

Release Engineering as a Service

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Agenda

- Who are we?
- What is Release Engineering?
- Problems we faced
- Incremental Solutions
- RAAS
- How we fixed our problems

Who are we?

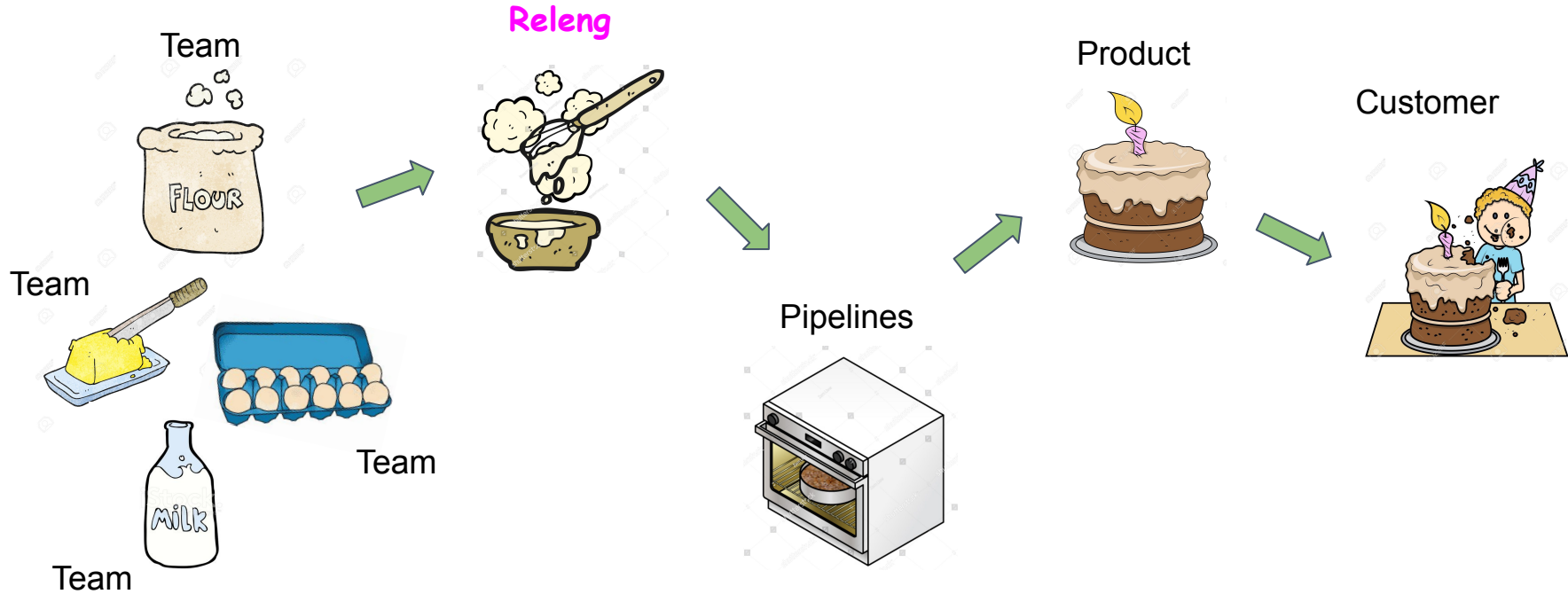
Ramya Shenoy
Software Engineer @ Pivotal

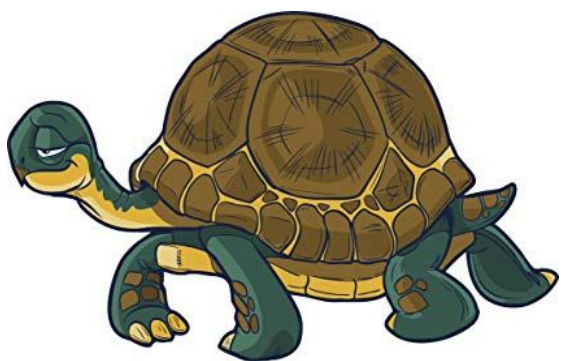


Maryam Labib
Software Engineer @ Pivotal



What is release engineering in our context?





shipping too slowly

APRIL 2018						
SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

bugs in code

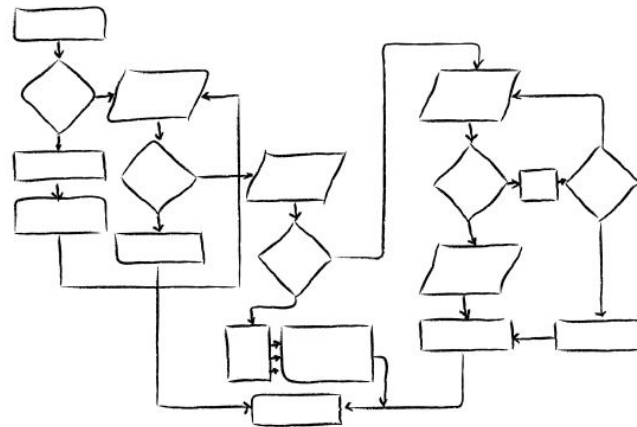


Why?



No testing

```
1 def add(X, Y):  
2     return X+Y  
3  
4 def test_add():  
5     AXY = int(add(4, 5))  
6     assert AXY == 9
```

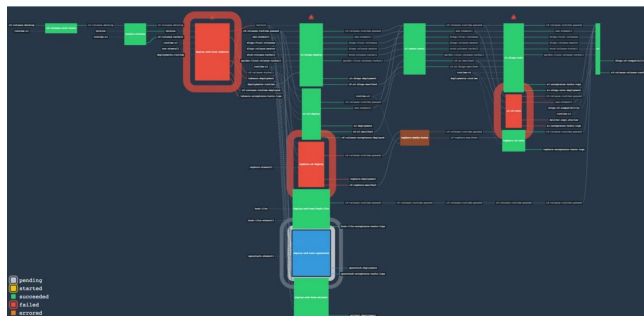


No process

YAML
Duplication



Pipelines Take Forever



Everything is
Manual

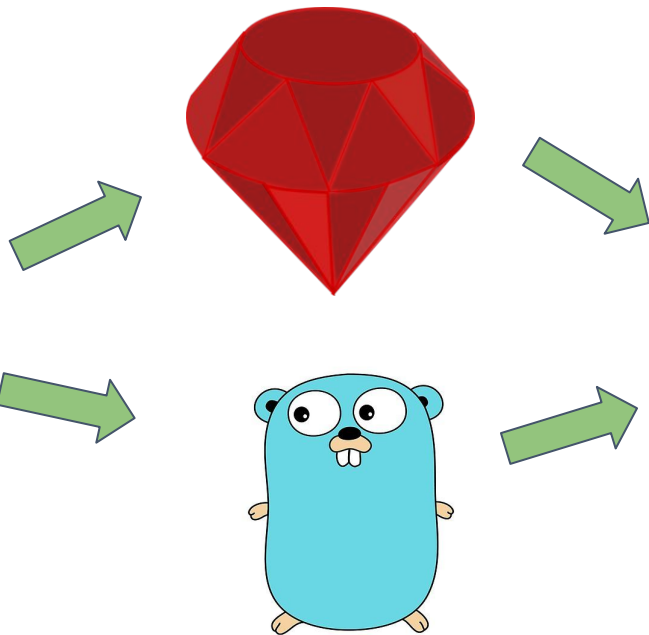


- **No Testing**
- No Integration Process
- YAML Duplication
- Manual Environment Creation
- Pipelines Take Forever
- OSL



Hard to write tests for bash

Hard to notice bugs



```
1 def add(X, Y):  
2     return X+Y  
3  
4 def test_add():  
5     AXY = int(add(4, 5))  
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```

- No Testing
- **No Integration Process**
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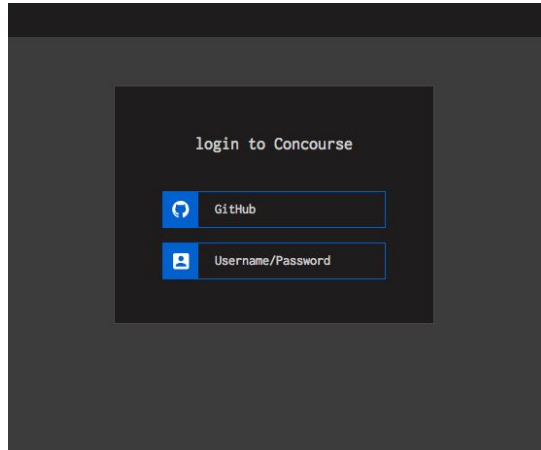
Who triggered the pipeline?



Direct code merges to master, debugging
in production



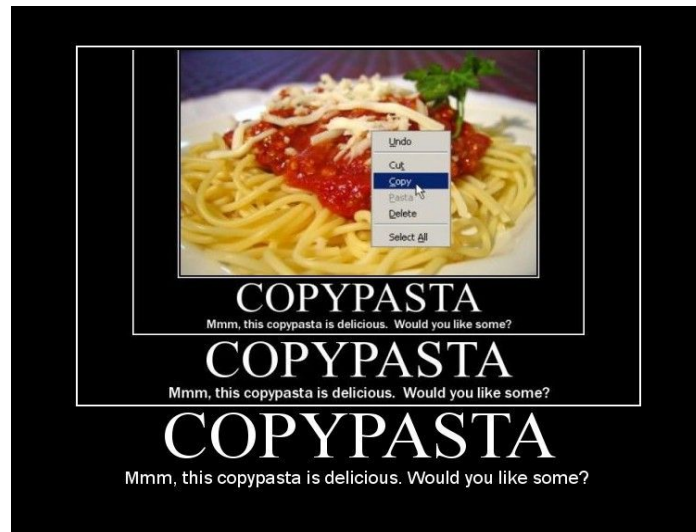
Restricted Concourse Access



Code Reviews and PR Process



- No Testing
- No Integration Process
- **YAML Duplication**
- Manual Environment Creation
- Pipelines Take Forever
- OSL





Decouple the Pipelines

one_huge_pipeline:

- configuration_1
- configuration_2
- configuration_3
- configuration_4

one_small_pipeline:

- configuration_1

one_small_pipeline:

- configuration_2

one_small_pipeline:

- configuration_3

one_small_pipeline:

- configuration_4

Now we see the pieces!

Pipeline Composition - Before

Pipeline 1

resource_types:

- duplicate_yaml
- duplicate_yaml

resources:

- duplicate_yaml
- duplicate_yaml
- duplicate_yaml

jobs:

- duplicate_yaml
- duplicate_yaml

Pipeline 2

resource_types:

- duplicate_yaml
- duplicate_yaml

resources:

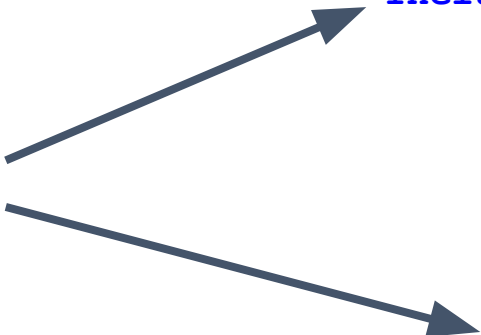
- duplicate_yaml
- duplicate_yaml
- duplicate_yaml

jobs:

- duplicate_yaml
- duplicate_yaml

Automatic Pipeline Composer - After

Written only once,
used everywhere!

Two dark blue arrows originate from the text 'Written only once, used everywhere!'. The top arrow points towards the 'Pipeline X' configuration, and the bottom arrow points towards the 'jobs' section of the configuration.

Pipeline X

```
Pipeline_name: some pipeline
```

Includes:

resource_types:

- resource_type_def.yml

resources:

- resource_def_1.yml
- resource_def_2.yml

jobs:

- job_definition_1.yml
- job_definition_2.yml

- No Testing
- No Integration Process
- YAML Duplication
- **Manual Environment Creation**
- Pipelines Take Forever
- OSL

Pipelines > Number of
Environments

No automation



Team morale low



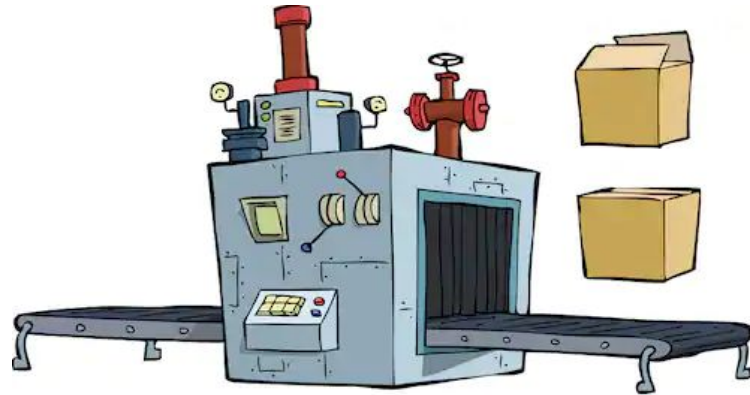
Human error

Pipelines waiting on locks

Takes forever to create new environments

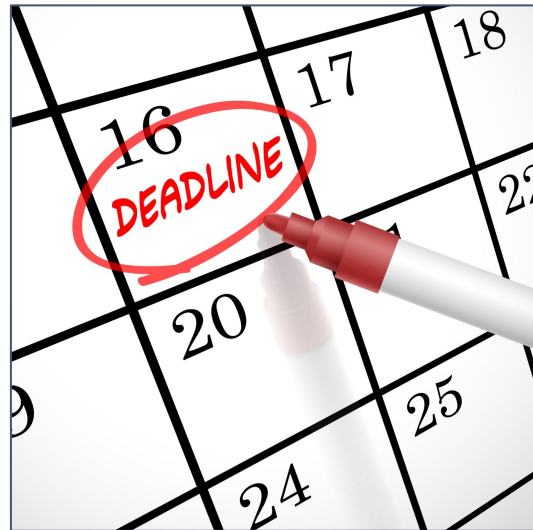


One Click environment
management
Terraform



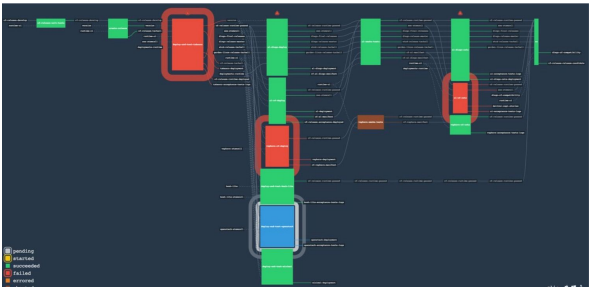
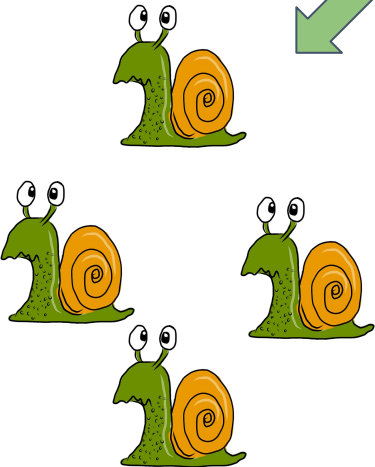
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Pipelines Take Forever

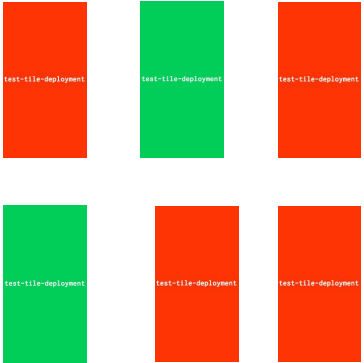


Compiling Code against Stemcells
- using golang channels/process

Pipelines
Are
Slow

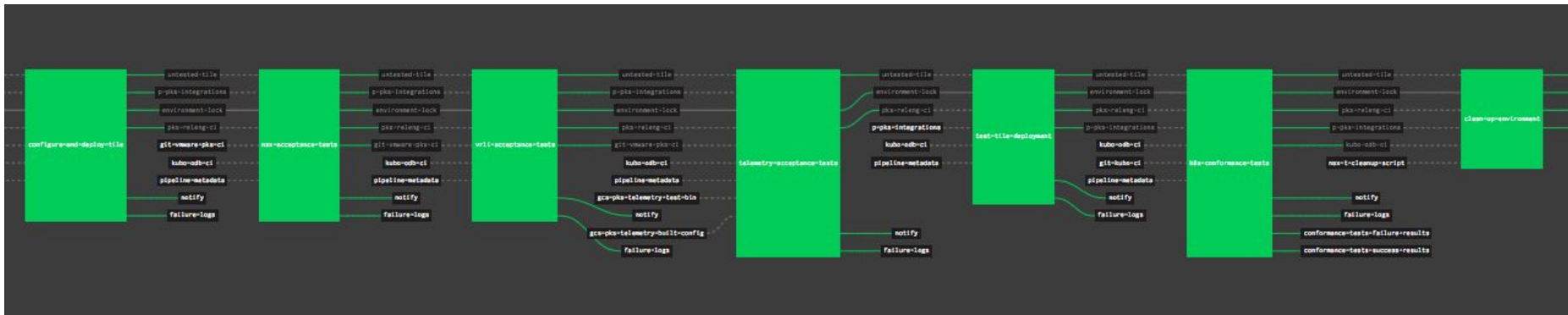


Pipelines
Are
Flaky



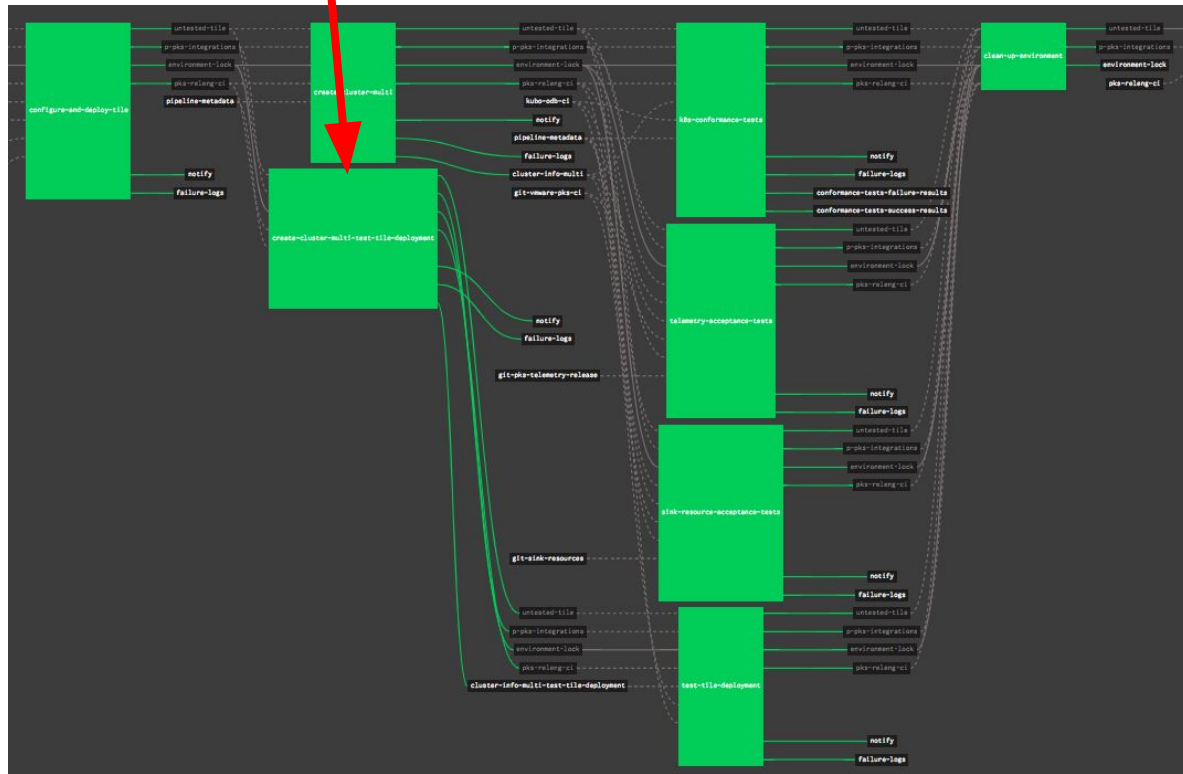
Pipelines Are Slow

Each job was creating its own cluster



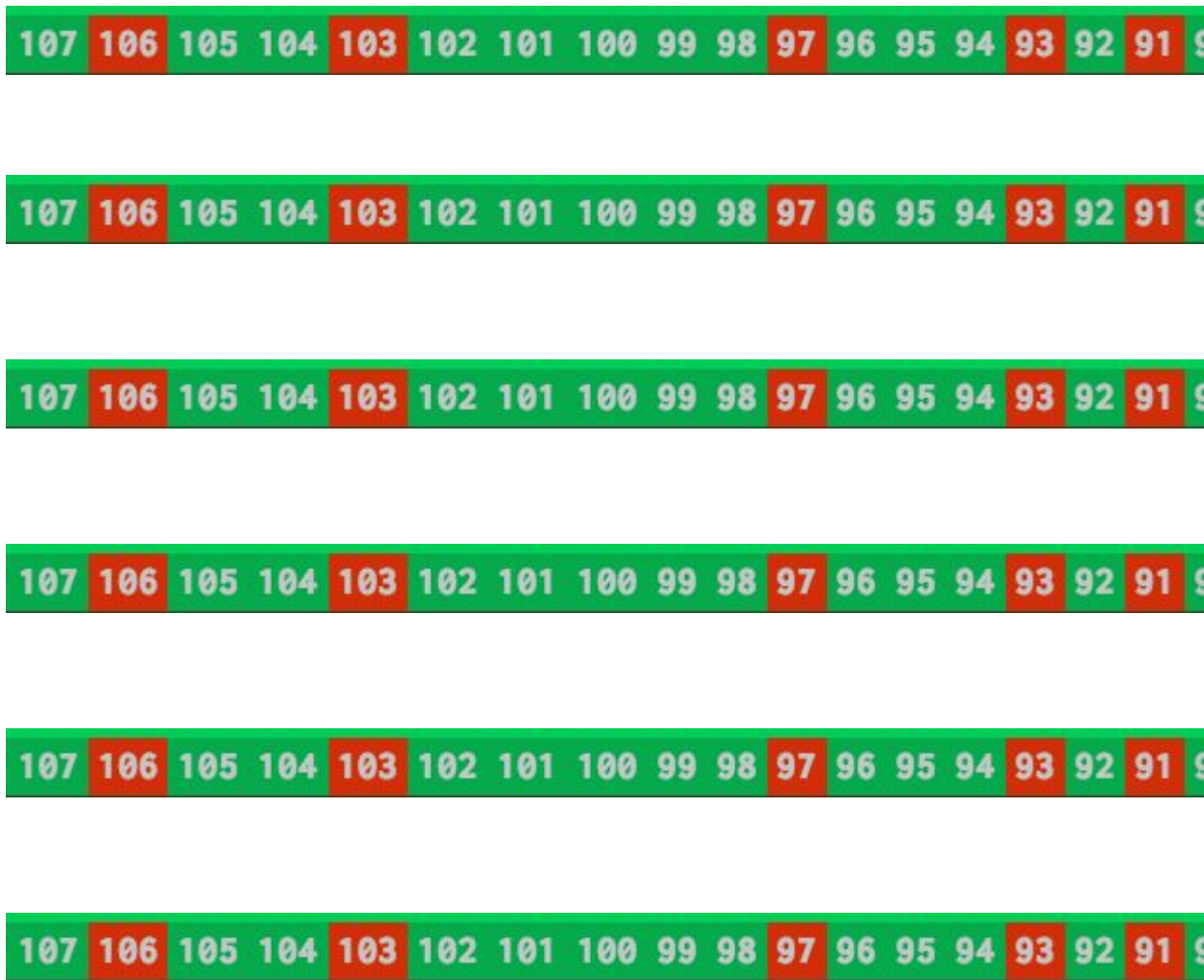
Pipelines Are Slow

All jobs can share a
cluster!



Pipelines Are Flaky

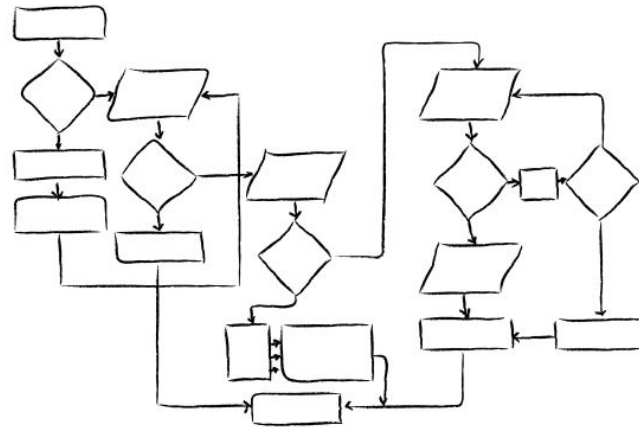
Run-Run-Run



TESTED ✓

```
1 def add(X, Y):  
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```

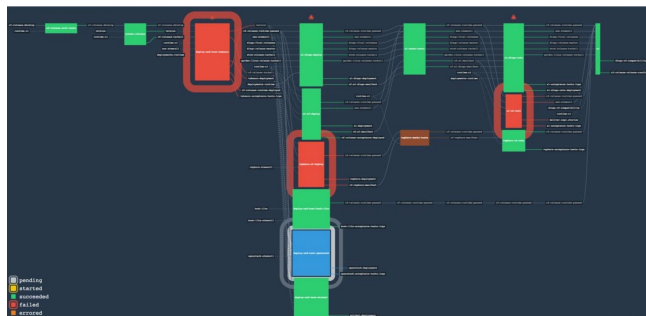
PROCESS ✓



DRY YAML ✓



PIPELINES FAST ✓



AUTOMATION ✓



OSL

- Lack of tools for scanning containers for OSS
- Docker images - challenges with layered filesystems
- Lack of an OSL process

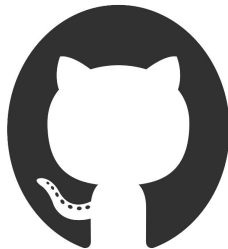
Defining the OSL process

- Work with the OSL team to define a process of collaboration
- Container scanning tool
- Base image issues - alpine, busybox, scratch, ubuntu

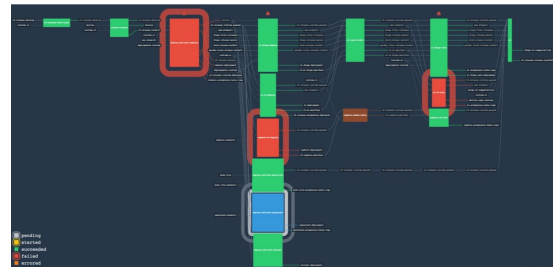
At this Point...



master

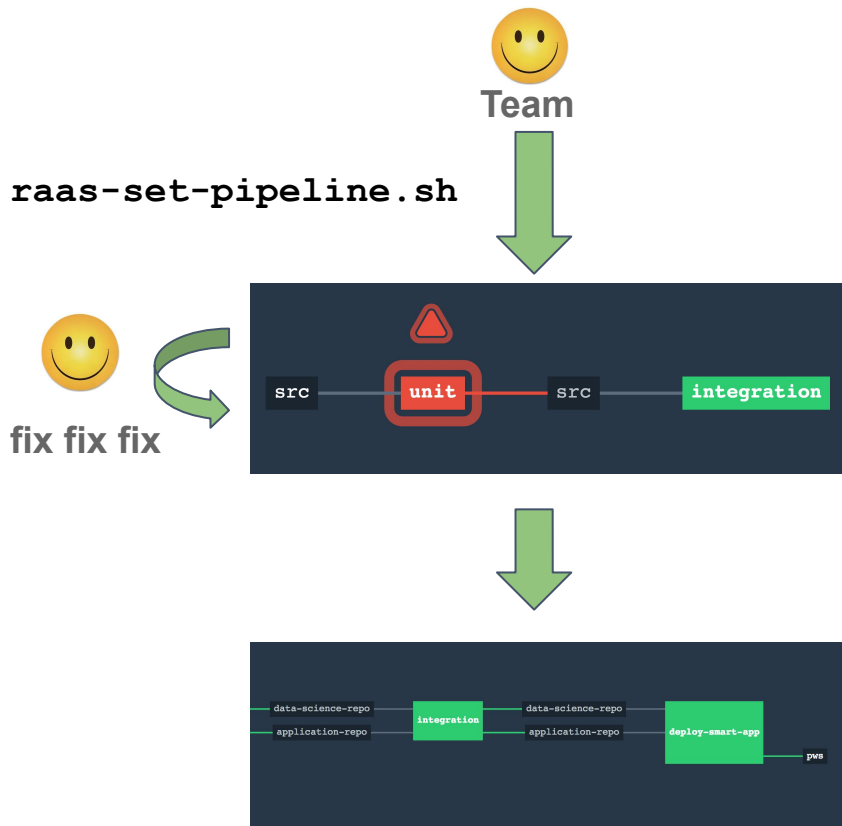


Production Concourse



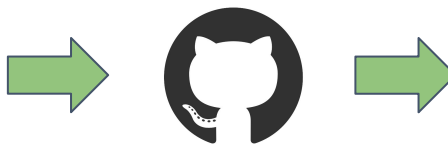
master broken!

Releng as a Service!



Their code on **our** tests in a **development** concourse

PR to master



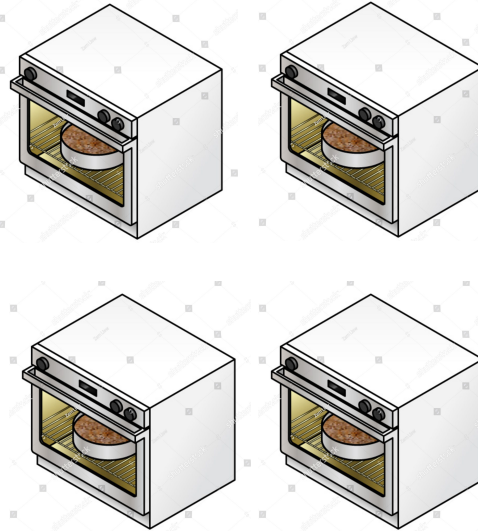
Production Concourse



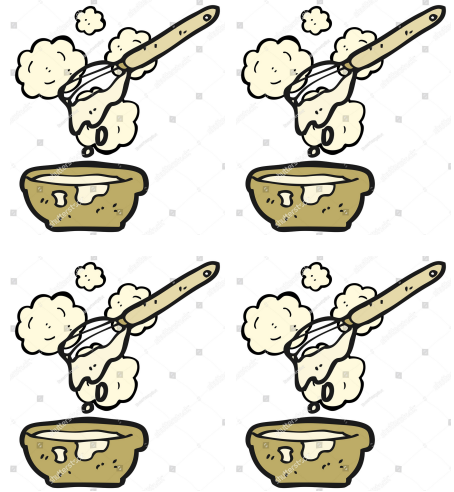
Shipping every 6 months to
shipping every 10 days



Pipelines went from 12
hours to 4 hours!



Bugs, CVEs, patches
in 48 hours



That's all Folks!