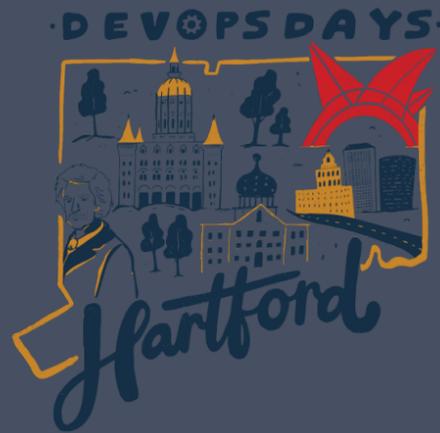


BY OUR POWERS COMBINED:
OBSERVABILITY FOR DEVELOPERS

HI, ABSTRACTIONS! 🖐️



🎙️ : [THEELASTICAST.COM](https://theelasticast.com)

🐦 : [@CRAYZEIGH](https://twitter.com/crayzeigh)

✉️ : AARON.ALDRICH@ELASTIC.CO

🌐 : [NOTI.ST/CRAYZEIGH](https://noti.st/crayzeigh)



OBSERVABILITY

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DEVELOPS

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DEVOPS

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elastic

DEV



Change



OPS



Stability



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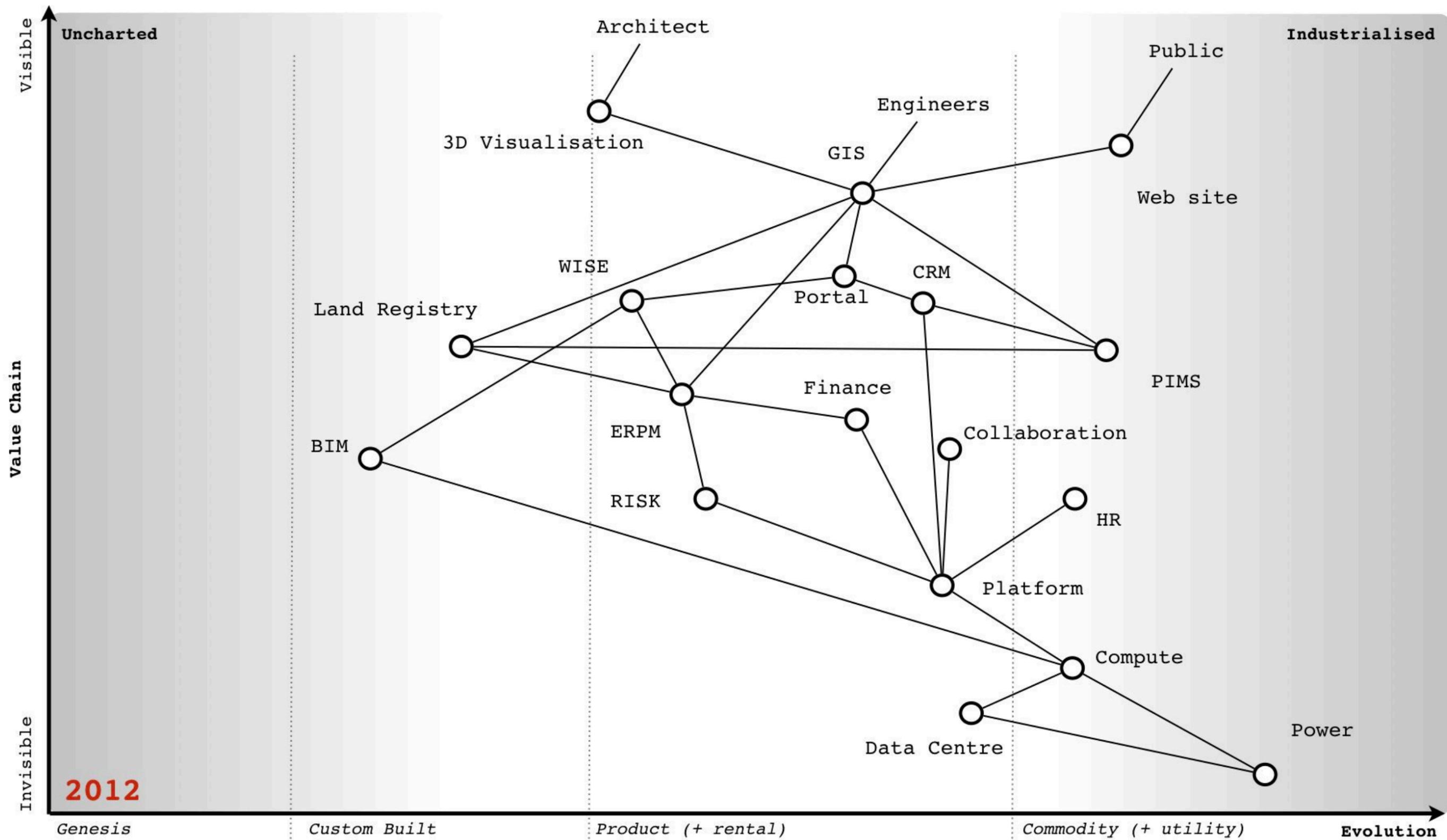
DEVOPS

- > **WAVE 1: OPS** LEARNS **CODE** & AUTOMATION
- > **WAVE 2: DEV** OWNS CODE THROUGH **PRODUCTION**¹

¹[HTTPS://VIMEO.COM/341142053](https://vimeo.com/341142053)

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[HTTPS://DEV.TO/MOLLY_STRUVE/MAKING-ON-CALL-NOT-SUCK-490](https://dev.to/molly_struve/making-on-call-not-suck-490)



SHARED LANGUAGE

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SHARED TOOLS

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SHARED SOURCE OFF TRUTH

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OBSERVABILITY

A SYSTEM IS OBSERVABLE WHEN YOU CAN ASK ARBITRARY QUESTIONS ABOUT IT AND RECEIVE MEANINGFUL ANSWERS WITHOUT HAVING TO RESORT TO WRITING NEW CODE OR COMMAND LINE TOOLS.

IT LETS YOU DISCOVER UNKNOWN-UNKNOWN AND DEBUG IN PRODUCTION.

ISN'T IT JUST MONITORING WITH
BETTER SEO?

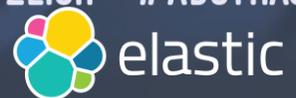
- YOU

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YOU'RE NOT WRONG...

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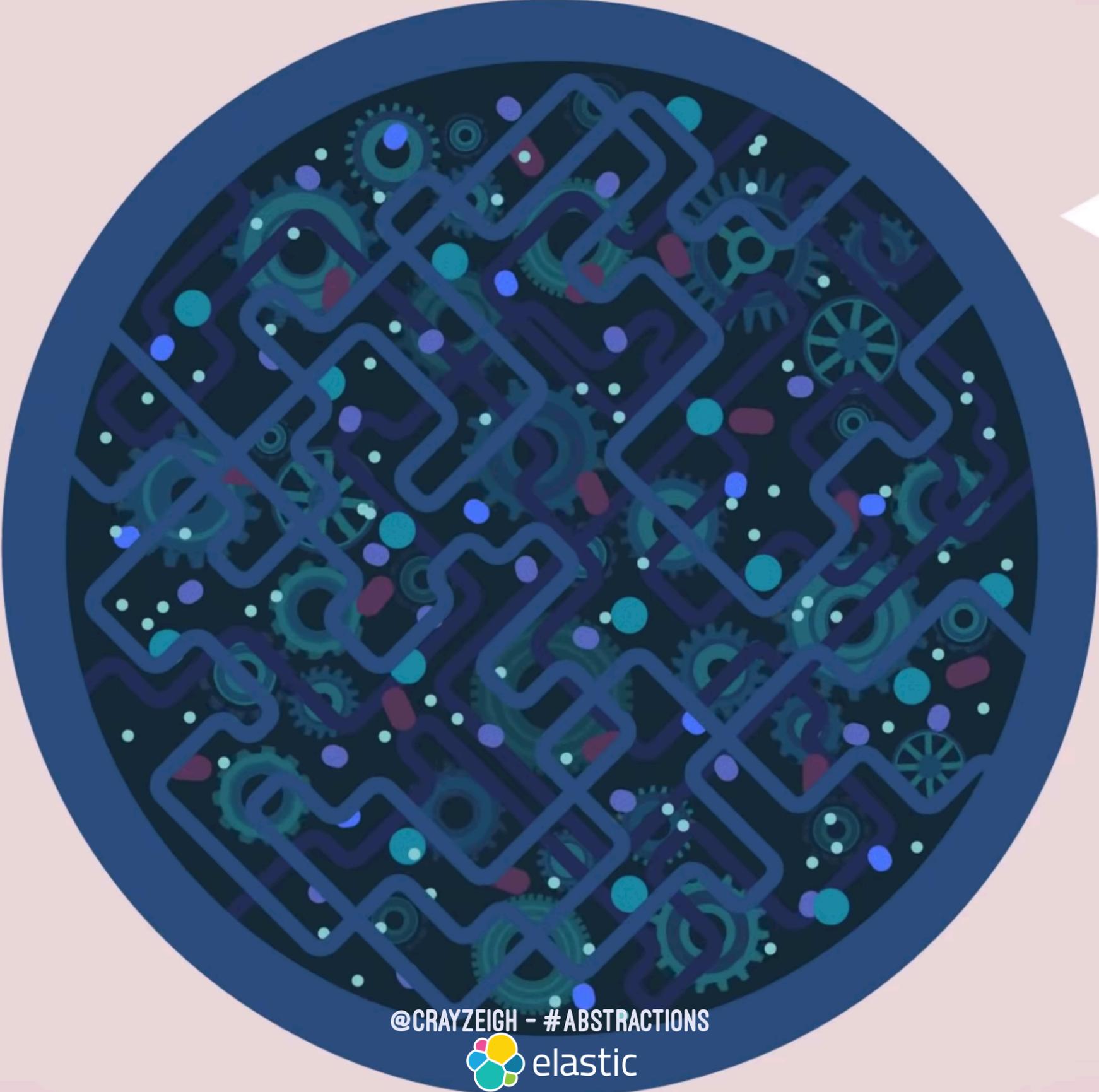




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**SOFTWARE IS INHERENTLY OPAQUE. WE
HAVE TO INSTRUMENT IT TO OUTPUT
MEANINGFUL INFORMATION**

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THE THREE PILLARS OF OBSERVABILITY

1. LOGS

2. METRICS

3. APM

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THE THREE PILLARS OF OBSERVABILITY

1. LOGS EVENTS

2. METRICS

3. APM

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THE THREE PILLARS OF OBSERVABILITY

1. LOGS EVENTS

2. METRICS

3. APM

4. DISTRIBUTED TRACING

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THE THREE PILLARS OF OBSERVABILITY

1. LOGS EVENTS

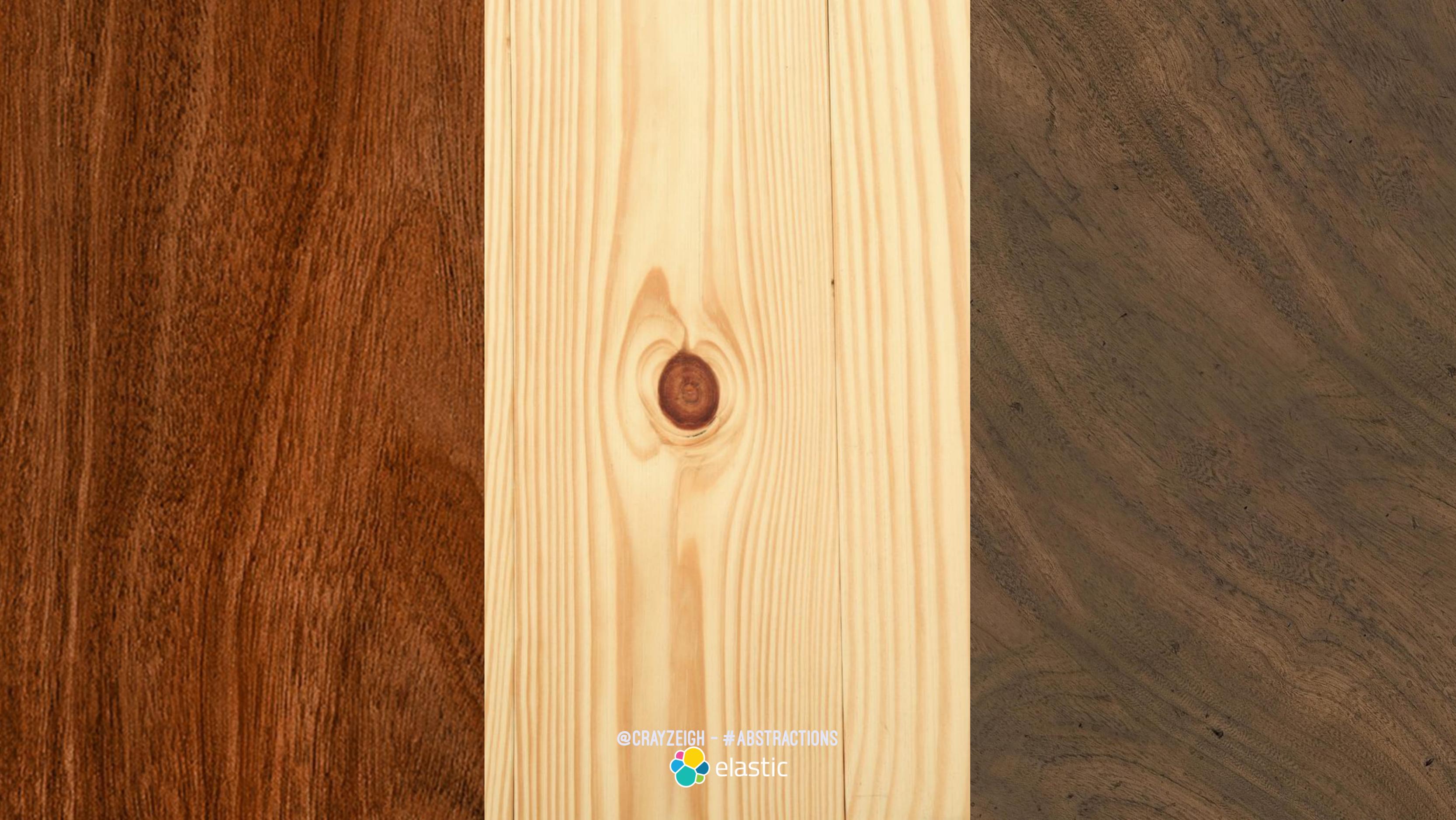
2. METRICS

3. APM & DISTRIBUTED TRACING

4. ~~DISTRIBUTED TRACING~~

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LOGS / METRICS / APM
ARE THE MEDIA WE WORK IN

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+ Add filter

[Metricbeat] MySQL Metrics

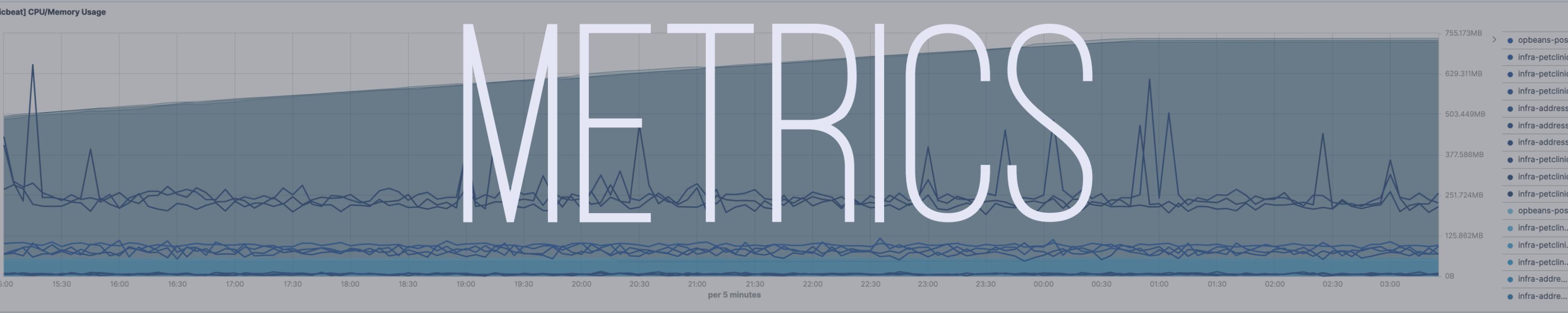
202.627 Average Opened Tables 1.039 Average Threads 6,423,741 Select Commands 48,640 Delete Commands 65 Connections

K8 Controls - 2

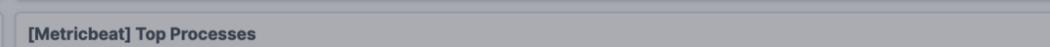
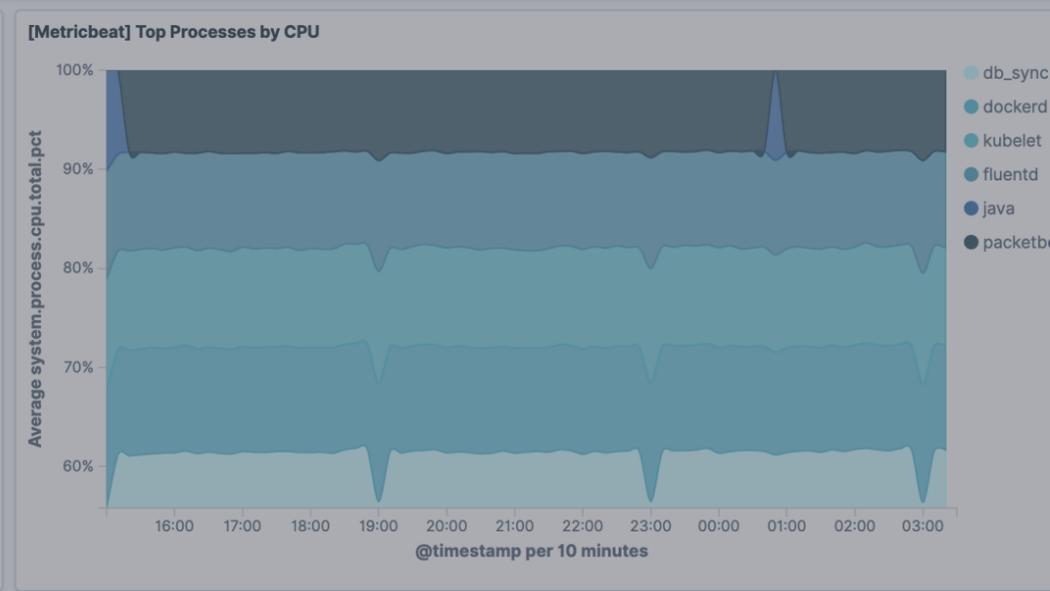
Pod: Container:

Nodes, Pods & Containers

Pod Name	Container Name	Connections
infra-petclinic-client-7b9644b6c8-v5q28	infra-demo-petclinic-nginx	14
infra-petclinic-client-7b9644b6c8-v5q28	infra-demo-petclinic-client	92
infra-petclinic-client-7b9644b6c8-8zvdv	infra-demo-petclinic-nginx	14
infra-petclinic-client-7b9644b6c8-8zvdv	infra-demo-petclinic-client	88
infra-petclinic-client-7b9644b6c8-hjsq	infra-demo-petclinic-nginx	14



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```
# Time: 2018-11-27T23:59:26.375064Z
18:59:22.595 POST /api/specialties 201 14.847 ms - 42
18:59:22.668 GET /api/vets?Accept=application/json;charset=UTF-8 200 33.577 ms - 4901
18:59:22.690 POST /api/visits 500 0.949 ms - 665
18:59:22.696 Sending error to Elastic APM { id: '3c846fde4fcdaae8d9e370246b53ec02' }
18:59:22.833 GET /api/vets?Accept=application/json;charset=UTF-8 200 43.512 ms - 4901
18:59:22.991 GET /api/owners 200 101.692 ms - 37307
18:59:23.000 [nginx][access] undefined undefined "POST /api/find_state HTTP/1.1" 200 51
18:59:23.000 [nginx][access] undefined undefined "GET /petclinic/api/owners/41 HTTP/1.1" 200 600
18:59:23.000 [nginx][access] undefined undefined "GET /server-status HTTP/1.1" 200 110
18:59:23.000 [nginx][access] undefined undefined "POST /api/find_state HTTP/1.1" 200 51
18:59:23.000 [info] client 10.56.0.149 closed keepalive connection
18:59:23.000 [nginx][access] undefined undefined "GET /api/owners/41 HTTP/1.1" 304 0
18:59:23.000 [nginx][access] undefined undefined "GET /server-status HTTP/1.1" 200 112
18:59:23.479 POST /api/find_state 200 453.049 ms - 51
18:59:23.946 GET /healthcheck 200 0.70 ms - 6
18:59:23.979 GET /api/owners/41 304 16.388 ms - -
18:59:24.000 [error] connect() failed (111: Connection refused) while connecting to upstream, client: 10.56.2.85, server: infra-address-finder-549cd4684f-7vm9v, request: "POST /api/find_city HTTP/1.1", upstream: "http://[::1]:5000/api/find_city", host: "infra-petclinic-client-7b9644b6c8-hjjsq"
18:59:24.000 [warn] upstream server temporarily disabled while connecting to upstream, client: 10.56.2.85, server: infra-address-finder-549cd4684f-7vm9v, request: "POST /api/find_city HTTP/1.1", upstream: "http://[::1]:5000/api/find_city", host: "infra-petclinic-client-7b9644b6c8-hjjsq"
18:59:24.000 [nginx][access] undefined undefined "POST /api/find_city HTTP/1.1" 200 49
18:59:24.000 [nginx][access] undefined undefined "POST /api/find_city HTTP/1.1" 200 49
18:59:24.481 POST /api/find_city 200 64.872 ms - 49
18:59:25.000 [info] client 10.56.0.149 closed keepalive connection
18:59:25.000 [info] client 10.56.0.149 closed keepalive connection
18:59:25.000 [nginx][access] undefined undefined "GET /petclinic/api/pettyypes?Accept=application/json;charset=UTF-8 HTTP/1.1" 200 4139
```

EVENTS

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elastic

CARDINALITY

& YOU

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EXISTING LOGS

```
66.249.65.159 - - [06/Nov/2014:19:10:38 +0600] "GET /news/53f8d72920ba2744fe873ebc.html HTTP/1.1" 404 177
 "-" "Mozilla/5.0 (iPhone; CPU iPhone OS 6_0 like Mac OS X) AppleWebKit/536.26 (KHTML, like Gecko) Version
 /6.0 Mobile/10A5376e Safari/8536.25 (compatible; Googlebot/2.1; +http://www.google.com/bot.html)"
66.249.65.3 - - [06/Nov/2014:19:11:24 +0600] "GET /?q=%E0%A6%AB%E0%A6%BE%E0%A7%9F%E0%A6%BE%E0%A6%B0 HTTP/
 1.1" 200 4223 "-" "Mozilla/5.0 (compatible; Googlebot/2.1; +http://www.google.com/bot.html)"
66.249.65.62 - - [06/Nov/2014:19:12:14 +0600] "GET /?q=%E0%A6%A6%E0%A7%8B%E0%A7%9F%E0%A6%BE HTTP/1.1" 200
 4356 "-" "Mozilla/5.0 (compatible; Googlebot/2.1; +http://www.google.com/bot.html)"
```

STRUCTURED LOGGING

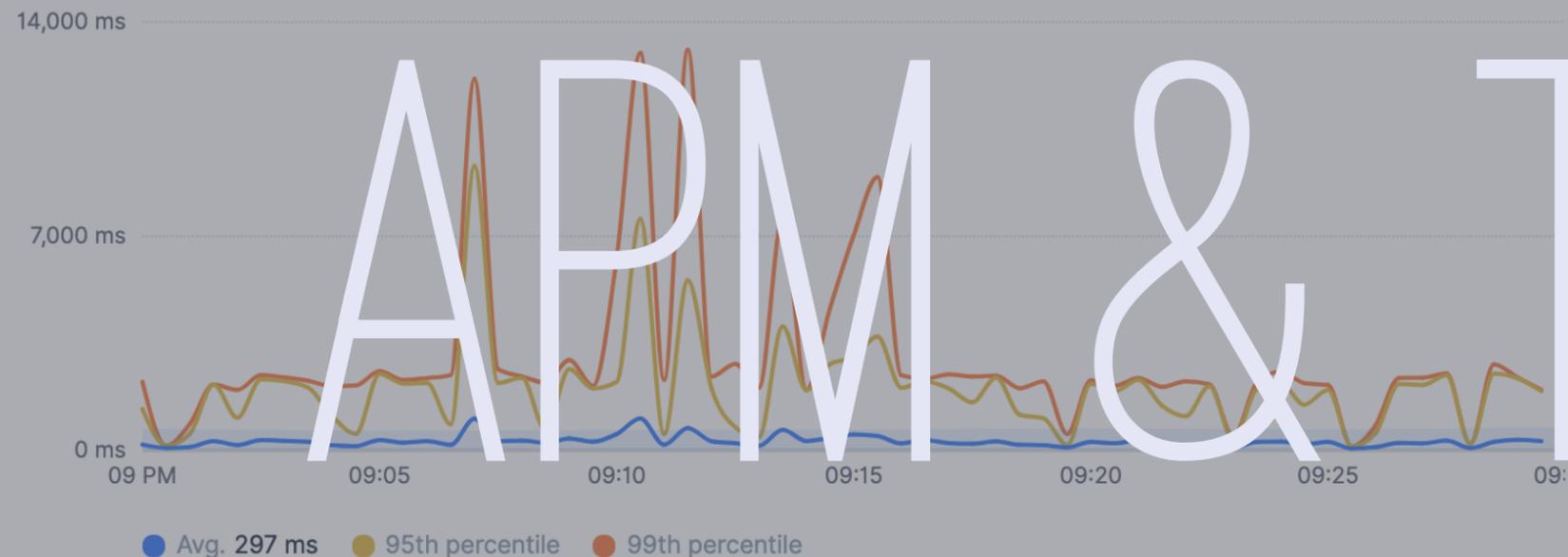
```
{
  "@timestamp": "2019-08-04T12:30:04.000Z",
  ...
  "container": {
    "image.id": "48f5af6667f3457be0a2c7814caefe21ed3c94fb94bd6243096b3a61ea502b1d",
    "version": "version",
  },
  "build.id": "efdd0b5e69b0742fa5e5bad0771df4d1df2459d1"
  ...
  "transaction": "transaction_ID",
  "user": "importantPerson",
  "account": "0129",
  "os": "osx",
  ...
  "api_endpoint": "endpoint",
  ...
  "response": 400,
  ...
  "message": "Some informative thing, probably more human readable and friendly, but difficult to parse"
}
```

Filter by type

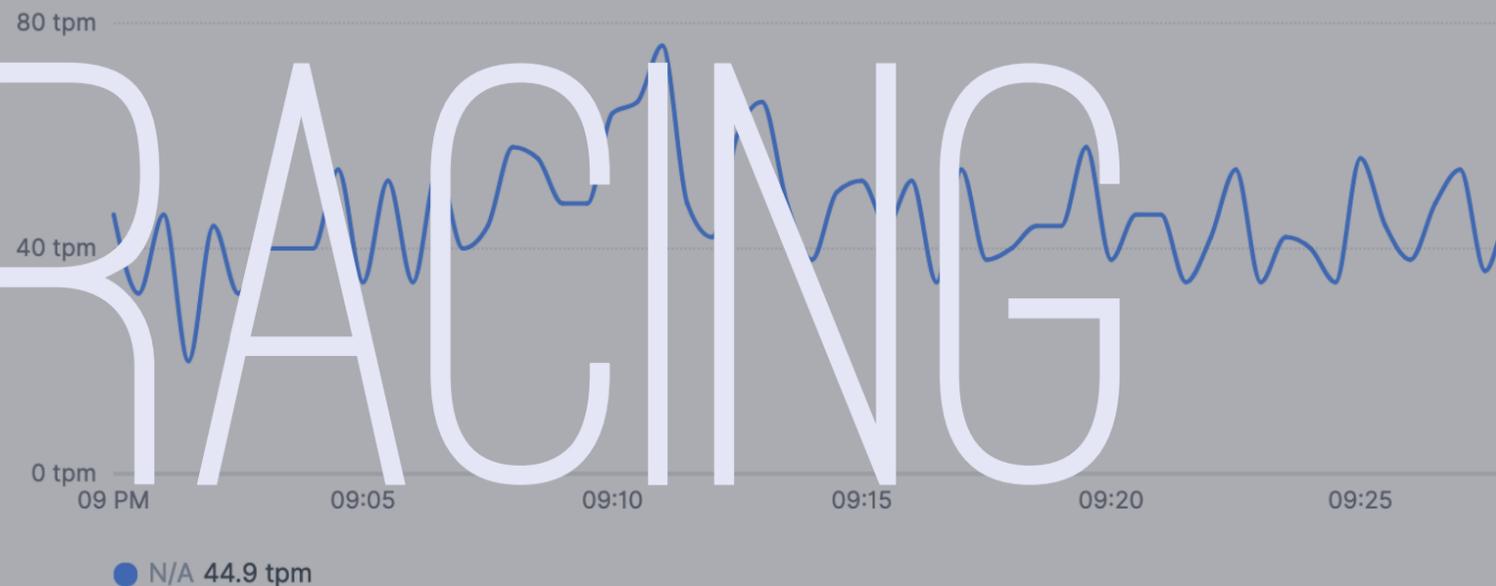
Events ▼

Transaction duration

[Machine learning: View Job](#)



Transactions per minute



Transactions

Name	Avg. duration	95th percentile ↓	Trans. per minute
UpdateOwner	2,451 ms	12,566 ms	1.3 tpm
EditOwnerPage	221 ms	2,341 ms	1.4 tpm
VetsPage	254 ms	2,313 ms	4.2 tpm
FindOwnersPage	337 ms	2,272 ms	11.5 tpm
OwnersPage	209 ms	1,994 ms	11.5 tpm
ErrorPage	147 ms	1,847 ms	3.0 tpm

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Transaction sample

Actions ▾

View full trace

Timestamp

9 months ago (November 27th 2018, 21:10:09.008)

URL

N/A

Duration

47 ms

% of trace

100.0%

Result

N/A

Errors

None

User ID

brist1y

User agent

Chrome 19.0.1055

User agent OS

Mac OS X 10.7.2

User agent device

Other

Timeline

Metadata

Services ● petclinic-react ● petclinic-node ● petclinic-spring

0 ms

5 ms

10 ms

15 ms

20 ms

25 ms

30 ms

35 ms

40 ms

47 ms

🌐 UpdateOwner 47 ms

PUT /api/owners/1 46 ms

↔ HTTP 2xx /api/owners 40 ms

PUT infra-petclinic-client-7b9644b6c8-8zvdv/petclinic/api/owners/1 38 ms

↔ HTTP 2xx OwnerRestController#updateOwner 16 ms

| validateZipCode 19 μs

updateOwner 13 ms

findOwnerById 4,050 μs

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action sample

Actions

View full t

mp
ths ago (November 27th 2018, 21:10:40.265)

URL
N/A

ms
% of trace
100.0%

Result
N/A
Errors
None

User ID
dalem

ent
e 70.0.3538
User agent OS
Mac OS X 10.14.0

User agent device
Other

Timeline Metadata

petclinic-react petclinic-node petclinic-spring

ms 1,000 ms 2,000 ms 3,000 ms 4,000 ms 5,000 ms 6,000 ms 7,279



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updateOwner 1,642 μs

The background of the slide is a detailed, dark-toned illustration of the Tower of Babel. The tower is a massive, multi-tiered structure with intricate architectural details, including arches, windows, and scaffolding. It rises from a city with various buildings and a river. In the foreground, a man in a red cape and a soldier with a shield are visible. The overall scene is dramatic and historical.

SHARED LANGUAGE

➤ LEARNING TO SPEAK PROD

➤ TEACHING PROD TO SPEAK DEV (STRUCTURED LOGS: TRACES)

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SHARED TOOLS

- > **DEBUGGING IN PROD**
- > **OPS SKILLS TRANSFERRABLE AND REPLICABLE**
- > **NEW KNOWLEDGE AND METHODS SHAREABLE**

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SHARED SOURCE OF TRUTH

- > REAL PRODUCTION DATA
- > DRAW BETTER LINES FROM CODE TO PROD
- > WRITE BETTER, PRODUCTION READY CODE.

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WHERE DO WE GO FROM HERE?

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TESTING & EXPERIMENTATION

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TEST IN PRODUCTION

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Michael Stahnke

@stahnma



Everybody has a testing environment. Some people are lucky enough enough to have a totally separate environment to run production in.

♡ 433 6:07 PM - Aug 21, 2015



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elastic

DON'T DEBATE
EXPERIMENT

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SPEAKING OF TESTING²:

QA

² [HTTPS://THEELASTICAST.COM/EPISODES/0017-QA/](https://theelasticast.com/episodes/0017-QA/)

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NETFLIX



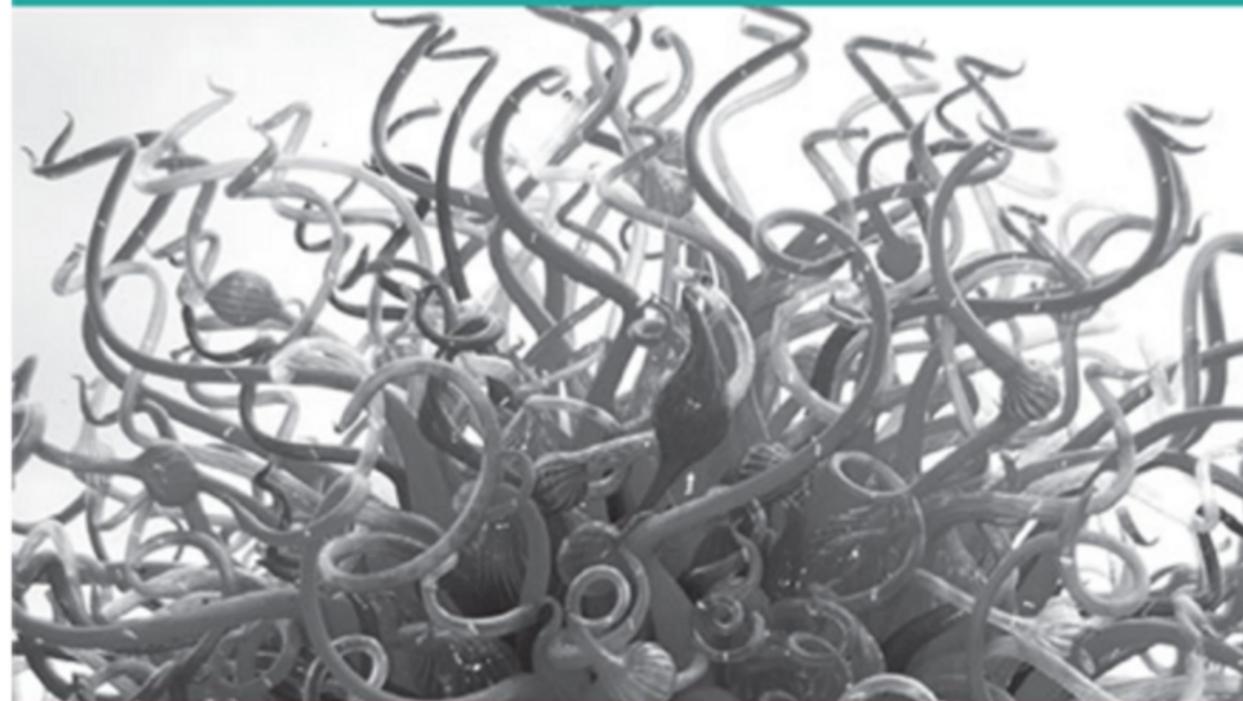
**SIMI
ARMY**

O'REILLY®

Chaos Engineering

Building Confidence in System Behavior
through Experiments

Compliments of
NETFLIX



Casey Rosenthal, Lorin Hochstein,
Aaron Blohowiak, Nora Jones
& Ali Basiri

DEVOPS

- > **WAVE 1: OPS** LEARNS **CODE** & AUTOMATION
- > **WAVE 2: DEV** OWNS CODE THROUGH **PRODUCTION**¹

¹[HTTPS://VIMEO.COM/341142053](https://vimeo.com/341142053)

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DEV OWNS CODE THROUGH PRODUCTION

- > BETTER, MORE PRODUCTION-READY CODE
 - > REAL WORLD EXPERIMENTATION
- > IMPROVED OPERATIONAL RESILIENCY



THE POWER
IS YOURS

THANKS!

- > SLIDES & REFERENCES: [NOTI.ST/CRAYZEIGH](https://noti.st/crayzeigh)
- > TRIAL: [ELA.ST/AARON-ALDRICH-TRIAL](https://ela.st/aaron-aldrich-trial)