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1 1: The Microsoft Cases

What is the big idea?

Why do software engineers need to deal with legality issues?

Vista: The EU comission is concerned with Microsoft bundling software into the distribution, ex. hand writing recognition and Windows Media player.

What does law say about software size and scope? Topics of this week:

1. The Economics of licensing with simple examples
2. Understanding scope-of-permission goods
3. Computer Software and Network externalities
4. 1994 Anti-trust case
5. ???

1.1 Licensing with fixed costs

Fixed cost means that you have to spend a bunch of money to develop the product. For Windows, we're talking billions of dollars, no matter how many products they sell. This is very different than, say, a coke bottle - cost of developing the product (coke fomula) + cost of material and chemicals. But

a software product is very different - once developed, the cost is rather fixed (like a bridge - once built, it's there).

How are licensing policies influencing use?

Lump-sum licensing: one check a year. Per-processing licensing: one check per processor produced.

Imagine an actual bridge - our consumer has the choice of taking the bridge or "the long way". The bridge costs per use.

M-F worth 10 dollars a day

Saturday

Assume that the bridge has no upkeep costs.

State wants to cover cost of manufacture, and charges \$5. Our consumer values M-F at \$10 and feels fine to pay it - everyone's happy.

Then the state says: "Well, we built the bridge. But our consumer won't use it on Sat/Sun because of our licensing policy. But wait - it doesn't cost anything for us when she uses it, so we're losing on her not using the bridge." And so they develop a unlimited license policy at \$25.

Now the consumer has to think ahead - do I want to buy this monthly pass? Well, I value it \$10 each MTuWThF... At a cost of \$25 it's worth it. AND she now uses it on weekends as well!

We want to avoid licensing policies which discourages consumers from using the product. We need to "line up" social costs and social benefits, private costs and private benefits.

Another example... So the state decides to go back to a revised daily price. We'll charge you \$25/7, which comes out to \$3.57. How often will our consumer C cross the bridge now? We assume 5 times a week, since she values a Saturday cross at \$2.

What's the analogy to Microsoft? Well, Windows has a very high fixed cost - again, development involves billions in investment. So how is Windows licensed? Their goal is of course to

1.2 Scope-of-permission goods

Big distinction between public goods and private goods. The Coke can is a classic private good - only one person can drink the can. A public good is very different - Pr. Picker singing Happy Birthday in the shower this morning does not mean that you cannot sing that song in the shower as well. Software is similar - one person using a copy of software does not interfere with another person's use of their copy (in fact, it might enhance it - more on that later).

"Public" public vs "Private public goods.

Private public: Satellite TV is uniformly distributed to everyone - you just need the technology and decryption key to utilize it. This is the exclusion tool used to make it "private," enforcing payment for the product.

Scope-of-permission goods = non-rivalry, excludability, and zero-marginal cost (Once we have a product, it costs us very little to add features to it.

What's shocking with Windows is not how bundled it is, but rather that it is not more bundled - why does Microsoft Office not come as part of Windows? It wouldn't cost anything to add it! The point is that there is no natural limit to the scope of the product. As a counter example, a fruit basket certainly does. If you don't like apples, the apples in the basket would be a waist (on part of both consumer and producer) since each apple has a unit cost. Packing windows with features that are already developed does not cost anything.

Back to the question: How does law limit software scope? Well, we don't have the physical limits of, say, a fruit basket. Once Microsoft has developed 6 million new features, it doesn't cost Microsoft anything to add it to Windows. The problem comes along when Microsoft opportunistically bundles their product as a response to competition - "Embrace and Extend".

Something we frequently see is a producer creating a free version for market presence, and then offer an exclusive paid-for version for revenue.

Example: Realplayer - download them both and you'll notice that they're practically the application - but the free version is simply has some of the features turned off. Imagine this on the real estate market: "Here's your home - nice 4 room apartment, but you'll have to pay extra for the keys to

the last 2.” Not really possible in much of the real market, but effective in software.

In a pre-network world it was much cheaper to pre-emptively build in functionality as opposed to add on features after the fact. The Internet has radically reduced the cost of such new functionality distribution. Vista has as example intended to add pdf generation capabilities - Adobe obviously did not like this. Microsoft’s responds ”Ok: we’ll make it a free download. We’ll even offer yours as well!” The networked world has thus created a decentralized functionality distribution with an arbitrary software feature cost.

Demand curve of good bundles:

A simple linear demand curve: half of our consumers are happy, since they pay less than they valued it. However, the consumers who valued it less won’t buy - an economist calls this a dead-weight-loss. People who would have paid more, pays less. People who would pay a little pays nothing.

As we bundle products together, the value/demand curve associated with the product looks more and more like a box (as according to Central Limit Theorem). This maximizes our utilized area. So why did Microsoft start bundling? Utilizing such CLT phenomena is certainly part of it.

Why does Microsoft have three monopolies? (Windows, Office, and IE). Because they chose not to have just one. Think Microsoft AllEncompassing: An ”integrated” version of Windows, Office, and IE. This would be *easy* for them - example: all version of Vista will be on the DVD delivered to the consumer - what matters is which version you have a key to unlock.

1.3 OS Economics

Large, fixed costs on producer side.

Consider the demand-side - Network externalities: the more people using a product, the more valuable it is (cell phones, IM’s). The result is that we may stick to old standards for too long (ex floppy drives - didn’t disappear until USB flash drives).

2 2:

2.1 Sherman Act

The core US anti-trust stature - wording hasn't changed much since it was written. Problems: What's a restraint of trade? Unreasonable restraint of trade. What's to monopolize? If you have a monopoly, do you monopolize?

District courts under Second circuit under Supreme Court. Monopolize means having a monopoly and abuse of that position (much similar to EU).

The mission then is to understand what it means to monopolize in a particular situation. 1994 Microsoft case: before the complaint was even filed, there was a settlement. They put into place a contract for settlement. Monopoly on DOS market was acquired correctly, but was it then abused?

Covered products were outlined (windows, MS-DOS, etc). What does it not cover? It does not cover Windows NT, since it's a highly technical/industrial software (huh?).

Bundling and integration: Microsoft licensing agreement was restricted from tying (to enforce being two products together, example tabulator machine and specific cards). A competitor is then *withheld* from production of the second product. So the act was to limit Microsoft's ability of tying products together. However, this was not to limit Microsoft from developing integrated products.

So Windows 95 and a browser, is this tying two products together, or is it integration of products?

Q: Can judges/jurys/lawyers sufficiently understand the difference?

Back to Microsoft licensing strategies: Lump sum pricing (annual fat check) vs per-processing pricing (number of 80286 machines produced). Why was the EU concerned?

Kaypro uses MS-DOS. Picker comes up with his OS and wants to sell it to Kaypro. Kaypro, however, is tied to MS since in case one they have the annual check to write anyway, and in case two, whether or not they put MS-DOS on the machine, they have to pay the license.

One the one hand, this is a safety mechanism for Kaypro; on the other, this creates an entry-barrier for Picker OS. So what do we do? We force MS to start doing per-copy licensing. Problem: have to keep track of copies and have to worry about pirating.

In the end, this really did not change much for Microsoft. Question: So

what influence does US law system have on the software business?

2.2 1998 Microsoft case

Filed in district court on May 18, 1998. Market definition (the most important detail in a anti-trust lawsuit): Two product markets

PC Operating Systems written for the Intel x86 instruction set (Not unix, not mac os...)

Internet Browsers

Microsoft's position: monopoly share (80%) in operating systems.

Browsers emerging as competitor for the OS - does everything in its ability to keep its OS monopoly in competition with other browsers.

Gate May 26: "A new competitor "born" on the Internet is Netscape. Their browser is dominant, with 70% usage share, allowing them to determine which network extensions will catch on. They are pursuing a multi-platform strategy where they move the key API into the client to commoditize the underlying operating system. They have attracted a number of public network operators to use their platform to offer information and directory services."

What does this mean? Instead of writing OS specific software, software will be written using the Netscape API.

(Why hasn't Google done this already? When will Google announce the complete OS-independent "Online System"?)

"One scary possibility being discussed by internet fans as whether they should get together and create something far less expensive than a PC which is powerful enough for Web browsing. This new platform would optimize for the data types on the Web. Gordon Bell and others approached Intel on this and decided Intel didn't care about a low cost device... "

2.3 solution?

Microsoft loses the case, and judge Jackson suggests that Microsoft should be broken up into an OS company and an applications company.

Market definition: Intel-compatible PC operating systems.

Exclusions: Macintosh, Information appliances, Future competitors: (Netscape navigator and Java)

Microsoft says that you cannot define the market without including our competitors, Netscape and Java. This ended up not going through.

3

How is Microsoft using their design of software to exclude competitors?