Surviving technology transitions:

Adding and removing tools from an existing stack
The “steady” state
Evaluating Change

Have a process.

It will probably suck at first.

MareBearCrafts.etsy.com

Maggie Zhou | @zmagg
Melissa Santos | @ansate
Evaluating Change

Enumerate requirements

and advantages of potential solutions
Evaluating Change

TheFreckledBerry.etsy.com
Evaluating: Architecture Review

CherryOrchardAttic.etsy.com

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Evaluating: Architecture Review

EventPipe - a new ETL process for analytics logging, backed by Kafka
EventPipe Architecture Review

• The problem: old architecture was brittle. GET requests, logrotate

• Wins: distributed system - near real time metrics into event health, sets us up for streaming analytics later
Evaluating: Operability Review

Understand:

• how the system will break
• how we will know
• how we will react
## Operability Review

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the feature been tested enough to deploy to production?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the feature supported in the app? Does it affect older versions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has it been tested on mobile devices and all supported browsers?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have all strings been translated into all our supported languages?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there communication (community/blog post)</td>
<td></td>
<td></td>
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</tbody>
</table>

### Scenario: Cut power to one chassis (4 Kafka nodes)

<table>
<thead>
<tr>
<th>Execution &amp; Test Plan</th>
<th>killall -9 kafka on one box</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Expected Behavior</th>
<th>nagios process check alerts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>nagios alerts for under-replication</td>
</tr>
<tr>
<td></td>
<td>no data loss</td>
</tr>
<tr>
<td></td>
<td>no effect on prod</td>
</tr>
</tbody>
</table>

| Observed Behavior                          | Cutting power to these machines caused XFS corruption because of the write cache in the RAID controller. We are going to disable the write cache to prevent this from happening in the future. |
Operability Review: Eventpipe

- Scenario: Franz dies on a single beacon box
- Scenario: Apache dies on a single beacon box
- Scenario: Franz dies on all beacon boxes
- Scenario: Franz dies on *most* boxes
- Scenario: One Kafka box shuts down cleanly
- Scenario: Cut power to one Kafka box
- Scenario: Cut power to one chassis (4 Kafka nodes)
- Scenario: Most Kafka boxes are unreachable (see how many we can shut down and still stay up)
- Scenario: One ZooKeeper dies
- Scenario: Two ZooKeepers die
Comfortable upgrades

curlybracketdesign.etsy.com
Comfortable upgrades

Test, test, test!

How do you gain confidence?
Comfortable upgrades

Case study: HHVM

API Traffic

Web Traffic

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Melissa Santos | @ansate
Comfortable upgrades: Testing

- benchmarking

HHVM CPU 14 hour

140 rps peak

Zend CPU 14 hour

140 rps peak
Comfortable upgrades

How do you gain confidence?

• slow ramp-up

• run an a/b experiment

• ramp up the things that could go badly by themselves (high traffic pages, unique features)
Upgrading: HHVM

HHVM vs PHP 5.5 on Etsy Internal API

<table>
<thead>
<tr>
<th>Response Time in Milliseconds</th>
<th>HHVM</th>
<th>PHP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>p95</td>
<td>125</td>
<td>250</td>
</tr>
<tr>
<td>p99</td>
<td>250</td>
<td>375</td>
</tr>
</tbody>
</table>

Etsy

Maggie Zhou | @zmagg
Melissa Santos | @ansate
Removing old tech

StageFortPress.etsy.com
Removing old tech

mygoodbabushka.etsy.com
Removing old tech
Removing old tech

a story: Cascading::Jruby
Removing Cascading.jruby

1,098 c.jr jobs

Etsy

Maggie Zhou | @zmagg
Melissa Santos | @ansate
Removing Cascading.jruby

cha
214 commits / 17,601 ++ / 860,053 --
Removing old tech: Celebrate!
Evaluation Takeaways

• It’s ok to choose NOT to do something
• But if you do something, you gotta explain what problem it solves (and how)
• Process helps people see how you made the decision
Upgrading Takeaways

• testestestestestestest
• Be clear about what’s different
• Publicize and celebrate how it is better!
Retiring Takeaways

• It takes longer than you think it will
• It’s gonna hurt
• It’s going to feel so good once you’re done
Thanks!