# Concentration is a business model

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The DEDR call for paper asks us to analyze whether specific aspects of protocol design lead to unexpected deployment issues, most notably the evolution to a state where market share is concentrated on just a few actors. My thesis is that concentration mostly happens when determined actors harness network effects and economies of scale to build a dominant position.

We are all familiar with the concept of network effects. The very emergence of the Internet was caused by one such effect, when the TCP-IP technologies built enough momentum to displace competitors like ISO, SNA or DECNET. When a network grows, its becomes more attractive to future users, resulting in further growth and accelerated adoption until becoming effectively “the only game in town”.

In the period leading to the dot com boom in the 90’s, we started to observe that these network effects applied to software product and networking services. After a period of experimentation, successful technologies would grow very quickly, and the intense period of growth would act as a crucible to select just one winner. There are multiple factors at stake. The very low marginal cost of producing another copy of a successful software or adding another user to a successful service plays in favor of the bigger competitors. The bigger players will also benefit of network effects such as familiarity with the solution, and training of users, often reinforced by proprietary standards and various forms of intellectual properties.

Sophisticated investors and venture capitalists are aware of these effects and develop tactics to try “win the race” during the growth phase. They would for example pour investment on a promising start up, so it can grow faster than its competitors during the technology adoption phase. They may also buy competitors outright, in order to preserve the advance of their favored company. They do that because the winner takes all and because once a race is won network effects make it very difficult for competitors to emerge. The current Internet and technology landscape results from a number of these races.

There is probably a grain of truth in the notion that some defects or holes in the development of protocols enable winners to emerge faster. For example, standards often define basic interoperability but leave large areas unspecified, allowing strong players to innovate and gradually build a dominant position. But in many cases innovation happens entirely above the standards. Facebook, for example, was developed using web and Internet standards, and simply innovated on top of them.

Like many others, I dream of an Internet in which multiple companies will compete, and in which the winners of past races will not accrue unreasonable power, and in which new entrants can freely innovate. But I also think that this can only happen with a deliberate effort to build distributed solutions and compete against the centralized systems. This amounts to breaking the network effects that support the centralized servers. Concentration is a business model. Opposing it requires massive investments, supported by a massive movement.