

Upstream, Why?

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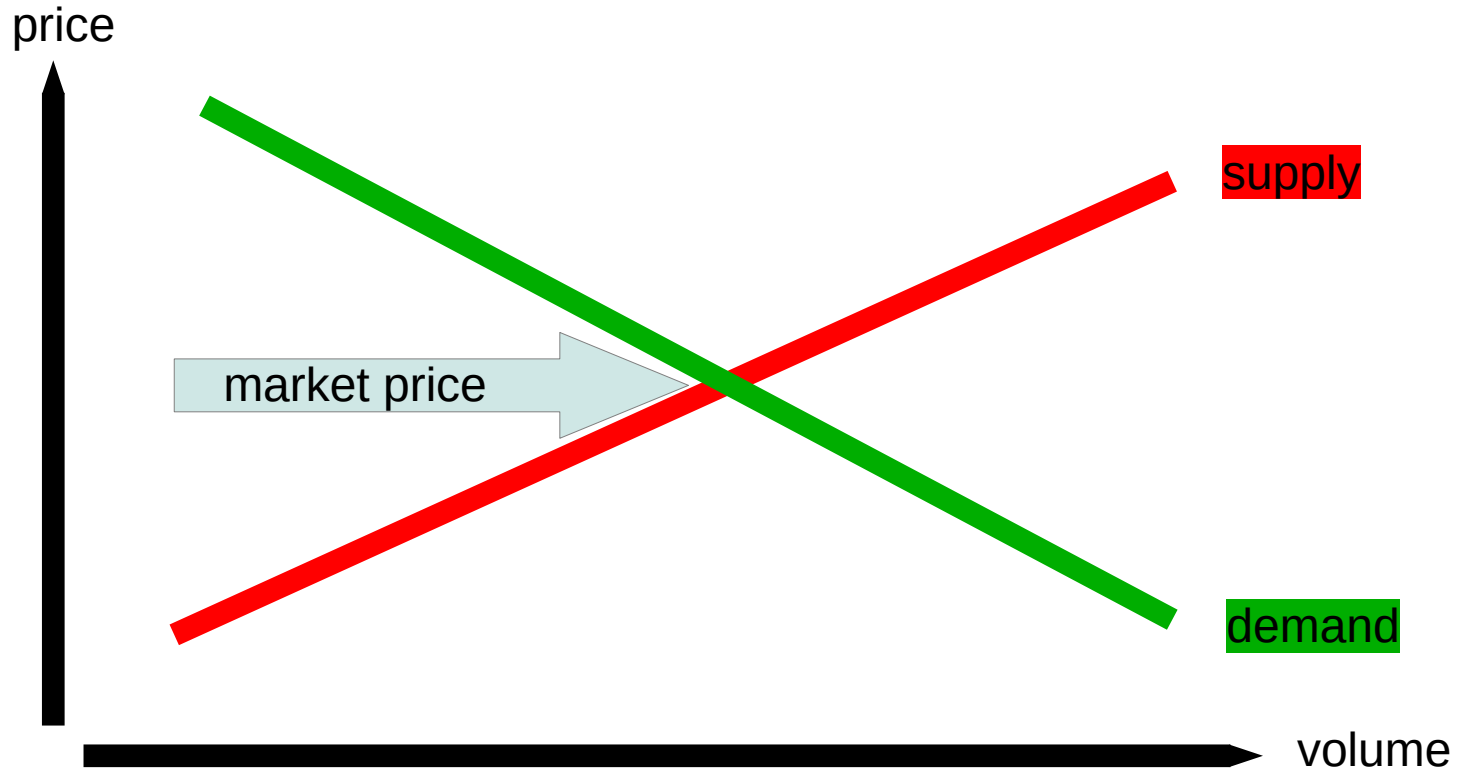
me

- 10+ years of kernel maintaining in graphics
- plenty chats with all gpu hardware vendors
- upstream/Intel both-ways ambassador role

Upstream Myths

- it's communism!
- «all bugs are shallow»
 - but guided fuzzing, valgrind, ...
- mistaking appearance for essentials
 - license
 - public repo, issues, all on github
 - foundation

Eco 101: Markets



Eco 101: Supply Side Costs

- long term/fixed cost
 - depreciation of investements, interest on loans, ?
 - investement: R&D, training, production ramp, ?
 - barriers to entry/exit a market
- short term/incremental/marginal cost
 - raw material, production labour, services, ...
- market price can drop to only marginal cost!
 - e.g. hydro power plant

Eco 101: Efficient Market

- market price = marginal cost
- no barriers to entry/exit
- does not mean «good» or «bad»
 - sometimes great for buyers
 - often not so great for sellers
- e.g. financial markets or logistics as close approximation

Upstream Open Source

- marginal cost of software = zero
 - open source license removes barriers to entry
- **upstream open source = efficient software market**

Upstream Open Source

- marginal cost of software = zero
- open source license removes barriers to entry
- upstream open source = efficient software market
- all about maximizing competition
- but economic value = 0\$
- very unusual, because it destroys a market, not create one

Barriers to Entry: Be Nvidia

- be the tech leader
- big margins pay for big R&D budget, to keep the lead
- unstable business model
- many more think they lead than actually do

Barriers to Entry: Open Core

- open source core features, proprietary extensions
- misunderstanding open source as free labour
- CLA (contributor licensing agreement) for exclusive advantage
 - has become a red flag
- permissive licenses more accepted, but not exclusive
- community forks when you try to aggressive monetize
 - unless you lack massive adoption
- unstable business model

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- unstable business model
 - reliably results in failures in every economic downturn

Eco 101: Complementary Markets

- cars&fuel/electricity for individual mobility
- flights&hotels for holidays
- inkjet printers and ink cartridges ...
- lower market price
 - increased demand in complementary markets

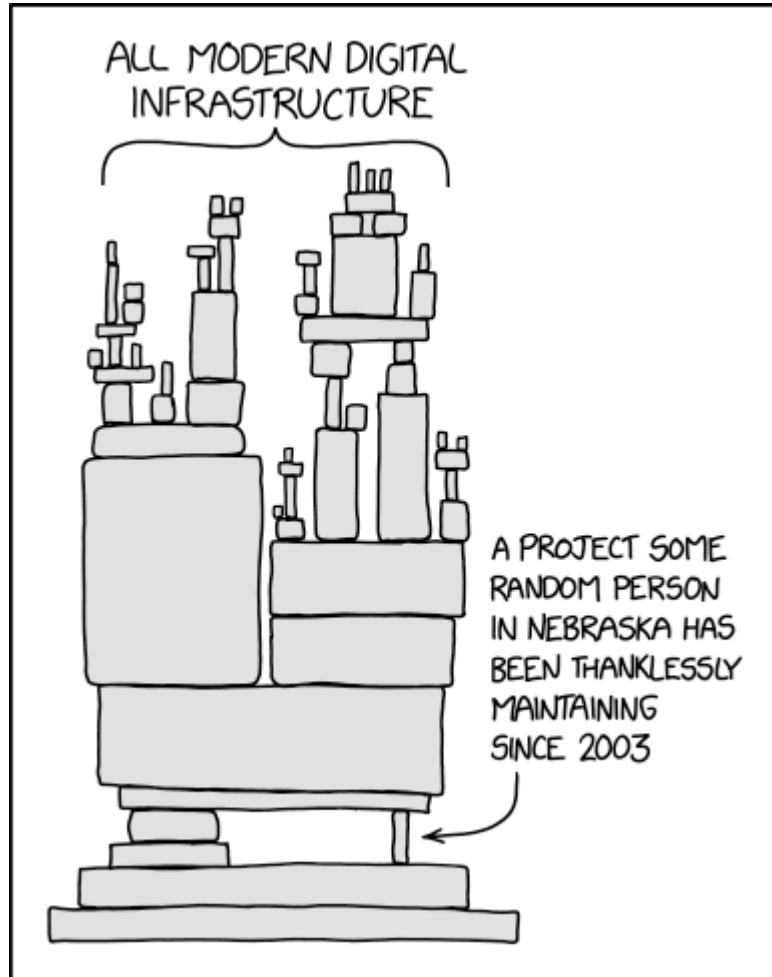
Upstream Business Case

- destroy margin/profits in a specific software market
- sell complementary product
 - hardware
 - support contract
 - customization, extension, consulting in general
 - integrated services (cloud, Anything-as-a-Service, ...)
 - application on top of open source base
 - ...

Barriers to Entry: Upstream Culture

- unusual business case
- very unusual power dynamics
- years (individual engineer) to decade+ (entire org) to adjust
- hard to predict the tipping point towards efficient market
- easy to be too late, therefore be early
- stay tuned for part 2

And Individual Engineers?



- no market value, no salary
- part 2 will start here
- <https://xkcd.com/2347/>

Summary&Questions

- upstream open source = efficient, maximally competitive market
- understand your upstream business case:
 - know which software market to rid of margins&profits
 - have a complementary product to sell