

Micro Economics



A Network of Platforms

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..... The Internet has been called a “network of networks.” Although the phrase once had meaning, it is misleading today.

Leading firms and their business partners view the commercial Internet through the same lens they view the rest of computing. To them, the Internet is a market in which to apply their platform strategies.

That is my point. The commercial Internet should be called a “network of platforms.”

This might sound like a philosophical rather than a pragmatic observation, but hear me out. Most firms and users are better off with platforms than without. Yet, if the behavior of prior successful platforms predicts the future, problematic issues will inevitably arise.

Coordinating activities

Typical use of Internet-related services requires multiple independent firms successfully executing a set of technically interrelated activities. Even the simplest of activities, such as sending email, involves many participants, such as the writer of software for the email client, the carrier of the data, and the operator of the server. To provide services efficiently, firms must agree in advance as to how their business activities will interrelate.

Focusing solely on the technical action misses how firms address the challenges involved in making all parts interoperate. Commercial firms typically negotiate arrangements in advance with

all relevant participants or do it all themselves. In business parlance, firms either negotiate standards or they offer their own platform for accomplishing the task.

Platforms are a standard bundle of components and designs around which vendors build services. Ever since the Internet emerged, many leading businesses have preferred to address challenges with platforms.

The list of important platforms on the Internet is long. They include proprietary platforms, open source platforms, and business platforms.

This is an enormous evolution: the present arrangement looks nothing like the Internet of the late 1980s, before the US National Science Foundation privatized the backbone, which led to the full commercialization of the network.

Platforms on the Internet

Today, many observers believe that Google—which did not even exist when the Internet first commercialized in the mid-1990s—has the most effective platform on the Internet.

Google’s approach is interesting. Sometimes it makes code accessible to programmers for mash-ups, building services that attract users and developers, seemingly with no direct way to generate revenue. Sometimes it retains many proprietary features, particularly in its search engine, which also supports a lucrative ad-placement business. Google takes action to prevent anyone from imitating it.

For example, the caching, indexing, and underlying engineering tweaking activities remain hidden from public view.

The firm profits from shaping the actions of others. Many other firms expend considerable resources optimizing their Web pages to appear high on Google’s search results, and Google encourages this by letting potential advertisers, who will bid in Google’s auctions, know which search words were most popular.

To its credit, Google seems to manage a community of programmers with some success. For example, Google’s relationship with a large community of application developers for its Chrome browser plays a central role in the firm’s recent efforts in the handset market—an effort known as Android.

Networking equipment provider Cisco is another prominent platform provider for the Internet. For many years, Cisco made most of its profit from selling hubs and routers, so the platform strategy was rather straightforward. Cisco aspired to growing closely related businesses, offering users a nearly integrated solution to many networking problems.

At the same time, Cisco kept out of service markets and server applications, leaving that to integrators, consultants, and software vendors. That way, Cisco did not compete with its biggest business partners.

Cisco balanced acquisitions and internal innovation, growing into some new areas by acquiring start ups (more than 150) since 1995. Not every acquisition worked,

but a substantial number did—hence, the firm’s expansion into many new markets.

More recently, Cisco branched into consumer markets (with its purchase of Linksys). The firm also has moved into some server (competing with HP) and some software/service areas related to videoconferencing and telepresence (by purchasing Webex, for example). Cisco no longer draws the boundary where it used to, and it is unclear how wide a scope the firm wants its platform to cover.

Wait, there is more . . .

The Internet value chain supports many other platforms, of course. Microsoft is perhaps the next best known.

In the early 1990s, Microsoft offered TCP/IP compatibility in Windows as a means of enhancing its networking software, as well as to support functionality in some of its applications, such as Exchange. In the mid-1990s, Microsoft offered a browser, partly as a gateway toward developing a broader array of Web services, and partly for defensive purposes.

Although Microsoft continues to support these commercial positions and profit from them, the firm has not had as much success in other aspects of its commercial Internet ventures. MSN, search, mobile OS, and related activities have not yielded sustained enviable success (yet). Only the firm’s investments in Xbox Live have generated a significant amount of Internet traffic.

Another PC firm, Intel, has an Internet platform strategy too. Its strategy emerged as the company invested far afield from microprocessor manufacturing, such as PC motherboards. Intel’s most important Internet activity came from sponsoring a Wi-Fi standard for laptops under the Centrino brand. Intel has funded, infrastructure development and a range of efforts in wireless technology. More recently, it has invested heavily in WiMax.

I could describe many other proprietary platforms, such as IBM (servers and systems), Research in Motion (BlackBerry), Apple (iPhone and iPod), Yahoo! (search, news, and mail), Oracle (enterprise databases), E-Bay (auctions), Verizon (cell phones and Internet access),

AT&T (U-verse), and Amazon (as a retailer, and in its content-delivery system).

I could also spend thousands of words on the range of Web 2.0 platforms, such as Facebook, YouTube, and Flickr. These platforms facilitate a high degree of collaboration in user communities, using either general-purpose licenses or copyright licenses designed by the Creative Commons.

Each of these platforms deserves a longer description, and the absence of explanation here is due solely to space constraints, not to their lack of importance.

Open source

Open source platforms differ sharply from proprietary platforms. More to the point, open source platforms substitute for commercial platforms in some areas and shape competitive behavior in others.

How does open source do this? It raises transparency for developers about code and its evolution. In some organizations, open source also substitutes participatory/collective decision-making for unilateral decision-making.

In some respects, the open source movement is not at all new as an institution for platform development on the Internet. For many years, transparency and wide participation have played a role in the Internet Engineering Task Force. The IETF did not use the term “open source” when it started, but its standardization process strongly resembles the modern open source model.

Several important open source models find different ways to coexist with proprietary platforms. For example, the World Wide Web Consortium (W3C) produces and supports Web standards. These standards shape the platforms of many firms. The W3C has an interesting model: firms pay to join, and Tim Berners-Lee and his staff retain some authority to make decisions unilaterally after consulting with the membership.

Linux is a better-known example of an open source platform. Linux began as a volunteer project by Linus Torvalds, but today is financially supported by a consortium operated by Torvalds. This consortium

supports a range of businesses operated by many firms, including IBM and Red Hat.

I could describe other hybrid open source platforms on the Internet. Various models have emerged, including communities organized by MySQL (for databases), Mozilla (Firefox), Webkit (for the Safari and Chrome browsers), and Apache (Web servers). Once again, I will stop due to space constraints, not lack of importance.

What is the potential problem?

Early commercial platform leaders did four things: compete, expand, seed, and defend.

A platform leader competes with others in its own layer, or product niche. That is usually fine, because it leads to lower prices, competition in functionality, and accelerated rollout of new services.

Many platform leaders expand to new niches—that is, they develop new functionality and attach it to an existing platform. Generally, that brings new functionality to users. Anybody watching software platforms in the last two decades has seen such action from Microsoft, Oracle, SAP, and others.

A platform leader also might seek to seed—namely, fund businesses outside its area of expertise, if doing so increases demand for the core platform product. For example, Intel, perhaps the most famous practitioner of this activity, funds technical “rabbits”—that is, manufacturers of frontier components.

Only one type of conduct—defending—is worrisome. Defending leads dominant platform firms to deny interconnection to others, to block the expansion of others, and, in an extreme case, to smother the seeding of others.

When Internet alarmists worry about proprietary platforms, defending is what they most fear. Microsoft, AOL, Intel, and WorldCom have all shown tendencies toward such behavior in the recent past. Open source advocates who claim that they benefit the Internet usually mean they are preventing defensive activity by leaders with defensive tendencies.

Will such questions arise for others in the future Internet? That remains to be seen.