Beyond Open Source

Glyn Moody

BCS

31 October 2006

Open Genomics (1)

- Genomes are a digital code
  - written in quaternary (A, C, G, T), not binary
  - Completely equivalent
    - A -> 00
    - C -> 01
    - G ->10
    - T -> 11
- Genomes are distributions – collections of applications, genes are subroutines
  - Genome -> source code; proteins -> subroutines

Open Genomics (2)

- Human Genome Project
  - Global and distributed
    - sequencing centres around the world
  - Net-based
    - The Internet made the Human Genome Project possible
  - Darwinian dynamics
    - Since code is digital, it can be mixed and matched
    - Use better (quality) code when available

Open Genomics (3)

- Genomic sequences are free
  - Bermuda declaration (1996)
    - "It was agreed that all human genomic sequence information, generated by centres funded for large-scale human sequencing, should be freely available and in the public domain in order to encourage research and development and to maximise its benefit to society."
  - Free as in beer
  - Free as in freedom
  - Some patent claims, especially in the US
- Available from public online databases

Open Genomics (4)

- Open genomics
  - Digital code
    - Quaternary
    - Source code
  - Free
    - beer
    - freedom
  - Global, distributed, Net-based development
  - Darwinian

- Open source
  - Digital code
    - Binary
    - Source and object
  - Free
    - beer
    - freedom
  - Global, distributed, Net-based development
  - Darwinian

Open Access (1)

- Digital versions of academic research
  - Concerns traditional literature, generally published without expectation of payment
  - Does not seek to change the academic model
  - Still based on peer review
- Free as in beer
  - Generally not free as in freedom
  - Varying ability to use and change text

Open Access (2)

- Free software/open source tension
- Stevan Harnad
  - 1976 – journal with open peer commentary
  - 1989 – Psycoloquy, Usenet/Bitnet magazine
  - Post-Gutenberg Galaxy: The Fourth Revolution in the Means of Production of Knowledge
  - A Subversive Proposal for Electronic Publishing
- Paul Ginsparg
  - 1991 – arXiv.org: high-energy physics preprint server (nine days before Linux)

Open Access (3)

- BioMed Central (1999)
  - Vitek Tracz
- Public Library of Science (2001)
  - Patrick Brown, Michael Eisen, Harold Varmus
  - inspired directly by arXiv.org, public genome databases and open source software
  - PLoS Biology
  - PLoS Medicine
  - first of many titles, including PLoS Computational Biology

Open Access (4)

- Budapest Open Access Initiative (2001)
    - free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution... should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

Open Access (5)

- Global
  - open access materials stored in open archives, which are found all around the world
- Distributed
  - Open Archives Initiative (OAI) devised harvesting protocols that allow searching across archives, wherever they are
- Access and searching are via the Net
- Not directly Darwinian
  - academic research is (generally) Darwinian, with better explanations/results superseding previous ones

Open Access (6)

- Open access
  - Digital code
    - Binary
    - Textual, graphical
  - Free
    - Beer
    - Freedom, sometimes
  - Global, distributed, Net-based archives
  - Darwinian ideas

- Open source
  - Digital code
    - Binary
    - Source and object
  - Free
    - Beer
    - Freedom
  - Global, distributed, Net-based development
  - Darwinian

Open Content (1)

- Digital versions of content
  - Typically text
  - Graphics
  - Music
  - Video
- Project Gutenberg
  - Michael Hart 1971 (cf. GNU - 1984)
  - 1991 – 10 books
  - 2006 – 20,000 books
  - Distributed Proofreaders
  - Public domain, with some copyright material

Open Content (2)

- ## Legal code
  - ### Open Content
    - #### David Wiley
      - Inspired by coining of "open source" at Freeware Summit
      - OpenContent Licence (1998)
      - Open Publication Licence (1999)
        - OPL, OPL-A, OPL-B, OPL-AB
  - ### Creative Commons (CC) 2001
    - #### Larry Lessig
    - #### Wide range of licences
      - Attribution (by)
      - non-commercial (nc), no derivatives (nd), share-alike (sa)
      - public domain, sampling, founders, developing nations

Open Content (3)

- Open Education using CC licences
  - Rice Connexions
    - Open source platform - Rhaptos
  - MIT Open CourseWare
    - Proprietary platform
    - Open source alternative - EduCommons
      - David Wiley
  - Open University OpenLearn
    - Open source software, including Moodle (course management system)
  - Many others adopting and adapting materials

Open Content (4)

- Software code
  - Blogs
    - Web pages
      - entries in reverse chronology
      - readers can comment
    - Technological step
      - Blogger, Pitas, Radio Userland, etc.
      - blog search engines
        - Winer's "ping"
  - Wikis
    - Web pages
      - readers can edit
    - Technological step
      - Ward Cunningham's Wiki Wiki Web

Open Content (5)

- Wikipedia
  - GNU Free Documentation Licence - GFDL (2000)
- Wikimedia Commons
  - GFDL, Creative Commons
- Citizendium
  - Larry Sanger, co-founder of Wikipedia
  - "progressive" fork of Wikipedia
  - GFDL

Open Content (6)

- Multimedia open content (cc licences)
  - Images
    - Flickr (as at 31/10/06)
      - by – 2,646,548
      - by-nd – 776,258
      - by-sa – 1,787,696
      - by-nc – 3,222,674
      - by-nc-nd – 7,695,559
      - by-nc-sa – 6,591,506
  - Video
    - BBC Creative Archive, Internet Archive
    - Elephant's Dream, Boy Who Never Slept
  - Audio
    - CcMixter - "download, sample, cutup, share"
- CC – 140 million link-backs to licence

Open Content (7)

- Virtual world open content: Second Life
  - Web 1.0 + Web 2.0 + 3D = Web 3.D
  - In-world content – text, images, objects
  - Like Javascript, SL scripting is open
  - Allows Net-based collaborative working
- Second Life based on open source
  - GNU/Linux
  - Apache
  - Squid
  - Second Life moving server and client to open source
    - only possible because it is a non-competitive world

Open Content (8)

- Open content
  - Digital code
    - Binary
    - Text, multimedia
  - Free
    - Beer
    - Freedom, sometimes
  - Some global, distributed, Net-based development
  - Not Darwinian

- Open source
  - Digital code
    - Binary
    - Source and object
  - Free
    - Beer
    - Freedom
  - Global, distributed, Net-based development
  - Darwinian

Challenges to the Opens

- Open genomics
  - Legal challenge – patents
- Open access
  - Economic challenge – STM publishers
- Open content
  - Technical challenge – tools

(Too Far) Beyond Open Source?

- Open science
  - Open access, open data
- Open journalism
  - Citizen journalism
- Open source marketing
  - Cluetrain Manifesto, Pinko Marketing, Citizen Agency
- Open business
  - Corporate blogs, wikis
- Open source conferences
  - Conference blog, wiki

Beyond "Beyond Open Source"

Glyn Moody

glyn.moody@gmail.com

opendotdotdot.blogspot.com
open source, open genomics, open content