



Building Blocks and Stumbling Blocks

Designing for Scale and Innovation for the world's largest ticket marketplace

Charlie Fineman

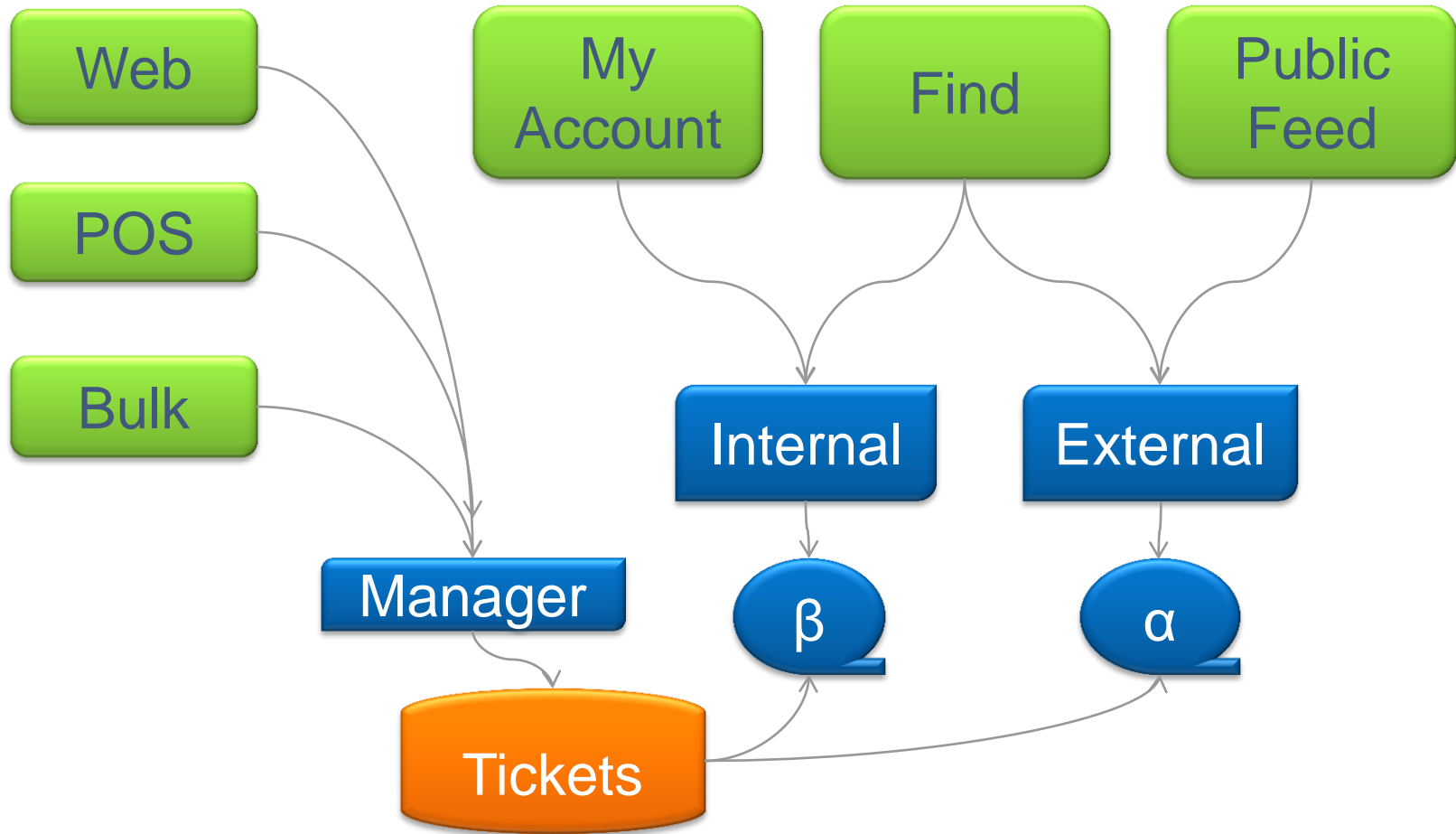
- 5M orders on 1.5-2M Active listings
- About 45K events
- 20% YoY growth in sales
- A typical hour sees us serving about 6-800k complex pages and about 2M api calls (more on this later) powering affiliate sites around the web.
- We're also a lot smaller shop!

Of course site performance but also...

- Operational efficiency
- Developer efficiency

- Buyers demand up-to-date inventory... *buyer frenzy*
- Sellers are constantly updating prices and quantity...
they are playing the market on and off StubHub
- Tickets ***are not commodities***

So as you might imagine the tickets table gets hammered.



Double click into LCS



Arlington Tickets

Search for tickets on StubHub

SPORTS | CONCERTS | THEATER

Ralph Wilson Stadium, Orchard Park, NY	11/01	\$25	Tickets starting at
Atlanta Falcons at New Orleans...	11/02	\$104	Tickets starting at
Superdome, New Orleans, LA			
Baltimore Ravens at Cincinnati...	11/08	\$12	Tickets starting at
Paul Brown Stadium, Cincinnati, OH			
Miami Dolphins at New Englan...			Tickets

Boston Tickets

Sports | **Concerts** | Theater

Smashing Pumpkins	Tickets starting at	Go ▶
ssssWang Theatre at	11/1 \$55.00	
Girl Talk	Tickets starting at	Go ▶
Showcase Live in	11/1 \$76.00	
Smashing Pumpkins	Tickets starting at	Go ▶
Wang Theatre at	11/1 \$75.00	

SF Bay Area Tickets

choose another city

SPORTS

CONCERTS

THEATER

Avalanche @ Sharks

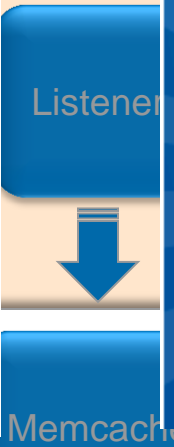
10/30/2009 starting at: \$35.00

Grizzlies @ Warriors

11/04/2009 starting at: \$3.80

Clippers @ Warriors

11/06/2009 starting at: \$9.00



SEDA Protocol Buffers

▶ **Pistons @ Lakers** 11/14/2008 starting from \$76.97

▶ **Bulls @ Lakers** 11/18/2008 starting from \$24.00

▶ **Lakers @ Suns** 11/20/2008 starting from \$12.00

previous games next games

Get LAKERS Tickets StubHub! See all Lakers games





Consume

Subscribe

A useful retrospective on applicability

<http://matt-welsh.blogspot.com/2010/07/retrospective-on-seda.html>

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Notify



itor

The Good

- Fast
- Flexible POTENT query language
- Full-text search
- Geo-Spatial added this year
- Various output formats

The Bad

- Not great for high frequency writes
 - Remember that “active marketplace” comment?
- Flat Data structures (well... there are lists)
- Replication feels like an afterthought (so we built our own)
- Search scores are relative, not absolute so not as good for “scrubbing”

Double Click into Browse (DCL)



Welcome, [Sign in](#) or [Register](#) [Buy](#) | [Sell](#) | [My Account](#) | [Customer Support](#) [f](#) [Connect](#)

StubHub! [Sports](#) [Concerts](#) [Theater](#) San Francisco 49ers Tickets

Enter: Team, artist, event, venue All Categories [Search](#) Where fans buy & sell tickets™

San Francisco 49ers Tickets [+1](#) [4](#) [Like](#) [106](#) [Get event updates](#)

- Categories**
- Sports
 - Football
 - 2011 NFL
 - 2011 Regular Season NFL [>](#)

- Fine tune results**
- All events
 - Only events with tickets

When

[All available dates](#) [📅](#)

Where

[SF Bay Area, Californi...](#) (3 events)

Events

[San Francisco 49ers](#) (3 events)

- More ideas for you**
- [San Francisco Giants Tickets](#)
 - [Oakland Raiders Tickets](#)
 - [2011 NFL Tickets](#)
 - [San Jose Sharks Tickets](#)
 - [Arizona Cardinals Tickets](#)



49ers Home	49ers Road	49ers Playoff	49ers Schedule
Event	Date and time ▲	Location	
Arizona Cardinals at San Francisco 49ers Tickets	Sun, 11/20/2011 1:05 p.m.	Candlestick Park San Francisco, CA	Sell See tickets Priced from: \$34 4,608 tickets left
St Louis Rams at San Francisco 49ers Tickets	Sun, 12/04/2011 1:15 p.m.	Candlestick Park San Francisco, CA	Sell See tickets Priced from: \$40 7,089 tickets left
Pittsburgh Steelers at San Francisco 49ers Tickets	Mon, 12/19/2011 5:30 p.m.	Candlestick Park San Francisco, CA	Sell See tickets Priced from: \$199 2,020 tickets left

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San Francisco 49ers Tickets

San Francisco 49ers Tickets

As the Niners look to make a serious move in the NFC West, you won't want to miss a single second of the action. For those not in the know, Patrick Willis is already a superstar and arguably the best linebacker in the league, giving the 49ers one of the best defenses around from season to season. You can't go wrong with heading out to all of the biggest games on the [schedule](#), so turn to StubHub for all the tickets you need.

San Francisco 49ers 2011 Tickets

The 49ers began playing in the NFL in 1950, and since then [NFL tickets](#) to see the team from San Francisco have been some of the most sought-after in all of the National Football League. The 49ers of the 1980s and 1990s are considered to be some

- Efficiently handling the nominal cases
 - Customer self service
 - Getting payments out quicker
 - Electronic integration
 - Primary
 - Point-of-(re)sale

- And the out-of-ordinary
 - Fraud
 - BPM

High level domain model



REST & WebApp

SOLR

sell.sh.com

buy.sh.com

www.sh.com

myaccount.sh.com

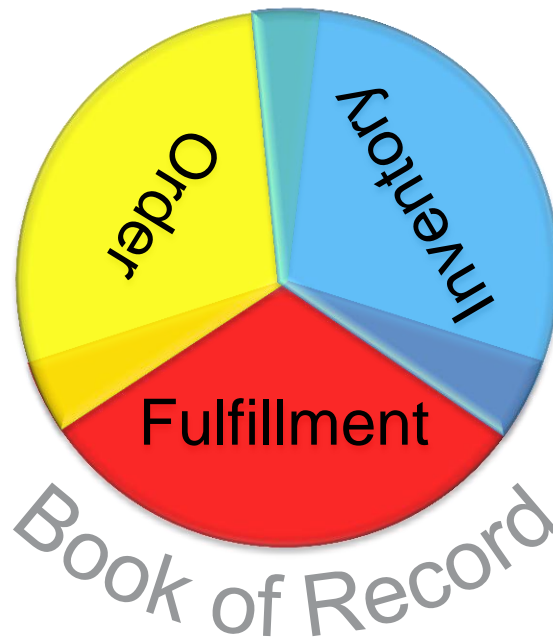
publicfeed.sh.com

User

Contact

(\$)

Profile



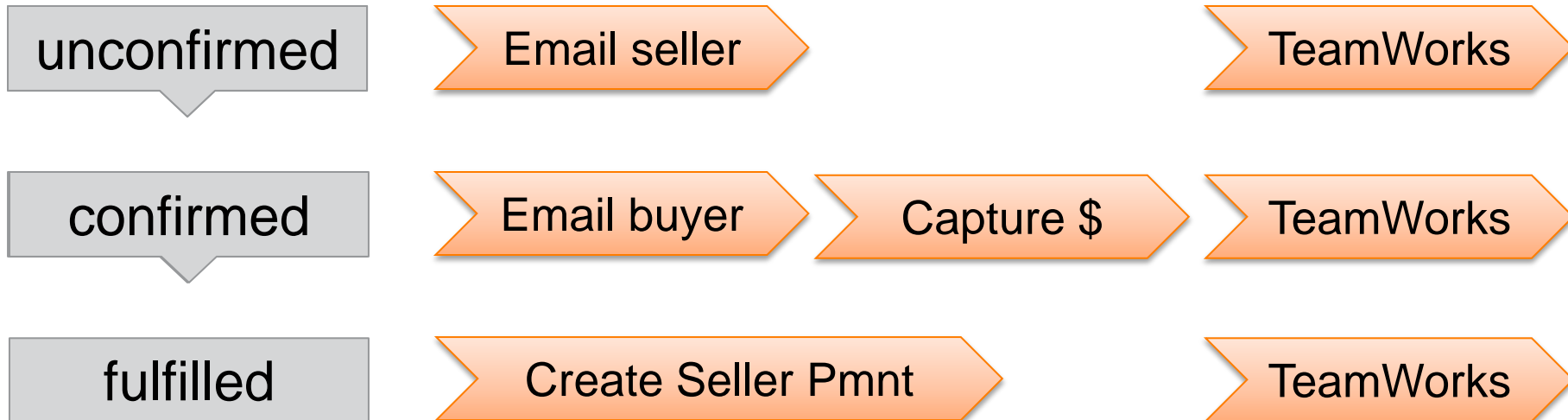
Content

Catalog

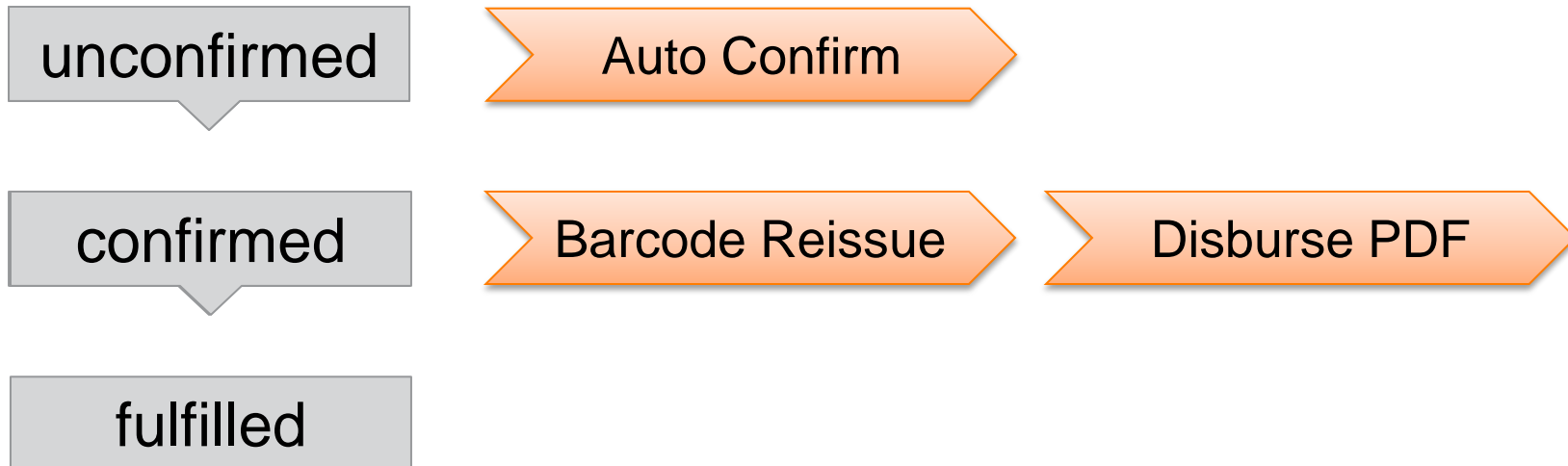
Order Lifecycle made life easy(er)



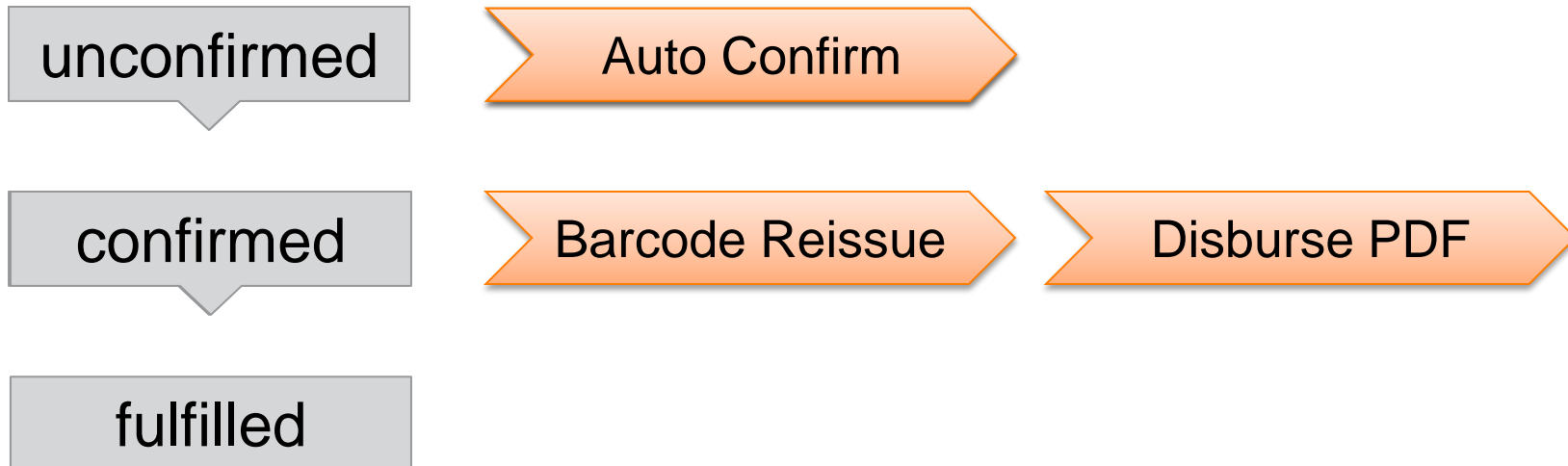
Nominal FedEx



Electronic Fulfillment

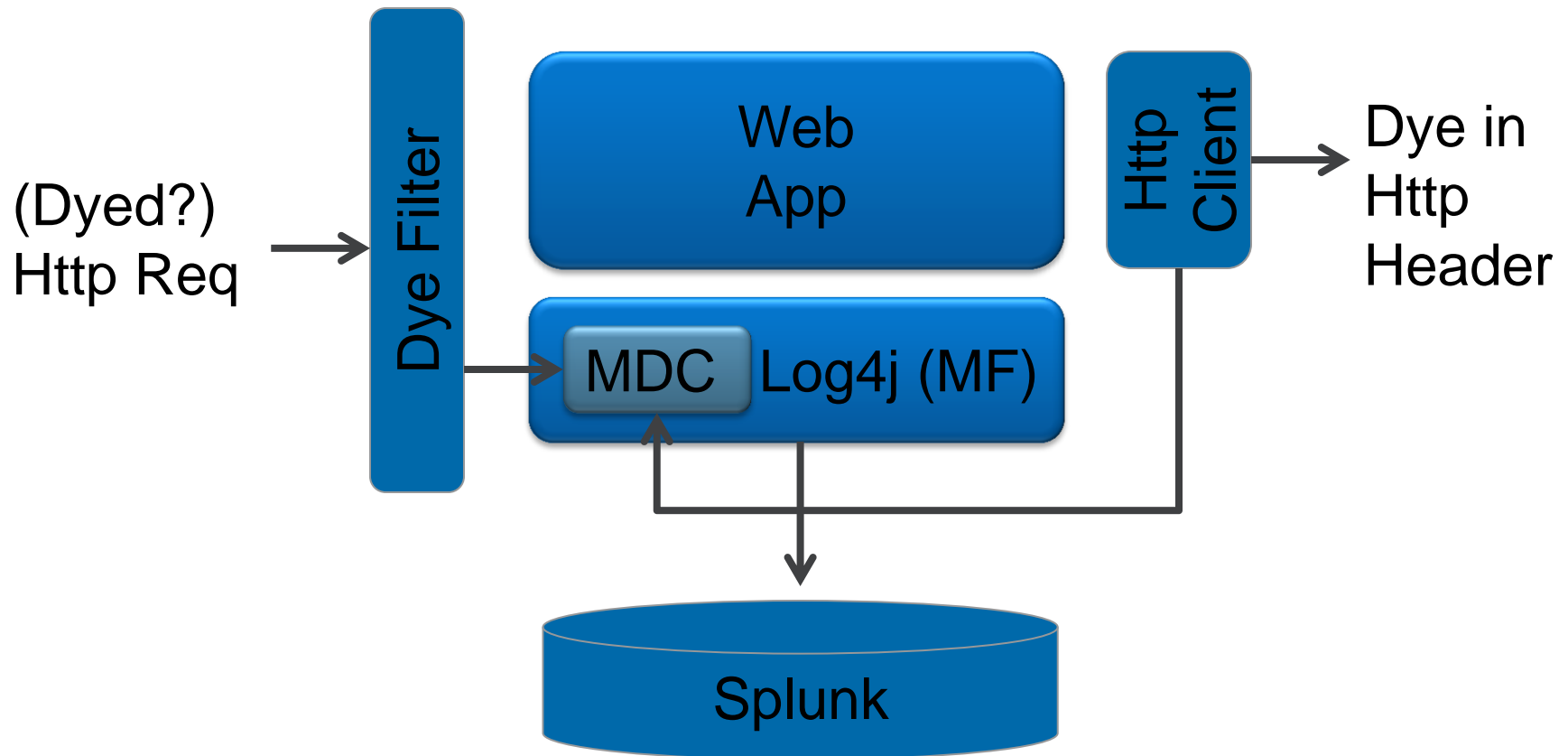


Fraud Avoidance



- Integration with “external book of record for inventory”.
- Uses “two phase commit”
 - 1) Reserve ticket on external system
 - 2) Create entry in StubHub book of record
 - 3) Commit purchase on external system.
- Proof of existence with Ticket Technology.
 - Looking to generalize (in both directions) in the future.

This *REALLY* improved our triage/debugging procedures



- Tend to prefer thin frameworks... makes devs think about what they are doing
 - Hibernate
 - Interesting observation: new schema vs existing
 - Component-based web frameworks
- It's great to have a legacy but it can really suck
- Don't short-change CM and deployment.
- Invest in continuous improvement.



Thanks!

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