Technology platforms are defining much of the “new economy”. How do you manage the ecosystem and set strategy?
Technology Smackdown
Technology Smackdown

HD-DVD vs BLU-RAY

PHOTOGRAPH BY ISTOCKPHOTO, DARIO SABLJAK

© 2011 Parker & Van Alstyne
Technology Smackdown

Nerd.  Pretty Boy.
Technology Smackdown

VS

© 2011 Parker & Van Alstyne
Can we help explain convergence?
• **Platform**: Components used in common across a product family whose functionality can be extended by 3rd parties (Boudreau 2007) characterized by network effects (Eisenmann, Parker & Van Alstyne 2009).

• **Examples**:
  1. Desktop OS: *Unix, Mac, Windows*
  2. PDAs: *Palm, Psion, Newton*
  3. Game Consoles: Wii, Xbox, Playstation
  4. Network Switches: Cisco, IBM, HP
  5. Multimedia: Adobe/Flash, MS/Silverlight, Google-Apple/HTML5
  6. Payment Systems: Paypal, Google Checkout, Visa, Apple, Mobile Felica
  7. Mobile Devices: iPhone, Android, Symbian, Blackberry
  8. Enterprise Systems: Salesforce, Oracle, i2, IBM, SAP
  9. Social Networks: Facebook, MySpace, LinkedIn, Monster, Twitter
  10. Batteries: Sony, Panasonic, Sanyo, A123
  11. Web Search: Google, Bing+Yahoo!, Baidu
  12. Ebooks: Amazon, iPad, Nook, Sony

© 2011 Parker & Van Alstyne
Apple launched the personal computer market but Microsoft licensed widely, building a huge developer ecosystem. By the time of the antitrust trial, Microsoft had more than 6 times the number of developers.
Apple passes Microsoft
May 26, 2011

Using a platform strategy, Apple becomes the most valuable tech firm in the US, representing $222 Bn to Microsoft’s $219 Bn. Chart shows % growth.
Remember this contest?
Question: What are “network externalities?”

Hint: they matter for pricing, winner-take-all markets, and strategy…
A “network externality” is a demand economy of scale.

Examples: phone, fax, IM, email networks.
Supply vs. Demand Scale Economies

### Standard Goods
- Rising average costs
- More competitive supply
- Oil, Soda, Bread

### Cost Econ of Scale
- Falling average costs
- Monopolistic supply
- Utilities, Semiconductors

### Demand Econ of Scale
- Often falling avg cost
- Monopolistic supply
- OS, IM, MMOG
(Re)interpreting Network Externalities

- “Network Externalities” are demand economies of scale.

- They imply at least some level of interaction as when I email you, or you FAX or IM me.
A “2-sided” network externality crosses markets from consumers to developers or developers to consumers
A two-sided network has *four* network effects

- A **same-side** effect for each side, i.e., preference regarding number of other users on *own* side
- A **cross-side** effect in each direction, i.e., preference regarding number of users on *other* side
Each network effect can be positive or negative

+ **same-side**: Player-to-player contact in Xbox MMOG, end-user PDF sharing.

- **same-side**: competing suppliers in Covisint auction, competing dates on Match.com

+ **cross-side**: merchants & consumers for Visa, developers & end-users for Windows

- **cross-side**: Digital Rights Management costs to consumers. Advertising clutter to viewers.
A New Business Model is Born
As the Old Model Dies

Blockbuster

Netflix

This is directly relevant to the IPC transition from direct mail to online.
A New Business Model is Born
As the Old Model Dies

Tower Records

Apple iTunes

This is directly relevant to the IPC transition from physical to digital.

© 2011 Parker & Van Alstyne
Apple iPod pre-Platform

(1) Standard linear supply chain
(2) User matches MP3 player to library
(3) Minimal network effects

© 2011 Parker & Van Alstyne
Apple iPod post-Platform

(1) Triangular *platform* supply network
(2) Apple owns financial chokepoint
(3) Apple matches users to content
(4) Stronger network effects

© 2011 Parker & Van Alstyne
How Apple is killing standalone platforms

Apple has vastly stronger network effects. Sony could have done this — has many great standalone products. Google is not making this mistake with Android.

Message for IPC: A great standalone product (e.g. eBox) might not be sufficient.
Openness vs. Control

Maximum protection ≠ Maximum Value

Your reward = (Value added to industry) x (Your share)

Source: Shapiro & Varian ‘99
Does Openness Work?

Openness adds value to Facebook – overtaking MySpace!
How should a firm manage the platform ecosystem?

Openness & Time: Having opened its platform, does Microsoft (or Cisco or Google or Apple) kill its ecosystem by bundling developer value into Windows?

Windows: Multithreading, Disk Compression, Internet Browsing, Streaming Media, Instant Messaging, …

iPhone: Flashlight, Voice Memo, shake-to-shuffle, iBooks, Voice Control, …

© 2011 Parker & Van Alstyne
Should Apple have opened the iPod?

Most firms can only concentrate on most valuable apps

Profits increase when others add to platform’s “Long Tail”

No! It does 1 thing only, so make it “insanely great” and own it.
Which applications to absorb?

Apps offered by Platform Sponsor

Apps offered by Developers

Rule 1: Absorb the highest value applications from the ecosystem. This adds value for users and mitigates threat of disintermediation.

Example: Apple iPad absorbed e-books

Example: Microsoft Windows absorbed web browsing
Anything else to absorb?

Apps offered by Platform Sponsor

Apps offered by Developers

Price

Application 1

App. 2

App. 3

Layer 2

Layer 1

Quantity

© 2011 Eisenmann, Parker & Van Alstyne
Anything else to absorb?

**Rule 2**: Absorb features that emerge in multiple places in the ecosystem. This increases compatibility, ensures efficient implementation, and benefits other apps. **Examples**: Operating systems support for (i) spell check (ii) cut & paste (iii) PDF.
Winner-Take-All Markets
When do Winner-Take-All Networks Emerge?

1. Large Supply/Demand Effects (FB vs gas engine)

2. Large Multi-Homing Costs (OS vs credit cards).

3. Anywhere access? (MMOG vs HMO).

4. Niche specialization is less feasible.

© 2011 Parker & Van Alstyne
Bundling & Envelopment

*Bundling Components to Foreclose Markets*
Independent Pricing: Spreadsheet

Word Processing

Charge 50
Sell to ½ mkt
Make 25
Independent Pricing: Word Processing

- Charge 50
- Sell to $\frac{1}{2}$ mkt
- Make 25

Word Processing

Spreadsheet
Independent Pricing Word & Excel

- Charge 50
- Sell to ½ mkt
- Make 25

Incumbent Profits from both markets are 50
Competitor WordPerfect (or Lotus) undercuts price

Charge 49
Sell to 0.51 mkt
Makes ~25

Incumbent profits drop from 50 to 25
Pricing Word & Spreadsheet as a Bundle

Charge $100 for 2
Sell to ½ market
Make 50
(same combined profits as before)

Source: Nalebuff 1999

© 2011 Eisenmann, Parker & Van Alstyne
Competitor WordPerfect (or Lotus) undercuts price but makes $\frac{1}{2}$ as much as incumbent.

- Charges $49
- Sells to 0.25 mkt
- Makes 12.25

Entrant profits cut by half.

Incumbent bundled profits fall only half as much.
Side by Side Comparison

**Independent Sales**

<table>
<thead>
<tr>
<th>Product A</th>
<th>Product B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incumbent profit: (.5 \times 0.5 = 0.25)</td>
<td>Entrant profit: (.49 \times 0.51 \approx 0.25)</td>
</tr>
</tbody>
</table>

**Bundled Sales**

<table>
<thead>
<tr>
<th>Product A</th>
<th>Product B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incumbent profit: (1 \times 0.5 - 0.125 = 0.375)</td>
<td>Entrant profit: (0.5 \times 0.25 = 0.125)</td>
</tr>
</tbody>
</table>
Other Effects: Network Effects

Spreadsheet

Word Processing
Rhapsody

Who are the players?
Where are the network effects?
What would you do?
Real Audio & Envelopment

- RA pioneers streaming audio
- Mobile phone service bundles music in service agreement.
- …like playing 3D chess.
Issues Continued…

Will your platform be this?

Or this?
Coming Platform Applications

Smart Grid Energy Platform Standards (WSJ 5-18-09)
Electronic Medical Records (Google, Microsoft, WebMD …)
Conclusions

- Business models that give strategic advantage in network markets:
  - Design products for 1) proprietary complementarity, 2) price sensitivity, 3) developer value add, and 4) low marginal costs.

- Winning Standards Battles: Winner-take-all platforms arise from both supply and demand economies of scale.
  - Find ways to manipulate 1) multi-homing costs, 2) same & cross-side network effects, and 3) localization 4) bundling.

- Platform envelopment is a means of bundling a competitor’s users or technology “money side” into your platform.
  - Explains convergence!
Questions?


mva@bu.edu
InfoEcon@Twitter.com