



RESEARCH LIBRARY

External World of Electronic Information

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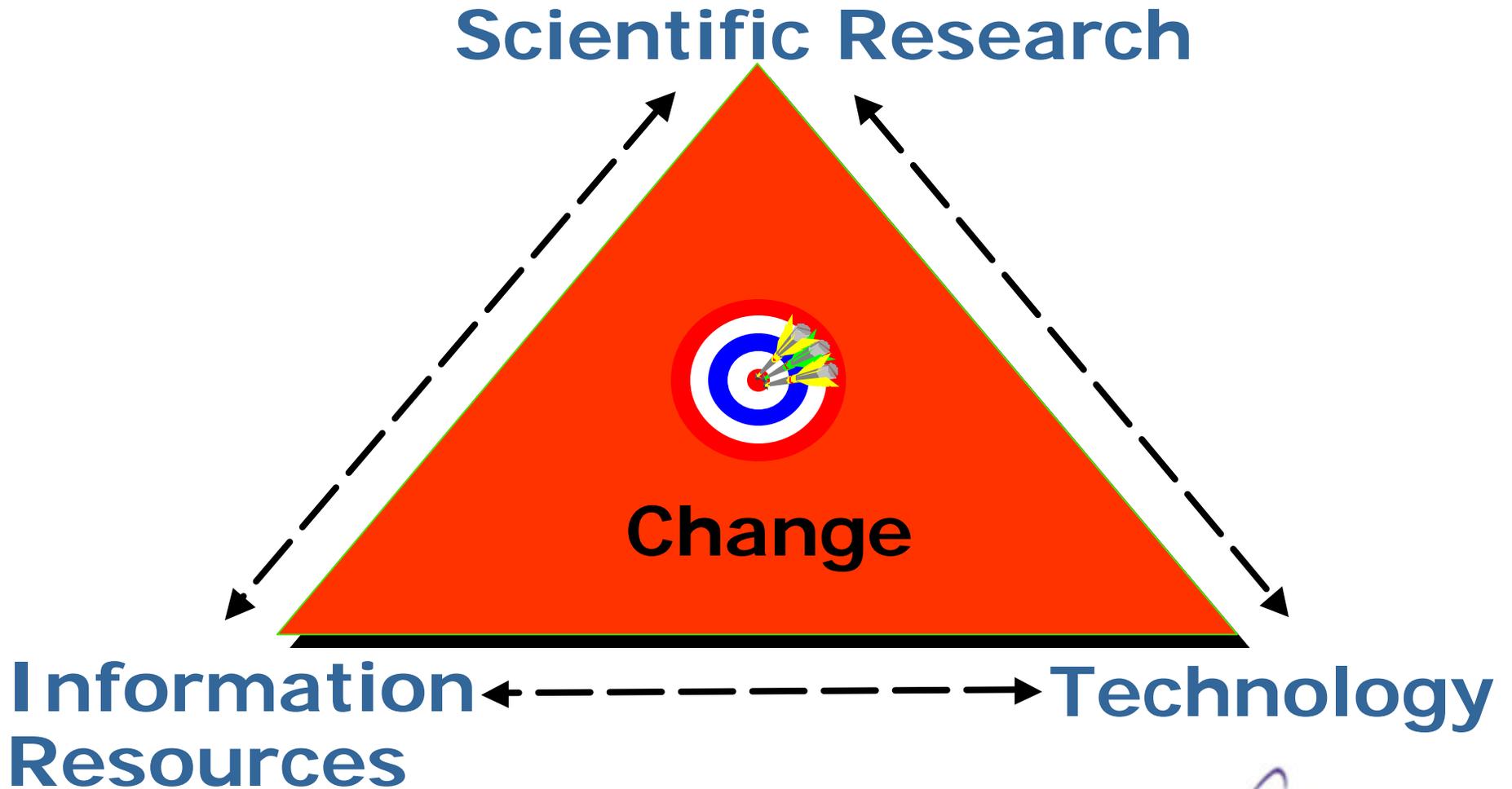
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Electronic Information Overview





Scientific Research? Change

- ✓ Increased interdisciplinary research
 - Nanotechnology, biophysics, security
- ✓ Research becoming more data intensive
 - Computer simulations, genomics
- ✓ Geographically distributed collaboration
 - CERN ATLAS, International focused
- ✓ Research sources more diverse
- ✓ Pace of discovery increasing



Response to Change

- ✓ Increased interdisciplinary research
 - Integrate content silos
- ✓ Research becoming more data intensive
 - Data mining, information visualization
- ✓ Geographically distributed collaboration
 - Desk-top delivery, collaborative tools
- ✓ Research sources more diverse
 - Integrate wider variety of sources at desktop
- ✓ Pace of discovery increasing
 - Alerts, preprints, rss feeds



Technology? Change

- ✓ Commoditization and Standardization
 - Standardized technology tools
 - Decreased prices for computers, storage, and bandwidth
- ✓ Wireless – Anywhere anytime computing
 - Decreased costs
 - Standards-based unregulated Wi-Fi technology
- ✓ Open Source Software
 - Inexpensive and robust
 - Examples? MySQL and Linux



Technology? Change

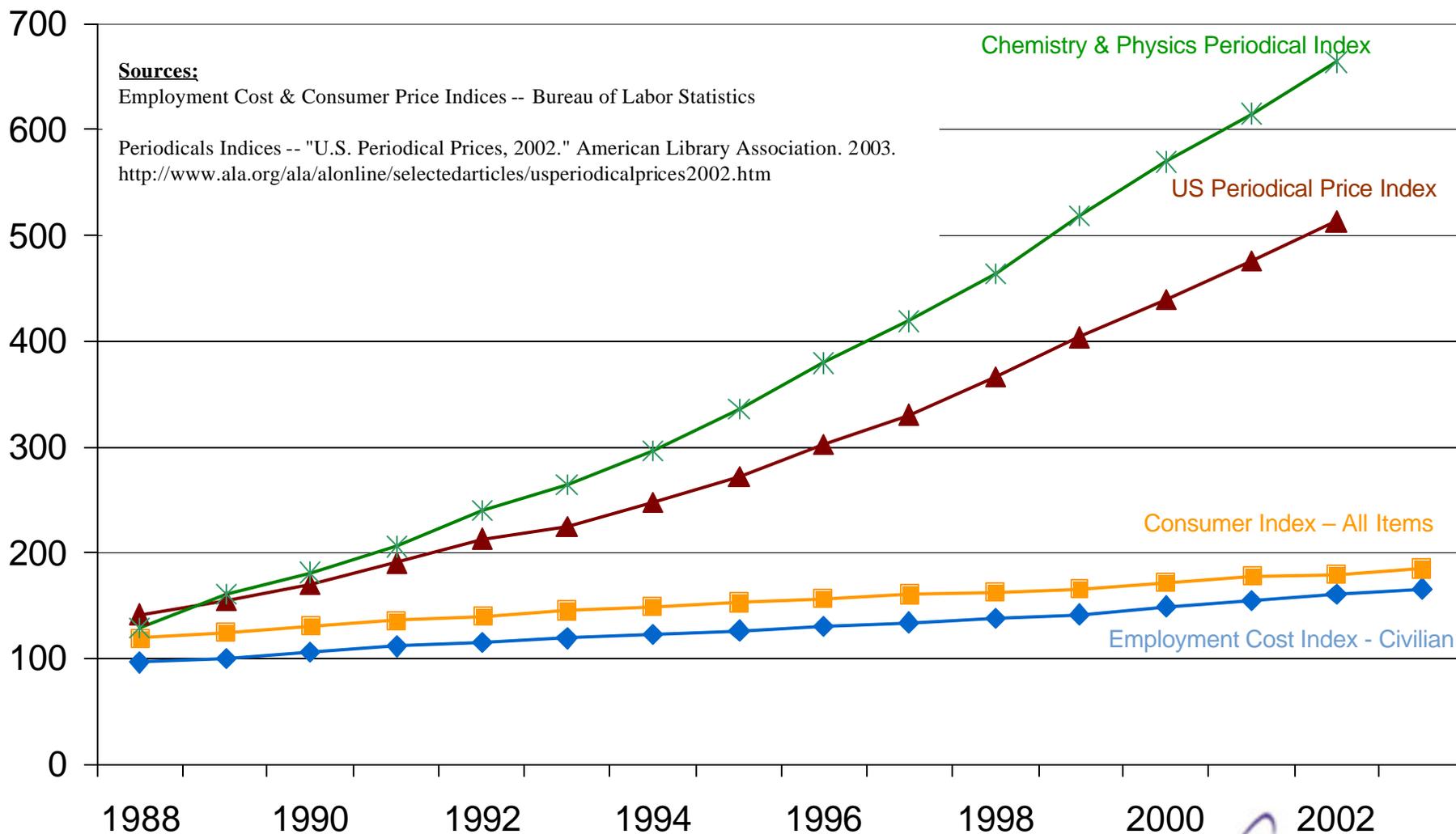
- ✓ Emerging technologies that dramatically increase software capabilities
 - Web services—seamless communication
 - Deep web—automate communication
 - Enterprise applications—automate business processes



Technology Change? Impact

- ✓ Bottom line? inexpensive, powerful, emerging capabilities
- ✓ Interconnected networks and access to tools of unprecedented power via
 - Low-cost machines
 - Inexpensive bandwidth
 - Easy-to-deploy networks
 - Rapidly improving yet affordable software
- ✓ Computing and communication are abundant, flexible resources!
 - Typical conditions for new players, new competition ...

Journal Costs are Spiraling





Information Resources? Change

- ✓ Traditional scholarly publishing model
- ✓ Prices increasing for electronic journals
 - Science >316%/3 yrs;
 - Nature >645%/4 yrs
- ✓ Library subscription budgets flat or decreasing
- ✓ Electronic journal packages—pushback



Information Resources? Change

- ✓ Open Access Movement—alternative to traditional publishing
 - Author pays to publish
 - Articles accessible to public
 - Currently >800 Open Access journals
 - Alternative to rising subscription costs
 - See Nature Forum debate



Information Resources? Change

- ✓ Government actions—Open access to government sponsored research
 - Berlin Declaration on Open Access—2003
 - Brazilian Declaration on Open Access—(May) 2004

- ✓ United States—Sabo Bill withdrawn
 - Sabo bill HR2613 to “exclude from *copyright*” protection works resulting from scientific research substantially funded by the Federal government



Information Resources? Change

- ✓ Institutional Repositories—Academic Movement
 - SPARC—2 papers--Framework for why and how to implement IRs
 - MIT- Dspace open source software
 - Metadata standards--OAI
 - Challenge—submissions of all work, long term preservation



Information Resources? Change

- ✓ Accessibility at the desktop
- ✓ Traditional databases, journals, books, and technical reports augmented by
 - Preprint servers
 - Google access
 - Web sites
 - Electronic publications
 - Electronic access to data
 - Conference sites—multimedia
 - Data sources



Information Resources? Change

- ✓ Subject domain specific access changes
 - Biology / Medicine
 - PubMed database
 - Public access to full-text articles
 - Physics
 - Preprint usage
 - Google access to information
 - Computer Science
 - Preprints
 - University author sites



Response to Change

✓ Scientists

- Stay informed
- Retain copyright
- Deposit papers in open access journals and institutional repositories

✓ Institutions

- Lead education about changing environment
- Develop / support institutional repositories
- Create incentives (rewards) for deposits in open access journal and institutional repositories



Challenge for All of Us

Support current research
environment,
while we
influence future research