The Economics of Open Source

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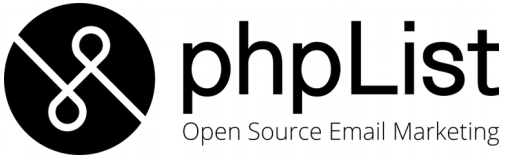
phpList CEO
@samtuke @phpList



Previously:

Rules of growth

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Image: Amherst College

Open Source successes

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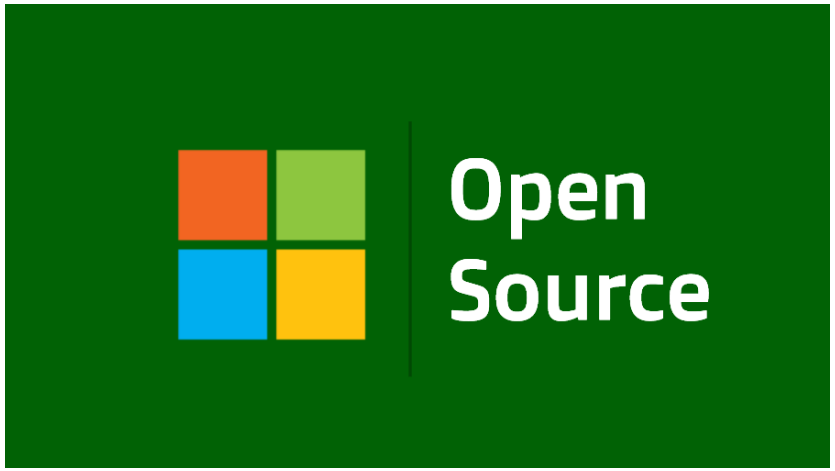

Image: Linux.com, wellesenterprises via Getty Images, Octodex/jeejkang, Fossbytes

Open Source failures

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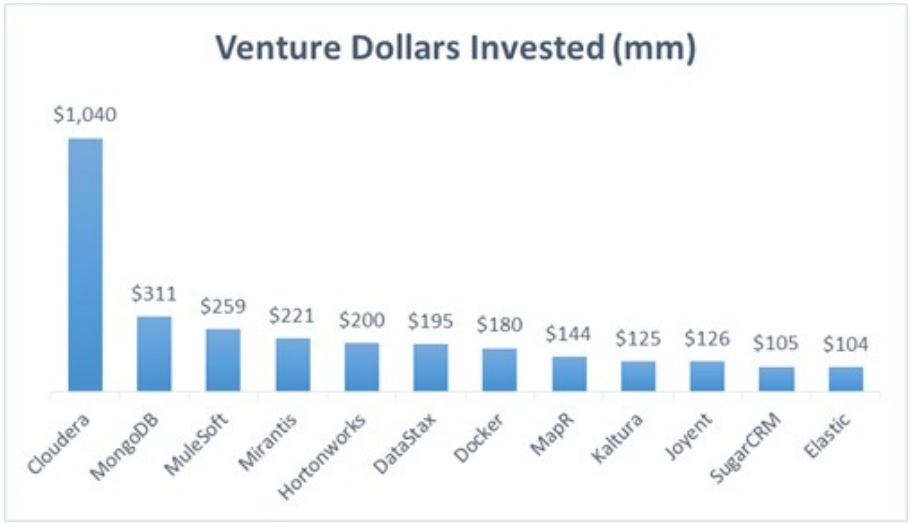
Target	Aquirer	Valuation	Year
Jboss	Red Hat	$420	2006
XenSource	Citrix	$500	2007
Zimbra	Yahoo	$300	2007
MySQL	Sun	$1,000	2008
SpringSource	VMware	$420	2009
Jaspersoft	TIBCO	$185	2007
Ansible	Red Hat	$150	2015
CoreOS	Red Hat	$250	2018

Few landmark Open Source exits



Miniscule investment

- 179 First time startup exits in 2017
- $61.4 billion deployed across 5,948 rounds in 2017
- Careem $570m
- 268 $1bn s/w firms since 2003 – 9 are Open Source
- MongoDB, Elastic, MySQL, Red Hat, Hortonworks, Cloudera, Canonical, Confluent

Refs: CBInsights, Tech Crunch, Pitchbook, Atomico

Daily economic challenges: Cloudera

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QUARTZ

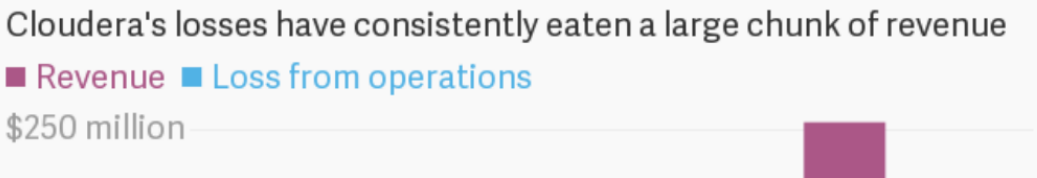
YIKES

This open-source tech company's IPO filing reads like an argument against building a business on open source

By Dave Gershgorn | March 31, 2017

Cloudera, the data management and machine learning company, has filed for an initial public offering on the NYSE.

While the company has lost more than $130 million per year since 2015, the future risks faced by Cloudera could cause alarm for potential investors or anyone looking at open-source software as a viable business model.



Daily economic challenges: Cloudera disclosure

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“

- Open source makes it easier to form other competing companies
- If open-source software changes, its current revenue stream will no longer be viable
- It could be sued for inadvertently using stolen open-source code
- Part of that lawsuit would likely expose its proprietary code
- Open-source software could be released that makes its platform redundant
- Open-source licenses give no warranties or promise technical support…
- …and the code can be vulnerable to cyberattacks
- Open-source developers might stop updating their code
- If open-source software breaks, Cloudera might not have the expertise to fix it
- If open source licenses change, they might not be compatible with other licenses
- An open-source license company effectively controls their business
- Using so much open-source software could look risky and people would not want to buy it

”

Refs: Quartz

Daily economic challenges: To business strategy 1

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- Reusable product means low barrier to market entry
  - Hard to create sustained market differentiation
- Little or no intellectual property
  - Harder to raise capital / investment
- Being incorporated into 3rd party products cuts off revenue
- Lacking differentiation + no lock in requires higher investment in retention, support becomes product
- Less profitable? “If you look at Red Hat, MySQL, KVM etc., in every case where there’s a proprietary vendor competing, they have more business traction and much more revenue than their open source counterparts”
- Typically underdogs: higher costs for market access, customer acquisition, cost per conversion

Ref: Peter Levine, a partner at Andreessen Horowitz Venture Capital

Daily economic challenges: To business strategy 2

- Smaller margins hurt growth: "Open Source companies won't take you out to play golf"
- Adoption !== subscription revenue – Red Hat
- Both adoption and subscription revenue requires investment (more complex sales)
- Cost of establishing community, especially with strong copyleft – e.g. MongoDB
- Burden of community distribution (packaging, hosting)
- Experts are talented and unpredictable; higher standards, more critical audience than for competitors
- Cost of managing PR, issue handling and expert community (normally internal processes are public)
- Conflict between customer and community needs (prioritisation, timelines)

Ref: Tony Wasserman, Professor of software management practice, Carnegie Mellon

Economic principles at work

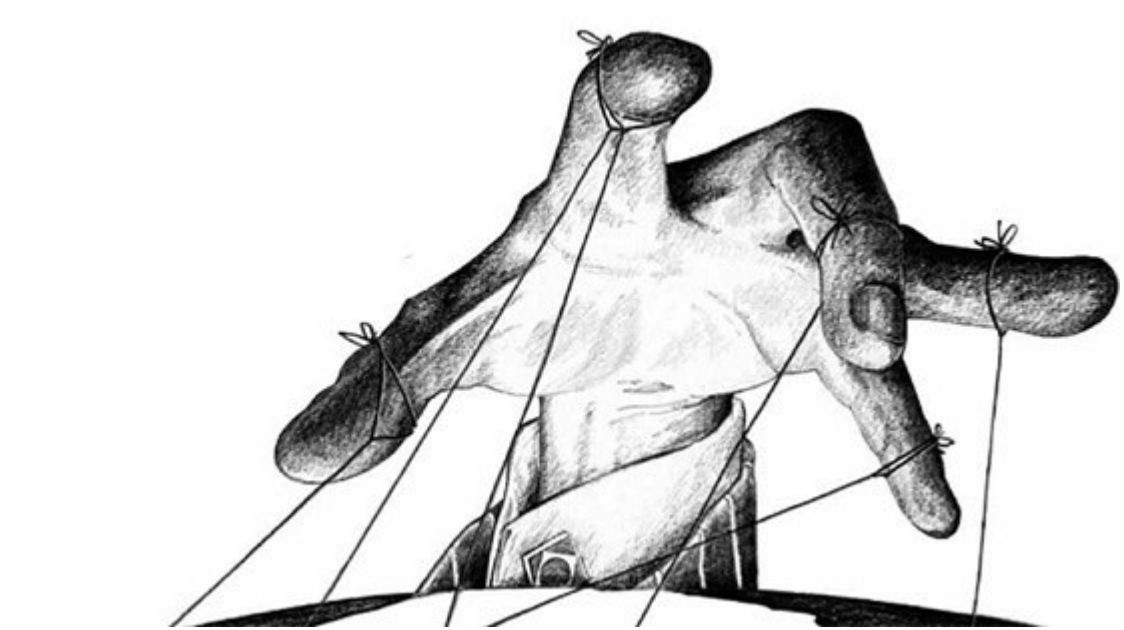

Image: Luis Britto García

Economic value

- Measuring Open Source value
  - Economic Value for the Customer (EVC)
    - AKA "value in use" or "end-benefit value"
    - Calculate value to customer
    - Example: cake mix
    - Include migration costs
  - Contrast with Willingness to Pay (WTP)
    - != EVC, but related
    - Market price != WTP; uninformative
- Example: Mailvis, only with secret sauce
- Gap: how can we appropriate the value we create?

Typically Open Source has:

- high EVC
- high consumer surplus
- low WTP
- value isn't being appropriated

Ref: Gregory Mankiw, Principles of Economics

Appropriability 1

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- "The degree to which value generated by a resource may be captured by its owner"
- Appropriate / capture / retain / “get”
- Why must we appropriate?
  - Creates economic value
  - Crucial for innovation (e.g. Bram Cohen, Bittorrent)
- Ineffective appropriability ->
  - Low investment
  - Low competitiveness
  - Cash starved vicious cycle

Refs: David J Teece (1976), The Multinational Corporation and the Resource Cost of International Technology Transfer - Ballinger, Cambridge, MA

Appropriability 2

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Category	Sub-categories	Explanation of how it works in OSS
Patents (IPR)		Institutional protection in terms of temporary monopoly granted to novel, useful and non-obvious innovations. Often granted to algorithm in software, but functions is also used and heavily debated
Copyright (IPR)		Institutional protection that grants creators exclusive right to reproduce, prepare derivative works, distribute, perform and display the work publicly
Secrecy		Keeping secrets within the firm, primarily by closing the code
First-mover advantages	Network externalities, first-mover advantages	Early entry to the market, which can create advantages by acquiring superior resources and capabilities
Complementary assets		Getting a large user base using complementary assets such as distribution, marketing in conjunction with the innovation

Ref: Linus Dahlander (2005)

Challenges for Open Source regimens

- "The value of technology is usually appropriated via legal mechanisms"
- Especially hard for knowledge
- Requires major investment
  - Market presence and reputation
  - Range of additional skills
- The rise of "Freemium"
- Rise of platforms (big barriers and cost drains)
- Subversion of standards (web tech, ecosystems)
  - Patents: "Fair, Reasonable, and Non-Discriminatory"? (FRAND)
- Dreaded network effects
  - Hypergrowth takes investment
- Quality: "Great software products have become a commodity"
- **Open Source EVC is frequently disproportionate to WTP**

- What is the unique resource?
- What sustainable competitive advantage?

Refs: Multinational Business Review Vols 7-9 1999, Henry Sauermann, ESMT/Georgia Tech

Network effects 1

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- “The situation in which the benefit a consumer derives from owning a product increases when the number of other consumers increases”
- Direct (telephone) vs. indirect (video games consoles) network effects
- BBM

Ref: Michał Grajek, Associate Professor of Economics, ESMT

Network effects 2

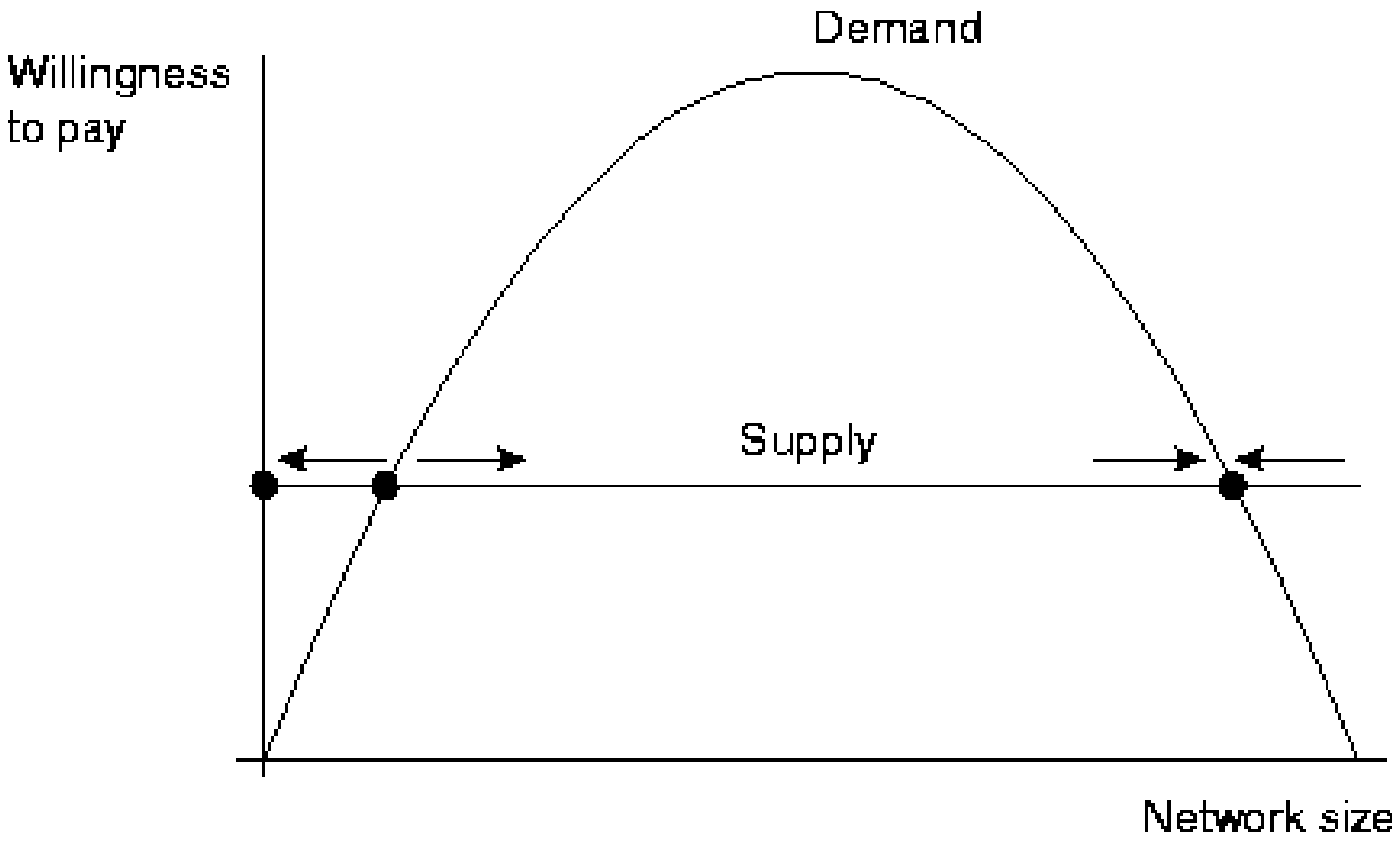

Image: Hal R. Varian, University of California, Berkeley

Network effects 3

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- In the presence of strong network effects, competition between incompatible standards takes the form of a “winner-takes-all” game
- Once a technology gains an initial lead in terms of its installed base, every consumer will choose the leading technology and the industry gets locked-in to the technology
- The winning technology does not need to be superior from the social viewpoint
- Consider QWERTY keyboards

Traditional models 1

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- Erik S. Raymond

- Cost sharing
- Risk spreading
- Loss-Leader/Market Positioner
- Widget Frosting
- Give Away the Recipe
- Open a Restaurant

- Accessorising
- Free the Future
- Sell the Present
- Free the Software
- Sell the Brand
- Free the Software
- Sell the Content

Ref: Catb.org, Linus Dahlander (2005)

Traditional models 2

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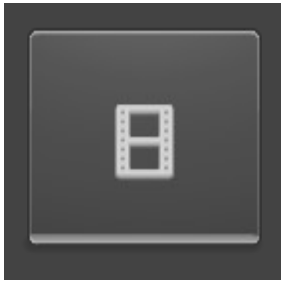
Category	Sub-categories	Explanation of how it works in OSS
Products	Licensing	Licensing the right to use the software, i.e., adding a proprietary part to the open code or allowing the customers to use the source code as they wish
	Black-boxing	Bunching several pieces of OSS in a hardware solution
Services	Consultancy	Consultancy work based on an area of expertise, be it a product that the firm releases or a community-established project
	Education	Education based on an area of expertise, be it a product that the firm releases or a community-established project
	Support	Support based on an area of expertise, be it a product that the firm releases or a community-established project

Ref: Linus Dahlander (2005)

Prognosis 1



Video: Television / 20th Century Fox Television

Prognosis 2

- Possible destinies:
  - “Shoemaker's children”
  - Serve the masters
  - Consult
  - Rely on other IPs
  - Or what?

Image: Esmas.com

Thank you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