Intellectual Property, Open Source and Lots of Questions

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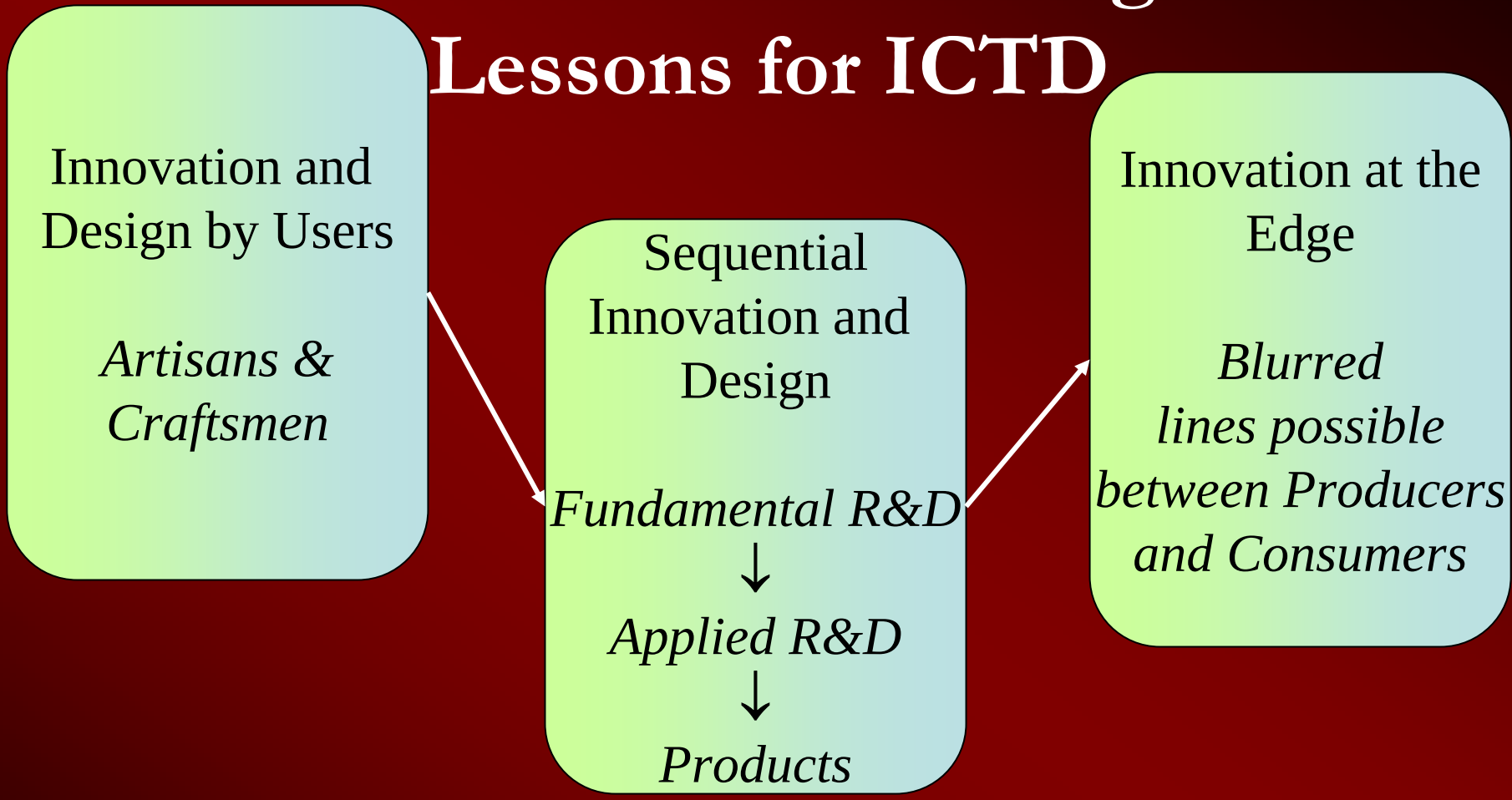
Let's say you have a great idea…

- Can you make money off it?
  - *Assume it's legal*
- Can you stop others from taking over your idea?
  - Do you care?
  - Is there a scaling issue?
    - Would you rather sell an new Internet Router or Internet Access (service)?
- Products vs. processes
  - Different countries used to treat these differently
    - E.g., India only started *product* patenting recently

One Evolution of Design – Lessons for ICTD



- ICT allows enormous innovation at the edge
  - E.g., content creation
- However, fundamental design is yet limited by end-users
  - E.g., Open-Source
    - Much of the excitement is over the "Free" rather than consumer-based design
    - Open-source software *design* is not as end-user controlled as many believe

"Big" Research…

- Success Rate of "research" is not very high
  - Data indicate ~2/3 success per stage of research
    - Basic Science
    - Applied Research
    - Productization
- Pharmaceutical companies talk about $1B/drug investments in R&D
- Intellectual Property (IP) protection is about *appropriability* of efforts

Who is Radiohead?

- A successful music group that offered fans the ability to “name their own price” for a *direct* download (in Rainbow album)
  - This bypasses the record industry
- Preliminary data (BBC report) indicate
  - Only 38% of downloaders paid to download
  - The average price paid for the album was ~$6
    - American fans paid the most, paying on average $8.05 vs $4.64 outside the US.
  - BUT, when we include total listeners, average payment per download as ~$2.26
- Was this a viable strategy?
  - How much do artists get out of gross revenues? (not much!)

Is Online Piracy such a big deal?

- Depends on whom you ask!
  - RIAA/MPAA cite costs in the many billions of dollars per year
  - How do you estimate the costs?
- What are the risks and penalties?
- Should we consider software differently than music/movies?
- *Online piracy is only a fraction of total piracy*
- What are some (industry) solutions to this threat?

Topics

- What is Intellectual Property?
  - Underlying theories
- Copyright
- Treaties
  - TRIPS
- Issues in Developing Nations

The Central Issue

- How can developing nations develop if the tools and information necessary for development are owned and controlled by wealthy nations?

Intellectual Property

- Copyright
- Patent
- Trademark
- Trade secret
- Industrial Designs

Theories of Intellectual Property (IP)

- Encourage innovation by rewarding creators
- Allow society to benefit from recorded knowledge
- Natural justice theory:

  "Justice gives every man a title to the product of his honest industry."

  John Locke, *Two Treatises on Civil Government* (1690)

- Moral rights, right to be recognized as creator
- Capitalist control
  - Innovation takes money. Capitalists benefit from IP; others can't

Copyright

- Dates from 1710
- Originally to limit book publishing monopoly of the British crown
- Later applied to photos, recordings, movies, video, buildings, computer software
- U.S. Constitution:
  - "Congress shall have Power … To promote the Progress of Science and Useful Arts, By securing for Limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." Art. I, Sec. 8
- U.S. copyright is exclusively federal

Rights Under Copyright

- Reproduce (copy)
- Distribute copies
- Prepare derivative works
- Perform publicly
- Display publicly

Rights recognized generally

- Integrity (against mutilation or destruction)
- Droit de suite (to collect resale royalties)
- Attribution (“paternité” - right to be given credit for one's work)
- Withdrawal (“retrait” - to remove one's works from public circulation)

Limited U.S. Recognition

“Moral” rights, recognized in EU

IP Rights

- Can sue others who use IP without permission for damages and to prevent unauthorized use
- IP rights are local to a country but under "national treatment" foreigners can assert rights
- IP rights are long-lived:
  - Patent: 20 years
  - Copyright: life + 50-70 years
  - Trademark: unlimited
- Where do developing nations fit in?

IP Treaties

- WTO Treaty on Trade-Related Aspects of Intellectual Property Rights (TRIPS)
- General concept: “national treatment”
  - Signatories must accord nationals of other countries the same IP rights as their own nationals or “most favored nations”
- Requires adherence to
  - Berne Convention on copyright
  - Paris Convention on Patents

Uruguay Round Agreement

- Decision on Measures in Favor of Least-Developed Countries
- Recognizes the plight of the least-developed countries, need to "ensure their effective participation in the world trading system" and "preferential market access"
- Provides for "sympathetic consideration" and "technical assistance"
- Tariff waivers
- NO CONCESSIONS ON IP RIGHTS

WTO Least-Developed Countries (49)

Afghanistan, Angola
Bangladesh, Benin, Bhutan, Burkina Faso, Burundi
Cambodia, Cape Verde, Central African Republic, Chad, Comoros
Democratic Republic of the Congo, Djibouti
Equatorial Guinea, Eritrea, Ethiopia
Gambia, Guinea, Guinea Bissau
Haiti, Kiribati.
Lao People's Democratic Republic, Lesotho, Liberia
Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar
Nepal, Niger
Rwanda.
Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan
Togo, Tuvalu
Uganda, United Republic of Tanzania.
Vanuatu
Yemen
Zambia

Fair Use

- A use that would otherwise be a copyright infringement, but is permitted by statute or case law
- U.S.: “fair use … for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright” 17 U.S.C. 107

Public Domain

- Definition: “Free from any intellectual property claims”
- When patents and copyrights expire, their content becomes public domain
- Increasing length of IP terms delays entry into the public domain

Copyright Policies

- U.S.: copyright is primarily economic. Provides income to copyright owner. Copyright Office is part of Library of Congress
- Japan: copyright serves education. Copyright Office is part of Ministry of Education.

Compulsory Licensing

- Owner may not refuse to license. User must pay.
- Fees may be statutory, or set by an independent commission, sometimes case-by-case
- Example: U.S. compulsory license for sound recordings of non-dramatic musical works
  - Per-copy rate (2004-2005): 8.5 cents or 1.65 cents per minute of playing time, whichever is greater
- Japan: extensive compulsory licensing for educational use, translations, missing author, etc.
- Problem: fee setting, payment, fee distribution. Solution: the Internet!

Public Lending Right (PLR)

- When books are borrowed from libraries, the author usually receives nothing
- Reduces the total revenue from the work
- In the UK, Government provides a fixed annual pool of funds (since 1979)
- When a book is checked out, a record is made. The pool is divided pro rata among registered works; 4.21 pence per loan, up to a maximum of £6,000 per work
- 2004 pool: £7.2 million. About 20,000 authors will receive payments

Public Lending Right Worldwide

- 1992 European Union Lending Right Directive requires states to implement PLR
- Japan: public libraries are new (1970). Great demand for PLR
- Annual PLR Conference (Sept. 2003 Oslo)

Scientific Publication

- Researchers do not publish research for profit
- Authors do not receive payment
- Publishers make profit by charging high prices, which limits dissemination
- FEW PEOPLE BENEFIT, except the publishers
- Answer: eliminate the publishers
  - Now possible because of the Internet

Out-of-Print, In-Copyright

- About 100 million titles have been published so far
- About 94 million are still in copyright
- Only about 6 million are in print
- MOST BOOKS ARE OUT-OF-PRINT BUT STILL IN COPYRIGHT
- They produce no income for either the author or the publisher
- There should be an incentive system to allow developing nations to access these books cheaply
  - Tax deduction/credit for dedication to public

Issues in Developing Countries

- Role of government, public sources, digital libraries
- Scientific journals
- Databases (collections of facts)
- Distance learning
- Cultural heritage protection (e.g. Taliban)
- Genetic, animal, plant resources
- Patenting of traditional remedies
- Inexpensive drugs
- Geographical indications (e.g. Roquefort)

What's the Answer?

- Information has value
- Creating information has cost
- Disseminating information has cost
- Information is essential to developing countries
- If wealthy nations want a world in which other nations can develop, they must bear the cost of information
  - Information infrastructure
  - Compensation to creators

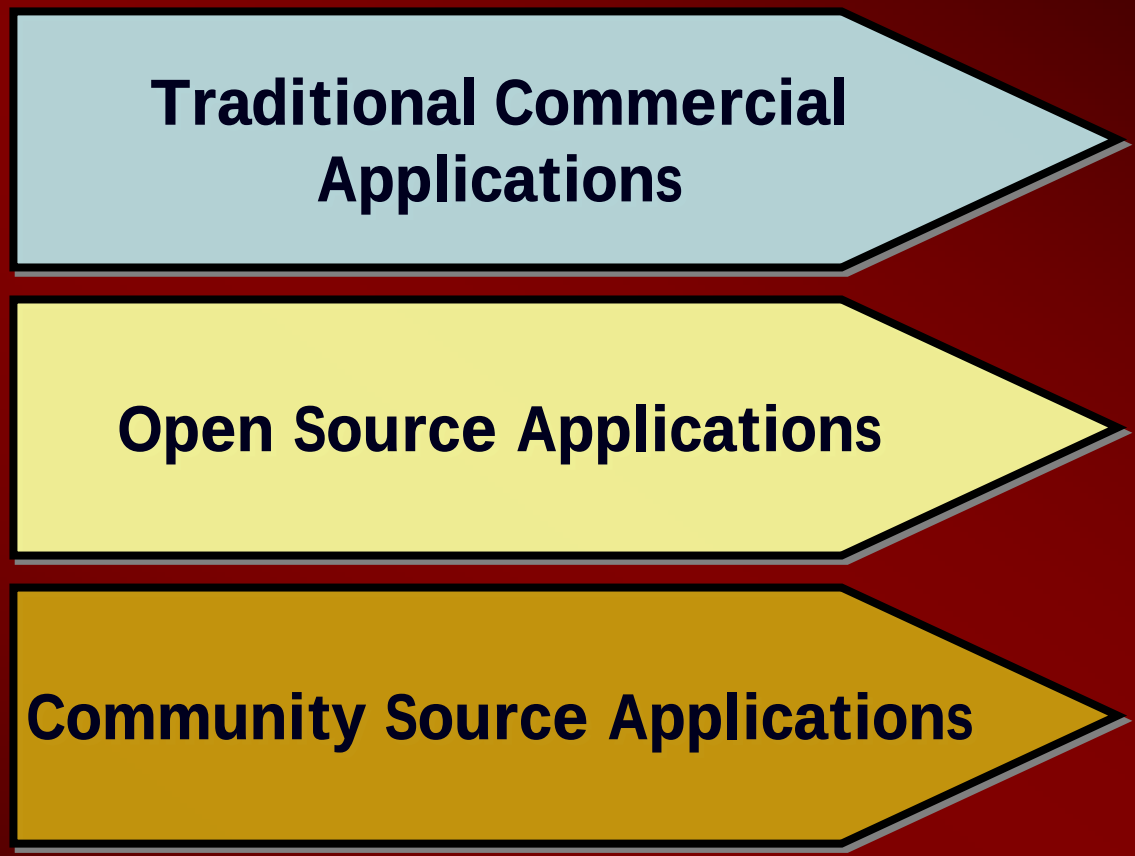
National Interests and IP

- Indian Patent Act (post TRIPs)
- *"Section 3 of the Act explicitly excludes certain categories of inventions from the scope of patentability. Critical categories include-plants, animals, parts of plants and/or animals, seeds, essentially biological processes, mathematical or business methods, computer program per se, inventions based on traditional knowledge, methods of treatment, diagnostic, therapeutic, and surgical methods."*
- Other exclusions
  - National emergencies
    - HIV medications

Open Source…

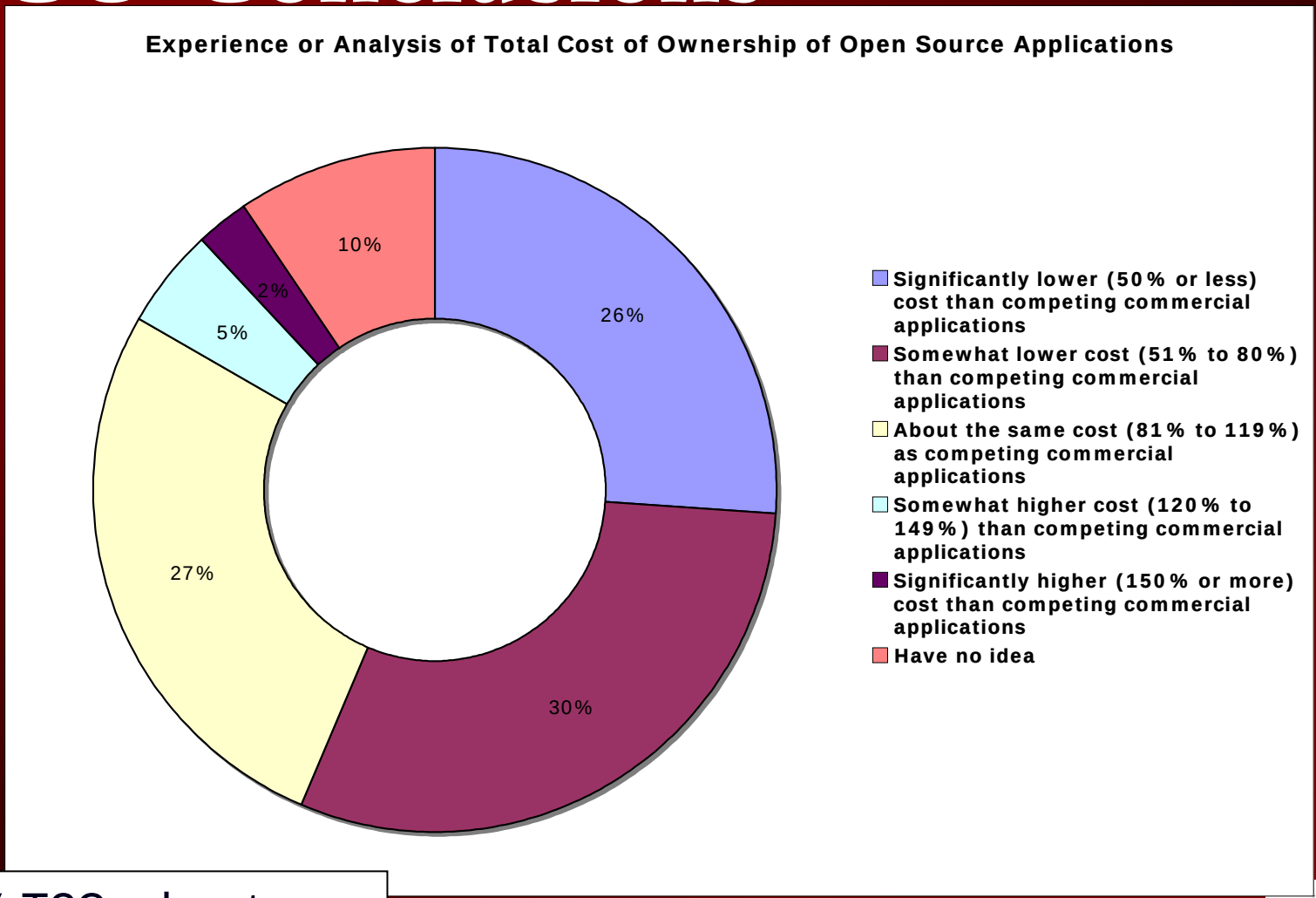
Who Will Win?

Higher Education Enterprise Software Applications



Source: IMS (2006)

Open Source in Education: TCO Conclusions



56% TCO advantage
7% TCO disadvantage

Source: IMS (2006)

A Few Basic Characteristics

- Open source software has the following characteristics:
  - Can be run by anyone for any purpose
  - Source code is available to the public for study and change
  - Can be redistributed
  - Can be modified and re-released to the public in a new form
  - Is *copyrighted* and then *licensed* under the aforementioned conditions
  - Developers can charge money for open source software products; they need not give them out for free (think Red Hat Linux)
  - Contractors can (and do) charge (lots of) money to provide technical support for open source products

Proprietary Software

- In contrast to open source, proprietary software requires that users agree to a restrictive license that prevents:
  - Redistribution
  - Copying more than a limited number of times by a single person or organization onto a specified number of computers
  - Access to underlying source code
  - And in some cases, things like reverse engineering

But there are conditions…

- When you make changes, you must publish your product under the conditions of the open-source license that originally accompanied the source code you modified
- People who use your code must be free to use it, study it, modify it, redistribute it, etc.
- You must agree to provide your modified source code to interested parties for free in machine readable form for a set amount of time (3 yrs.)
- You can’t add more restrictive conditions to your source code when released

Copyleft and Copyright

- The conditions on the previous slide are often described by the moniker “copyleft”
- Copyleft gets its legal teeth from the fact that the software code is initially copyrighted (and then released) under an open source license
- Developers of open source code can sue people who breach copyleft because of they hold the copyright on the code
  - The purpose of copyrighting open source software is to ensure open access!
- Open source does not equal public domain!

Lots of Open Source Licenses

- There are a variety of open source licenses available for software developers, some of which combine open source elements with proprietary license elements
  - In some cases, open source software can be modified and then made proprietary (often called dual licensing)
  - In others, elements of open source code can be used in proprietary software provided that those bits remain open source

Lots of licenses available

- The most popular is the GNU General Public License (GPL), which is requires that all subsequent modifications of source code that is protected by the GPL be issued under the same license.
  - GPL was created in 1989 by Richard Stallman
  - GNU stands for “GNU’s not Unix”
  - The GPL has been modified in various ways over the years to reflect changing needs of the software development community
- Others include the Berkeley Software Distribution (BSD) license [often referred to as ‘copycenter’], Mozilla Public License (MPL), the MIT License, plus lots of others

Human Development: Open Source or Open Standards?

- Why do we have standards?
  - Q: Why is electricity 60 Hz in the US, and 50 in Europe?
- How are Open Standards different from Open Source?
  - What is the relevance for developing communities?