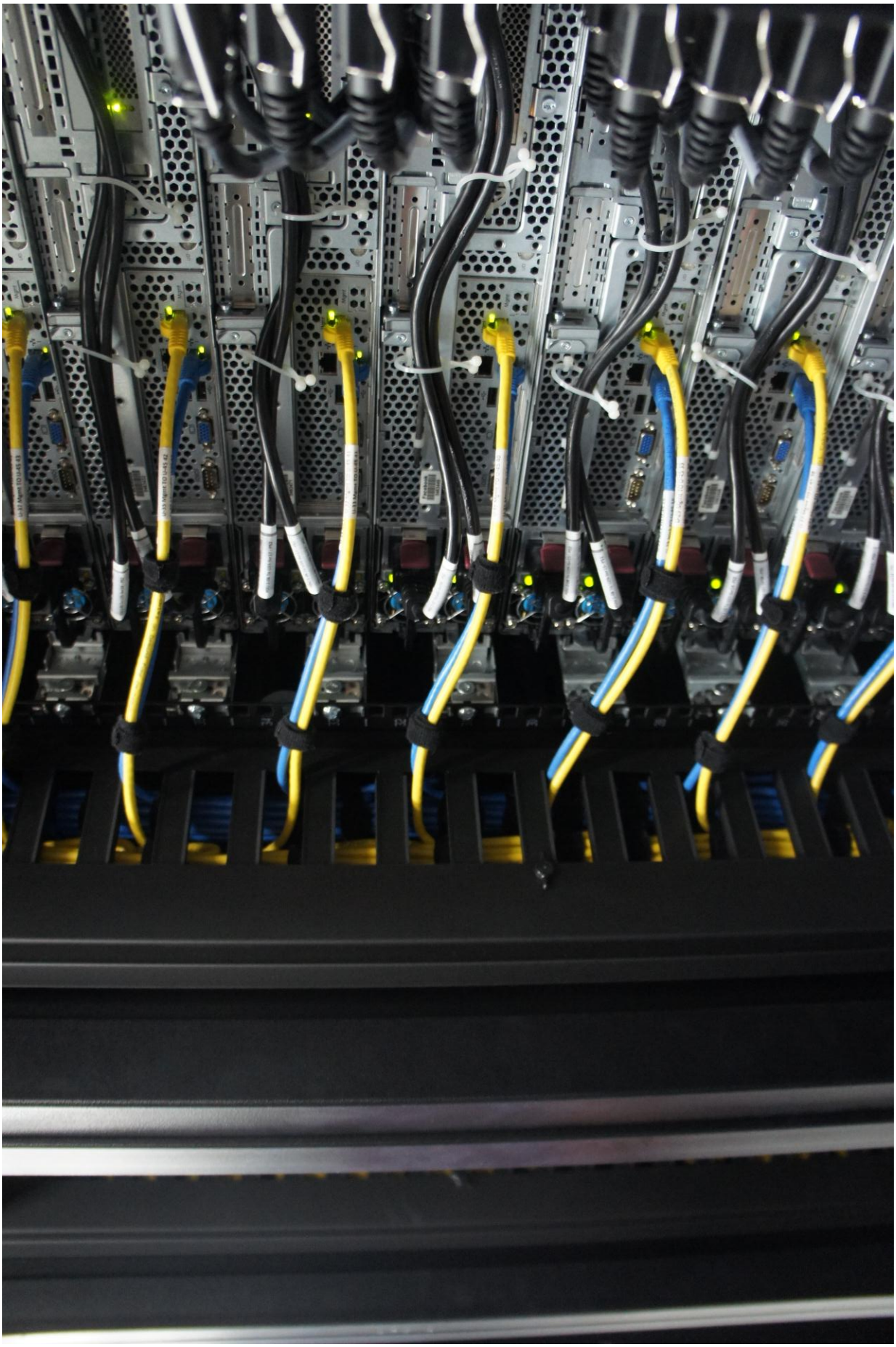
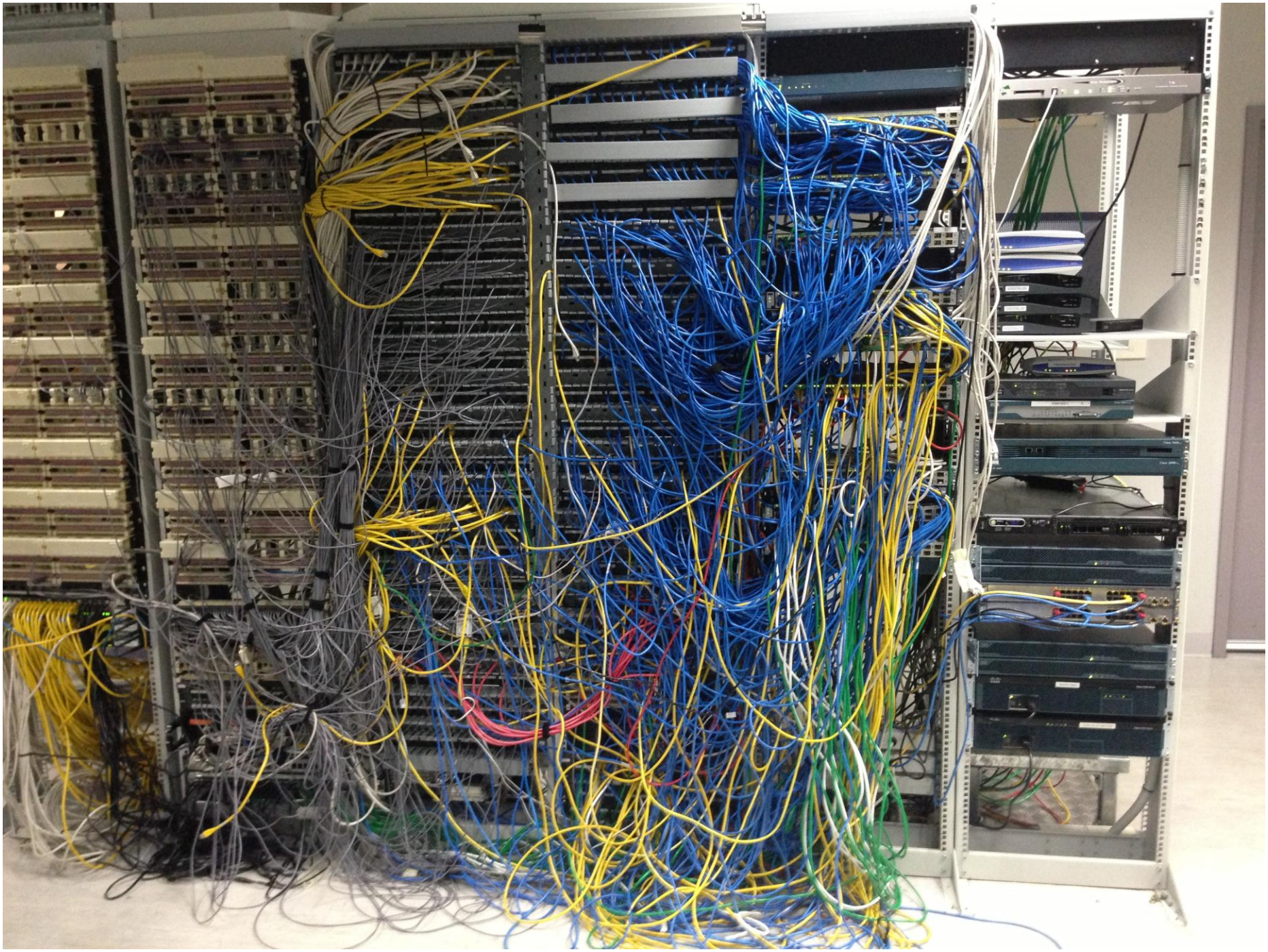
How did we end up here?

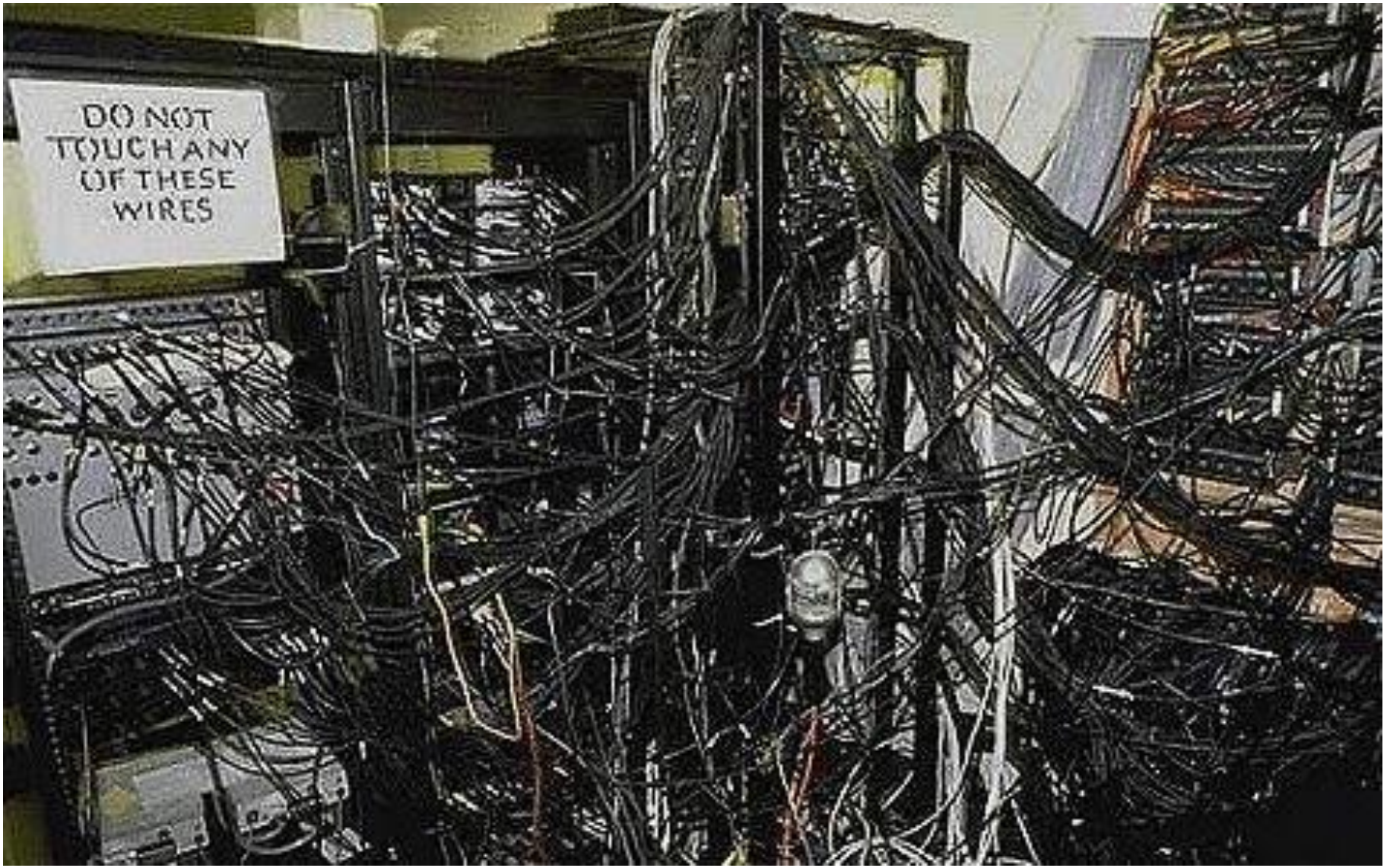
Trisha Gee - @trisha_gee

Todd Montgomery - @toddlmontgomery

Shout out: Martin Thompson - @mjpt777






DO NOT
TOUCH ANY
OF THESE
WIRES

How bad can things really be?

Software Project Success Rates

	Successful	Challenged	Failure
Ad-hoc	49%	37%	14%
Iterative	61%	28%	11%
Agile	60%	28%	12%
Traditional	47%	36%	17%

- Dr Dobbs 2010

Software Project Success Rates – by Team Size

	< 10	11 - 25	> 25
Ad-hoc	70%	58%	40%
Iterative	88%	68%	55%
Agile	83%	70%	55%
Traditional	69%	51%	50%

- Dr Dobbs 2010

Well that's the optimistic view!

Software Project Success Rates

Successful: 32%

Challenged: 44%

Failure: 24%

– Standish Group Chaos Report 2010

Software Project Failure Rates

< $350,000: 20%

$350,000 - $1,000,000: 25%

> $1,000,000: 28%

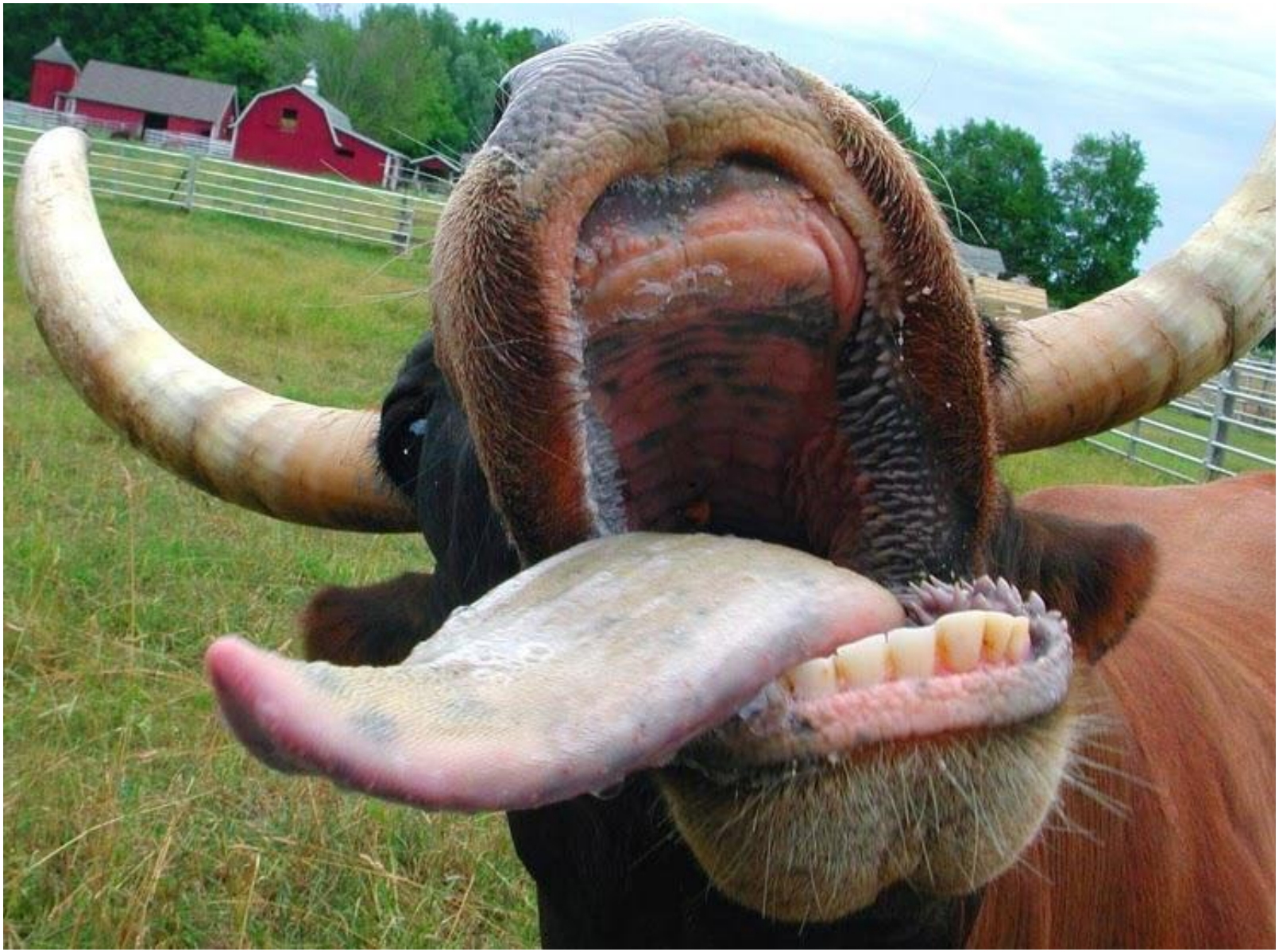
– Gartner 2012

In a study of over 5400 large scale projects (> $15m)

17% go so badly that they threaten the existence of the company undertaking them

– The McInsey Group with Oxford University 2012

Sacred Cows - It’s BBQ Time!!!



Enterprise Software

ent·ter·prise

noun \ˈen-tə(r)-ˌprīz\

: **a project or activity that involves <u>many</u> people and that is often <u>difficult</u>**

: **the ability or desire to do <u>dangerous</u> or difficult things or to solve problems in <u>new ways</u>**

Source: http://www.merriam-webster.com/

Naming Matters !!!


The Architect
BUILDING GREATER LIES
FOR THE GREATER GOOD

TM

open source

Product Management

Minimum Viable Product ?

Product Owner ?


GO BACK
YOU ARE GOING
WRONG WAY

Technologists ARE part of the business

Take responsibility for ROI

How can I get an answer for the minimum investment?

Agile Methods

CHILDREN MUST HAVE ADULT SUPERVISION

Water-scrum-fall

What really matters?

Need to focus on learning, feedback cycles, and outcomes

There is an uncomfortable truth…

“What would have been different if you were not involved?”

Shared Mutable State

“…Shared Mutable State...” the most feared words in computing

…if not they should be!

HERDING CATS.

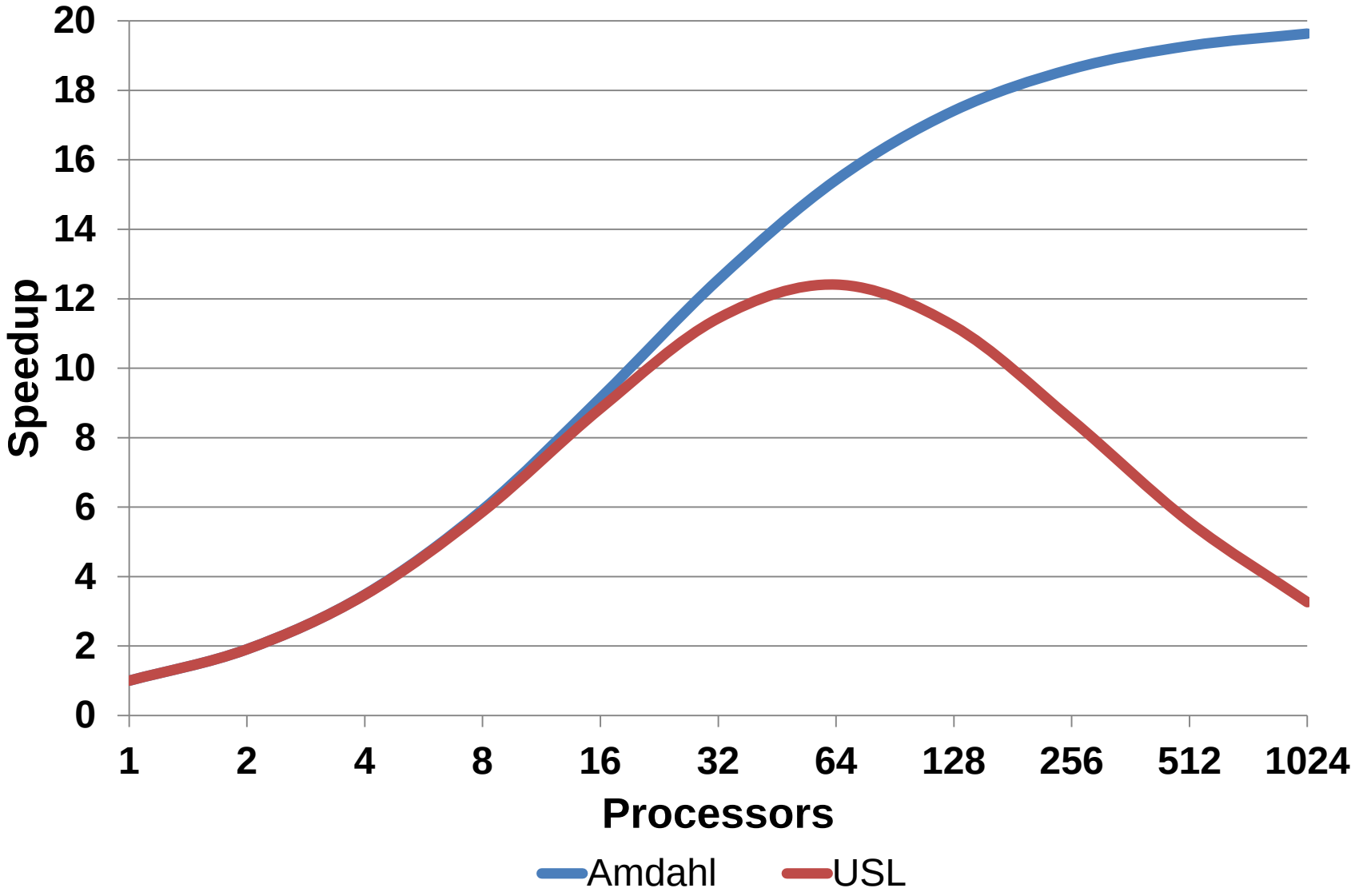
Not so difficult actually.

Shared Mutable State should only be used for systems programming

Embrace append-only,
single writer,
and shared nothing designs

If you don't...
math will hunt you down and
there is nowhere to hide!

Universal Scalability Law



Be ruthless in reducing complexity

Text Encoding

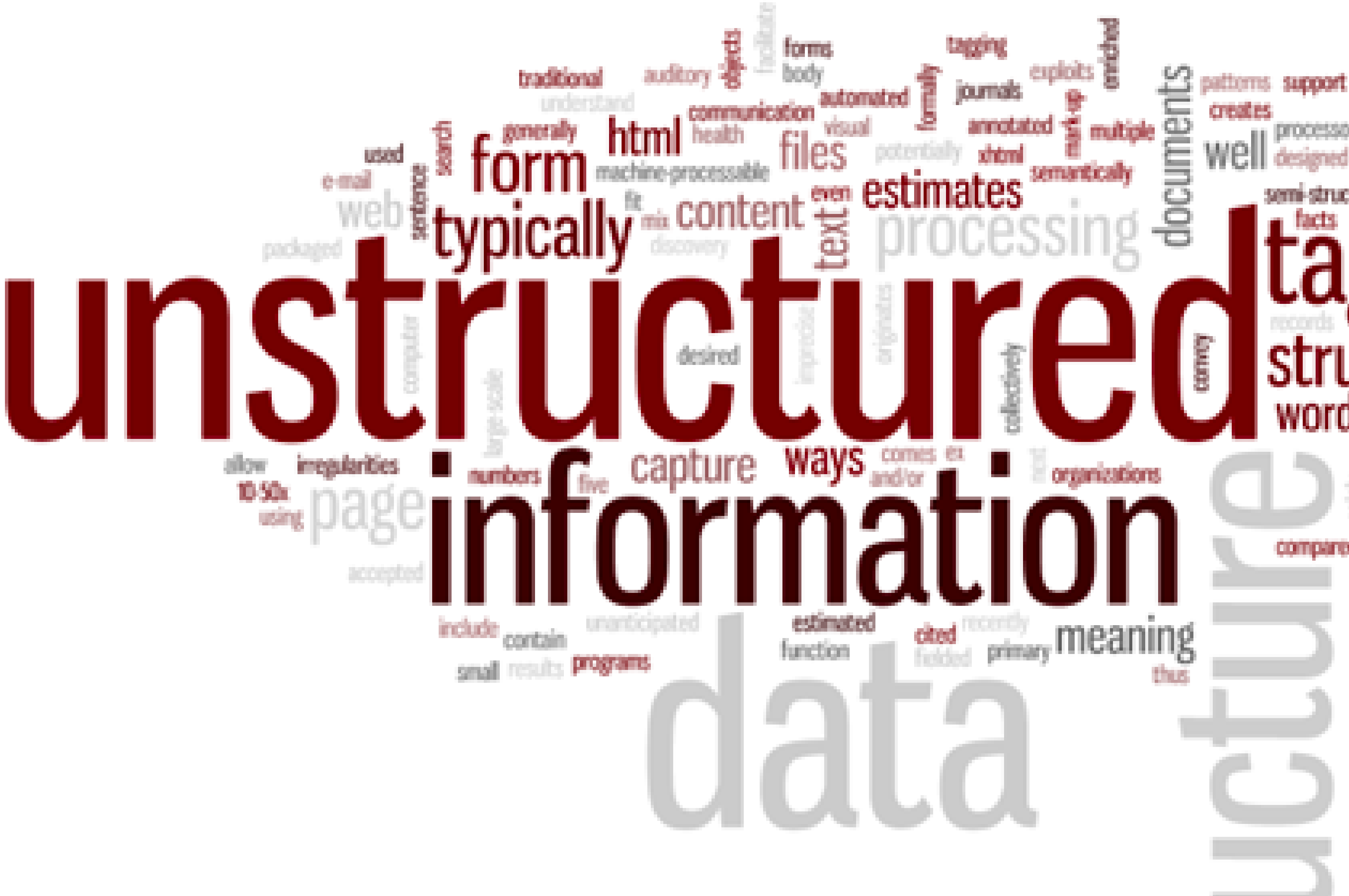
<?xml?>

Base64 Online

But it’s human readable...

Binary is hard to work with...

SHUT UP AND STOP WHINING


unstructured
information
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form
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content
documents
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objects
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body
tagging
exploits
enriched
patterns
support
understand
communication
automated
journals
creates
health
visual
formally
annotated
multiple
processor
used
search
generally
potentially
xhtml
designed
e-mail
sentence
machine-processable
semantically
semi-struct
fit
even
facts
mix
packaged
discovery
records
desired
originates
imprecise
computer
collectively
convey
large-scale
allow
irregularities
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comes
ex
organizations
10-50x
and/or
using
compared
accepted
include
contain
unanticipated
estimated
cited
recently
function
primary
fielded
small
results
programs
thus


Big Data

Communications
Battery life and bandwidth?

Synchronous Comms

Bad things will happen!!!

Synchronous Communication is the crystal meth of distributed programming

Causes a coupling in location and time

Errors need to be first class messages

Are your micro services on crystal meth?

Abstraction

“All non-trivial abstractions, to some extent, are leaky.”

- Joel Spolsky

“The detail of underlying complexity cannot be ignored.”

“the purpose of abstracting is not to be vague, but to create a new semantic level in which one can be absolutely precise”

- Dijkstra

We could say the main issue is that people don't understand abstractions...but...

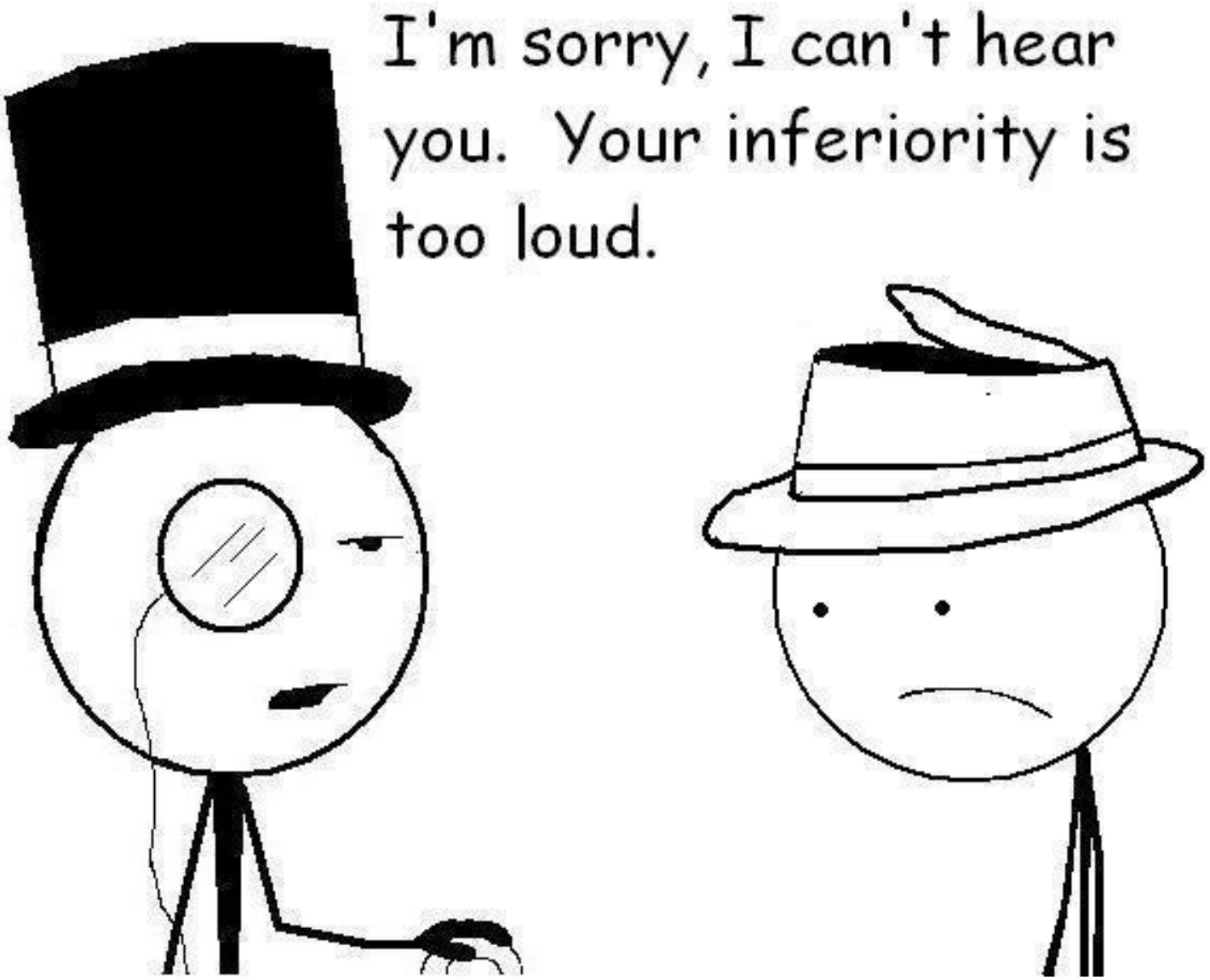
Sins committed in the name of Abstraction

ORMs !!!

Functional Programming

What is the biggest issue with functional programming?

Functional Programmers



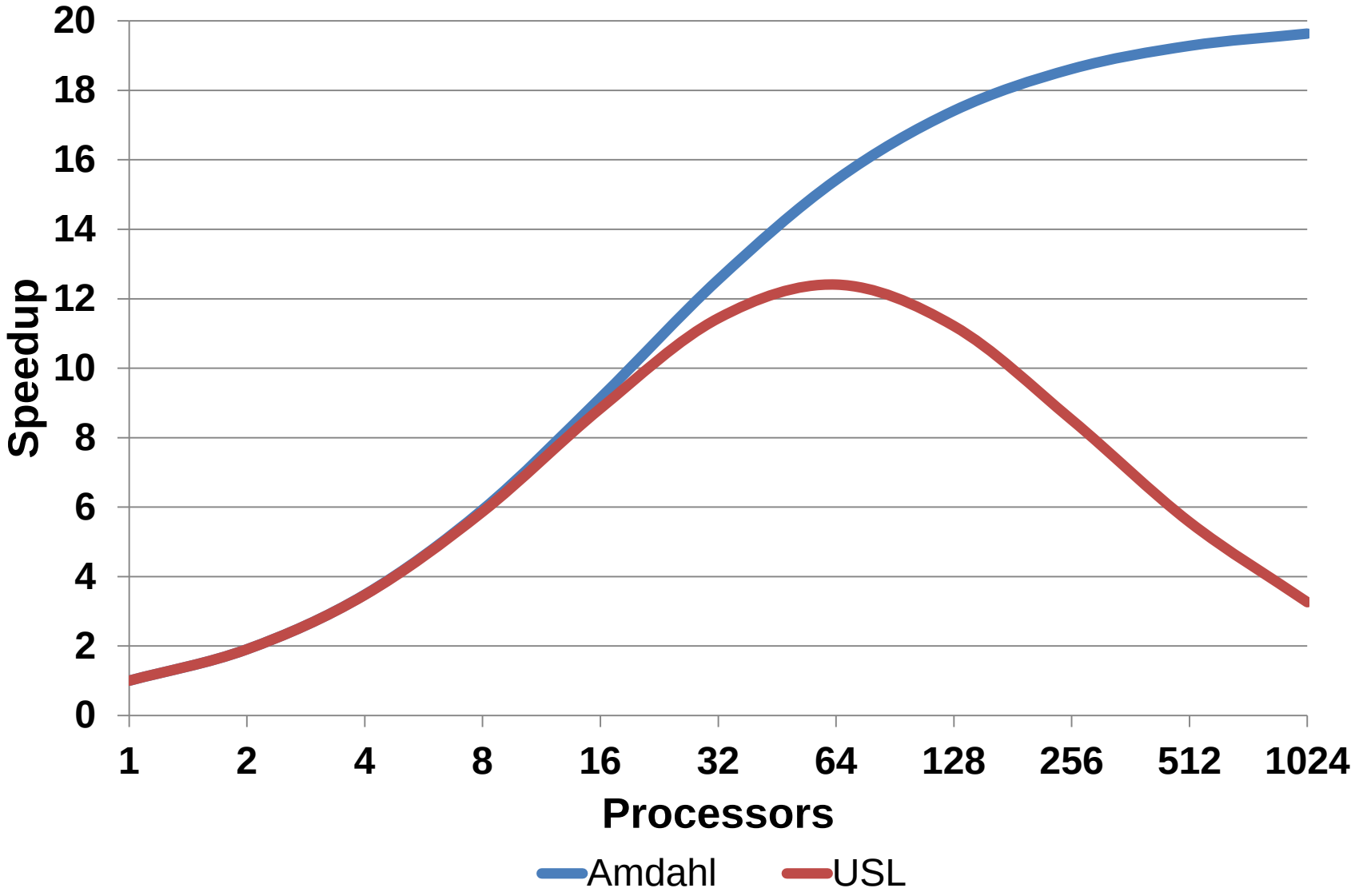
Functional programming is

NOT

the answer to multi-core

Software Transactional Memory was a failed experiment!

Universal Scalability Law



No Mechanical Sympathy?

However there is genuine brilliance in functional programming

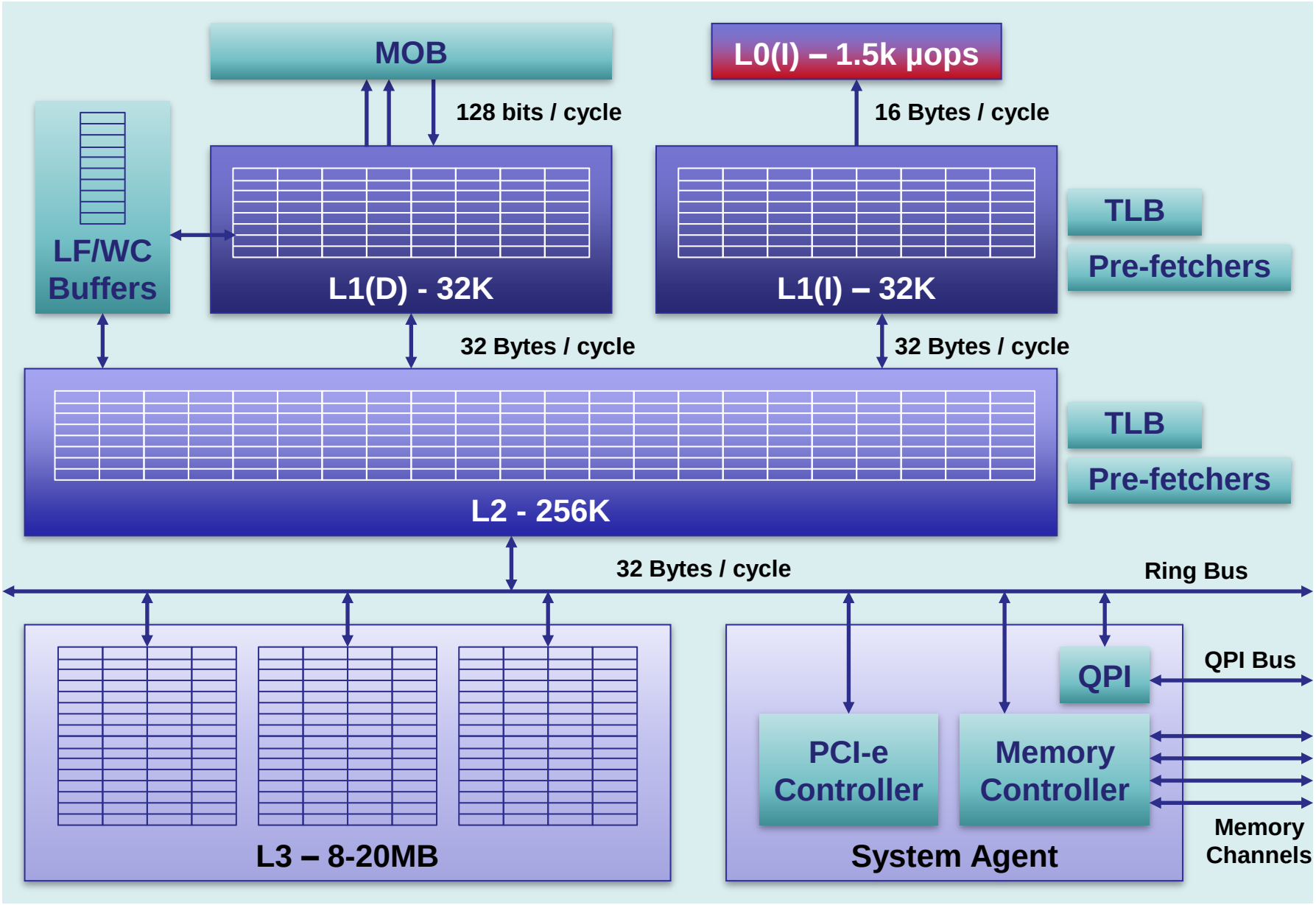
Collaborate and great things can happen...

Throw hardware at it… development is too expensive

The free lunch is over…
we cannot be sloppy anymore…

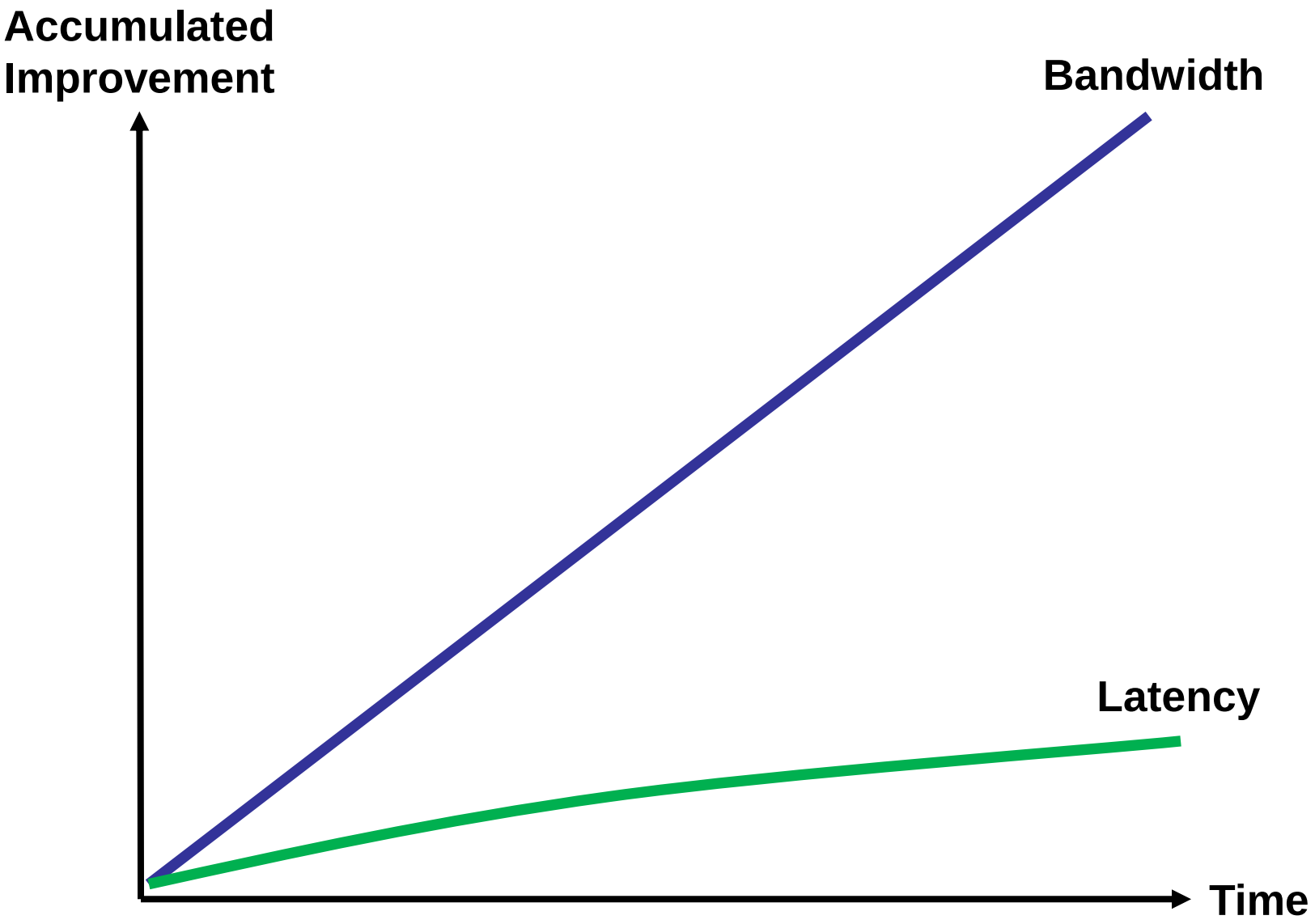
Code must be simple and composable

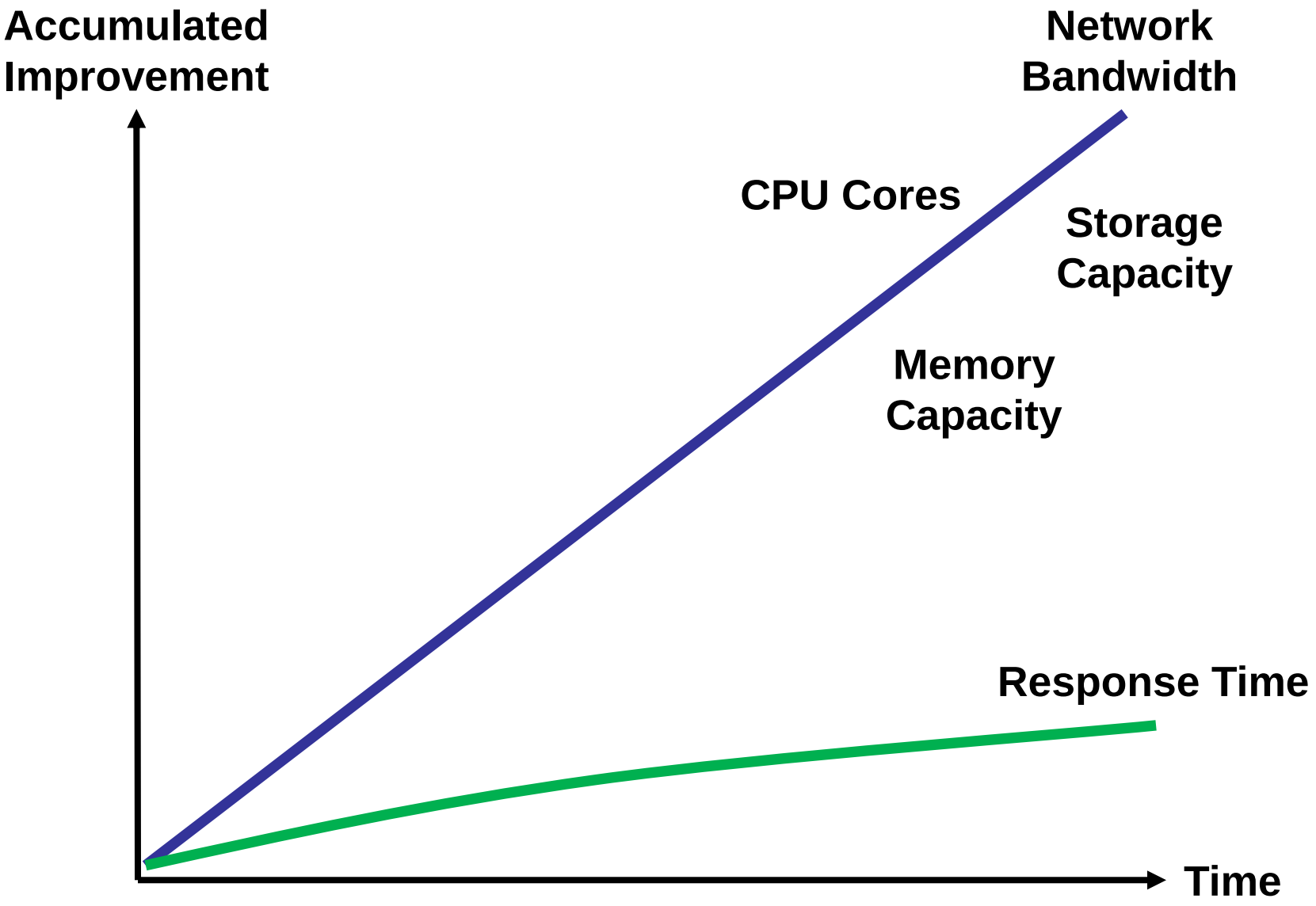
Cache Sub-System



Patterns of access and locality are key to performance

Memory Sub-System Performance




Accumulated
Improvement
Network
Bandwidth
CPU Cores
Storage
Capacity
Memory
Capacity
Response Time
Time

What does this mean for software?

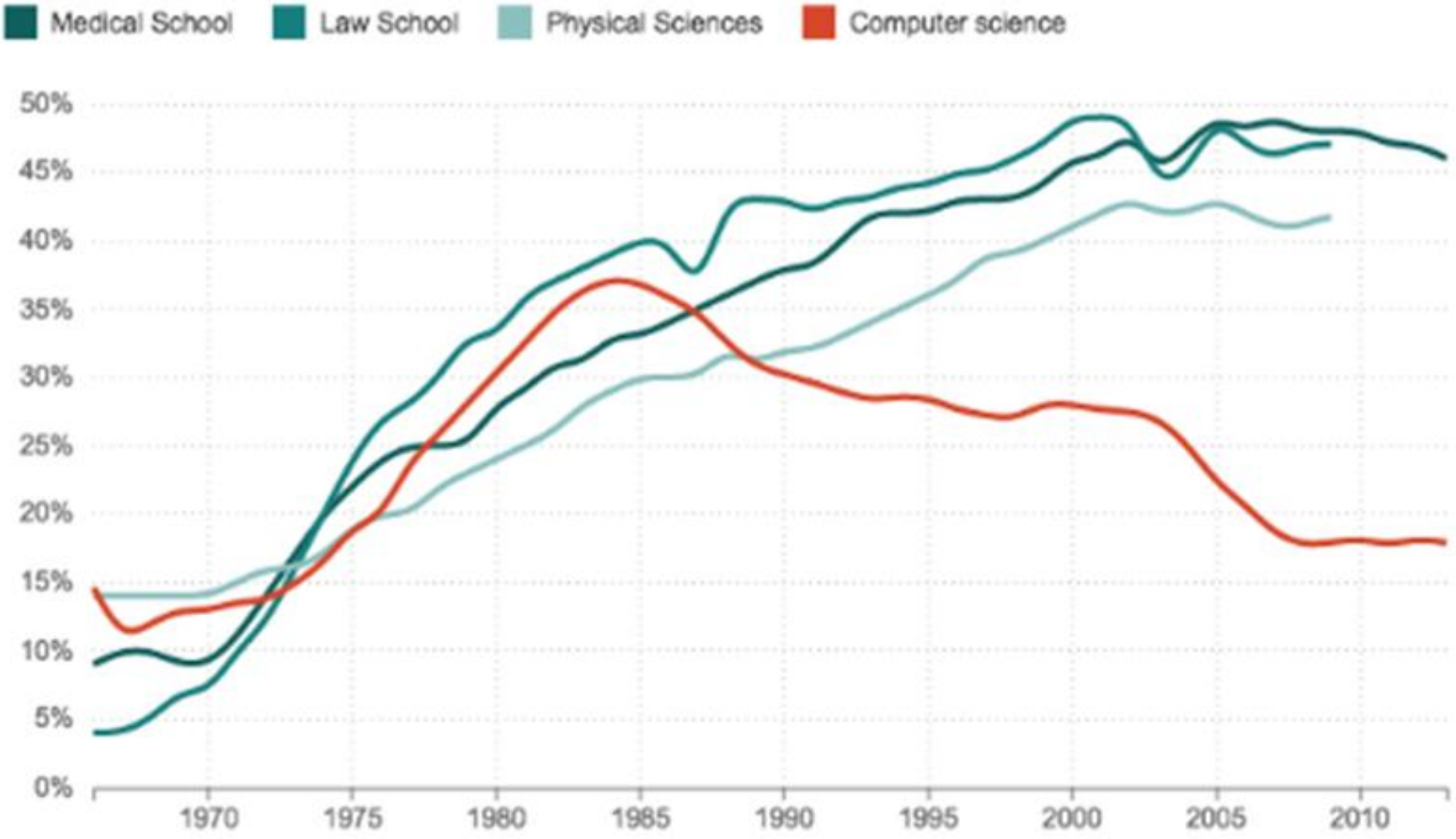
Think in terms of transformation and flow of data – not code!

Diversity

Testosterone Driven Development

What Happened To Women In Computer Science?

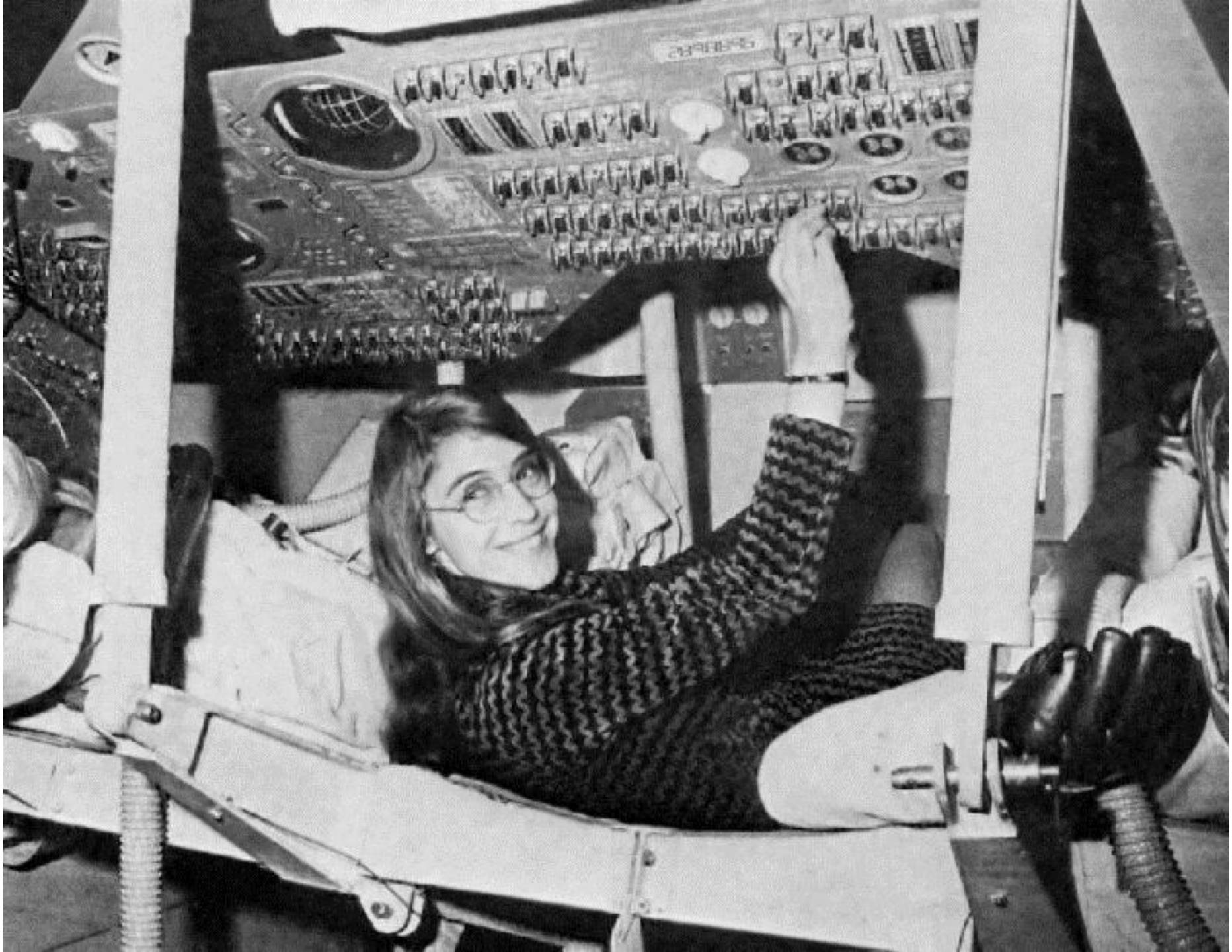
% Of Women Majors, By Field



Source: National Science Foundation, American Bar Association, American Association of Medical Colleges

Credit: Quoctrung Bui/NPR

What did the Carnegie Mellon studies show?



Fake it until you make it…

“As soon as you realise that most people don’t know what they are doing the world makes a lot more sense…”

– Farley’s second law

We need to look seriously at training programmers

Coaching and Apprenticeships

“The most important thing I've accomplished, other than building the compiler, is training young people.”

- Grace Hopper

“"Do you think we can do this?' I say, ‘Try it.’ And I back 'em up.

They need that. I keep track of them as they get older and I stir 'em up at intervals so they don't forget to take chances.

- Grace Hopper

In closing…

What are the greatest achievements of the human race?

The Scientific Method

Understanding of Evolution

Don’t feel bad…
We are living in the era of Software Alchemy


Do epic shit,
or die trying.

Questions?

@trisha_gee – Trisha Gee

@toddlmontgomery – Todd Montgomery

@mjpt777 – Martin Thompson

"It does not matter how intelligent you are, if you guess and that guess cannot be backed up by experimental evidence –
then it is still a guess."

- Richard Feynman