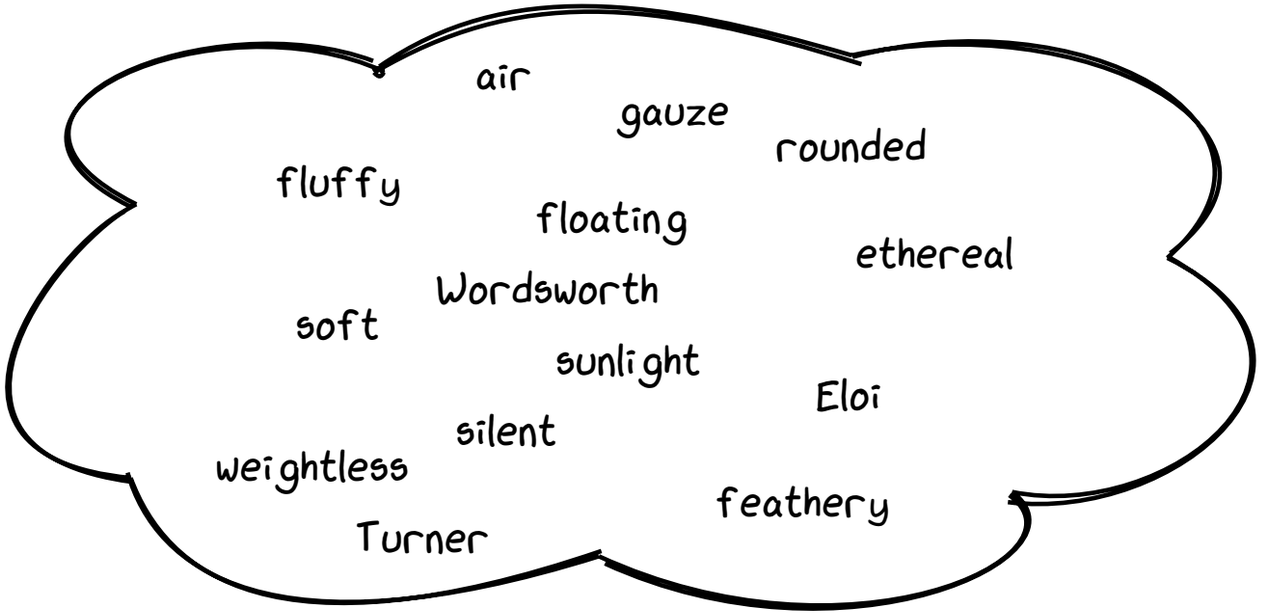
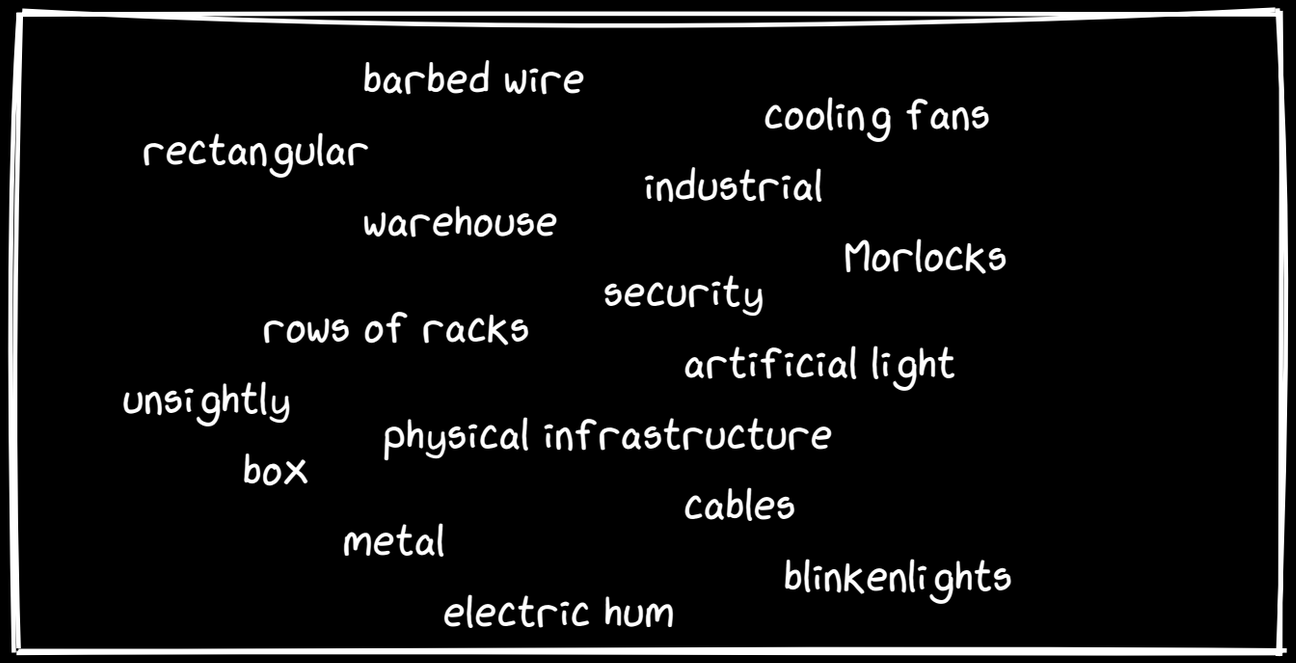
THE BOTTOMLESS DATACENTRE

Gerald Schmidt
@03spirit

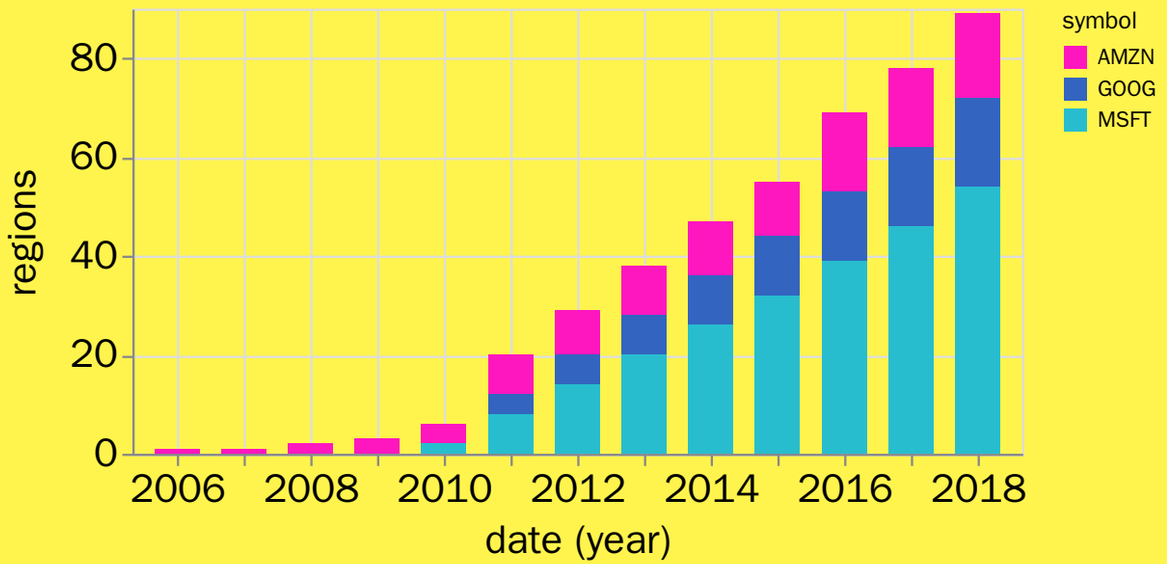
NEWSPEAK


air
gauze
rounded
fluffy
floating
ethereal
Wordsworth
soft
sunlight
Eloi
silent
weightless
feathery
Turner

GROUNDED


barbed wire
cooling fans
rectangular
industrial
warehouse
Morlocks
security
rows of racks
artificial light
unsightly
physical infrastructure
box
cables
metal
blinkenlights
electric hum

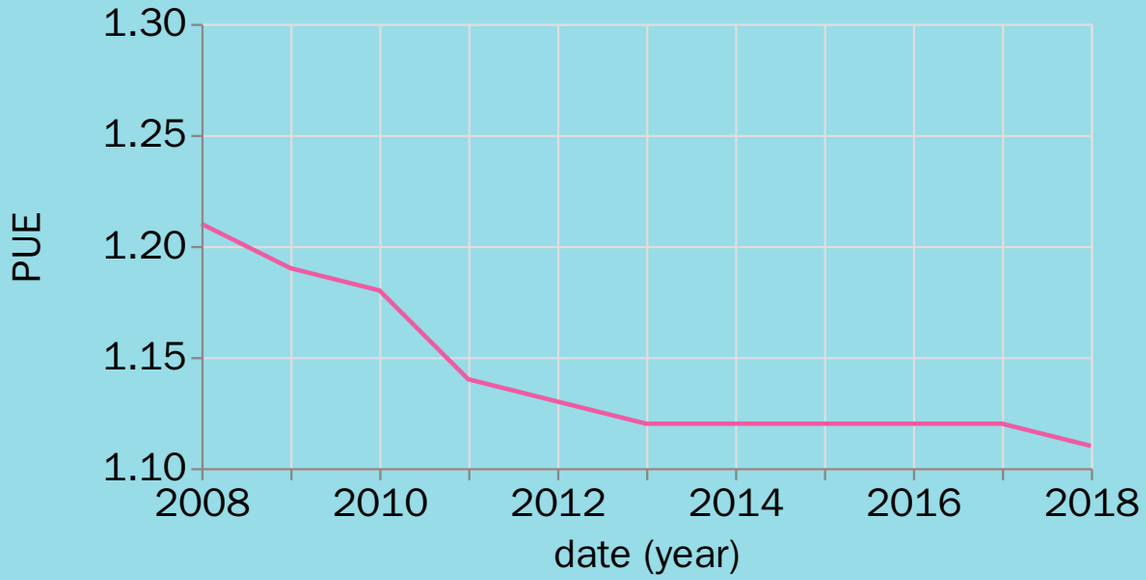
COMPUTE-1 AND UP



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

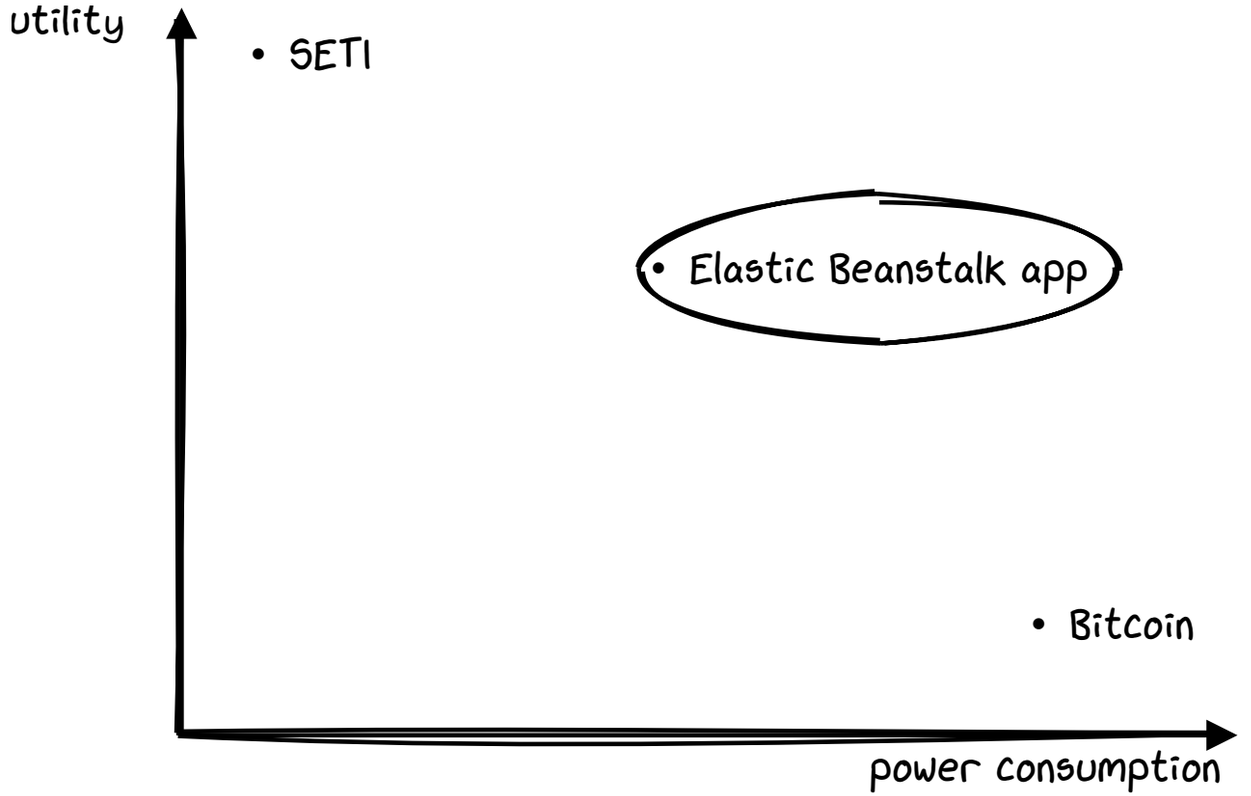
INCENTIVES

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



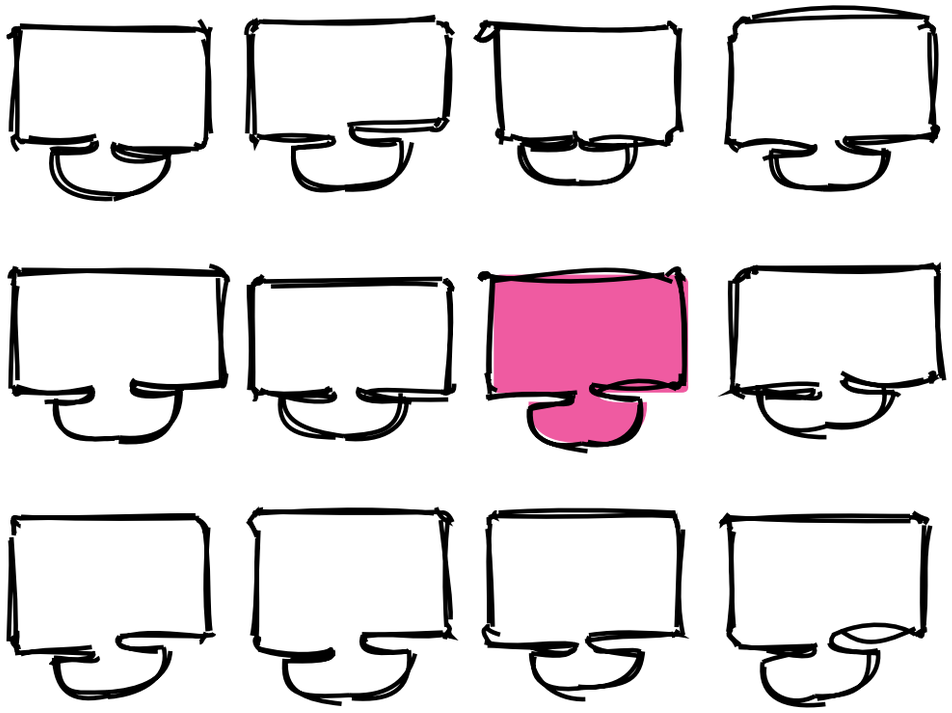
Power usage effectiveness data by Google Data Centers

ENERGY MIX


utility
• SETI
• Elastic Beanstalk app
• Bitcoin
power consumption

MORE DATA MORE PROBLEMS

1,000,000 SCREENSHOTS



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

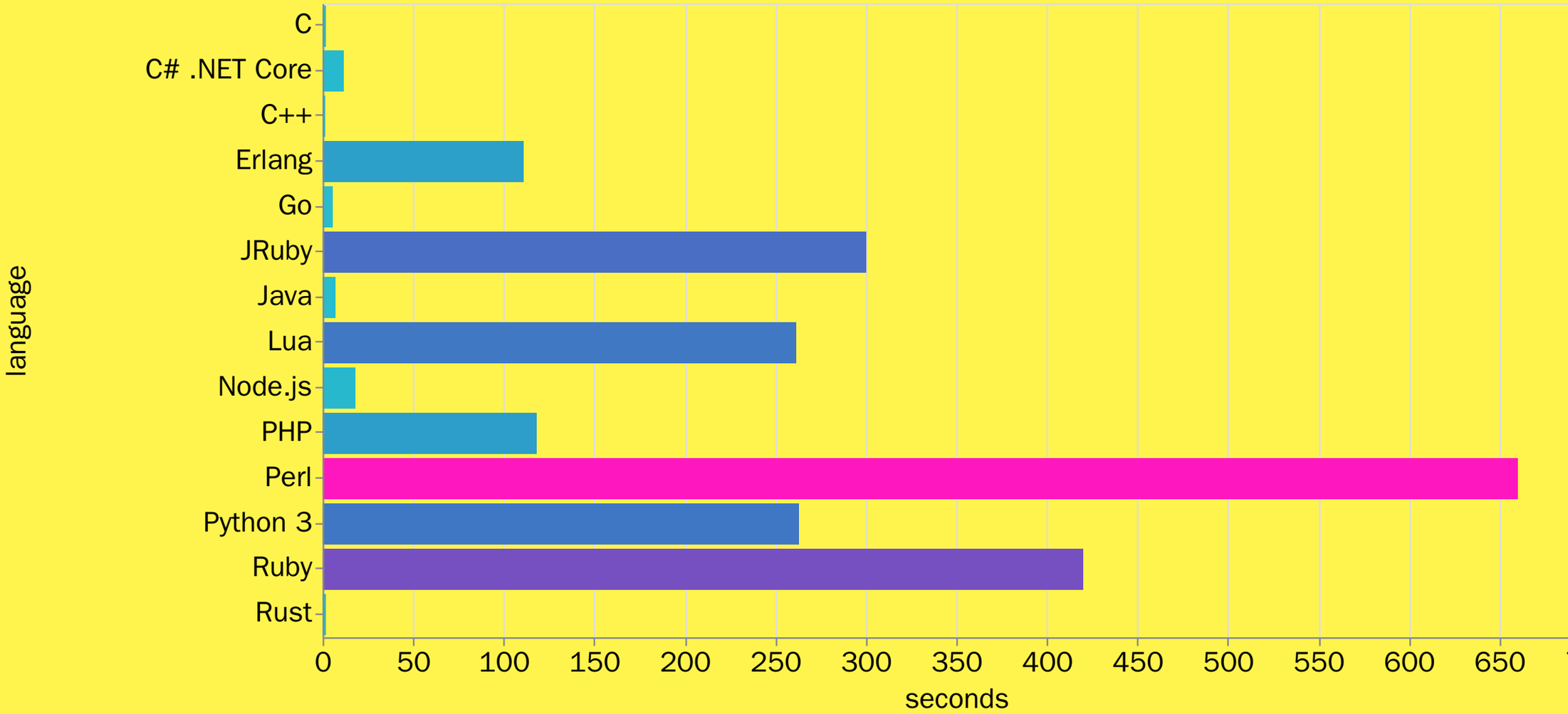
> We should forget about small efficiencies,
> say about 97% of the time:
> premature optimization is the root of all evil
>
> – Donald Knuth (?)

THE VIEW FROM LEMANS

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

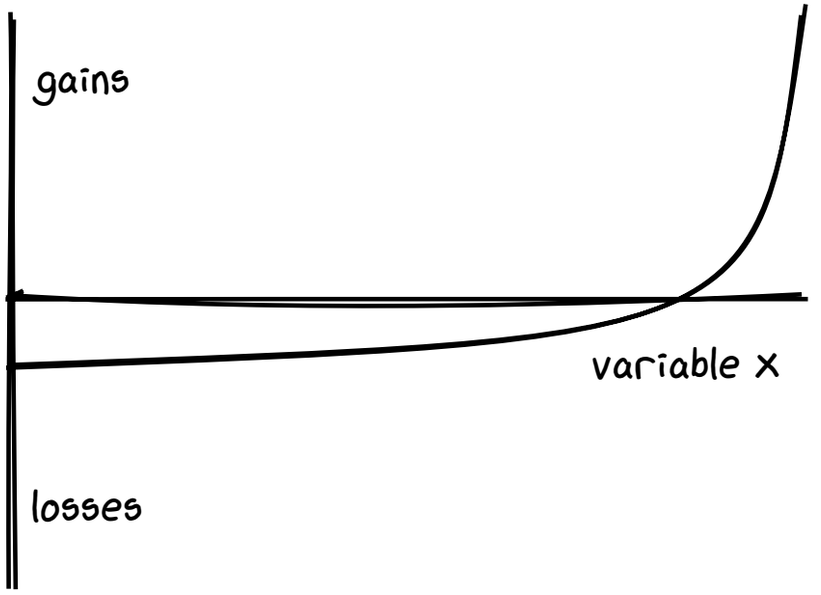
– DHH

MANDELBROT



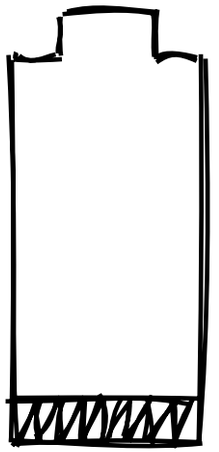
Source: benchmarksgame

CONVEX DISTRIBUTION

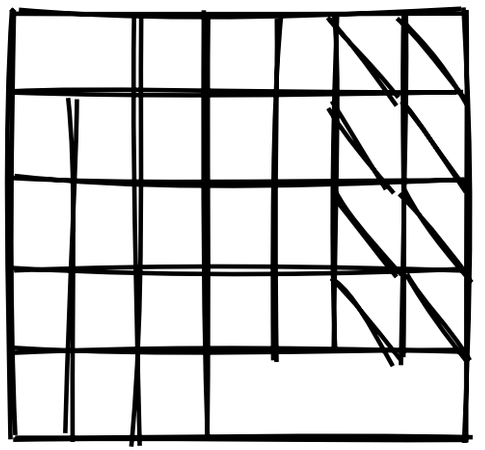


Adapted from N.N. Taleb. 2012. *Antifragile*. NY: Random House, p. 273.

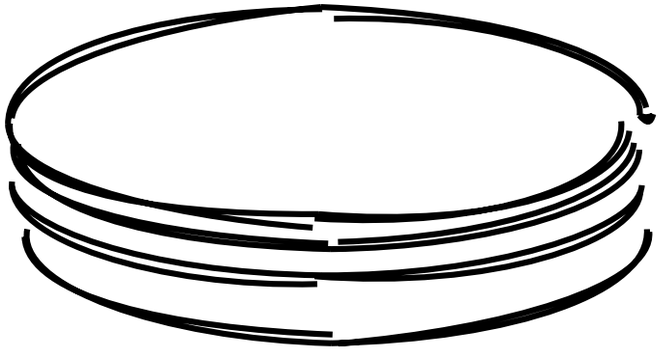
MOBILE



EMBEDDED



PAY FOR WHAT YOU USE



The myth of infinite supply carries huge costs
It’s up to us to bring compute consumption under control
The big three have no incentive to promote compute sustainability
Everything counts in large amounts

THANK YOU

Slides built with Markdeck by Arne Hilmann
Artwork courtesy of a2s, a2sketch and Vega-Lite
Fonts OpenSans and xkcd-script
github.com/gerald1248/bottomless-datacentre-slides

ThoughtWorks®