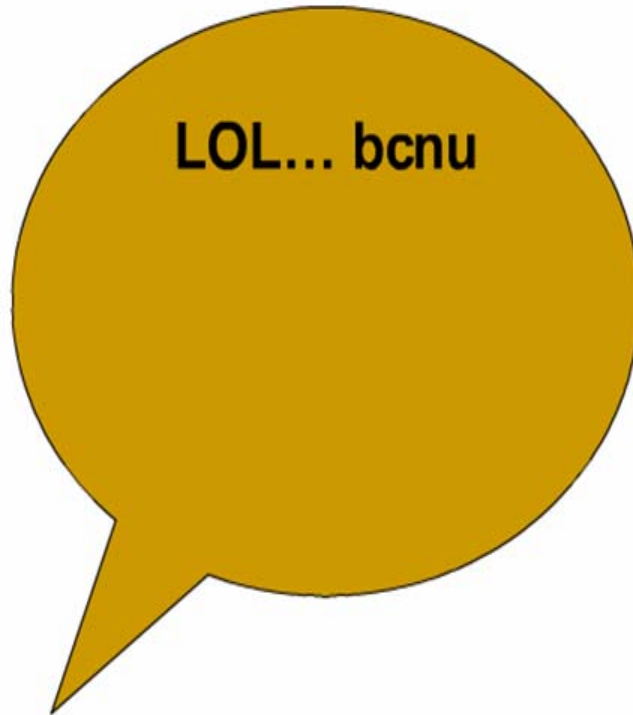


# Blog: like a personal newspaper

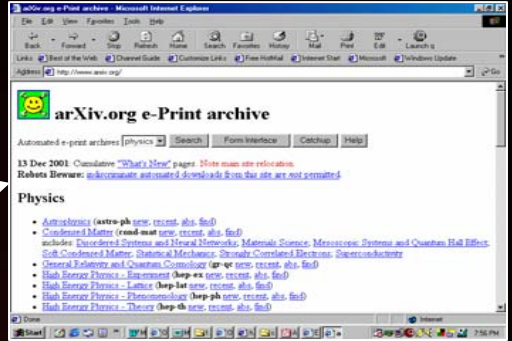
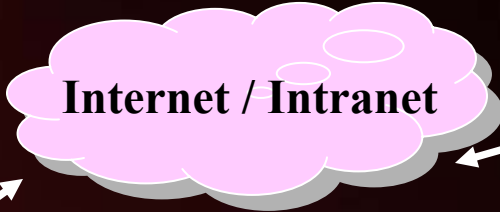


- Easy to use
- Free (at basic level)
- Easy to stay updated
- Encourages sharing and engagement

# IM (Instant Messaging):



- Easy to use
- Free (at basic level)
- Encourages sharing and engagement



**USER @ anywhere (access to information from anywhere)**

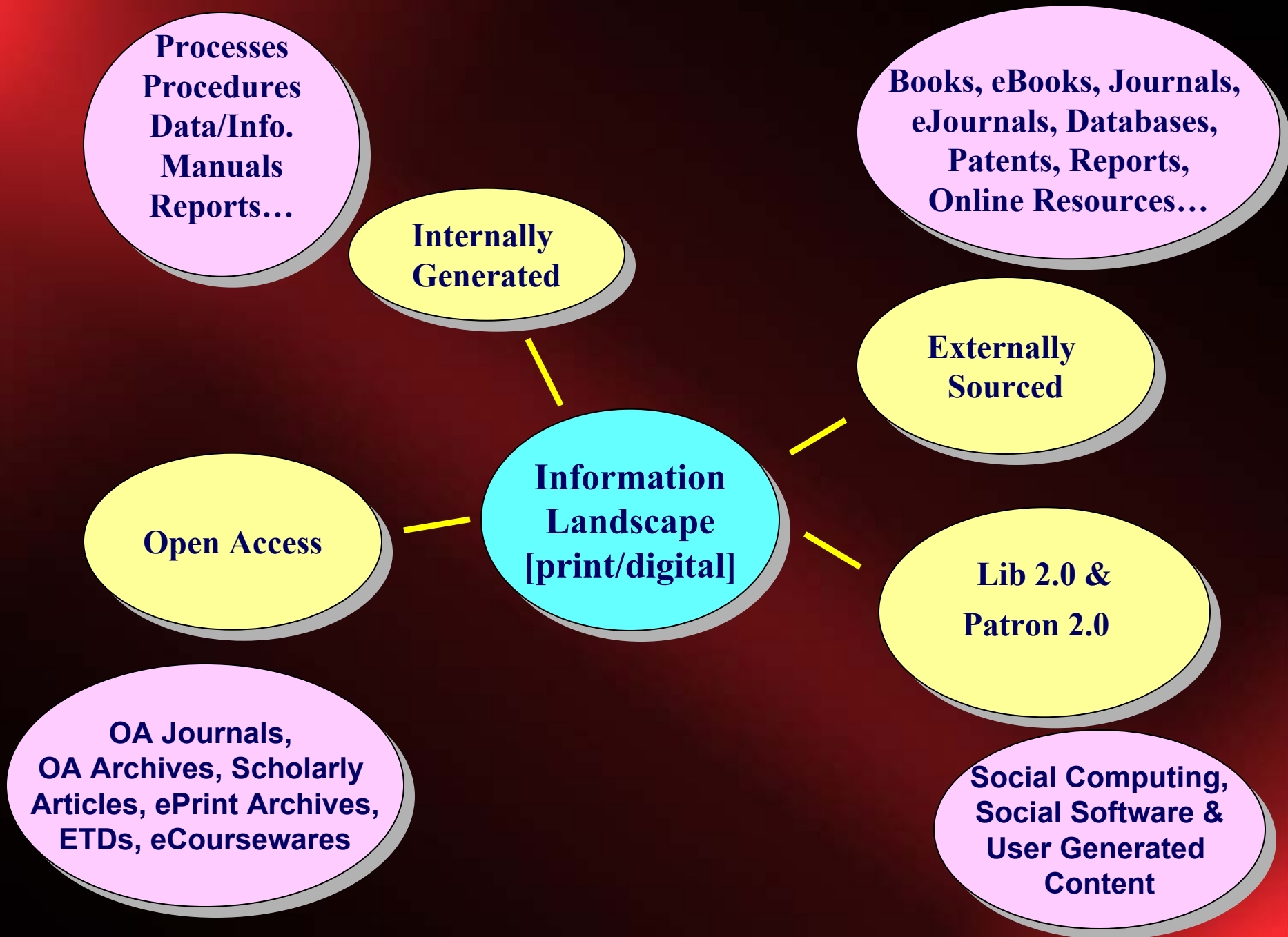
# Library 2.0

## LIBRARY 2.0 MEME MAP



# Good (Best) Practices

- Skill Sets – Leadership, Communication, Team Work, CE, Perseverance, Persistence....
- Flexibility / Open to Learning / Accept Changes
- Open Source Philosophy
- Open Access Advocacy
- Preach as well as Practice
- Sharing of Knowledge Acquired





Thank you