

Standard Wars and Competition in Technology Platforms

Competitive Strategies Within and Between Platform Markets

Lecture 1

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Spotify®



U B E R

Why do a course on platforms?

Platforms are economically relevant:

- “Platformization” of the economy (The Economist, 2014)
- \$3 trillion market cap. of public platform companies (GGE, 2015)
- 70 percent of “unicorn” companies are platform companies (CGE, 2015)

Platform strategy is distinctively different:

- Multisided
- Network externalities
- Complementors face unique challenges
- Tension between value creation and value capture

Platforms are academically versatile:

- Management
- Economics
- Information systems



Distribution of student cohort by study program

Strategic Management is the most represented study program accounting for **45% of all students**, followed by *Business and Information Management* (29%) and *Strategic Entrepreneurship* (17%). 9% of the students come from **other programs** such as *Management of Innovations*, *Finance and Investments*, and some exchange students.

After this course, you will be able to

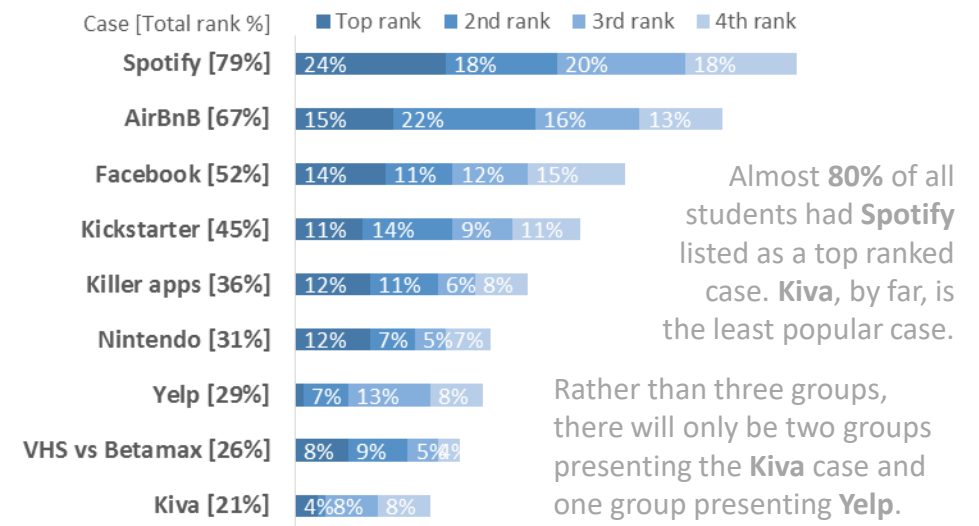
- Explain why dominant standards arise in markets for technology
- Analyze how platforms can unlock network externalities
- Understand what governance frameworks platforms can use
- Explain what market structures look like within platform ecosystems...
- And, how this affects competitive dynamics for complementors
- Recognize how platforms change the way people and firms interact
- Apply knowledge to existing cases, and advise on actual platform-related issues at Philips. Potentially apply to your own firms?

Course organization: when to expect what

Date	Topic	Theoretical perspective	Platform orientation	Case
1-Feb	Technological dominance	Standards	Between	Nintendo
8-Feb	Two-sided markets	Economics	Between	VHS vs. Betamax
15-Feb	Platform rules	Ecosystems	Within	Facebook
22-Feb	Platform competition and the product lifecycle	Evolutionary	Within	Killer apps
1-Mar	Superstars vs the long-tail	Information goods	Within	Spotify
8-Mar	Platforms for the people	Sharing economy	Between/within	Yelp; Airbnb; Kickstarter; Kiva
12-Mar	Final presentations		Between/within	Philips Hue

Some thoughts on case presentations

- You may not have gotten your top pick, unequal dist. of preferences
- Focus on the question in the syllabus, link with lecture materials
- Case is leading, link with current events (e.g. VCR battle → Netflix)
- Readings are suggestive, expand
- Engage audience, we like discussions
- Keep track of individual contributions
- Groups are fixed.





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Many markets are served by a dominant design, which may not be the most (technologically) superior design. Path dependency, but also firm strategy and environmental factors can tip the market.
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What is technological dominance?

“(A) specific technological design achieves dominance when ... one or both of the following two events occur: (a) there is a clear sign that the most closely competing alternative design has abandoned the active battle, thus acknowledging defeat directly or indirectly; (b) a design has achieved a clear market share advantage over alternative designs and recent market trends unanimously suggest that this advantage is increasing.” (Suarez, 2004; 281)

Note that Schilling’s (1998; 2002) *technological lockout* is an antonym of technological dominance

Case in point: 6th gen. game consoles



Sony PlayStation 2:

UK launch: Nov-2000
Launch price: £299.99
CPU: 299 MHz
RAM: 32m/4v

Nintendo GameCube:

UK launch: May-2002
Launch price: £129.99
CPU: 485 MHz
RAM: 24m/3v



Sega DreamCast:

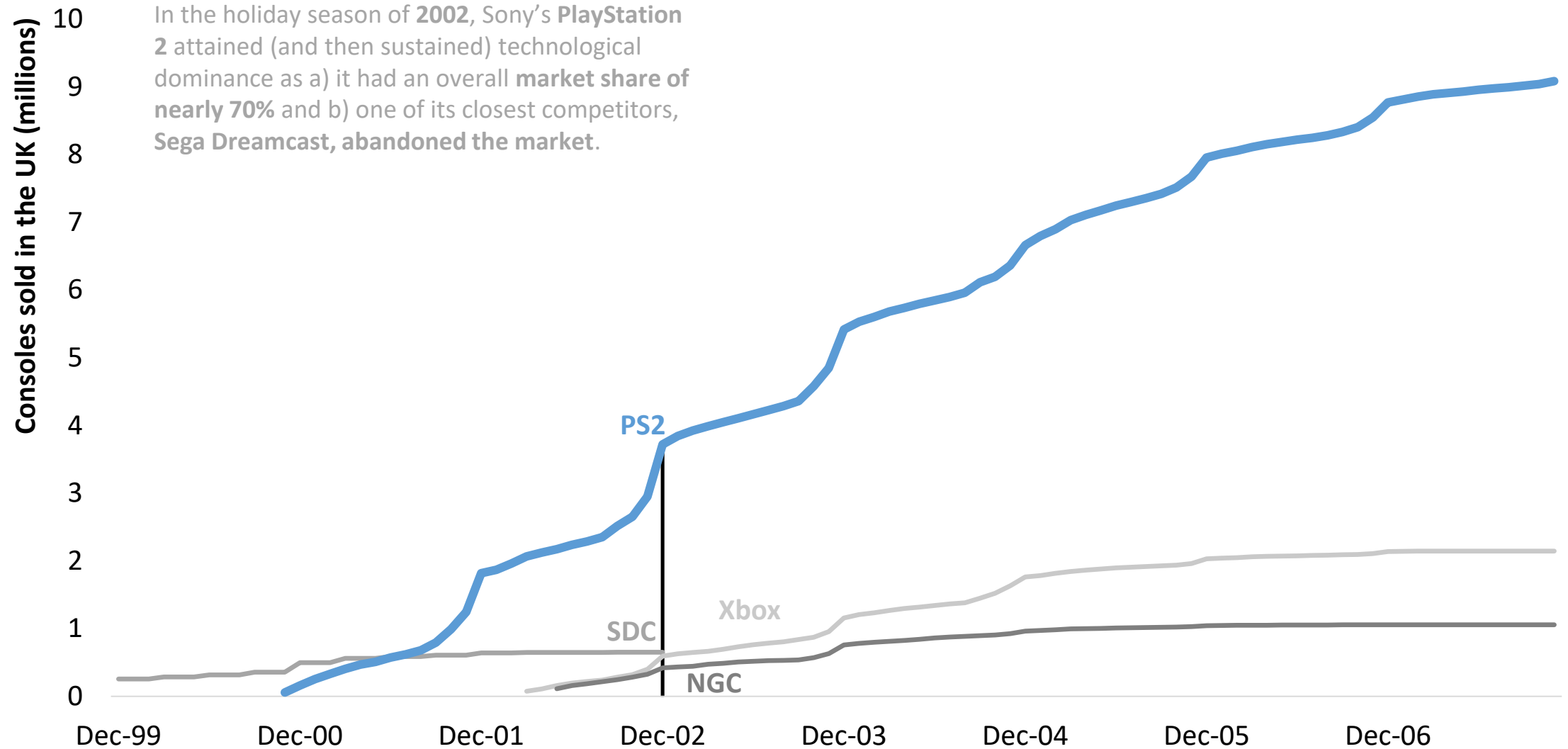
UK launch: Sep-1999
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CPU: 200 MHz
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Microsoft Xbox:

UK launch: Feb-2002
Launch price: £299.99
CPU: 733 MHz
RAM: 64m



Sony PlayStation 2's technological dominance



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PlayStation 2 won in spite of being (1) expensive; (2) not the most powerful machine; (3) launched second; (4) relatively new to the industry

DreamCast lost despite being (1) first to launch; (2) second cheapest; (3) having a long history as a console maker; (4) a very innovative machine



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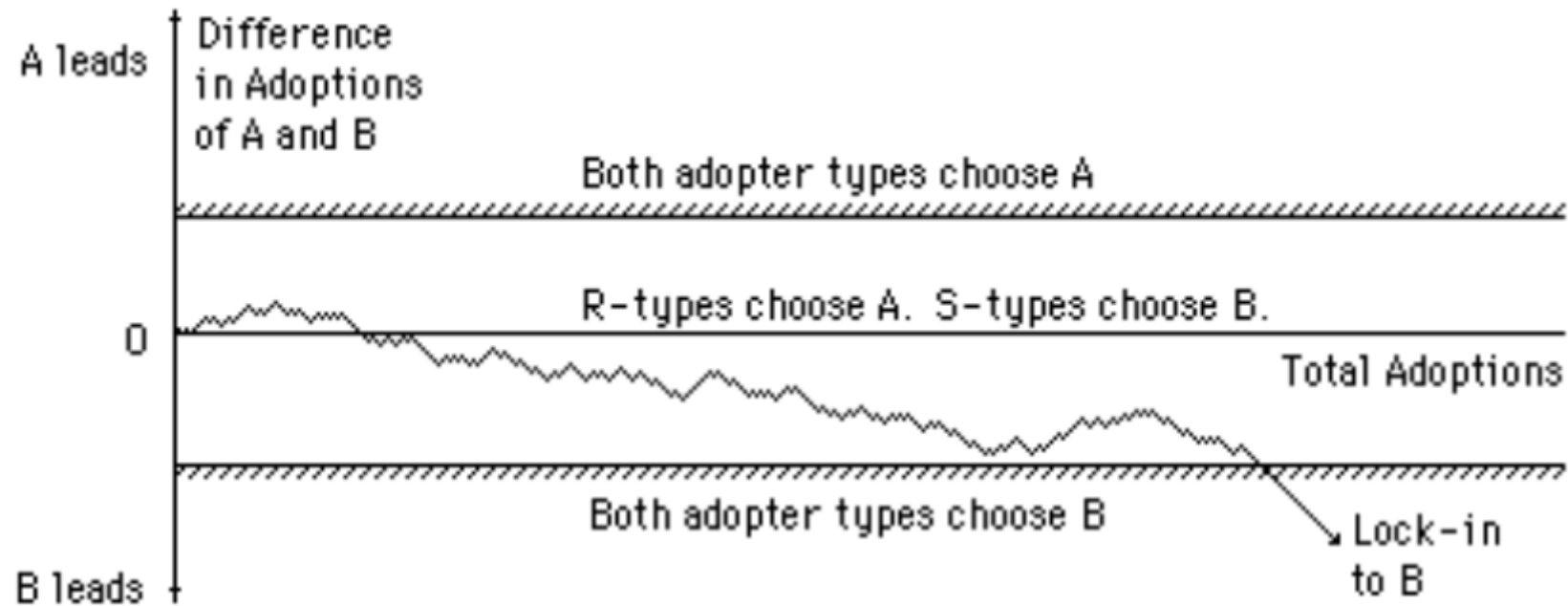


What drives (inferior) technologies to become the dominant standard in their market? And, how can firms increase the likelihood of attaining dominance?

In some cases, history matters

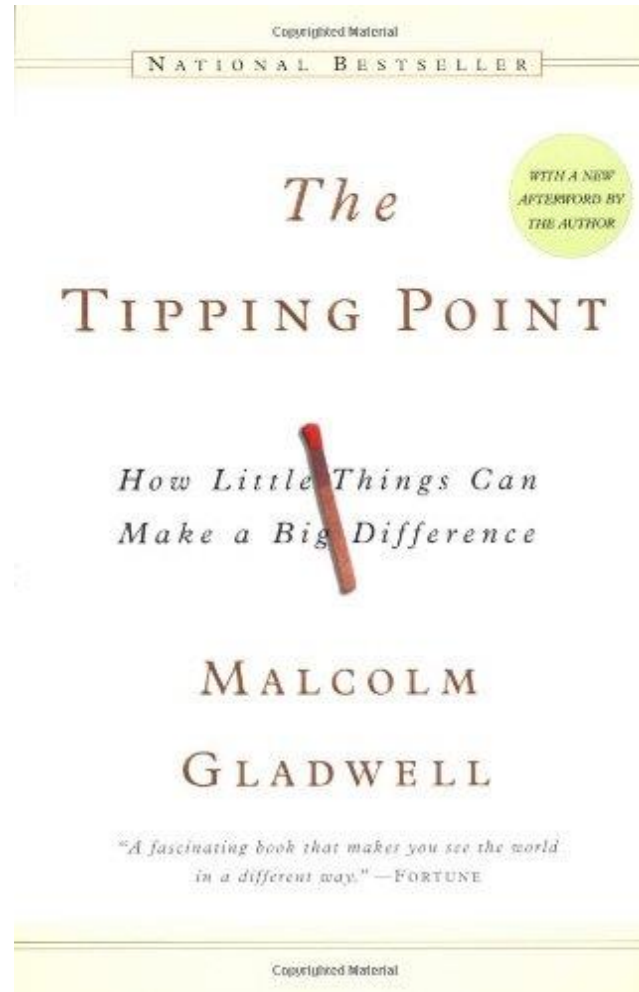
- The most superior technology may not always win
- Under *increasing returns to adoption*, history matters
 - Dominance battles are path-dependent, or non-ergodic (Arthur, 1985; David, 1989): Historical events are not averaged away or forgotten by the market, they may actually decide the market outcome
 - Positive consumption externalities –when the value of a good increases with the number of users of the same or similar goods- lock other firms out from (re-)gaining market share (Katz & Shapiro, 1985; 1986)
 - These market outcomes may be “inflexible” (Arthur, 1985): Once an outcome of a dominant standard arises, consumers and stakeholders are ‘locked in’

Increasing returns adoption



Source: Arthur, 1989; 120

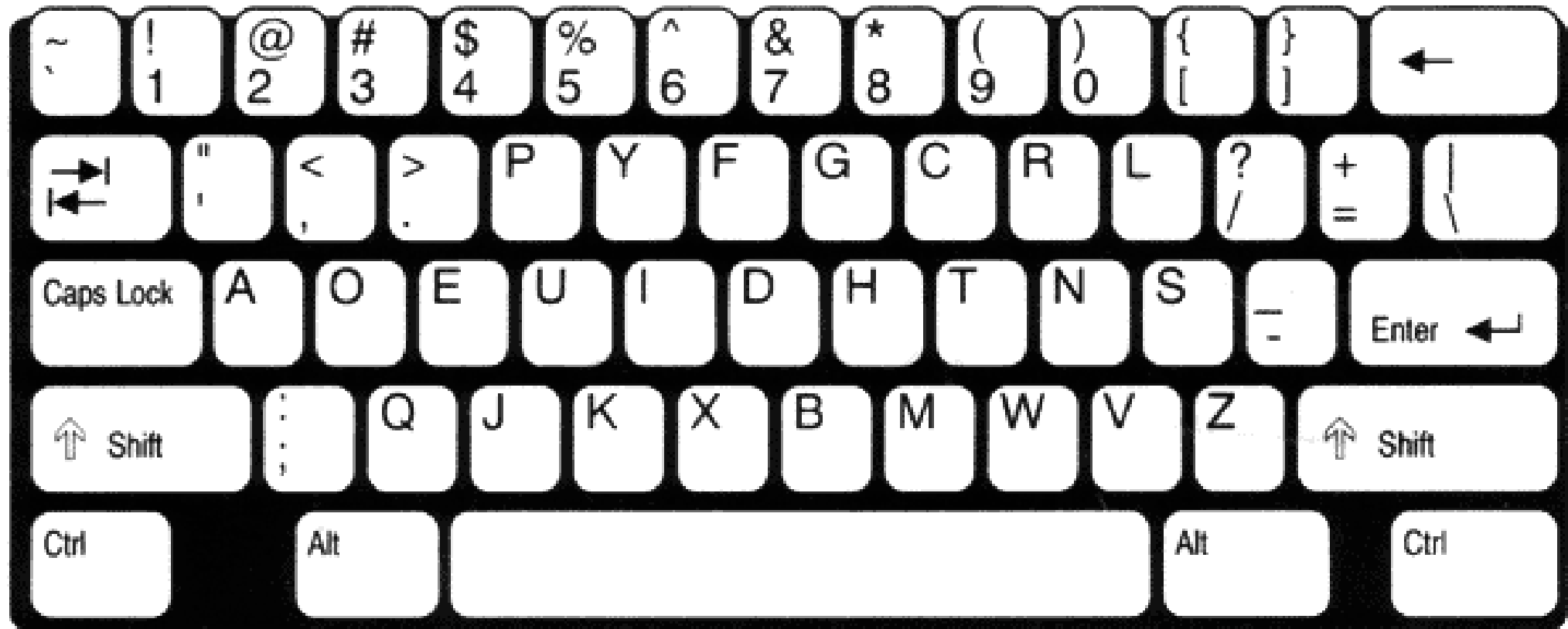
Increasing returns adoption





Case in point: The QWERTY keyboard

- Dominant technology despite being inferior and the presence of surmountable switching costs
- Consumers and organizations get locked-in by historical events:
 - Introduced in 1876; reduction in type bar crashes from old model;
 - Upper row conveniently facilitates writing “TYPE WRITER”;
 - By 1905 seen as universal standard, adopted by competitors/institutions;
 - Scientifically superior ‘Dvorak Simplified Keyboard’ introduced in 1932;
 - Costs of collective switching can be amortized within ten days;
 - We are locked into the “wrong system” and history is to blame (David, 1985).

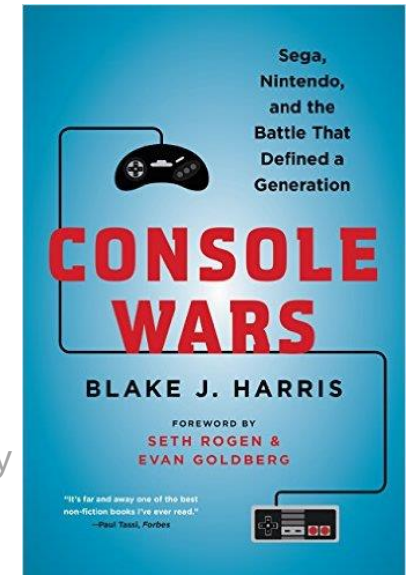


- 70% of all strokes are done on the home (middle) row vs. 32% for QWERTY;
- 56% of 'typing load' done by (stronger) right hand vs. 44% for QWERTY;
- More efficient; Dvorak needs only 63% of the finger motion required for QWERTY;
- Reduces Repetitive Strain Injuries (RSI) for typists;
- Fewer hurdles, or awkward strokes, leading to less typo's;
- Result: 5% greater efficiency for Dvorak over QWERTY (Norman & Fisher, 1982).

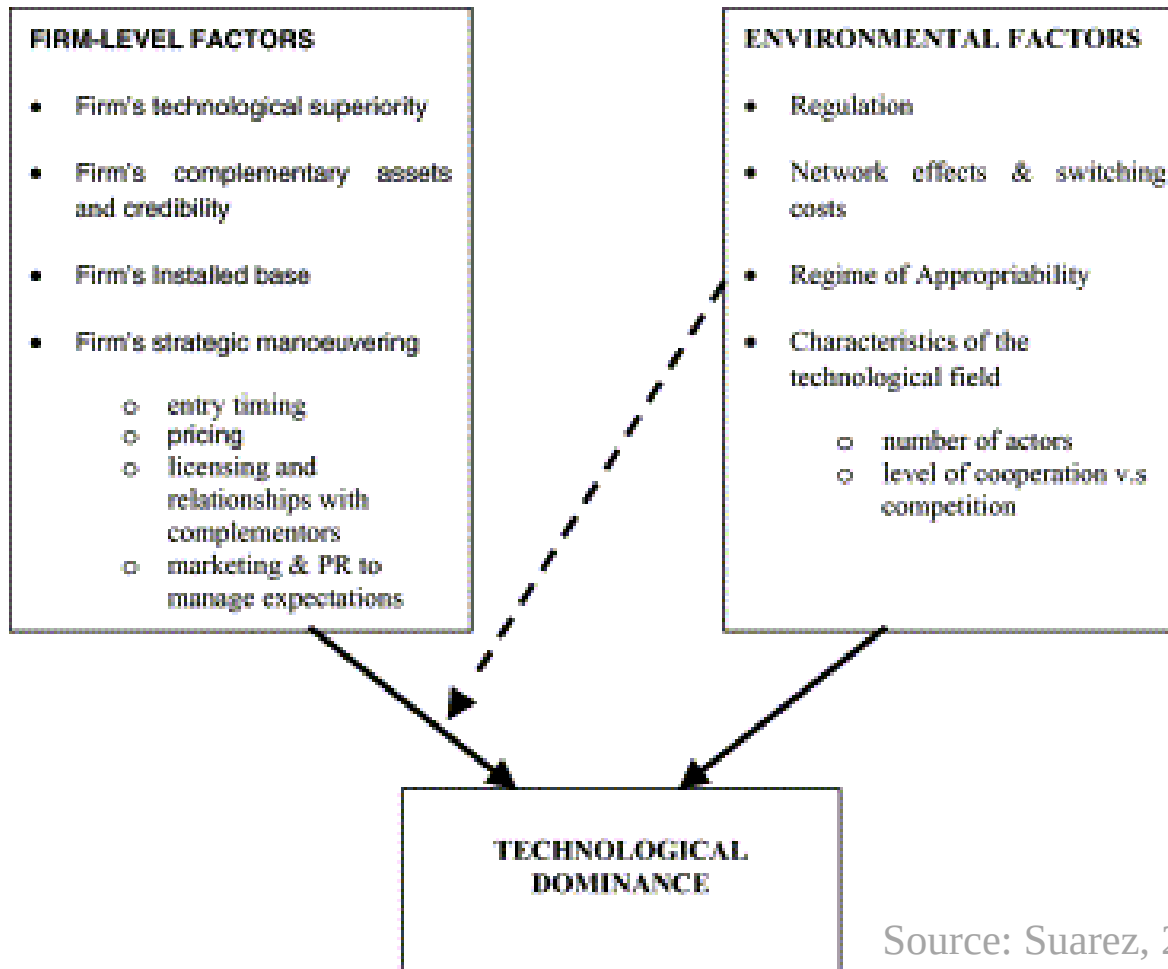
Is only history to blame? No!

- Random historical events can have dramatic effects on technology competition outcomes, but so can firms' strategies
- Technology adoption is therefore “neither wholly random nor beyond the firm's control” (Schilling, 1998; 267)
 - Firm technology strategy
 - Industry-level factors

“In 1990, **Nintendo** had a virtual monopoly on the video game industry. **Sega**, on the other hand, was a faltering arcade company. But that would all change with the arrival of Tom Kalinske, a man who knew nothing about video games and everything about **fighting uphill battles**. His **unconventional tactics**, combined with the blood, sweat and bold ideas of his renegade employees, transformed Sega and eventually led to a ruthless **David-and-Goliath showdown** with rival Nintendo. The battle was vicious, relentless, and highly profitable, eventually sparking a **global corporate war**.”



Framework for technological dominance

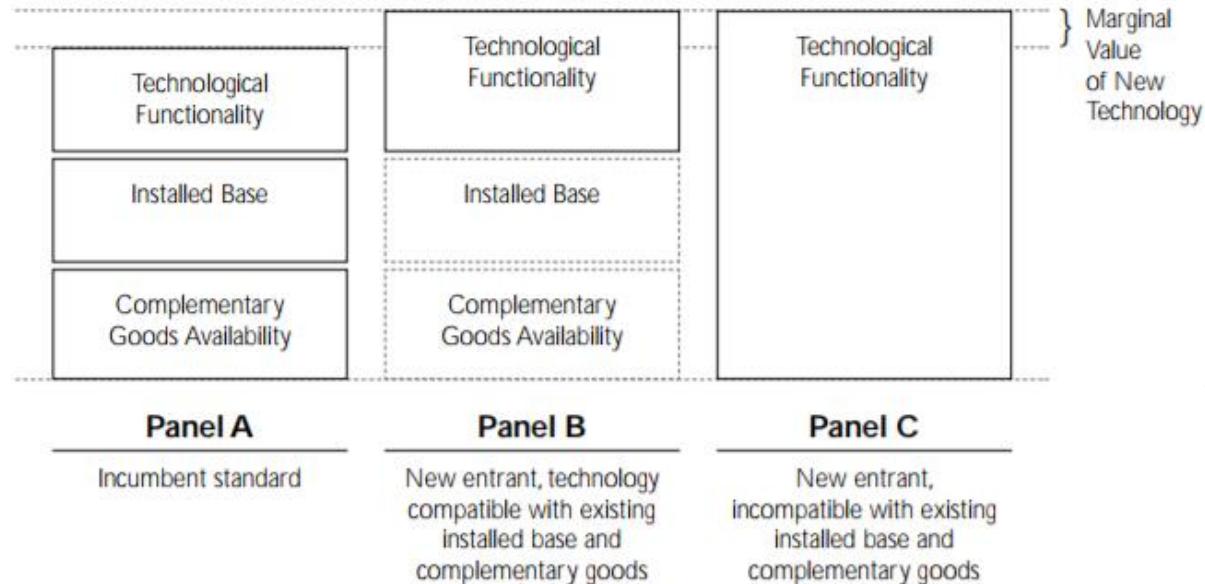


“Typically, no single factor of dominance is strong enough to tilt the balance in favor of a particular technology; the final outcome is always the result of the interplay of several firm- and environment-level variables” (Suarez, 2004; 276)

Source: Suarez, 2004; 275

Technological superiority

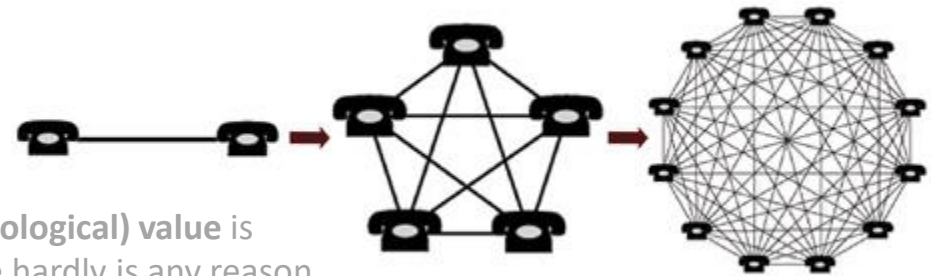
- The better a firm's technology, the higher the chances of dominance
- Firms have to keep investing in their technological capabilities and absorptive capacity over the technology lifecycle (Schilling, 1998)



Technological functionality is not enough in and of itself: the size of the installed base and the availability of complementary assets are additional value components that drive the overall value of technology platforms (Schilling, 2003; 18).

Size of installed base

- The degree to which the technology is used by commercial adopters at the time of an adopter's purchase decision (Schilling, 1998)
- Technology platforms display positive consumption externalities: The value of a good increases with the number of users of the same or similar goods (Katz & Shapiro, 1985; 1986)



The old fashioned **telephone** is a great example of a technology whose **base (technological) value** is rather low relative to the **value of the installed base**. Without other adopters there hardly is any reason to adopt this technology!

Complementary assets

- Without complementary goods, many technology platforms are useless! (e.g. games, apps, videotapes, toners, trains, people...)
- Variety, quality, and exclusivity of complementary goods all boost the likelihood of dominance for technology platforms
 - Some technology platforms produce their own complements
 - While others rely on outside firms ('complementors') for complements
 - Most allow a mix of internally and externally produced complements

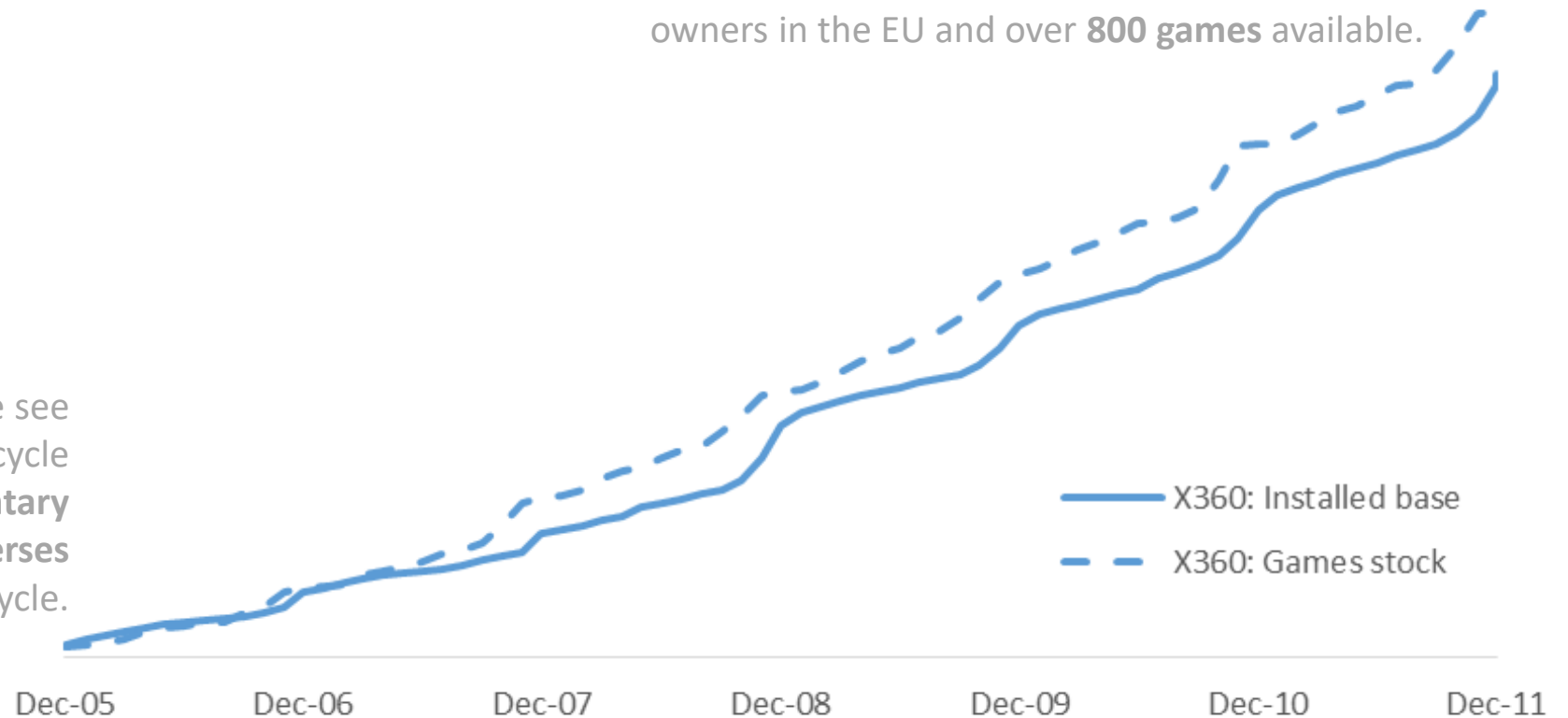
Without any (high quality) video games, video game consoles bear little value to consumers. As a console manufacturer, Nintendo is tasked to ensure that there is a sufficient supply of content on its platforms while at the same time monitoring the quality of this content. Note that without consumers there typically isn't a strong reason for game developers to join a platform... (next week we'll solve this *chicken-and-egg problem*)



There is a strong correlation between a platform's installed base and its stock of complementary assets

In December 2011 there were over **2 million** Microsoft Xbox 360 owners in the EU and over **800 games** available.

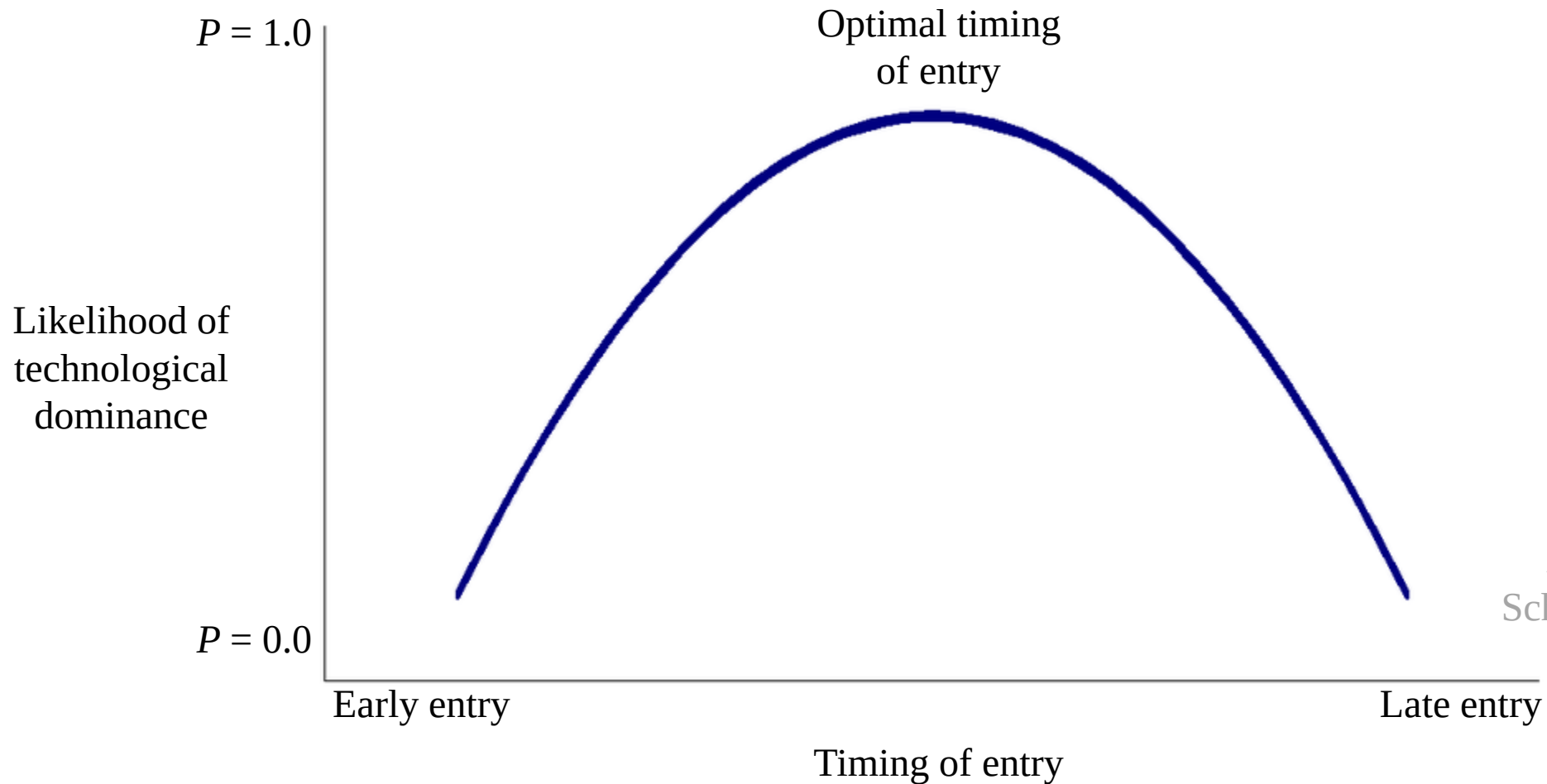
In many platform markets we see that **early** in the platform lifecycle **Installed base > complementary assets**, whereas this ratio **reverses later** in the platform lifecycle.



Strategic maneuvering

- **Entry timing:** Early entry helps building installed base, yet too early may lead to 'betting on the wrong horse' - give learning effects to competitors (Schilling 1998; 2002)
- **Pricing:** Strategic pricing of customers (complementors and end-users) can boost installed base (Katz & Shapiro, 1985)
- **Licensing and relationships with complementors:** Open vs. closed technology platforms (Boudreau, 2010; West, 2003)
- **Managing expectations:** Shape customers' perceptions of size of installed base and complementary goods (Schilling, 2003)

Timing of Entry and Technological Dominance



Adapted from:
Schilling, 1998; 277

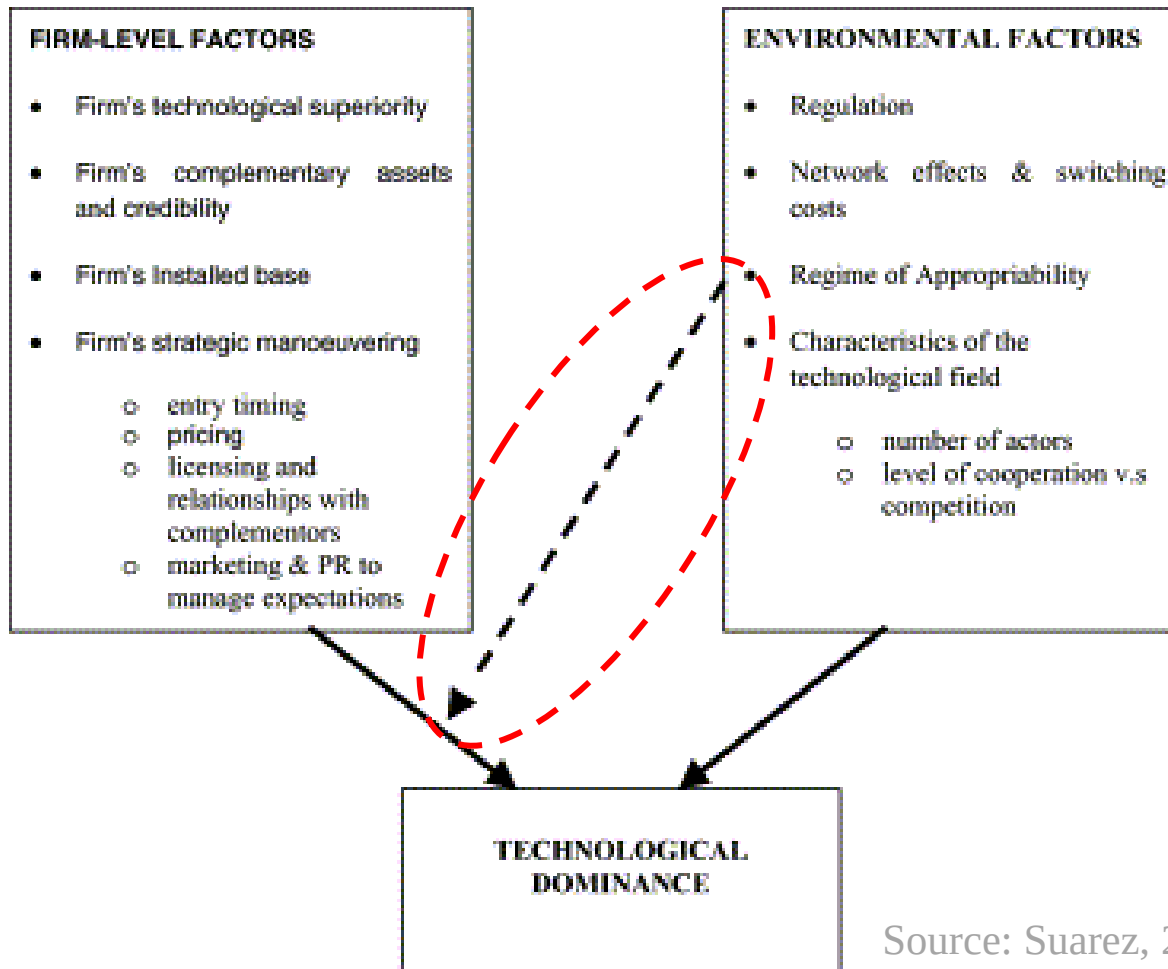
Environmental factors

- **Regulation:** E.g. government purchases, industry ass., standards making bodies
- **Switching costs:** May come from non-network effects-related causes



- **Appropriability regime:** Non-firm or market related means that allow firms to protect their inventions and capture monetary value (e.g. creative commons)
- **Competitive dynamics:**
 - Number of actors: Increase in competitors skews market outcomes and reduces the likelihood of any firm achieving technological dominance.
 - Intensity of competition: Degree of customer heterogeneity and collusion.

Framework for technological dominance



“Note that ... the environmental factors cannot only directly influence the outcome of a technological battle, ... but can also act as moderators of some firm-level variables.” (Suarez, 2004; 275-276)

Source: Suarez, 2004; 275



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Thank you!

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