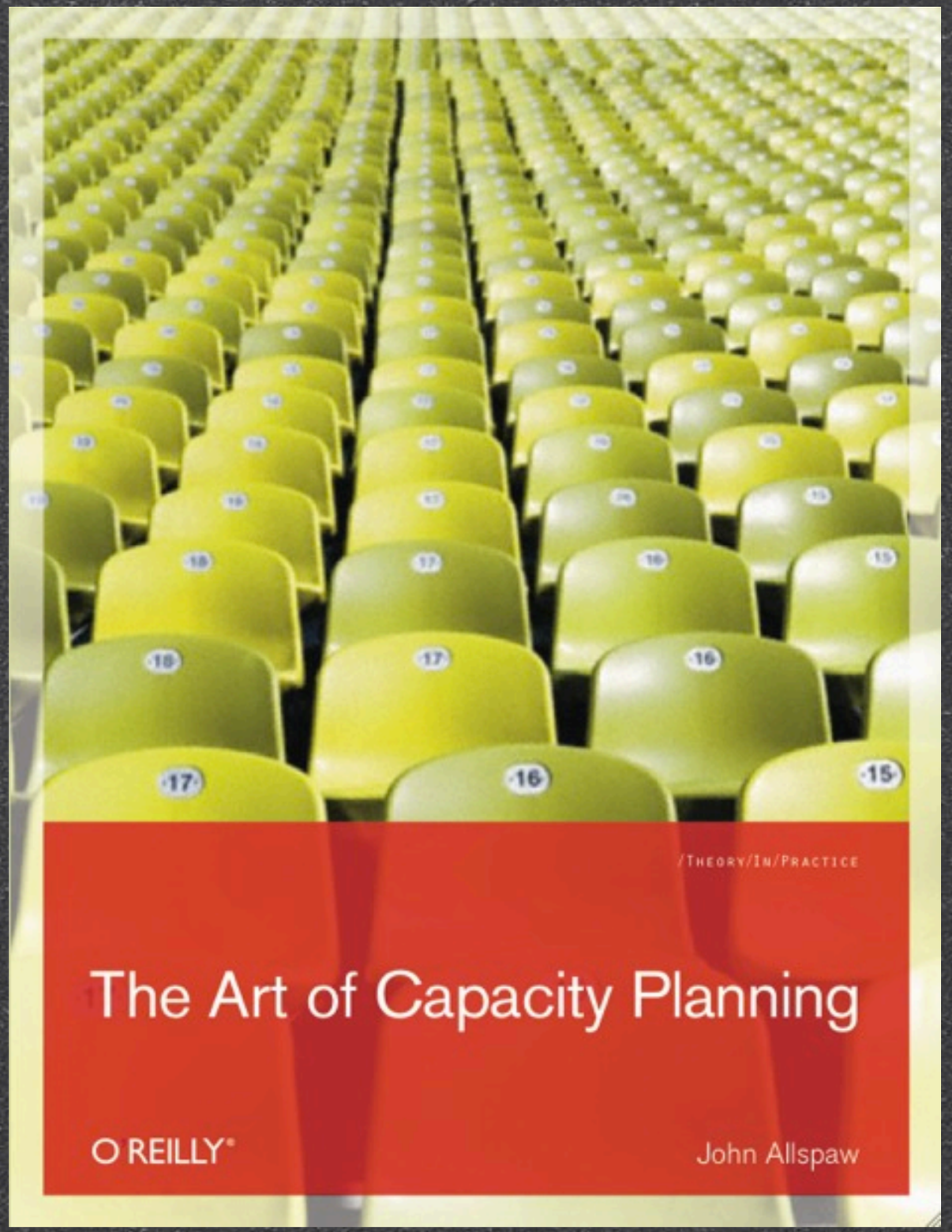
# Dev and Ops Cooperation at

Etsy & flickr

JAOO 2010


/Theory/In/Practice
The Art of Capacity Planning
O REILLY®
John Allspaw

# Production?

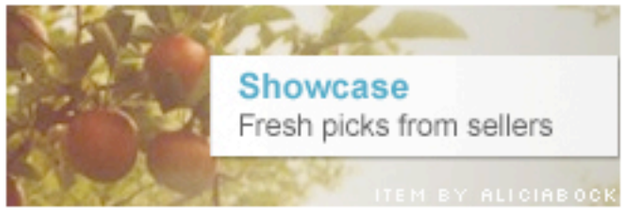
# On Call?

# Outage?

- 5 Billion photos
- ~10 PB of disk
- 10 datacenters for photos
- 2 datacenters for site and API traffic
- 28TB of MySQL data on 62 shards, ~140,000 qps

**Categories**

- Accessories
- Art
- Bags and Purses
- Bath and Beauty
- Books and Zines
- Candles
- Ceramics and Pottery
- Children
- Clothing
- Crochet
- Dolls and Miniatures
- Everything Else
- Furniture
- Geekery
- Glass
- Holidays
- Housewares
- Jewelry
- Knitting
- Music
- Needlecraft
- Paper Goods
- Patterns
- Pets
- Plants and Edibles



## Handpicked Items

See more

Picked by Emmamaha

ROMANTIC GOTH
FOLKSGARMENT.. $186.00 USD

Lizard P
Revonav $159.00 USD

Handmade Leather Belt Dark...
transaction $65.00 USD

Steampunk Money Clip, Razo...
kodashii88 $109.00 USD

skinny ROUND WIRE rim fram...
metrode $22.00 USD

Best Rum Balls Ever
denisesdelec... $19.99 USD

Recycled Military Wool Sat...
WoolyBison $135.00 USD

Natural Shaving Soap -- Ba...
urbaneden $5.00 USD

# Strappy. a leather macbook case by FULLGIVE

zoom

leather macbook case: the strappy
this is the case i would use if i ever took my laptop out for a stroll. throw this rich leather case over your shoulder and carry your computer in style. strips of sturdy leather create a shell of

**$207.00** USD

Add to Cart Favorite

2 available

**fullgive**
provo
Profile
Favorites
Feedback 109, 100% pos.
Contact

MORE FROM THIS SHOP

45
items

Add shop to favorites
See who favorites this shop
Subscribe to feed

Add item to favorites
See who favorites this item

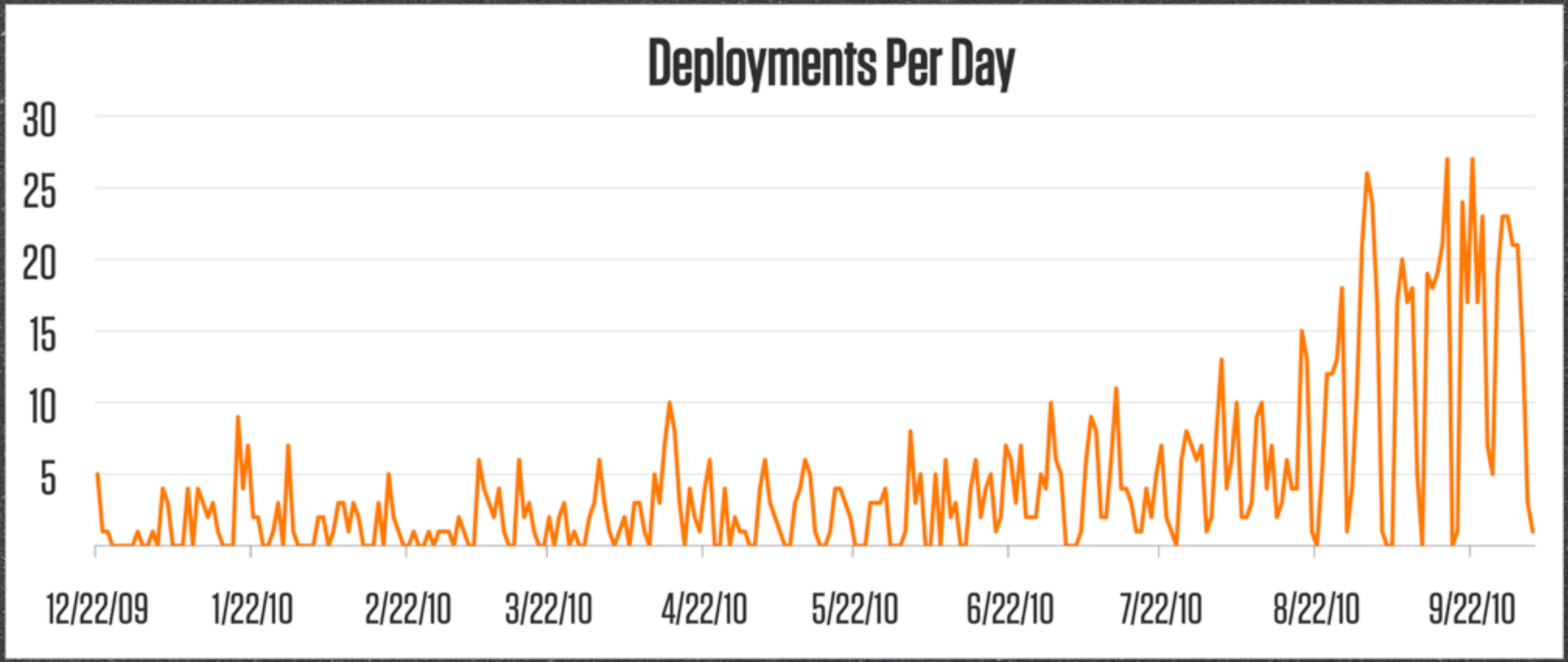
over 5.7 million members

over 400,000 sellers

6.5 million items currently listed

775 million PVs per month

$179.4 million sold (gross merchandise sales, thru August)




July: 204 deploys by 32 people

August: 371 deploys by 49 people

# 2010

1234 code deploys

4 deploy related incidents

6.5 minutes MTTD

6 minutes MTTR

# deployomatic

logged in as: *ekastner* [switch] QA: 25145-trunk-20100518-220720-UTC Princess: 25145-trunk-20100518-220720-UTC
Production: 25145-trunk-20100518-220720-UTC

## Deploy to QA (Trunk)

deploying revision: 25159

Message:

Push to QA →

## Princess is in the other castle

deploying version: 25145-trunk-20100518-220720-UTC

Save the Princess

## Deploy to Production

deploying version: 25145-trunk-20100518-220720-UTC

PROD!!! →

**Important links:**

## Log

¡¡ Commits since last prod deploy !!

☑ Auto scroll command output?

**Add an arbitrary log message:**

PROJECT-### to link to jira and add a comment log

- [ web ] | 2010-05-18 22:20:50 | PRODUCTION | sandrews | Production Deploy: old 25134, new: 25145 diff
- [ web ] | 2010-05-18 22:18:00 | PRINCESS | sandrews | Princess Deploy: old: 25144, new: 25145 diff
- [ web ] | 2010-05-18 22:17:22 | QA | sandrews | kyles bug fix old: , new: 25145 diff
- [ web ] | 2010-05-18 22:12:03 | QA | sandrews | pushing again -- banned user cache busting old: , new: 25144 diff
- [ web ] | 2010-05-18 22:06:39 | PRINCESS | sandrews | Princess Deploy: old: 25134, new:
- [ web ] | 2010-05-18 22:02:36 | QA | sandrews | [redacted] old: 25134, new: 25144 diff
- [ web ] | 2010-05-18 20:56:50 | PRODUCTION | cmunns | Production Deploy: old 25134, new: 25134 diff
- [ web ] | 2010-05-18 20:49:02 | PRODUCTION | cmunns | Production Deploy: old 25134, new: 25134 diff
- [ web ] | 2010-05-18 20:44:43 | PRODUCTION | ahashim | Production Deploy: old 25030, new: 25134 diff
- [ web ] | 2010-05-18 20:41:17 | PRINCESS | ahashim | Princess Deploy: old: 25030, new: 25134 diff
- [ web ] | 2010-05-18 20:40:38 | QA | ahashim | peanut butter jelly time!!!!! old: 25030, new: 25134 diff
- [ web ] | 2010-05-17 16:23:26 | PRODUCTION | sandrews | Production Deploy: old 24951, new: 25030 diff
- [ web ] | 2010-05-17 16:12:12 | PRINCESS | sandrews | Princess Deploy: old: 24951, new: 25030 diff
- [ web ] | 2010-05-17 16:08:05 | QA | sandrews | kissmetrics amongst others old: 24951, new: 25030 diff
- [ web ] | 2010-05-14 20:16:47 | PRODUCTION | zgarrett | Production Deploy: old 24884, new: 24951 diff

http://codeascraft.etsy.com/2010/05/20/quantum-of-deployment/

(Historically)

**Ops** owns availability and performance.

**Dev** owns features and evolution.

Everyone else owns other things, not sure what they are.

(Reality)

**Everyone** owns availability and performance.

**Everyone** owns features and evolution.

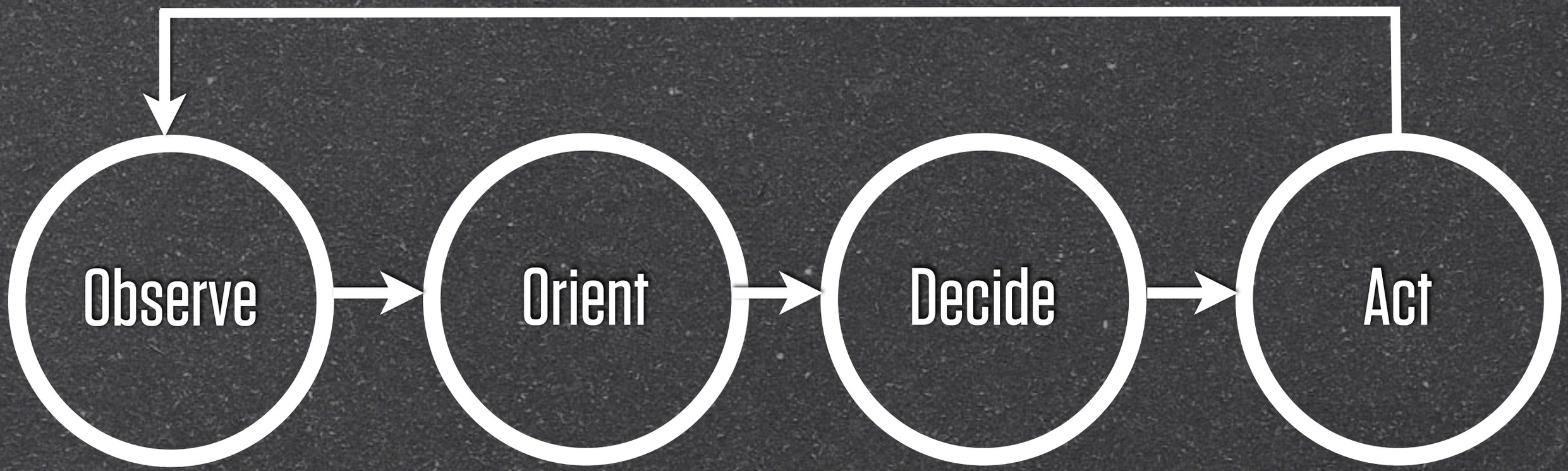
Arch Review

Development/Ops
Feedback Loop

Go or No-Go

Launch

# Web Ops OODA Loop




Metrics
Monitoring
Alerting
Alarming

Analysis
Visualization
Correlation

Planning
Resourcing

Execution

credit: http://blog.b3k.us/ooda.html

Domain
Expertise

# Ops

Anomaly detection/alarming

Root Cause Analysis and SPOF detection

“Black Box” = network, storage, system resources

Etc.

# Development

Application logic and behavior

Data layer distribution (cache, persistence, etc.)

“Black Box” = app calls, connection behavior, etc.

Etc.

# Coming Together

Ops = good with tcpdump and strace.

Those tools suck for app-level troubleshooting.

Answer!

Dev can make one for the application.

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zoom

leather macbook case: the strappy
this is the case i would use if i ever took my laptop out for a stroll. throw this rich leather case over your shoulder and carry your computer in style. strips of sturdy leather create a shell of

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2 available

**fullgive**
provo
Profile
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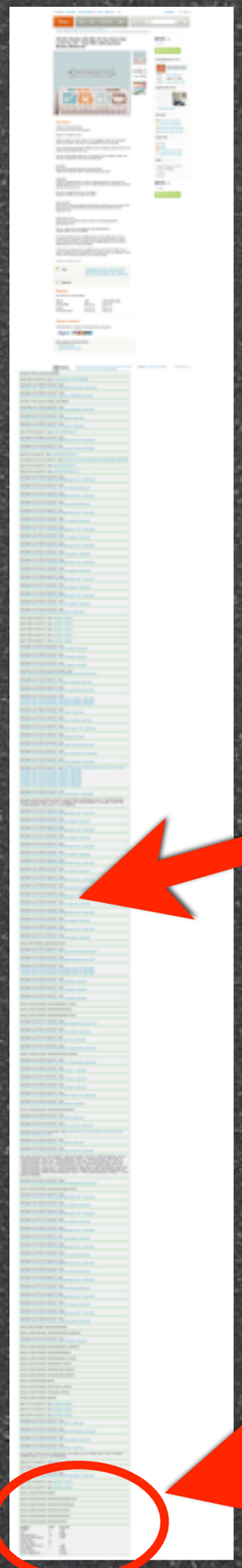
Contact

MORE FROM THIS SHOP

45
items

Add shop to favorites
See who favorites this shop
Subscribe to feed

Add item to favorites
See who favorites this item



# ?ioprofiler=1

# like tcpdump/strace, but for etsy.com

[dbshard01] 0.902 ms SELECT count(*) FROM FavoriteListingUser WHERE listing_id = 5773453

[memcache] 0.361 ms Cache HIT, keys: Etsy_Cache_Results:c812331f123321:1121231

| Category | Calls | Time (ms) |
|---|---|---|
| function | 2 | 11.528 |
| apc | 17 | 0.299 |
| memcache_orm | 106 | 40.327 |
| orm_etsy_shard_002_B | 1 | 1.066 |
| smarty_fetch | 2 | |
| smarty_include | 23 | |
| orm_etsy_shard_003_A | 1 | 0.995 |
| orm_master | 1 | 1.908 |
| TOTAL CALLS | | 56.123 |
| TOTAL PAGE EXEC | | 235.312 |

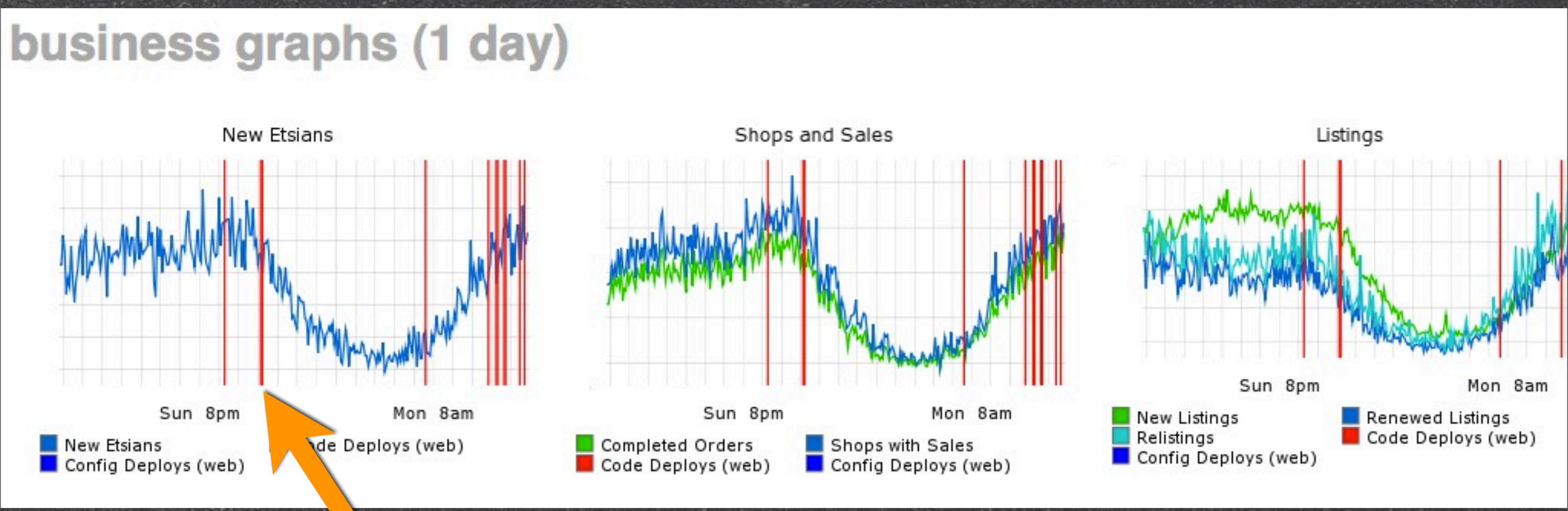
# Coming Together

Dev is good with application behavior, but might not know how to surface it.

Answer!

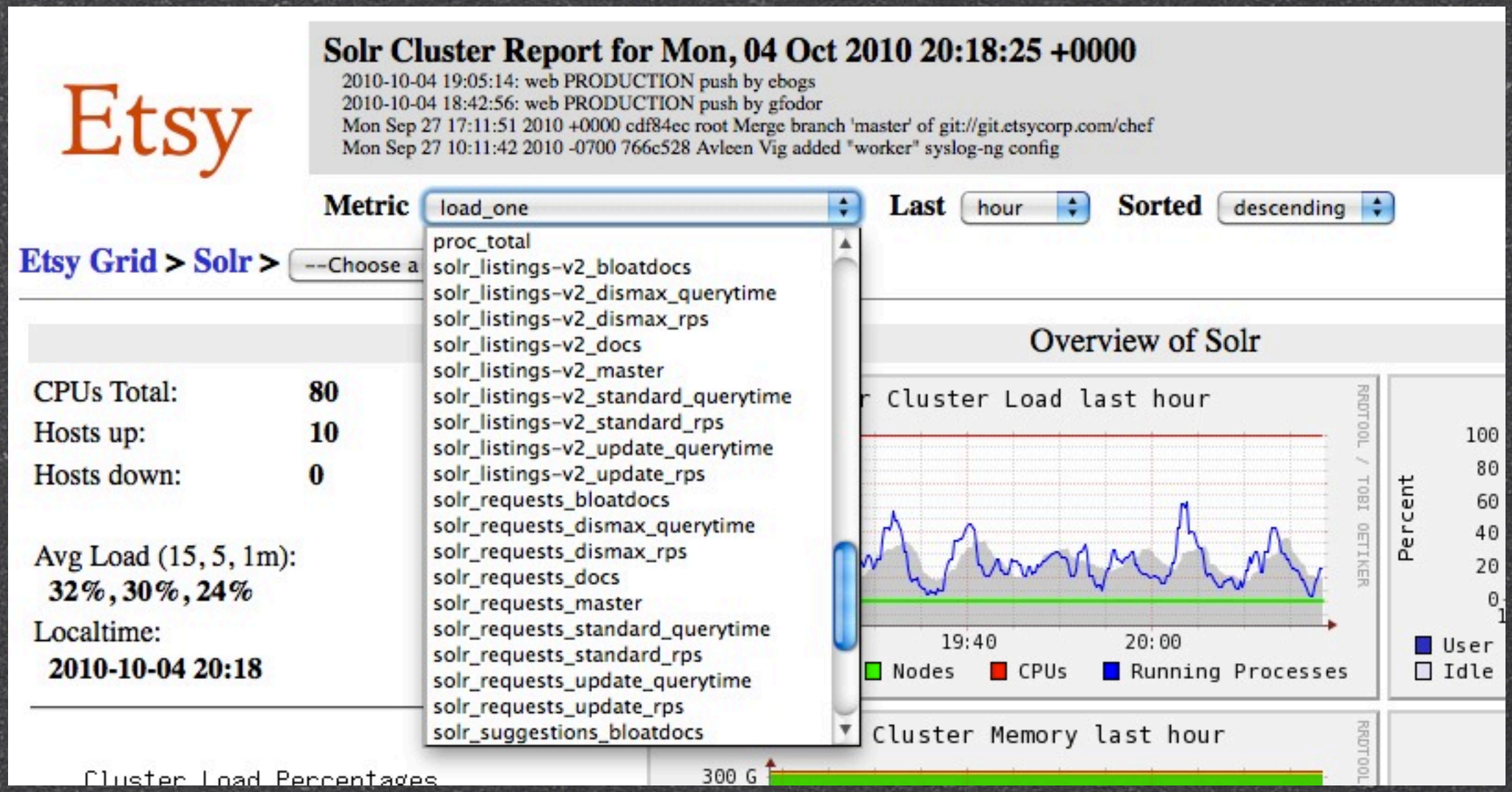
Ops can provide a platform for tracking and graphing, make it it brain-dead simple to add new metrics

# Graphite http://graphite.wikidot.com/




# Code Deploys

# Ganglia http://ganglia.info/




# Self-Service Custom Metrics

# Coming Together

Ops need to have graceful degradation options for fault-tolerance

Answer!

Developers can instrument the code with config flags.

# Feature Flags

- Turn on/off core functionalities via config flags
- Reviewed by product, ordered by priority
- “Branching in Code” - dark/staff/percentage/etc.

More info here:

http://code.flickr.com/blog/2009/12/02/flipping-out/

# Monitoring

Monthly alerts review:

Low and high thresholds
Alerting signal:noise ratios
Escalation/prioritizing of fixes
Event handling

# Configuration

Declarative
Abstract
Idempotent
Convergent

# Fear and Pain

# Responsibility

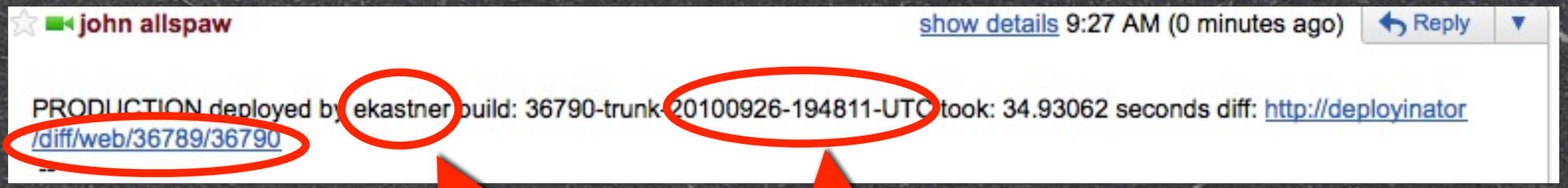
If you can break something via proxy, it's not going to hurt as much

So: developers deploy their own code

# IRC notifications

```
02:37 < devbot> PRODUCTION deployed by ekastner build: 36790-trunk-20100926-194811-UTC took: 34.93062 seconds
diff: http://deployinator/diff/web/36789/36790
```

# Email notifications




what

who

when

# Responsibility

- Devs own their own code, so they expect 24x7 contact on it
- When things break, dev and ops both participate
- Post-Mortems have both dev and ops remediations

# Culture

- No fingerpointy-ness
- Trust in the team, lean on each other's experiences and perspectives
- New feature launch coordination (Go or NoGo)
- Designated Ops for Dev teams, early involvement

DANGER
HIGH
VOLTAGE

# Common Sense

DB Schema

New Feature

Storage Schema

etc.

can be risky, so we treat them with

Change

Management

# Change Management

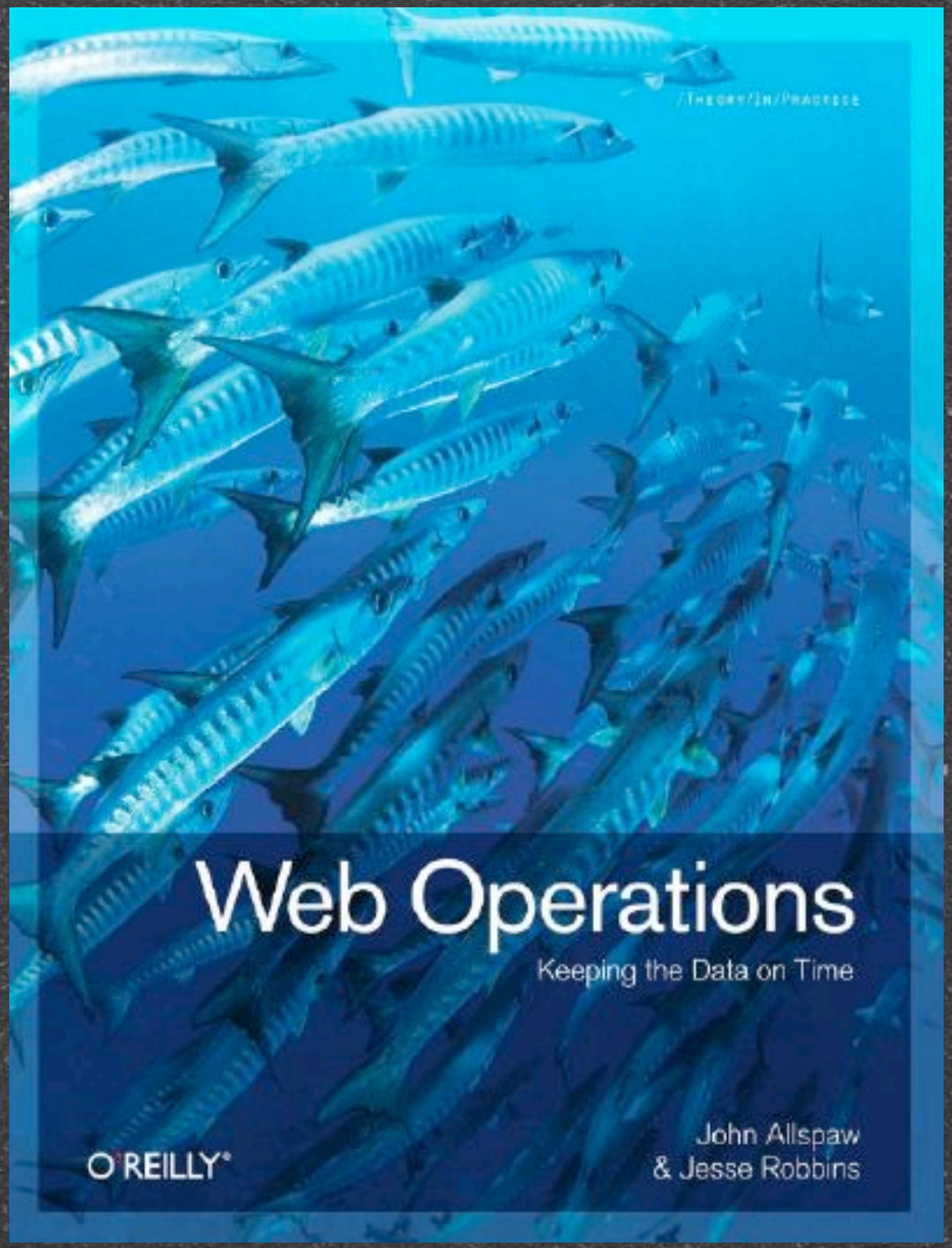
- Who, What, When?
- Have you done this before?
- WTF will happen when it goes wrong?
- WTF will you do when it does go wrong?

# Respect

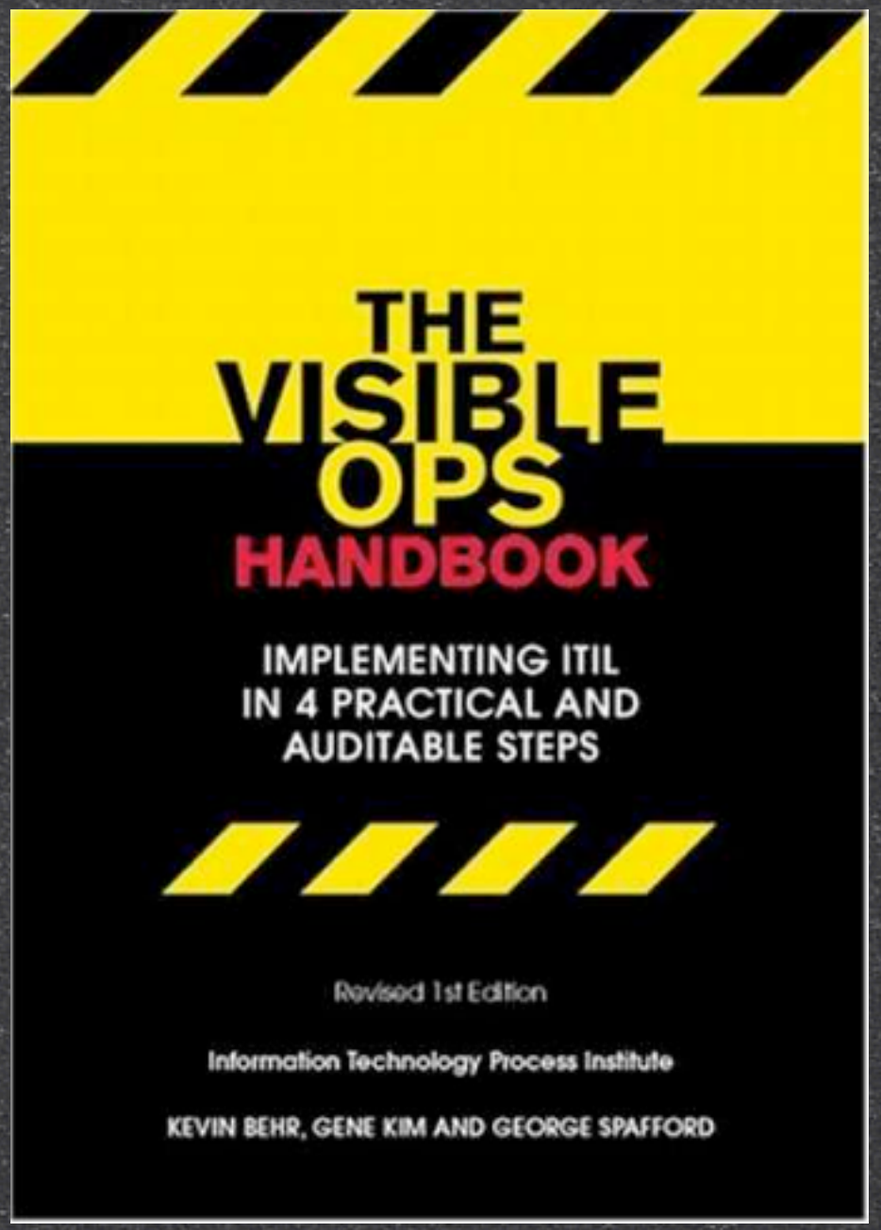
Celebrate collaboration!

Don’t allow fingerpointyness or being a jerk to cultivate

When the norm is to get along, being a jerk stands out


/Theory/in/Practice
Web Operations
Keeping the Data on Time
O'REILLY®
John Allspaw
& Jesse Robbins

# If you absolutely have to



# Photos

http://www.flickr.com/photos/artdrauglis/4192498549/

http://www.flickr.com/photos/amagill/34762677/

http://www.flickr.com/photos/vlumi/4501047312/

http://www.flickr.com/photos/maizee/3659446017/

http://www.flickr.com/photos/ohmannalianne/3945988109/

http://www.flickr.com/photos/ppowers/251326597/

http://www.flickr.com/photos/yodels/1390763078/

http://www.flickr.com/photos/perverted_introvert/4930316883/

http://www.flickr.com/photos/f-l-e-x/2319852529/

http://www.flickr.com/photos/11031862@N02/3197199659/