THE BOTTOMLESS DATACENTRE
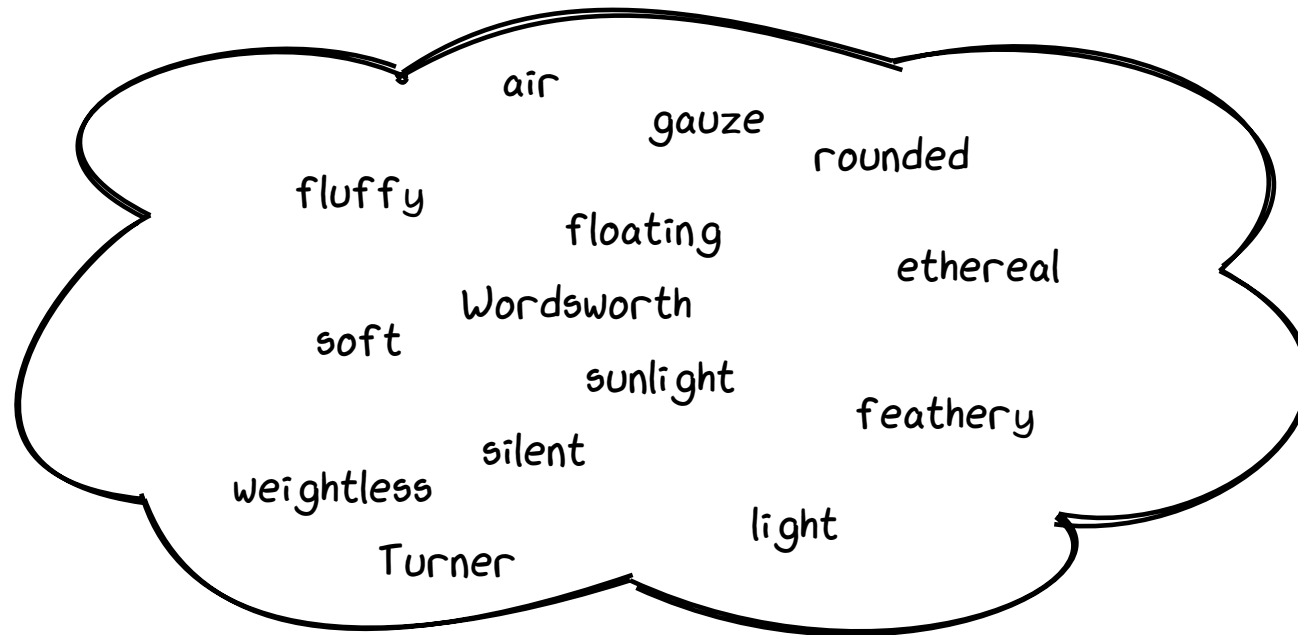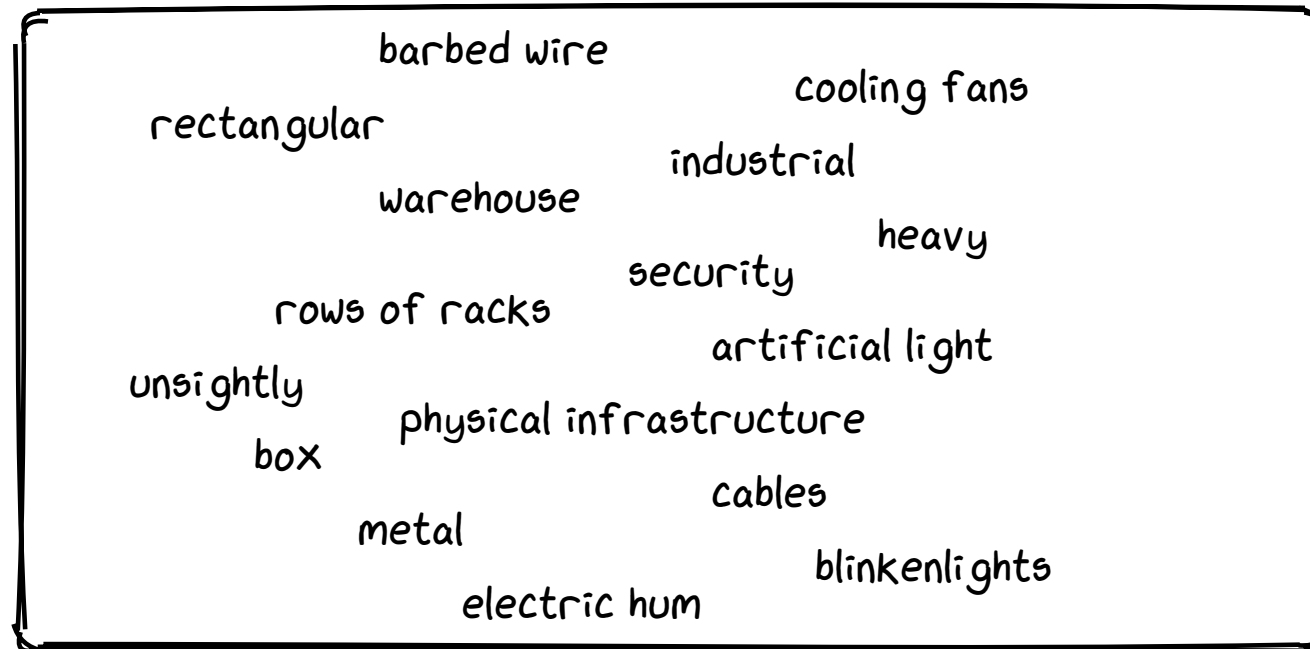
sustainable cloud computing

Gerald Schmidt
@03spirit
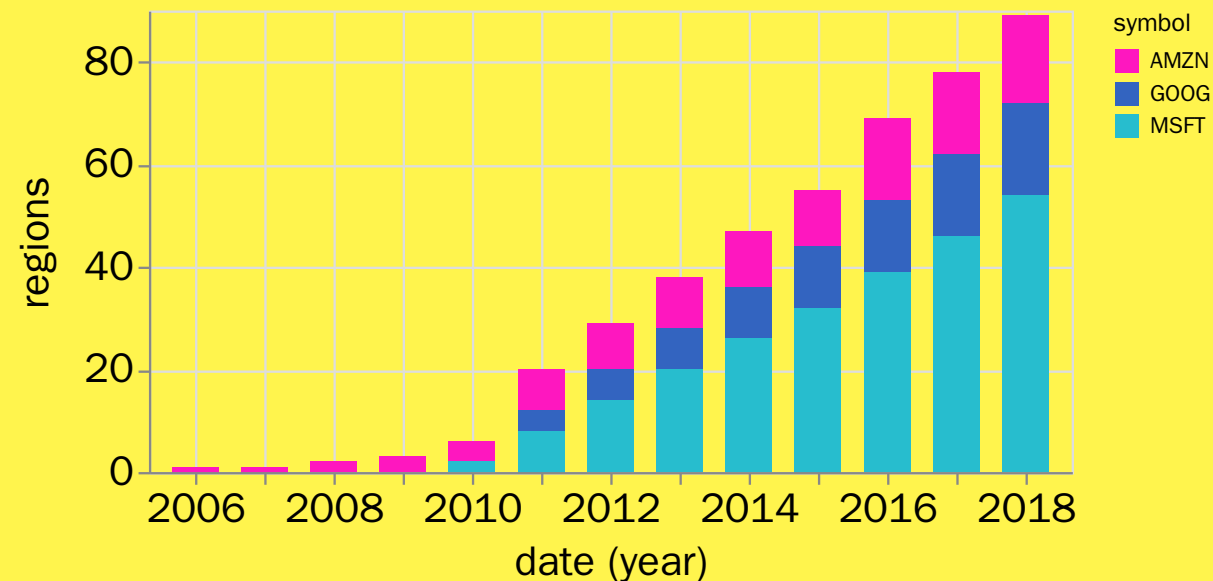
NEWSPEAK

air

gauze

rounded

fluffy

floating

ethereal

soft

Wordsworth

sunlight

feathery

silent

weightless

light

Turner

GROUNDED

barbed wire

cooling fans

rectangular

industrial

warehouse

heavy

security

rows of racks

artificial light

unsightly

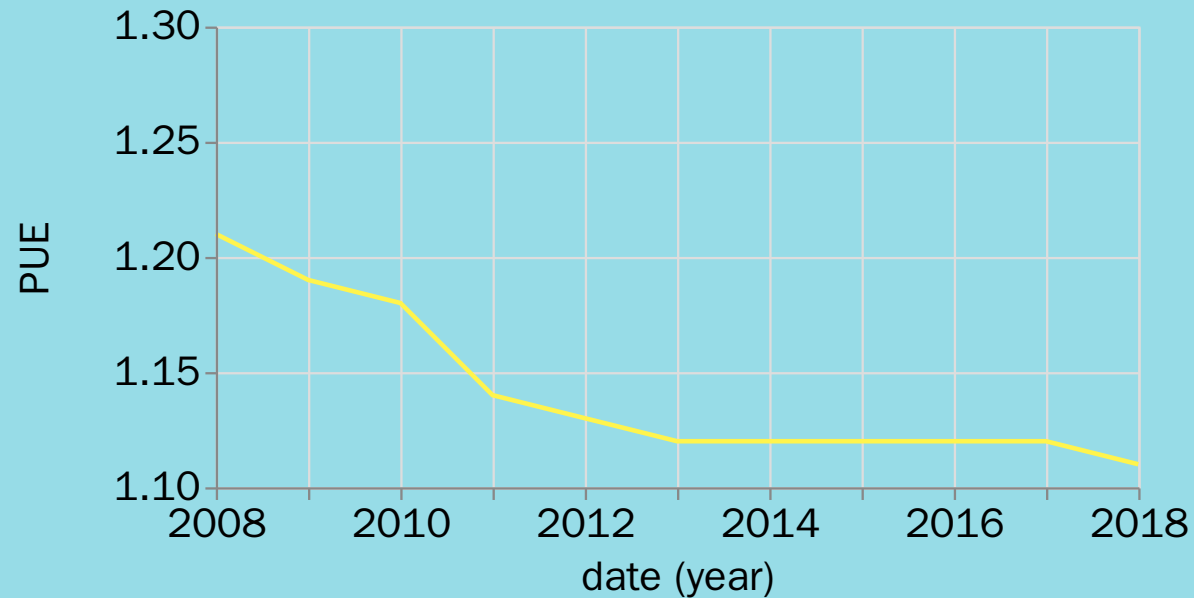physical infrastructure

box

cables

metal

blinkenlights

electric hum

COMPUTE-1 AND UP

Region data based on the AWS, GCP and Azure blogs.
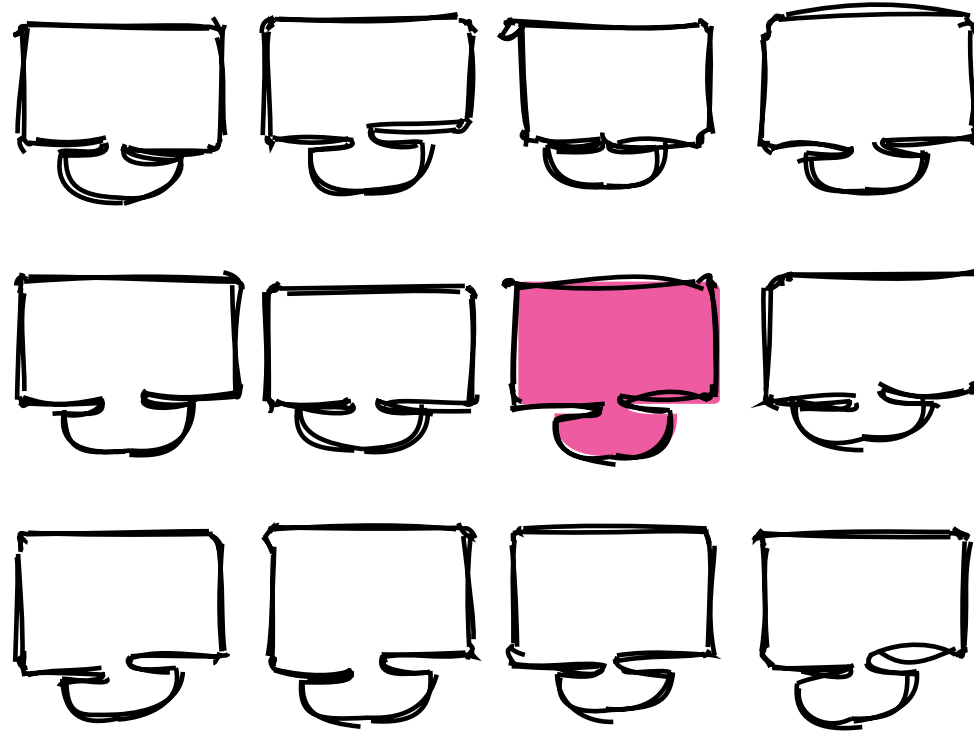Some missing data points interpolated.

INCENTIVES

$$PUE = \frac{\text{Watts in}}{\text{IT watts}}$$
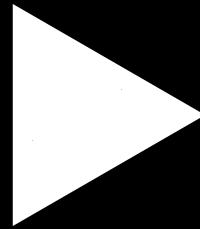

Power usage effectiveness data by Google Data Centers
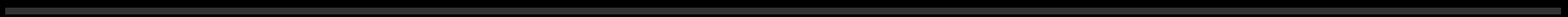
MORE DATA MORE PROBLEMS

I SHOT THE SCREEN

PHOENIX CI

RECIPE

```
FROM golang:1.11.1 as builder
WORKDIR /go/src/github.com/gerald1248/k8s-network-policy-viewer/
COPY * ./
RUN go mod download && go get && go vet go test -v -cover && \
    go build -o k8s-network-policy-viewer .

FROM ubuntu:18.10
WORKDIR /app/
EXPOSE 8080
COPY --from=builder .../k8s-network-policy-viewer /usr/bin/
USER 1000
CMD ["k8s-network-policy-viewer", "-s=true"]
```

THE MISSING THREE PER CENT

We should forget about small efficiencies,
say about 97% of the time:
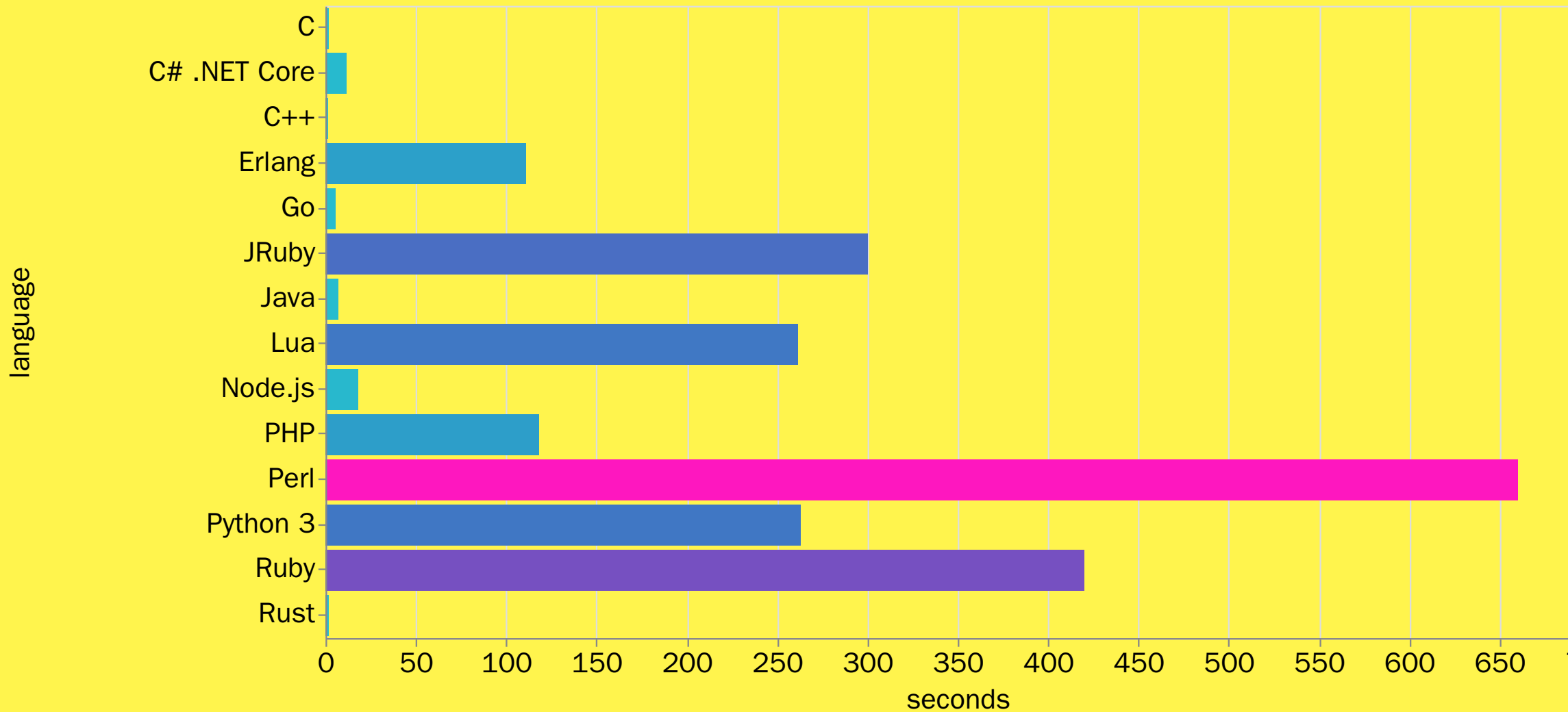premature optimization is the root of all evil

— Donald Knuth (?)

THE VIEW FROM LEMANS

Program to where the performance puck is going to be, not where it has been
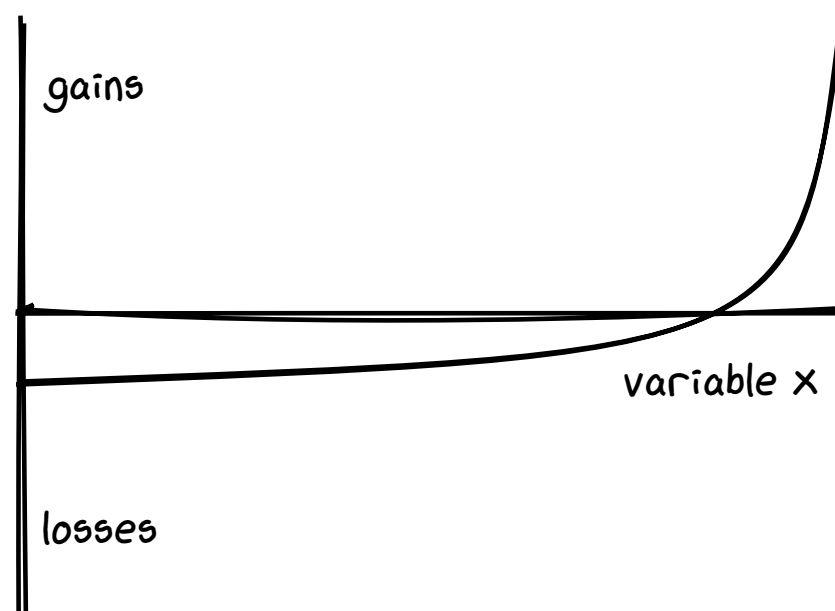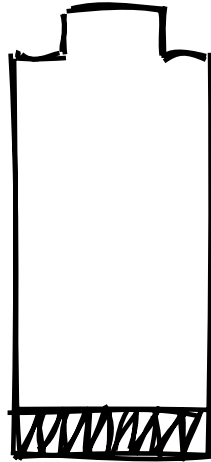
— DHH

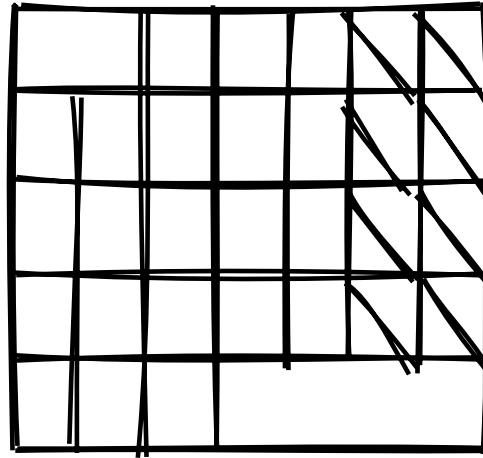# MANDELBROT

Source: benchmarksgame

CONVEX DISTRIBUTION

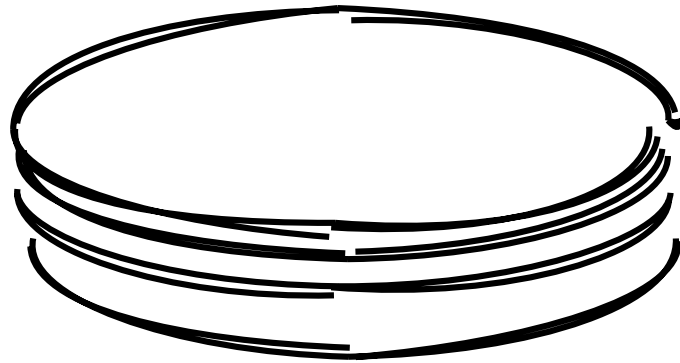Adapted from N.N. Taleb. 2012. *Antifragile*. NY: Random House, p. 273.
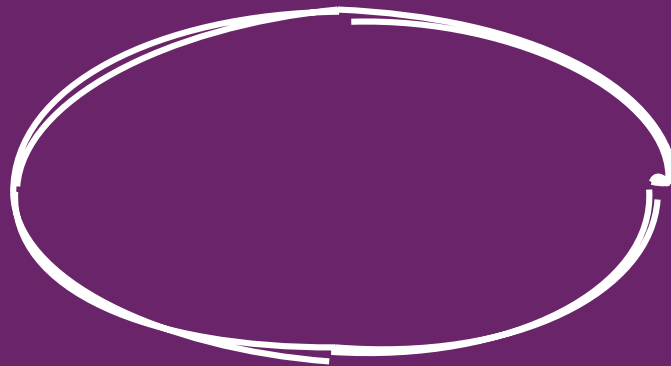
MOBILE

EMBEDDED

PAY FOR WHAT YOU USE

EVERYTHING COUNTS IN LARGE AMOUNTS

The myth of infinite supply carries many costs
It's up to us to bring compute consumption under control
The big three have no incentive to promote compute sustainability

THANK YOU

Slides built with Markdeck by Arne Hilmann
Artwork courtesy of a2s, a2sketch and Vega-Lite
Typography OpenSans and xkcd-script
Source on Github

ThoughtWorks®