Open standards, economics and innovation

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Economics of standards

- Network effect: benefits to single user proportional to number of users
- Network externality: added value of network effect

Economics of standards

- Network effects can form entry barriers for new technologies
- Path dependence, QWERTY, intel 8086, linux/unix...

Economics of standards

- Network effects can form entry barriers for new technologies
- Path dependence, QWERTY, intel 8086, linux/unix...
- Natural monopolies to maximise welfare from network effects
- Monopolies can lead to rent-seeking and capture of network externalities

Economics of standards

- Alternative approach: separate technology from producer
- *Interoperable standards* allow natural monopolies of technologies (standards) while providing for competition among *vendors*

Economics of standards

- Standards and IPR: rights over a standard (*de jure* or *de facto*) allow control or rent-seeking over the standard, thus reducing the competitive effect
- Standards bodies try to limit this controlling behaviour by rights-holders, e.g. by requiring RAND or royalty-free terms

Economics of standards

- If *no* competitive advantage is held by some players solely by virtue of owning rights over a standard, then a natural monopoly of technology can coexist with full competition in the supply for the technology
- (Only) such a *different* economic effect deserves a different term: **open standard**

Types of standards

- Proprietary (“standard”?) technologies
  - Natural monopoly in technology leads to natural monopoly in market for products and services based on that technology
  - Results when access to the technology is available only to the rights holders

Types of standards

- ("Semi-open"?) Standard technologies
  - Natural monopoly in technology arises (*de facto)* or is defined (*de jure)* but some competition provided for in market for products and services
  - Results when access to the technology is available to players other than the rights holders/originators, *perhaps retaining advantages for the rights holders*

Types of standards

- Open standard technologies
  - Natural monopoly in technology arises (*de facto)* or is defined (*de jure)* but *full* competition ensured in market for products and services
  - Results when access to the technology is available to all (potential) players on equal terms providing *no a priori advantages based on ownership of rights, or definition of the technology*

Economic effect of policy

- Different technologies have different economic effects
- Relationship between the natural monopoly of the technology and the extent of competition possible among suppliers of the technology
- Policies towards technologies and standards can achieve different economic effects
- For policy makers it is useful to distinguish between types of standards and the economic effects they can achieve

Different markets, different terms

- Total accounted cost of product development for Internet or office productivity applications can be zero for some suppliers (open source developers)
- Royalty or other (e.g. audit) requirements can prevent such suppliers from operating ...
- ... (and are thus not truly R or ND)

Different markets, different terms

- In markets where huge investments are required for product development, royalties may not pose additional entry barriers
- In markets based on unit sales audit or “no-sublicensing” requirements may not pose additional entry barriers
- In markets where open source developers provide the main existing or potential competition, such conditions do pose barriers, and reduce competition greatly, preventing the “open standard” effect

Standards and innovation

- *Standards inherently limit innovation!*

Standards and innovation

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- This is in the nature of standards:
  - Path dependence
    (qwerty; intel 8086; linux/unix; tcp/ip)
  - Natural monopolies and inertia
    (technology used by everyone)

Standards and innovation

- *Standards inherently limit innovation!*
- This is also the value of standards:
  - Network externality accrues to a fixed technology
  - Value to customers (network)
  - Value to producers: (large market)

Standards and innovation

- *Standards inherently limit innovation!*
- This is also the value of standards:
  - Standards provide a platform that can be assumed
- *A standard provides a platform above which innovation can take place freely*

Standards and innovation

- *A standard provides a platform above which innovation can take place freely*
- Innovation in the standard itself (*across the network*) is successfully achieved only by controllers of the standard
- This is rent-seeking, and prevents others from innovating above the standard
- (pulls the rug out from under their feet)

Policy strategies

- Interoperability is on its own not effectual – many PAs prefer "compatibility" in practice, which is anti-competitive and costly in the long term
- Interoperability with software from multiple vendors should be the sole "compatibility" criterion for all new software procurement

More information

Full FLOSSPOLS report (including “An economic basis for Open Standards”): http://flosspols.org/deliverables.php

Economic impact of open source: www.flossimpact.eu

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