

Capitalizing on Innovation: The Case of Japan

Stanford Program on Regions of Innovation and
Entrepreneurship
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Starting point: a “puzzle”

- Japan’s weakness in sectors in which production & innovation rely on “horizontal ecosystems”:
 - Either total absence: e.g. software
 - Or lack of competitive presence in international markets: e.g. animation, mobile telephony
- Contrast with manufacturing-based sectors... (maybe less of a contrast today!)

Outline

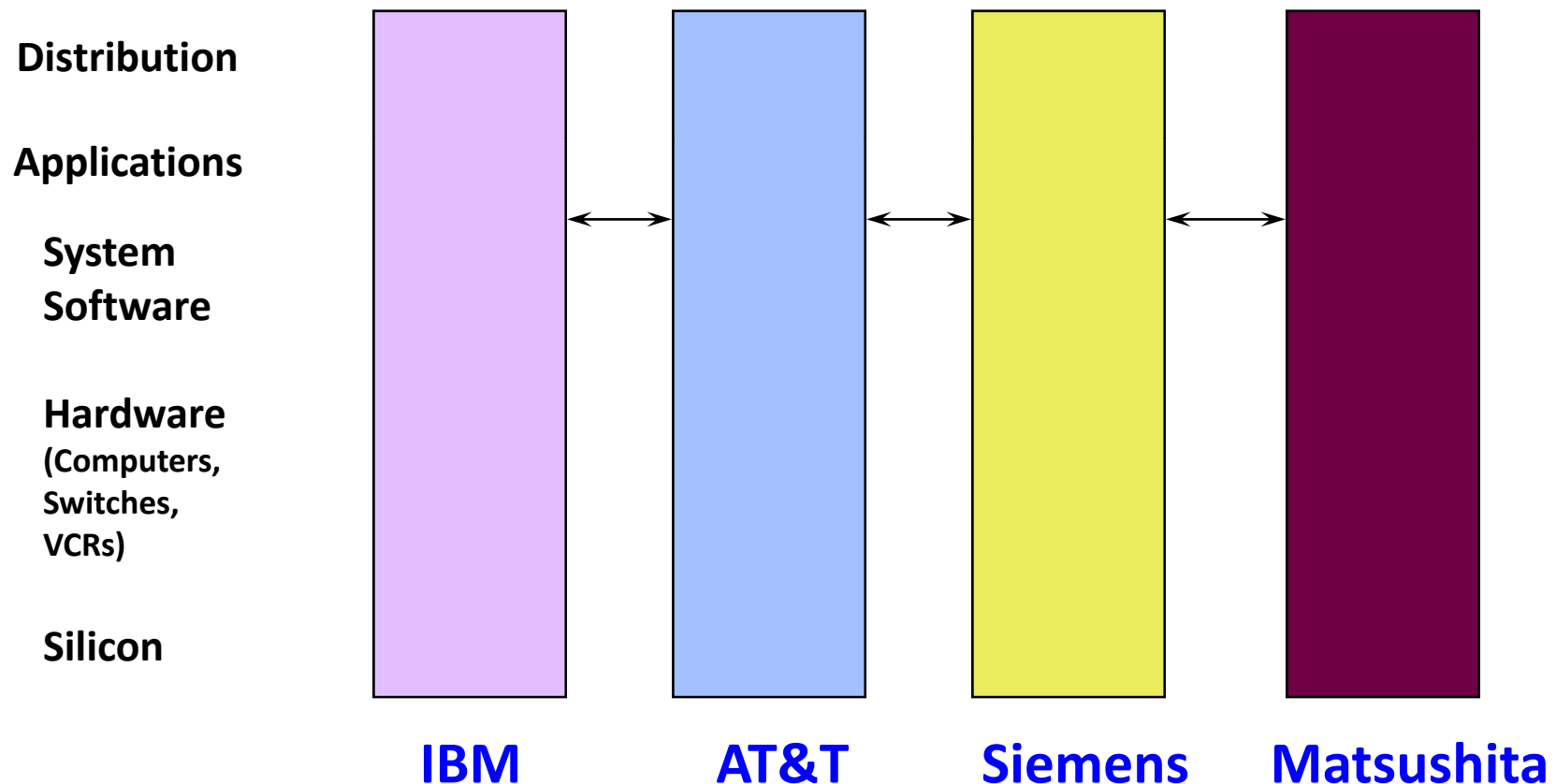
- 1) “Theory”: vertical integrated structures vs. platform-led ecosystems
- 2) Background on Japanese innovation
- 3) Evidence based on 3 industry case studies:
 - a) software
 - b) animation
 - c) mobile telephony
- 4) Discussion and policy implications

1) “Theory”: vertical integrated structures vs. platform-led ecosystems

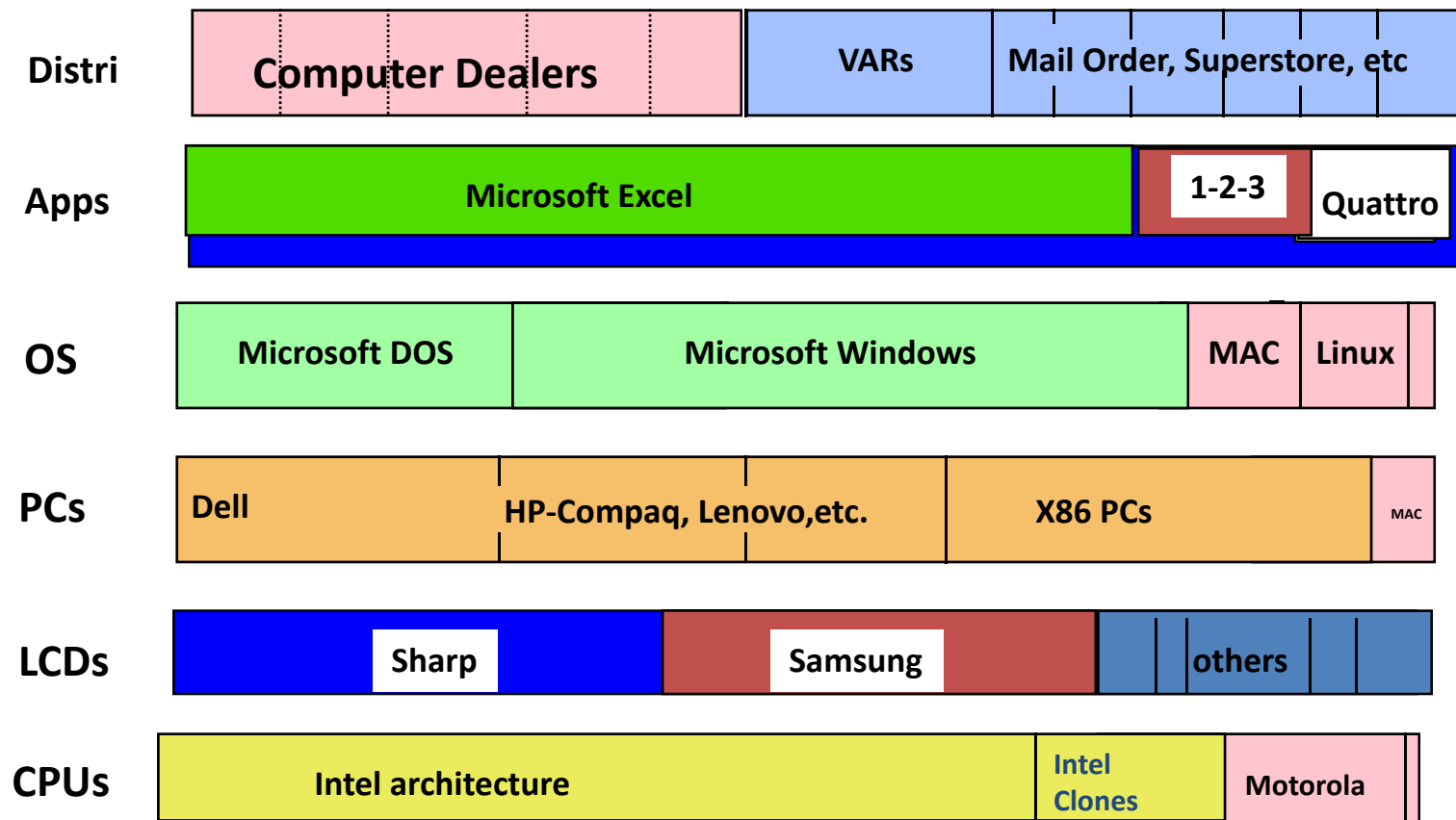
- Vertically integrated structures have been (are being) replaced by ecosystems governed by multi-sided platforms (MSPs)
 - Gawer and Cusumano (2002)
 - Evans, Hagiu and Schmalensee (2006)
 - Boudreau and Hagiu (2008)

From “vertical” industry structures...

Vertically Integrated Firms Competing Across All Segments



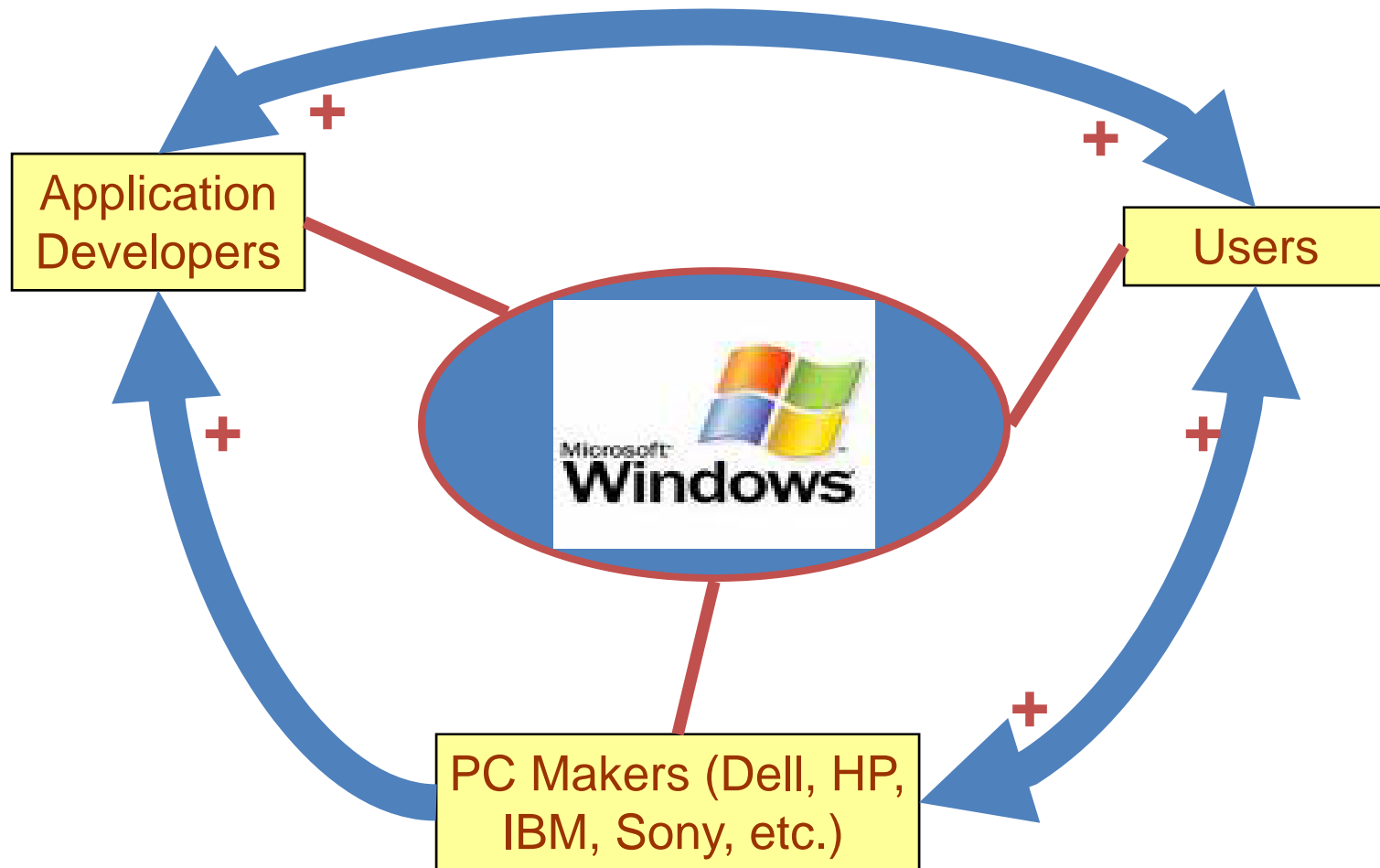
... to “horizontal” industry structures



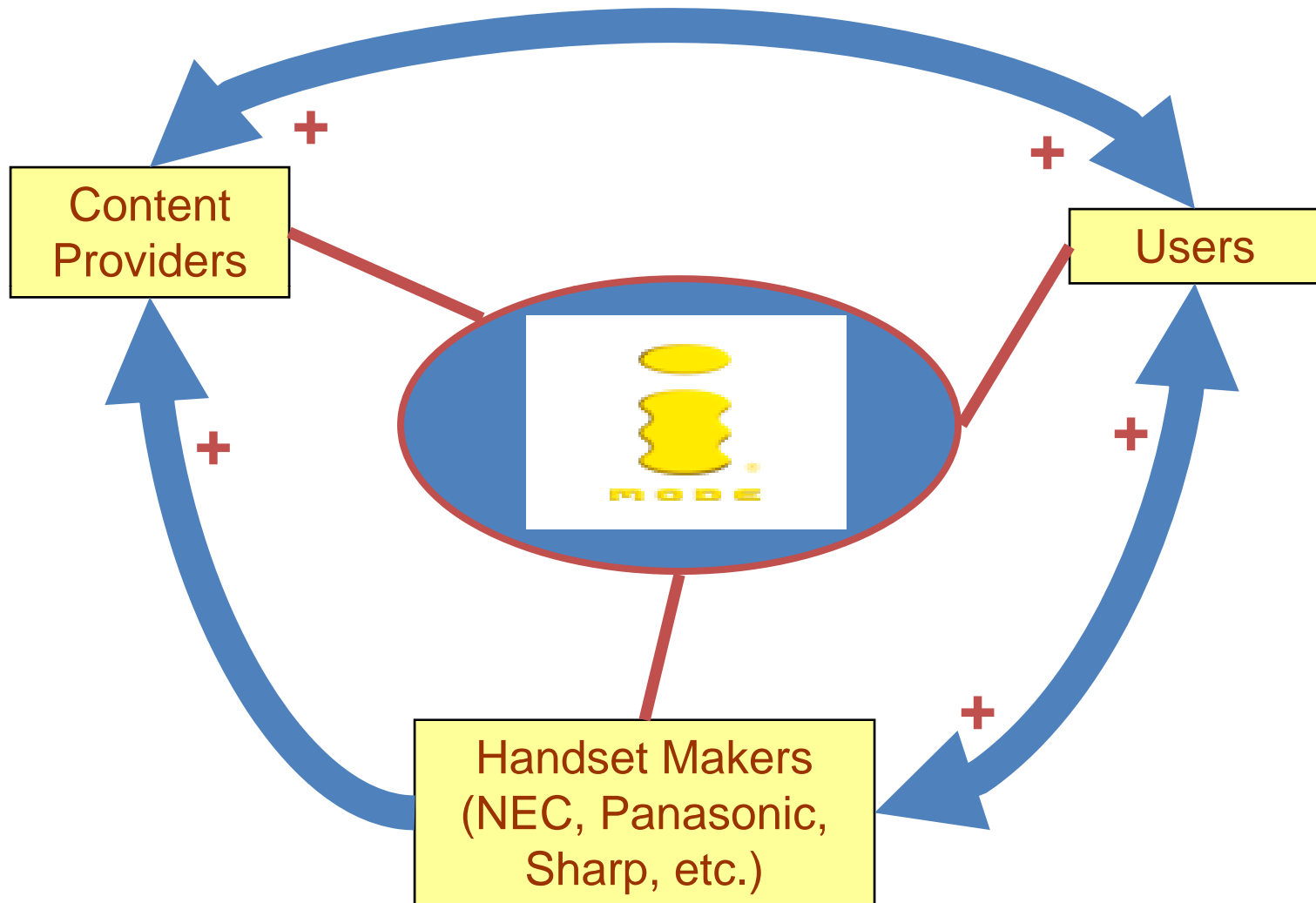
***Ecosystems revolving around multi-sided platforms
(e.g. Microsoft, Apple, NTT DoCoMo)***

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Examples of ecosystems driven by multi-sided platforms (MSPs)



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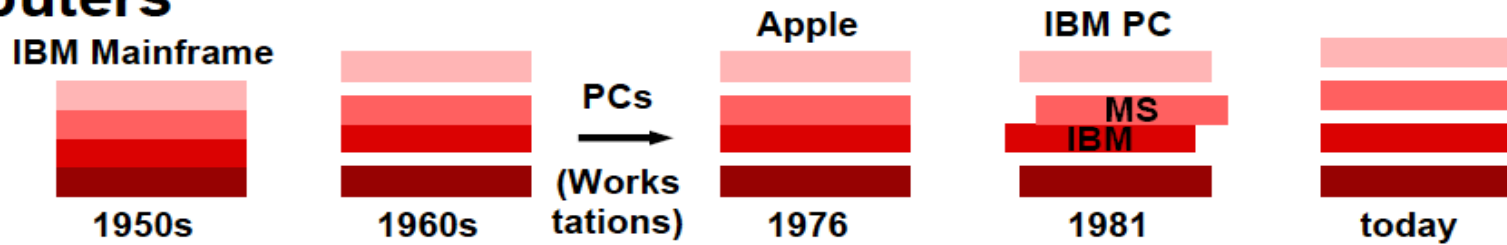
Key characteristics of ecosystems revolving around multi-sided platforms (MSPs)

- MSPs facilitate direct interactions between third-party members of the ecosystem
 - *Reduce search and transaction costs*
- Indirect network effects:
 - Third-party complementors <-> customers
- MSP can indirectly control contracting beyond its boundaries:
 - “platform governance” of *access to and transactions within* ecosystem (cf. Boudreau and Hagiu 2008)

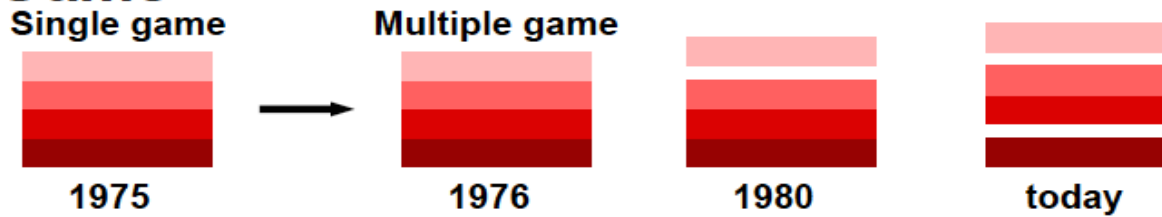
What drives the shift from vertically integrated models to ecosystem & MSP-based industrial structures?

Vertical disintegration

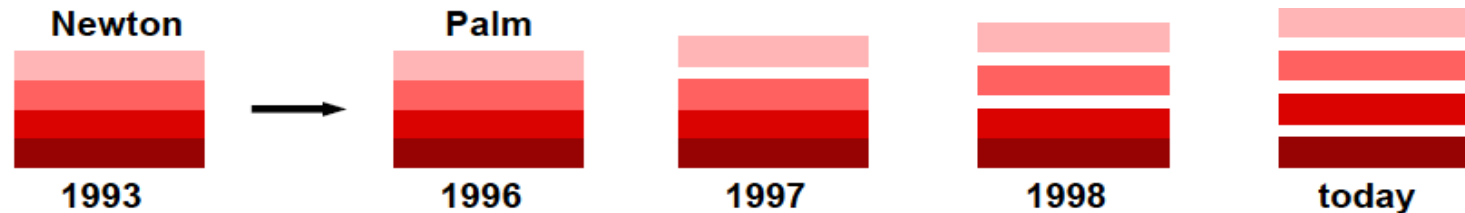
Computers



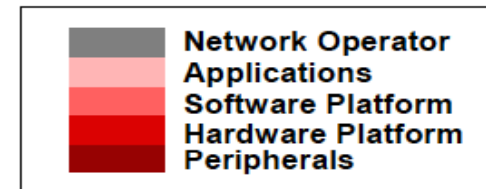
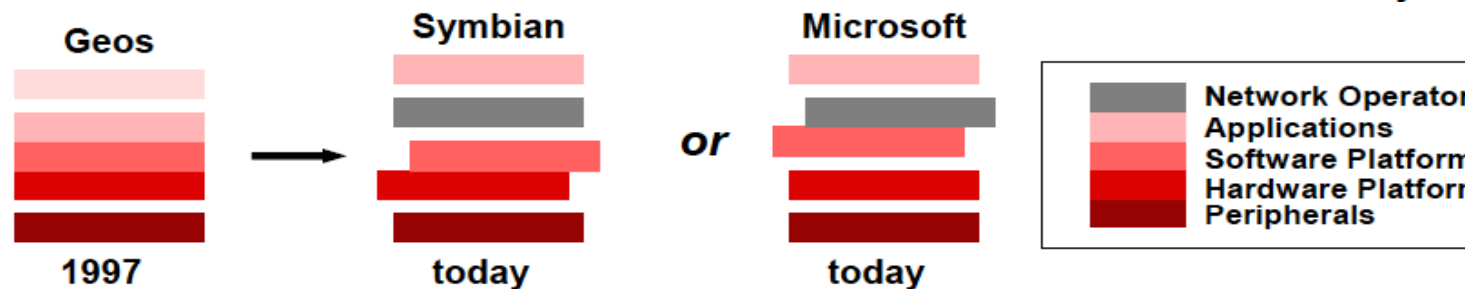
Video Game



PDA



Mobile Phone



- 1) Technological progress -> economies of specialization
- 2) Modularity & standards: decreasing transaction costs of coordinating through the market
- 3) Shift in consumer utility from “integrated solutions” to “preference for variety”

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Sources of economic inefficiency in vertically integrated structures (or hierarchical ecosystems)

- “Lock out” of certain types of innovation:
 - Japan’s software industry – or lack thereof
- Hold-up (opportunism) by ecosystem leaders:
 - Japan’s animation industry
- Excessive dependence on incentives of ecosystem leaders:
 - Japan’s animation industry
 - Japan’s mobile phone industry

2. Background on Japanese innovation

Japan's economic structure

- Large domestic service sector (68% of GDP).
- Most internationally-competitive Japanese businesses are in manufacturing.
- Services/soft goods not competitive internationally.
- Hierarchical industrial systems the norm.

Japan's twin economic challenges

- Increased competition in manufacturing from lower cost countries (China, South Korea, etc.).
- Increased share of the value-chain captured by services and soft goods where Japan is weak.

Japanese economic policy DNA

- Industrialization is the key to economic power (lessons of Meiji, immediate post-war).
- Hostility to foreign capital (low FDI/GDP ratio).
- “Life-time employment” in large corporations, hence little cross fertilization between firms and illiquid labor markets.

Industrial structures

- Pre-war zaibatsus (財閥) conglomerates.
- Post-war keiretsus (系列) structures (some pyramidal, others based on cross-shareholdings).

Based on formal or informal hierarchical “closed systems” as opposed to “open systems” of platform ecosystems.

Legal systems

- Does the Common Law facilitate open ecosystems? Does Japan's code law make open ecosystems more difficult?
- Weak contract-enforcement mechanisms put a premium on in-house development rather than on open systems where third-party contract-enforcement is essential.

3. Three industry cases studies

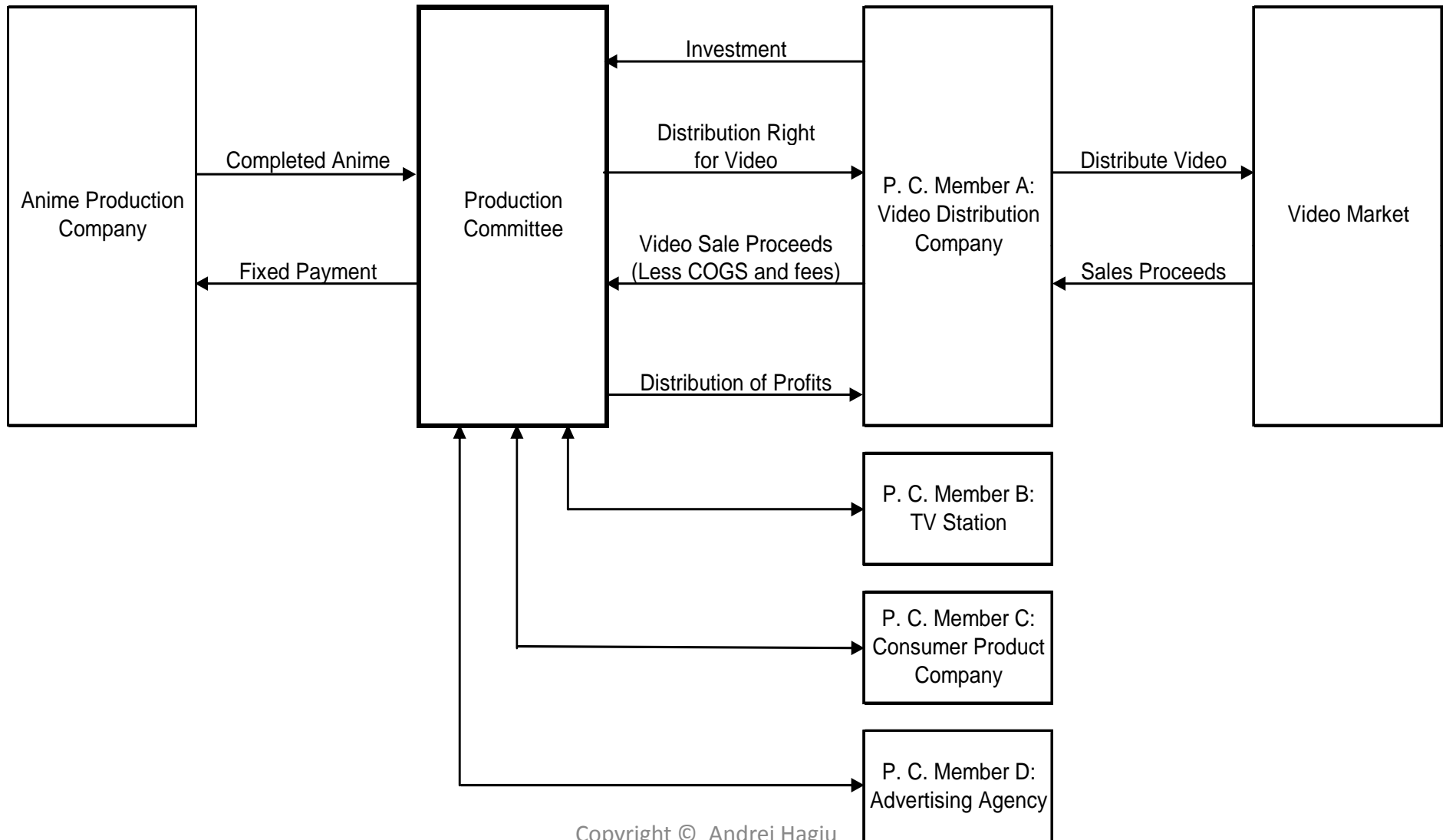
Japan's software industry

- Observation:
 - no standalone software industry in Japan (no companies; no exports);
 - most software bundled with and dependent on hardware systems (Fujitsu, Hitachi, NEC, etc.)
- Key reasons:
 - Early strategies of Japanese computer vendors: free, bundled and customized software -> customer lock-in
 - Customer preference for customized products from long-term suppliers
 - Government and private sector bias in favor of hardware (“monozukuri” モノ作り): cf. large-scale computing projects
 - No catalyst for unbundling (cf. IBM in the US): weak antitrust enforcement
 - No VCs; low labor mobility

Japan's animation industry

- Observation:
 - Extremely creative industry (all genres, all ages)
 - BUT...
 - No Disney/Pixar; no exports/licensing
 - Animation producers small and fragmented
 - Copyrights owned by distributors (TV, DVD, ad agencies), who dominate animation “ecosystem”
- Key reasons:
 - “Production committees”: financing key bottleneck
 - Weak IPR enforcement and recognition
 - No VCs; banks unwilling to lend to businesses without “hard” collateral
 - Animation producers cannot invest in developing their own copyright portfolio
 - “Ecosystem leaders” inherently domestic-focused

Animation: the production committee system - financing and copyrights problems



Japan's mobile phone industry

- Observation:
 - World's most advanced mobile telecoms & Internet market (handsets; services: e.g. contactless debit and credit payment systems on mobile phones)
 - BUT...
 - Handset mfgs very weak in global markets (e.g. top 3 in China: Nokia, Samsung, Motorola)
- Key reasons:
 - Japanese mobile ecosystem extremely hierarchical and dominated by operators (DoCoMo, KDDI) – unlike US, Europe
 - Innovation (services, features) driven by operators
 - Mobile operators: inherently domestic
 - Handset makers: relationship specific investments domestically without value in global markets

4. Discussion and policy implications

- Industry structures stuck in “inefficient” (self-reinforcing) equilibria
 - Japan not capitalizing on some of its foremost innovations
 - Rather than trying to create a “Japanese Silicon Valley” which would take decades Japan should capitalize on existing innovative industries (e.g. anime, telephony)
- What can be addressed by policy:
 - Antitrust enforcement (cf. unbundling and the software industry)
 - Recognition and enforcement of IPR – essential to knowledge and technology-intensive industries
 - Development of venture capital and other sources of financing for SMBs
 - Opening to foreign investment/skilled immigration
 - Better contract enforcement mechanisms to diminish the advantage of intra-firm transactions over inter-company ones.

Thank you for your attention.