Capturing Value Without Appropriability in Open Source Business Models

Joel West

www.JoelWest.org

Sloan Industry Studies Conference
April 25, 2007

SAN JOSE STATE UNIVERSITY
powering silicon valley

Examples of Open Source

- Linux operating system
  - Started as Unix “clone”
  - Today has largely supplanted Unix
- Apache web server
  - > 60% Internet market share
  - Community with dozens of add-on modules
- Firefox web browser
  - Direct result of Netscape spin-off

Traditional Software Business

- Barriers to entry and imitation:
  - High up front R&D
  - Protected by software copyright
    - Does not protect against clones
  - Some use of software patents
- Increasing returns to scale (Arthur 1996)
  - Low marginal cost of production
    - High gross margins
  - Winners enjoy high net margins

Defining “Open Source”

- Three dimensions (O’Mahony & West 2005):
  1. An IP license (e.g. Rosen, 2005)
  2. A development methodology (Crowston et al 2006)
  3. A way to organize & govern communities (O’Mahony 2003; Shah, 2006)
- “Free” and “open source” share similar goals (Dedrick & West, 2007)
  - Some movement differences
  - “Free” imposes additional IP restrictions

Open Source as a Business?

- Open source software can be freely copied and redistributed
- Firms surrender formal appropriability to win adoption (West, 2003)
- But then how do they (hope to) make money?
  - Need to create new business models (Chesbrough & Rosenbloom, 2003)

What's a "Business Model"

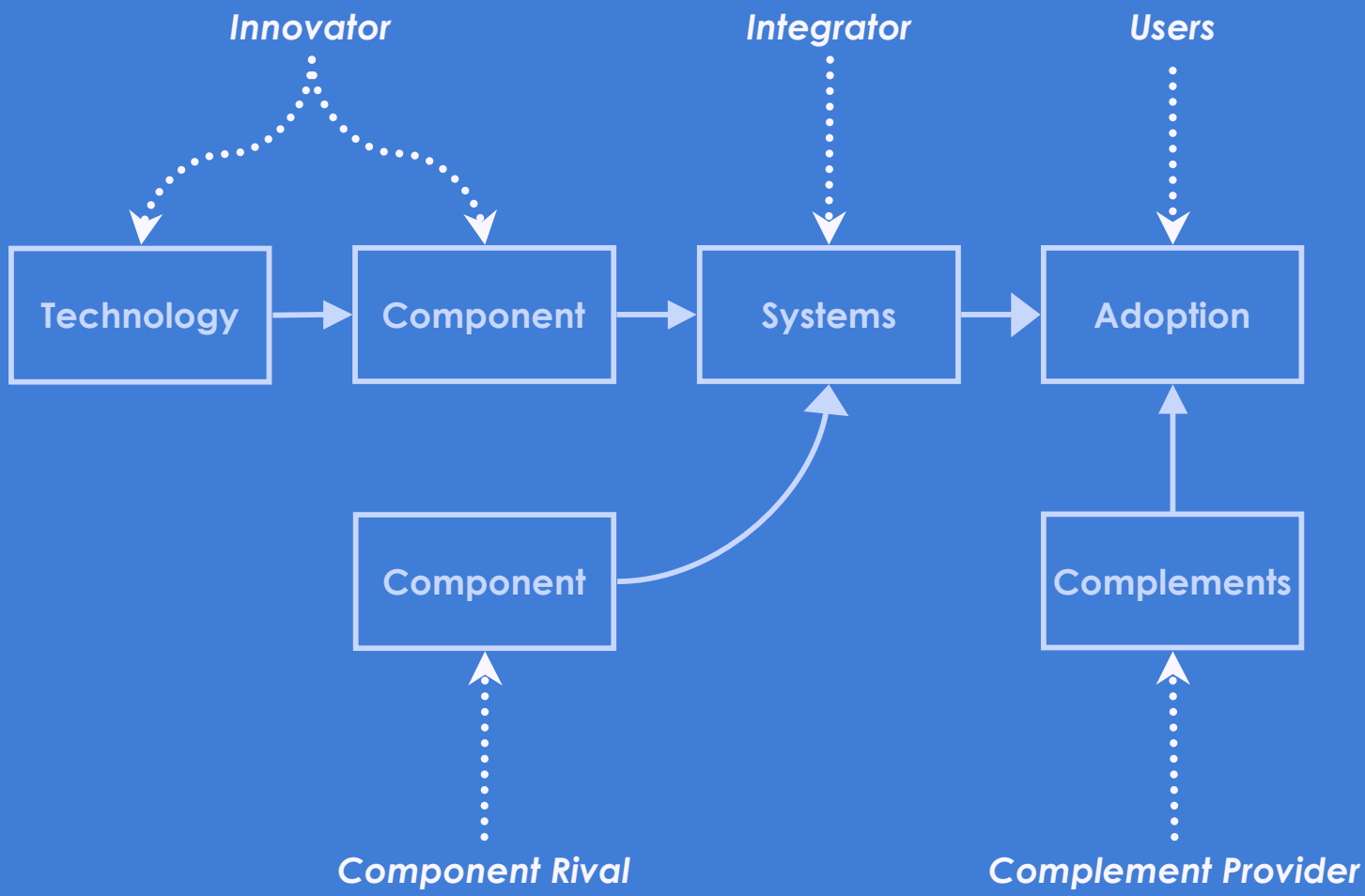
Elements of a business model:

1. Value creation
2. Sustainable value capture
3. Value network

Antecedent to firm's business strategies

Cf. Amit & Zott (2001), Magretta (2002), Chesbrough & Rosenbloom (2002), Morris et al (2005), Shafer et al (2005)

Typical IT Value Network



Source: *Open Innovation: Researching a New Paradigm*, p. 112

Research Questions

For firms that sell IT products & services:

- How do firms capture value without formal appropriability?
- Derivative question
  - What is the link between priced and unpriced components of the complete offering?

Research Design

- Inductive qualitative research
- Field Data (2002-2007)
  - Semi-structured interviews, 45-90 min.
  - 70 informants from 44 organizations
    - IT vendors (esp. software companies)
    - IT buyers
    - Non-profit open source communities
    - 83% live in US, org is HQ in US
  - Supplemented by secondary data

1. Creating Value

- Lower prices
- Reduced lock-in
  - Lead to commoditization
- Improved distribution
- Demand-side scale economies
  - Cf. Katz & Shapiro (1986)
  - Fuel network effects & further adoption

2. Value Capture

Options vary based on formal IP rights

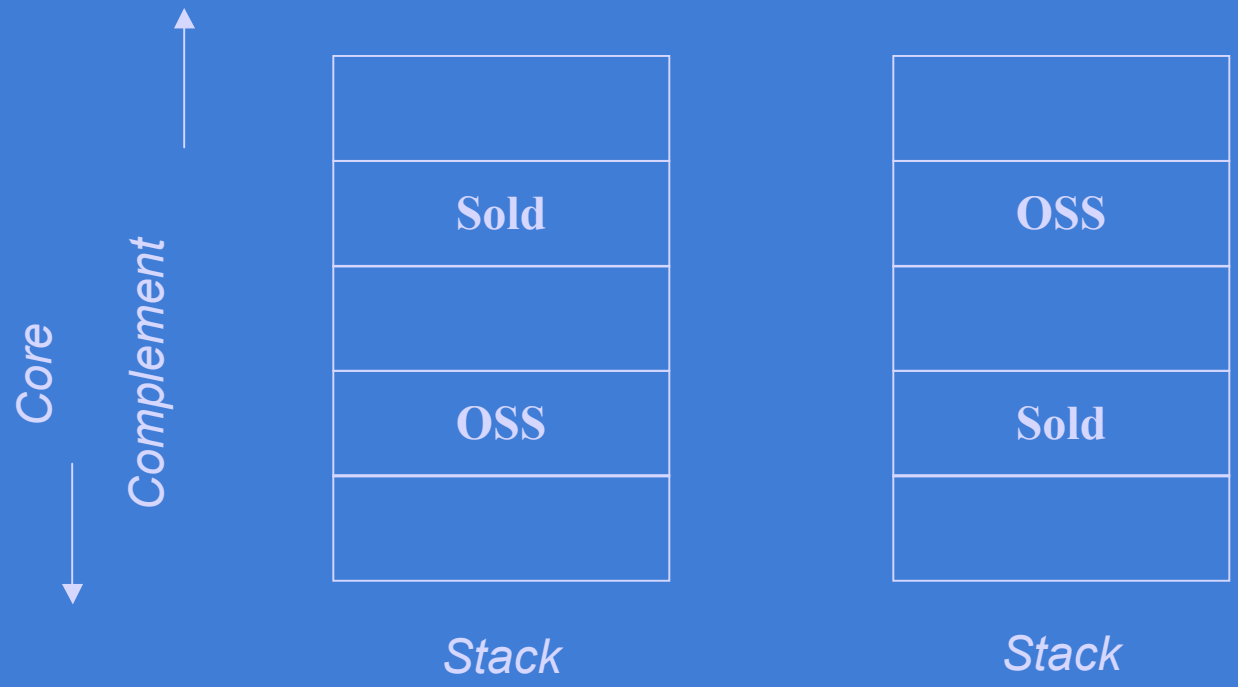
- Ongoing ownership: dual license (MySQL)
  - One license is “free” but with restrictions; or
  - Pay for license with less restrictions
- Surrender ownership (Eclipse)
  - Establish *de facto* industry standard
  - Transient gain: switching cost, tacit knowledge
- Community owned (Linux)
  - Value capture is difficult (only Red Hat?)

2. Value Capture (cont'd)

How do they capture value:

- Price discrimination
  - Charge more for less restrictions
- Sell complements
  - Support and other services
  - Add-on software modules
  - Hardware
- By leading value network

Vertical Complements

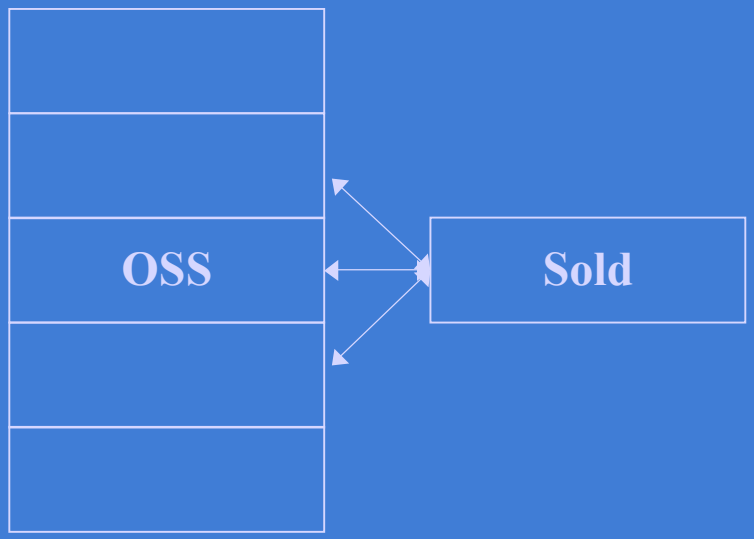


Examples:

Oracle on Linux
SAP on MySQL

Linux on Intel
Firefox on Windows

Horizontal Complements



Examples:

- Accenture, IBM Global Services, Red Hat support Linux, MySQL, JBoss, …
- HP, Epson provide Linux peripherals

3. Value Network

Gain value from the value network:

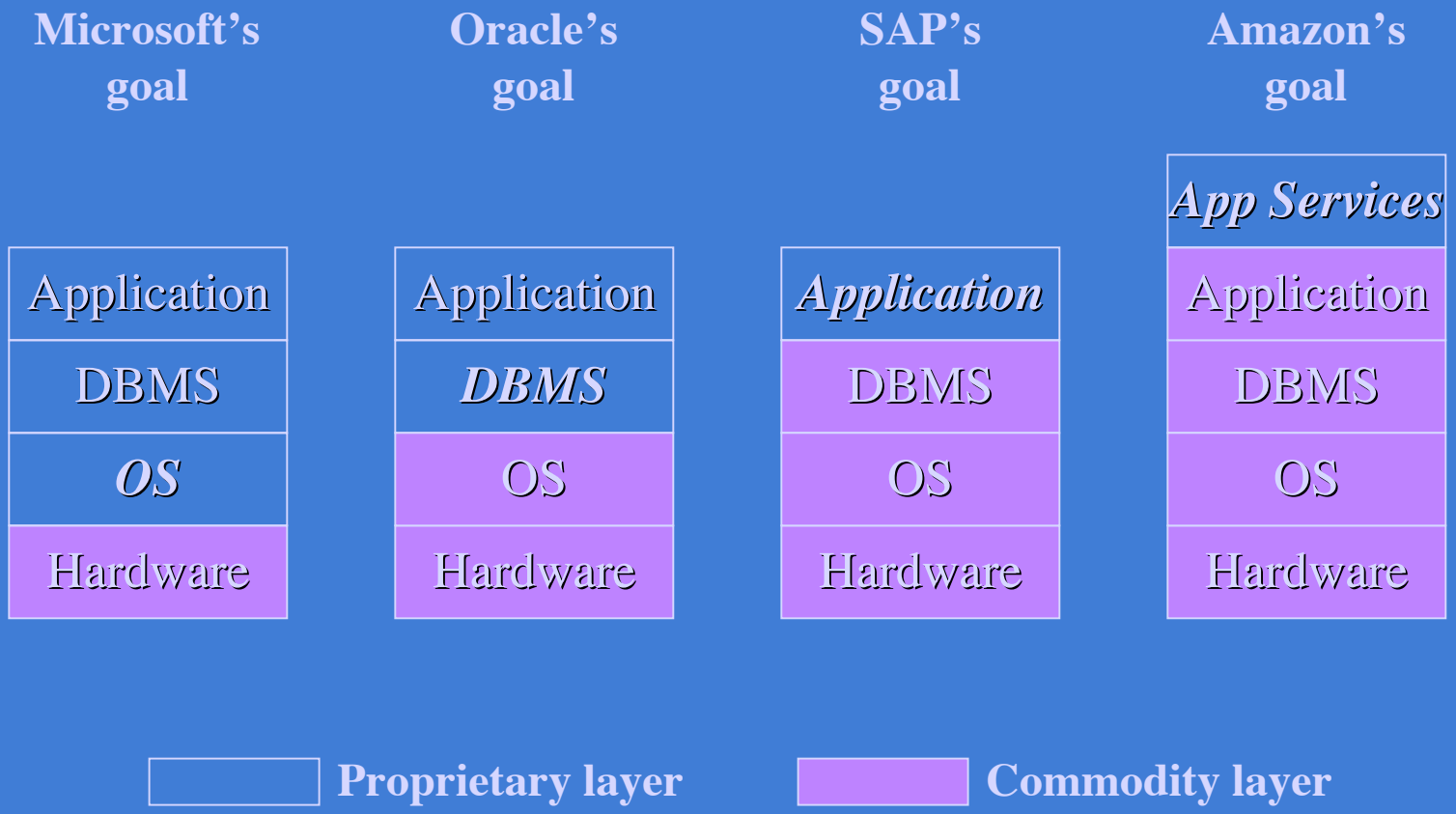
- User-contributors
  - Bug reporting or bug fixes
  - (Rarely) New code, features
- Facilitate complements
  - Source code as documentation
- Competitors — legitimation
  - Share code, control to attract rivals

3. Value Network (cont'd)

How does value network share value:

- Positive sum game
  - Traditional IT value network
  - Everyone sells add-ons
  - Complements -> complete product
- Zero sum game
  - Compete for "wallet share"

“Commoditize Up the Stack”



Unresolved Issues

- Establishing success
  - Most OSS-only companies private
    - Some acquired
      - Red Hat buys JBoss ($350+ million)
      - Oracle buys Sleepycat (≈ $70 million)
    - Some are losing money (e.g. SuSE)
  - Large companies don't report LOB
- Can firms profit from community OSS?
  - Linux: only Red Hat
  - Others: few examples of dedicated firms

Conclusions (1)

Value creation understood by all:

- Tied to mature commodities
  - Similar features at lower cost
- Openness spurs adoption within value network (West, 2003)
  - Adoption brings scale economies
- Encourage free-revealing of user innovation (von Hippel 2005)

Conclusions (2)

3 approaches to capturing value:

- Horizontal: auxiliary to value bundle
- Below: core technology for open source complements
- Above: sell complements on top of OSS infrastructure

- Latter has high risk of commoditization

Conclusions (3)

OSS license is credible commitment:

- Assures terms, price of use
  - To entire net: users, rivals, complementors
  - Guaranteed in perpetuity
- Attracts investment by value network
  - Specialized investment (Teece 1986)
  - Overcomes fear of rent-seeking
  - Even competitors may join