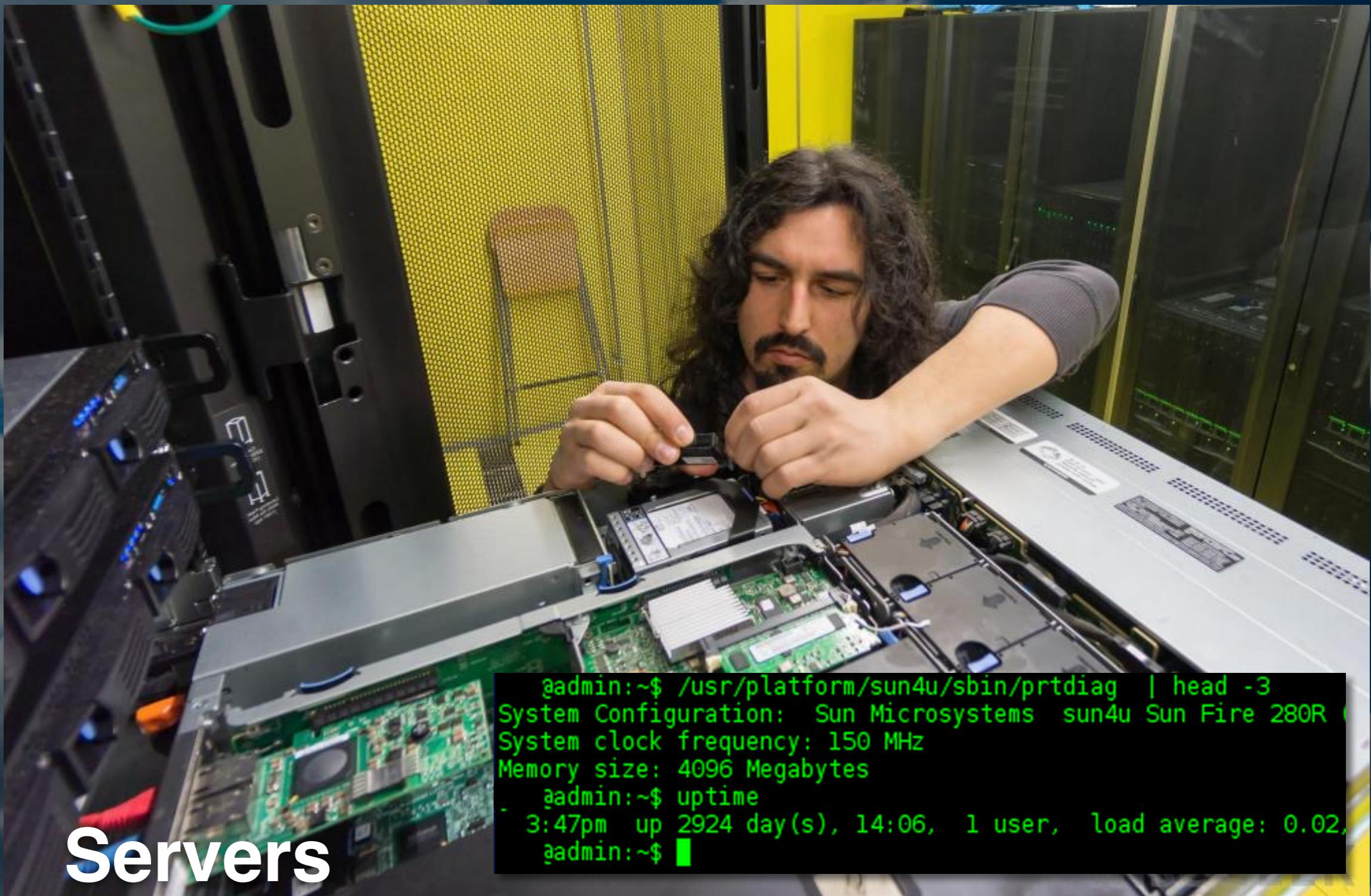


Pets versus Cattle: servers evolved

Phil Cryer / @fak3r
Automation Engineer / hacker

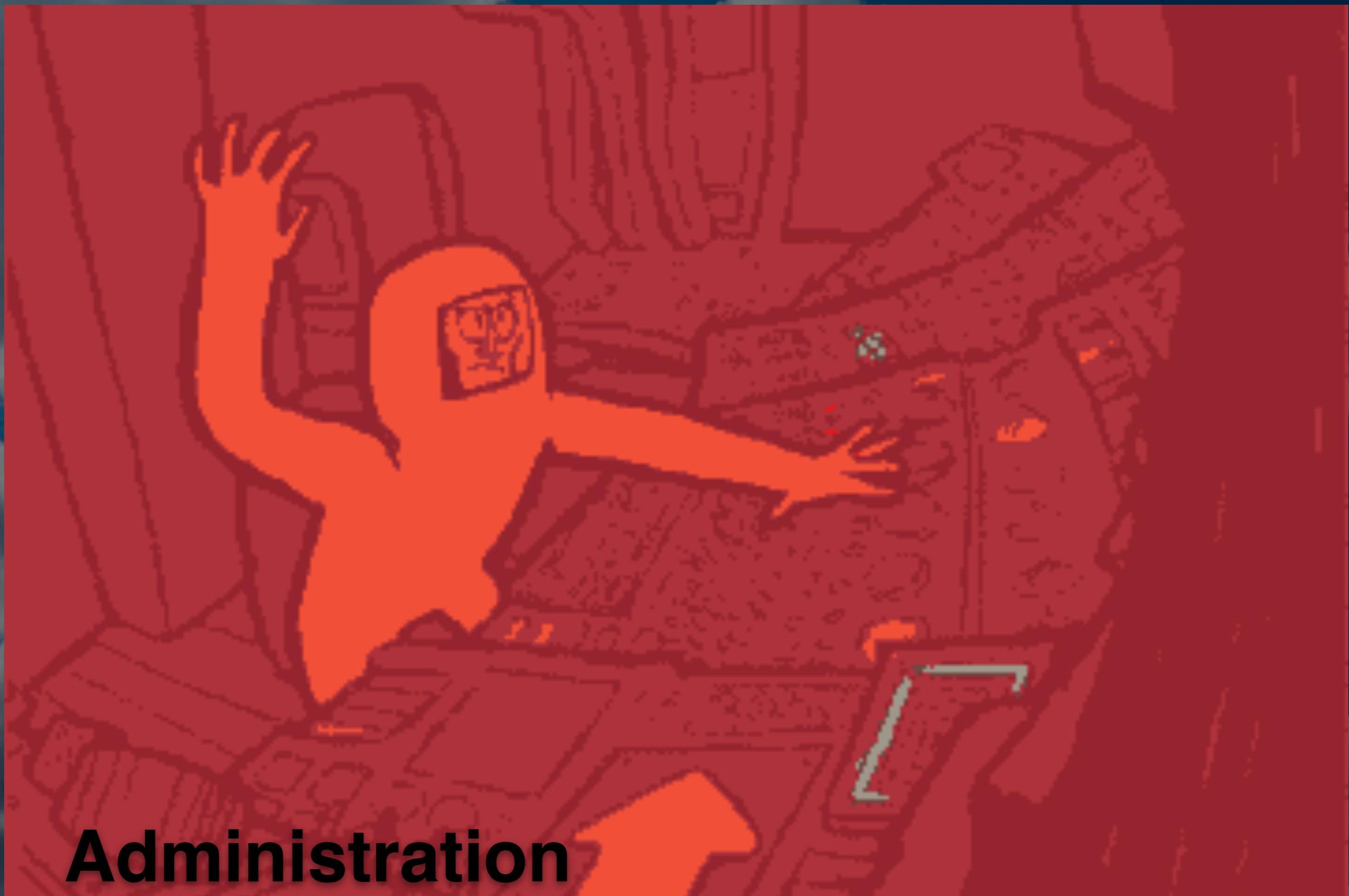




Servers

```
@admin:~$ /usr/platform/sun4u/sbin/prtdiag | head -3
System Configuration: Sun Microsystems sun4u Sun Fire 280R
System clock frequency: 150 MHz
Memory size: 4096 Megabytes
@admin:~$ uptime
3:47pm up 2924 day(s), 14:06, 1 user, load average: 0.02,
@admin:~$ █
```

the "enterprise computing" model



Administration

the "enterprise computing" model

Pets



"When one of them gets sick, you shoot 'em in the head and replace 'em with a new one" Randy Bias, CEO of Cloudscaling, 2012



Cattle!

```
764028] [<ffff8109a792>] try_to_wake_up+0x1d2/0x2c0  
764028] [<ffff8104f28f>] ? kum_clock_read+0x1f/0x30  
764028] [<ffff8109a8a3>] wake_up_process+0x23/0x40  
764028] [<ffff81080e64>] wake_up_worker+0x24/0x30  
764028] [<ffff810818db>] insert_work+0x61/0x10  
764028] [<ffff810a8041>] ? trigger_load_balance+0x61/  
764028] [<ffff81081a4e>] __queue_work+0x12e/0x320  
764028] [<ffff81081c40>] ? __queue_work+0x320/0x320  
764028] [<ffff81081c58>] delayed_work_timer_fn+0x18/0  
764028] [<ffff81074506>] call_timer_fn+0x36/0x100  
764028] [<ffff81081c40>] ? __queue_work+0x320/0x320  
764028] [<ffff81075205>] run_timer_softirq+0x155/0x2f  
764028] [<ffff8106cbac>] __do_softirq+0x1e/0x2c0  
764028] [<ffff8106d0f5>] irq_exit+0x105/0x110  
764028] [<ffff81731385>] smp_apic_timer_interrupt+0x4  
764028] [<ffff8172fd1d>] apic_timer_interrupt+0x6d/0  
<EOI> [<ffff8104f596>] ? native_safe_halt+0  
764028] [<ffff8101c62f>] default_id+0x19/0x20  
764028] [<ffff8101cef6>] arch_cpu_id+0x19/0x20  
764028] [<ffff810bed95>] cpu_startup+0x29/0x2c0  
764028] [<ffff81041018>] start_second+0x29/0x2c0  
764028] ---[ end trace 6bb555b7e2d2b666 ]---  
764028] INFO: NMI handler (perf_event_nmi_handler) took t  
msecs
```



Server offline!

Pets

Major disruption!
(aka #fail)

Decision?

Fix ASAP or
you're fired!



```
764028] [<fffff8109a792>] try_to_wake_up+0x1d2/0x2c0 Pets
764028] [<fffff8104f28f>] ? kum_clock_read+0x1f/0x30
764028] [<fffff8109a8a3>] wake_up_process+0x23/0x40
764028] [<fffff81080e64>] wake_up_worker+0x24/0x30 Major disruption!
764028] [<fffff810818db>] insert_work+0x6b/0xb0 (aka #fail)
764028] [<fffff810a8041>] ? trigger_load_balance+0x61/
764028] [<fffff81081a4e>] __queue_work+0x12e/0x320
764028] [<fffff81081c40>] ? __queue_work+0x320/0x320
764028] [<fffff81081c58>] delayed_work_timer_fn+0x18/0x18
764028] [<fffff81074506>] call_timer_fn+0x36/0x100
764028] [<fffff81081c40>] ? __queue_work+0x320/0x320
764028] [<fffff81075205>] run_timer_softirq+0x155/0x2f
764028] [<fffff8106cbac>] __do_softirq+0xec/0x2c0 Fix ASAP or
764028] [<fffff8106d0f5>] irq_exit+0x105/0x110 you're fired!
764028] [<fffff81731385>] smp_apic_timer_interrupt+0x4
764028] [<fffff8172fd1d>] apic_timer_interrupt+0x6d/0x6d
764028] <EOI> [<fffff8104f596>] ? native_safe_halt+0x1
764028] [<fffff8101c62f>] default_idle+0x1f
764028] [<fffff8101cef6>] arch_cpu_idle+0x2
764028] [<fffff810bed95>] cpu_startup_entry+0x10
764028] [---[ end trace 6bb555b7e2d2b666 ]---]
764028] INFO: NMI handler (perf_event_nmi_handler) took t0
msecs
```

Cattle

Server offline!



Decision?

Unnoticed by
end-users

Kill server, and
start another



Major disruption!
(aka #fail)

Fix ASAP or
you're fired!

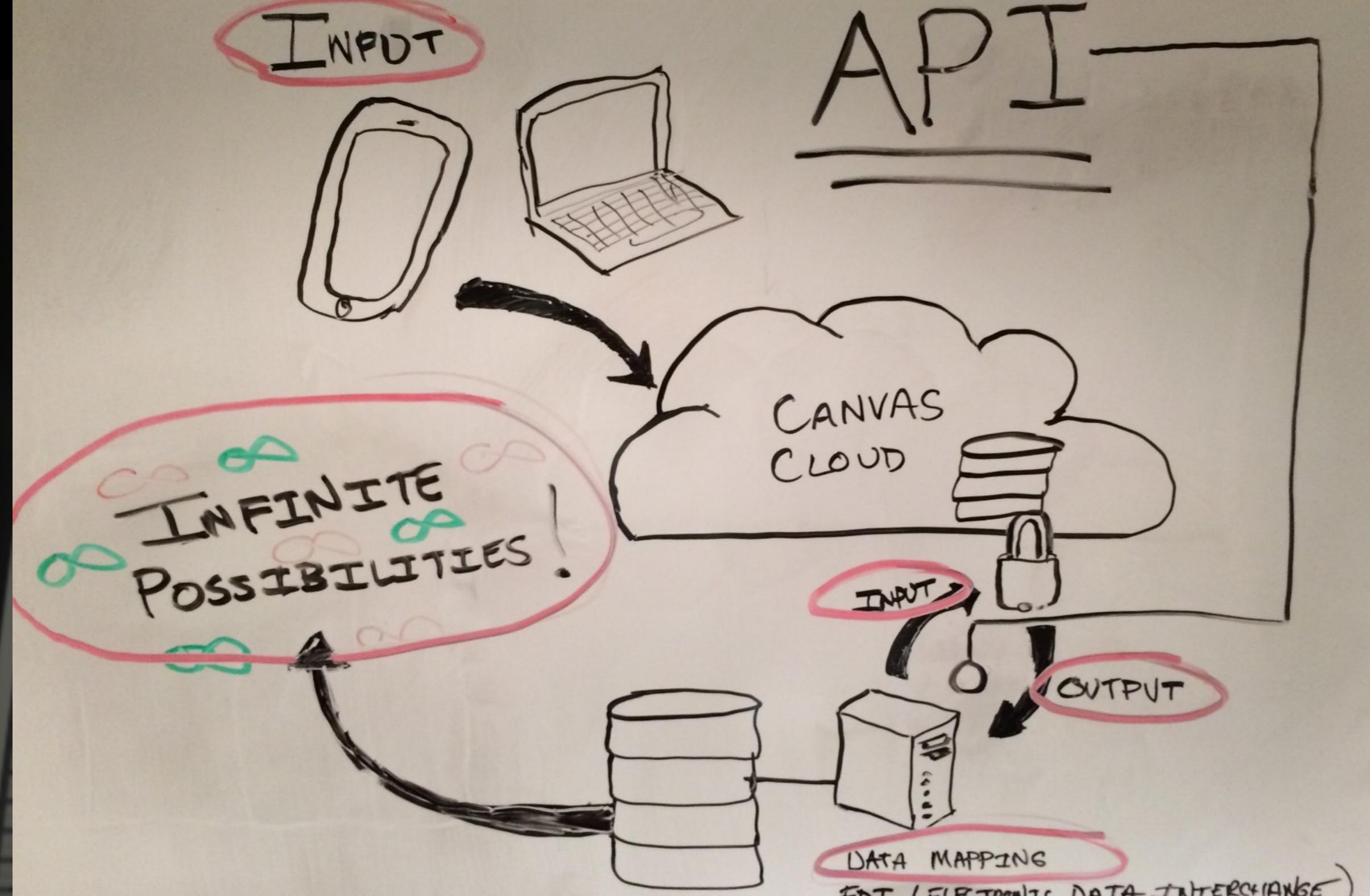
FLIPPIN

SWEET



ONE SIZE
DOES NOT
FIT ALL

One size does not fit all
so we'll still need (some) pets



Administration

the "cattle" model

Hardware

the "cattle" model

“...a data center full of **vanity free servers**... is more efficient and less expensive to build and run.”

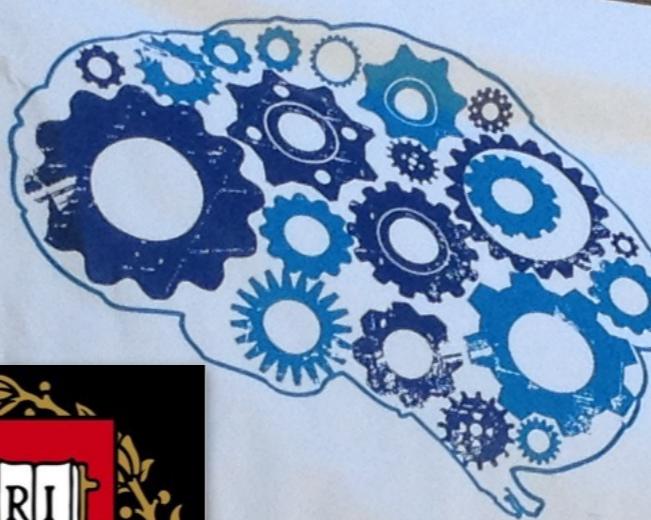
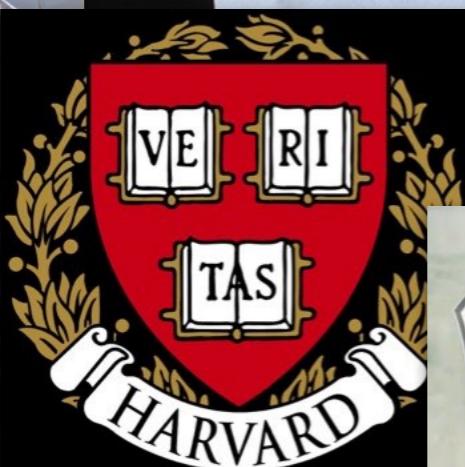
38% more efficient
24% less expensive

Hardware
the "cattle" model

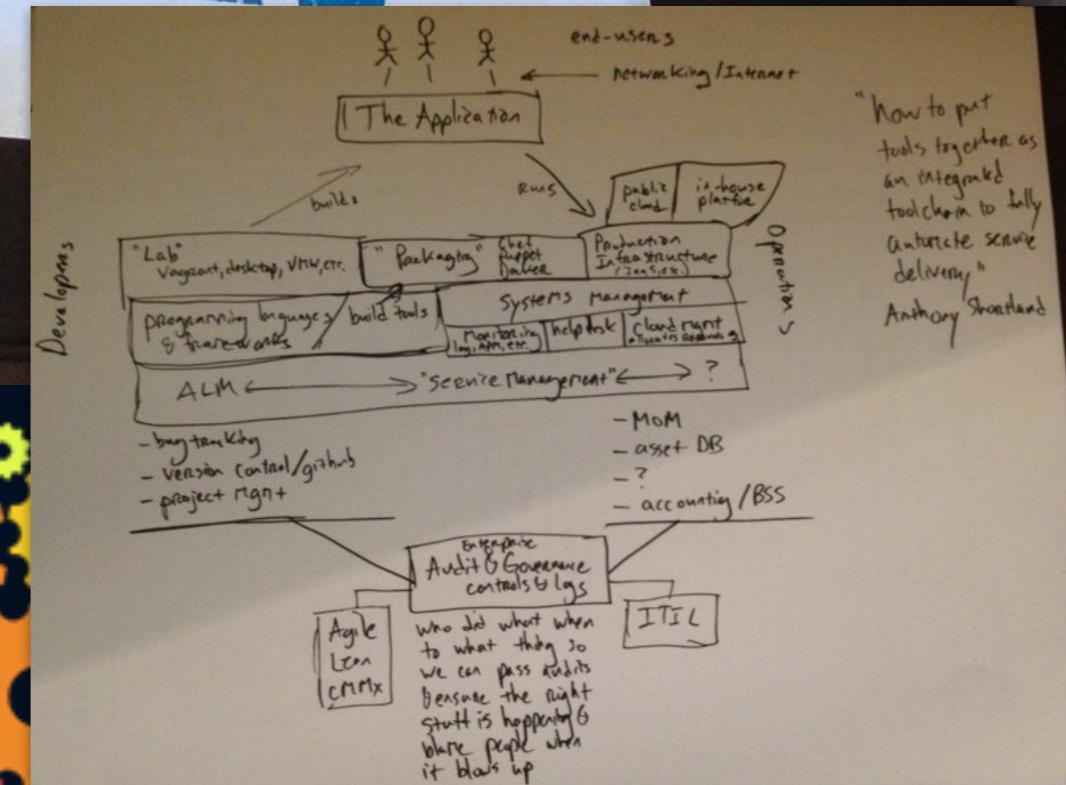




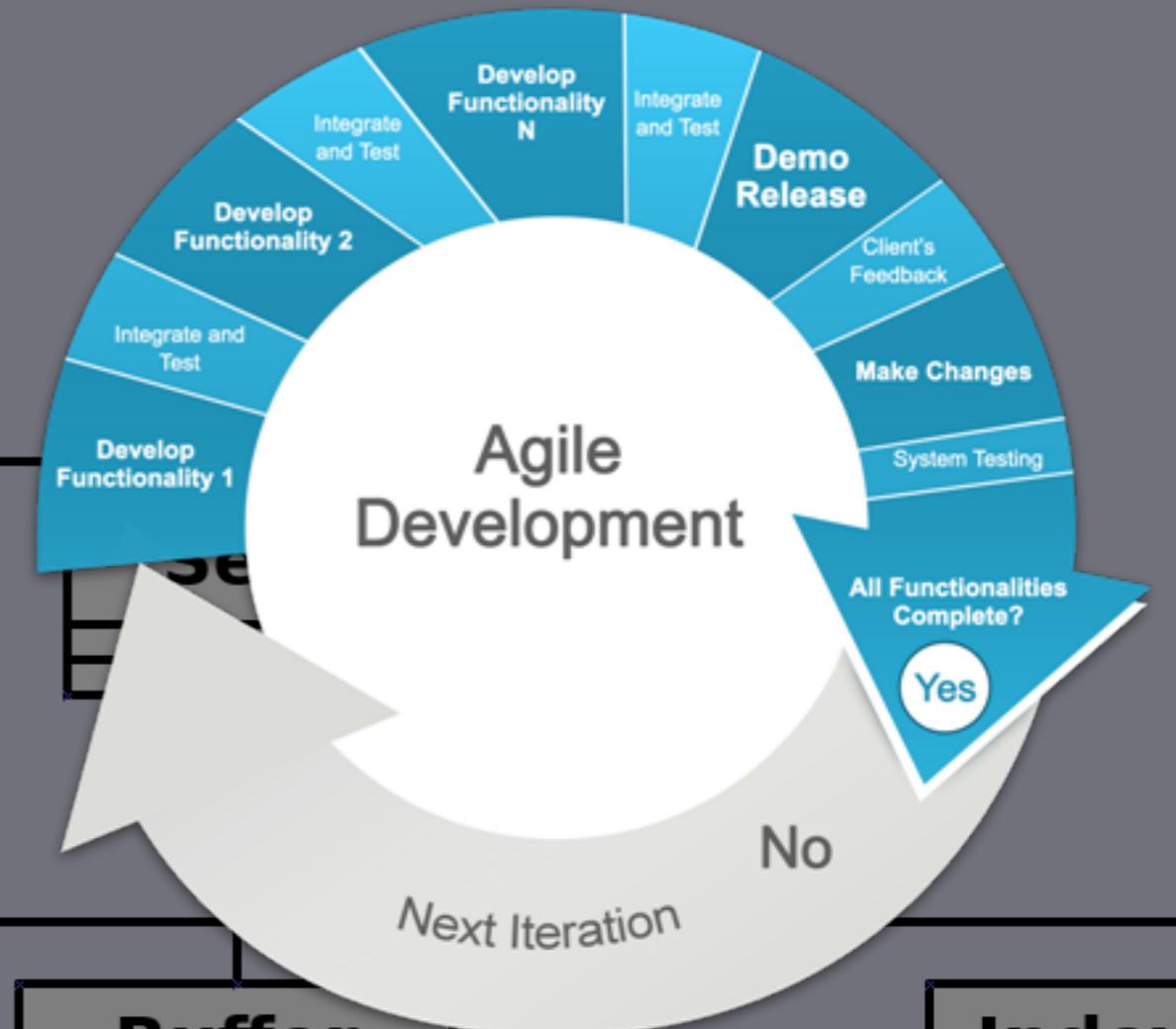
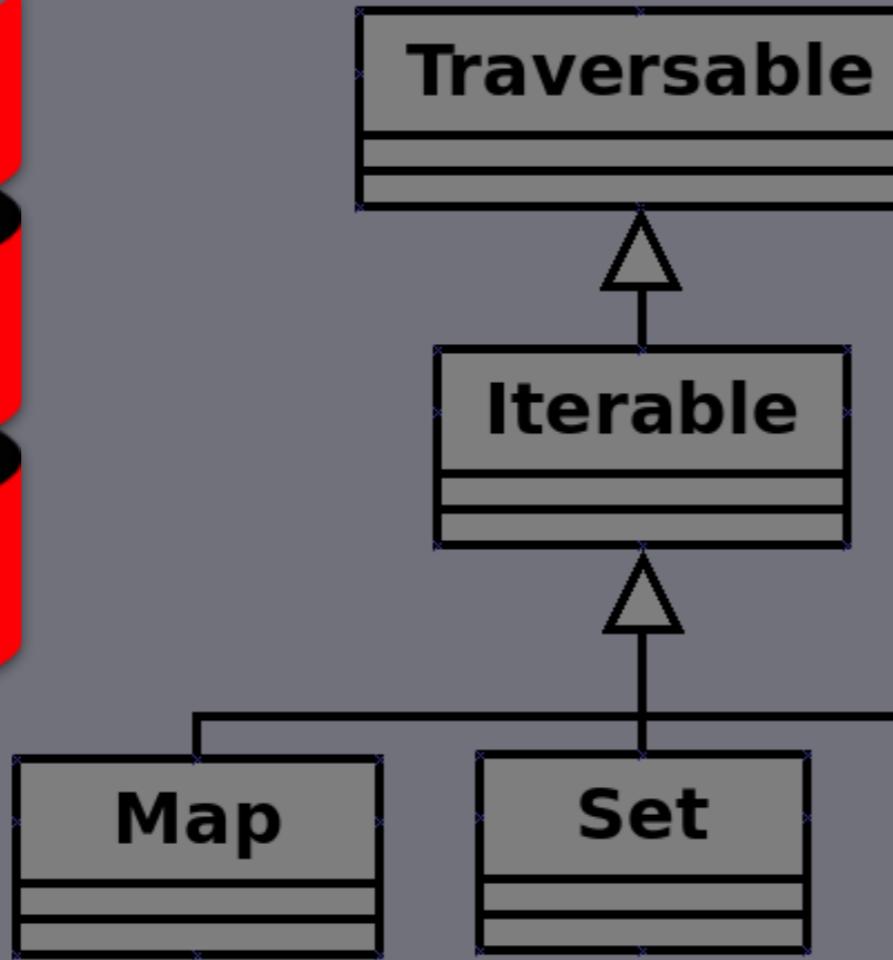
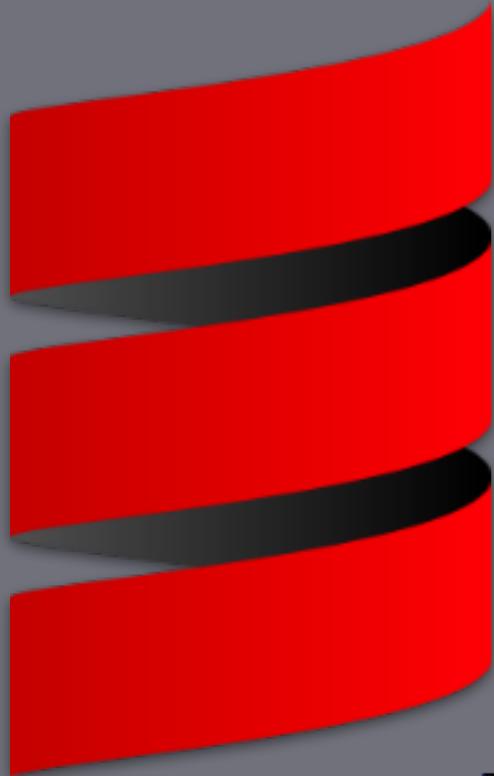
WWAD?



DEVOPS DAYS

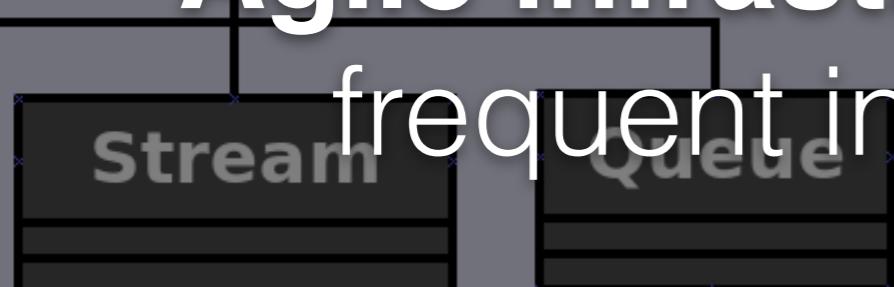


DEV OPS
DevOps
it's the new style (4 and 3 and 2 and 1)



Agile infrastructure

frequent incremental releases



Traversable

AUTOMATE



LinearS

Indexe

Automate everything

open source, apis take control

Stream

Queue

ListBuffer

ArrayBuffer

Vector

stax

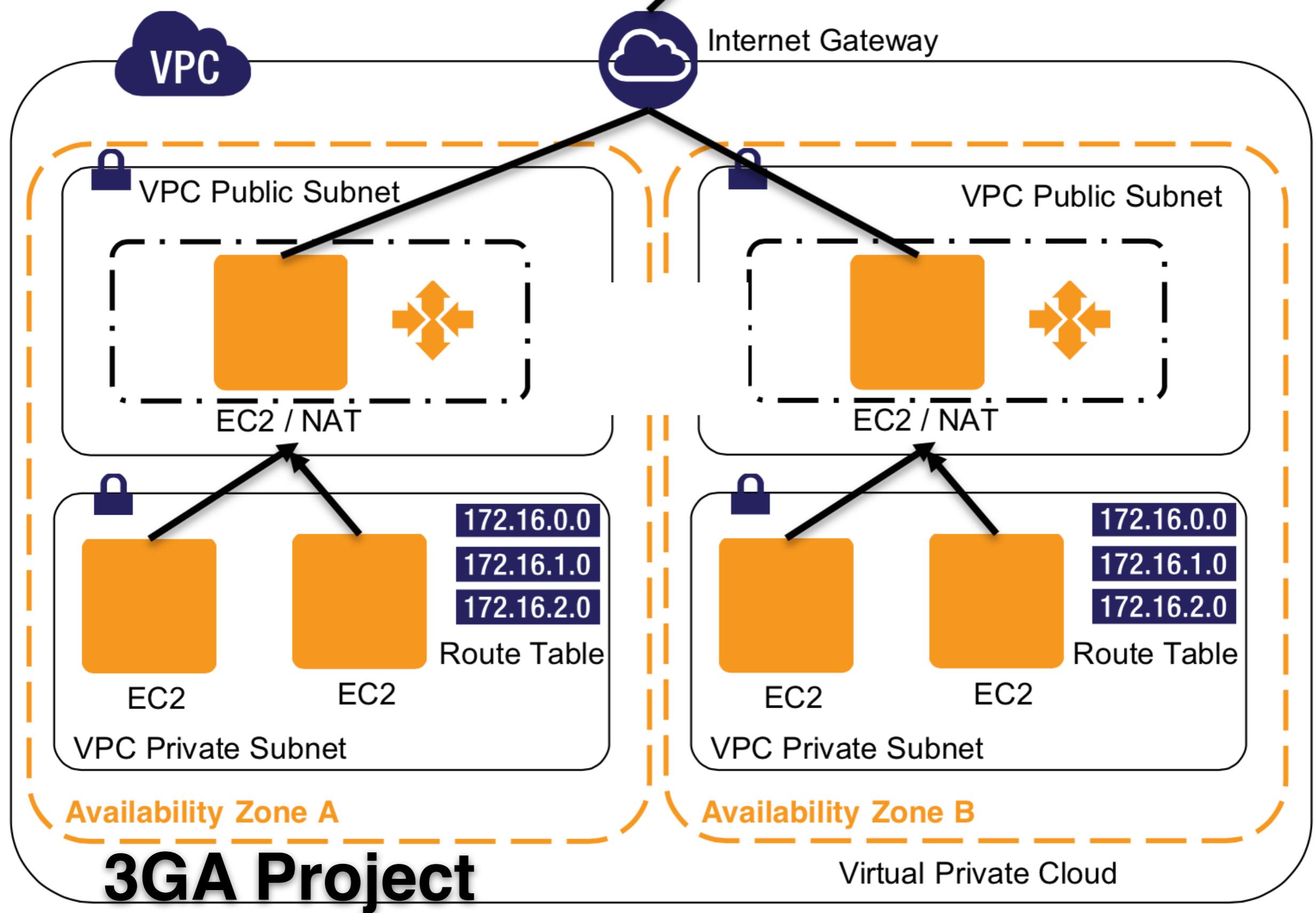


<https://github.com/philcryer/stax/>

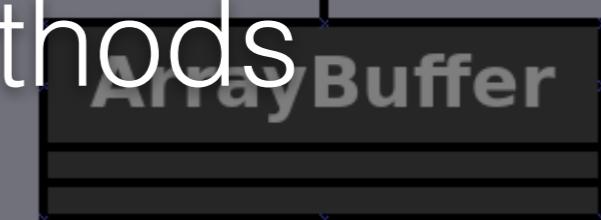
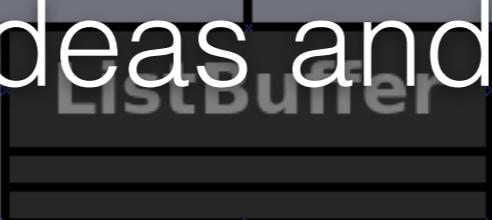
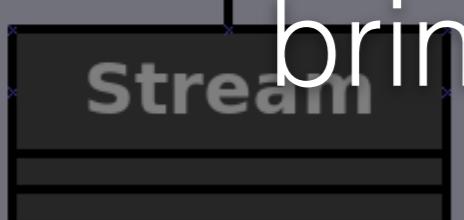
```
[ you know, for cloud
  / \ / \ / \ \ \ \ \
  \ / \ / \ / \ \ \ \ \
  \ \ / \ / \ / \ \ \ \ \
  / \ / \ / \ / \ \ \ \ \
  [ NAME ] vpc-stax-37904-unrevetted
  [ ---- ] creating stax
  [ ---- ] creating key pair: done
  [ ---- ] creating bucket: done
  [ ---- ] uploading template: done
  [ ---- ] validating template: done
  [ ---- ] uploading vpc assets: done
  [ ---- ] creating vpc in aws
  [ ---- ] stax creation complete
  [ NAME ] vpc-stax-37904-unrevetted
  [ ---- ] describe stax
  [ ---- ] querying aws: done
  [ ---- ] saving output: done
  [ ---- ] see /home/phil/.stax/vpc-stax-37904-unrevetted.json for details
[aws-ip-172-31-39-93] ~/devel/stax ✩ master ✩
```

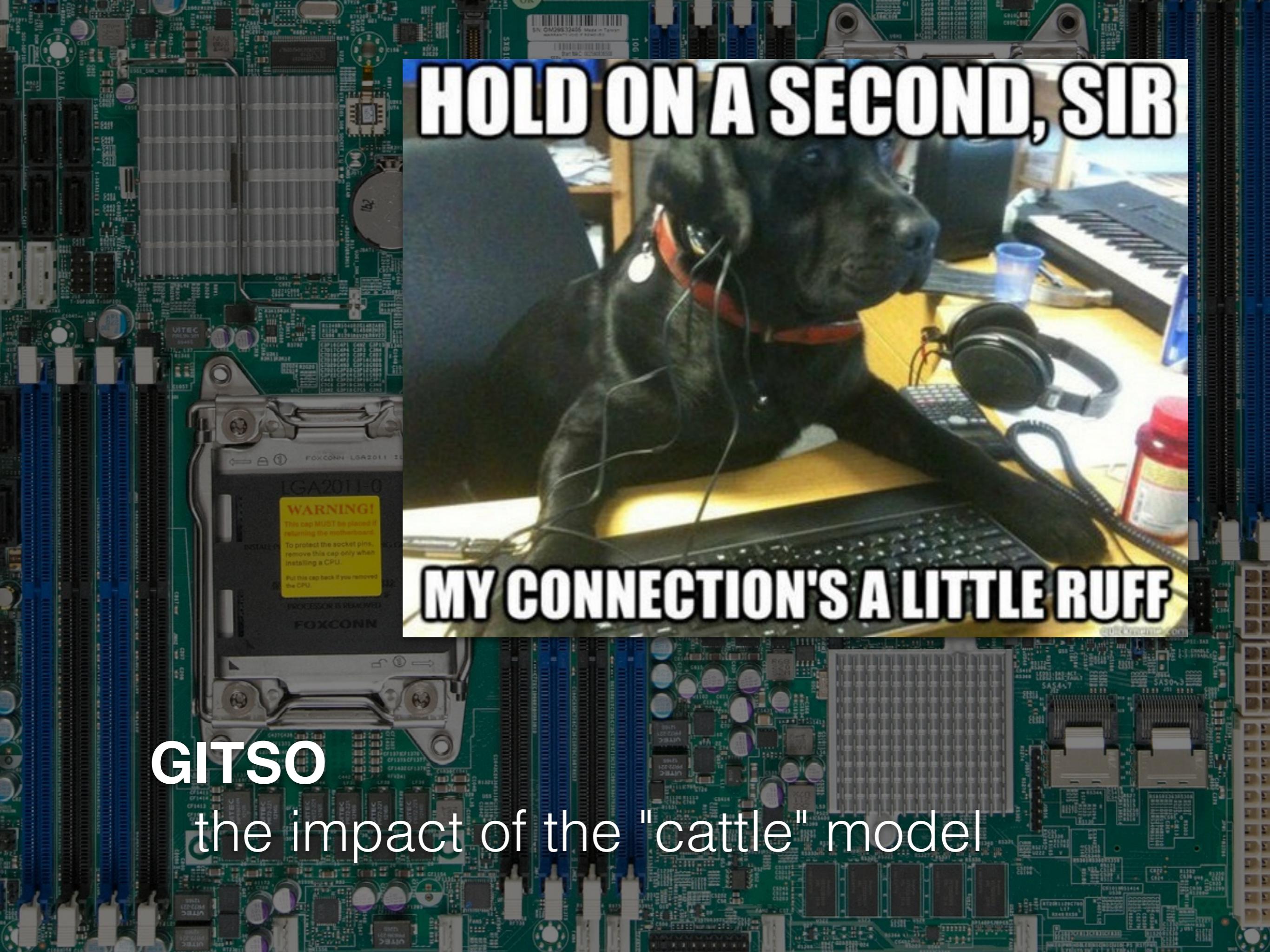
Stax

light fuse, get away



brings new ideas and methods





HOLD ON A SECOND, SIR

MY CONNECTION'S A LITTLE RUFF

GITSO
the impact of the "cattle" model

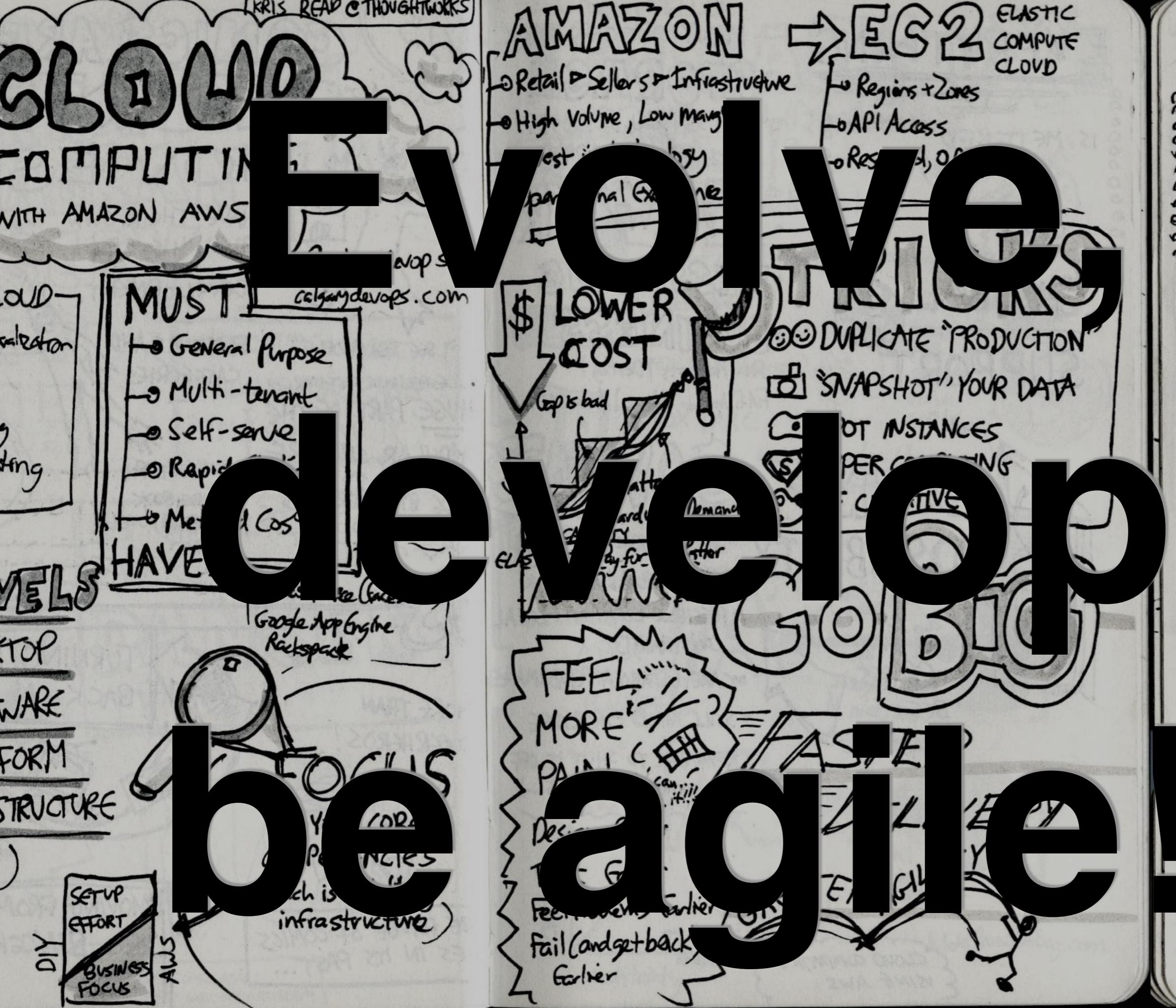


Barriers to adoption

“this is how we’ve always done it”







Thanks

Phil Cryer / @fak3r
Automation Engineer / hacker
Moooooo...

