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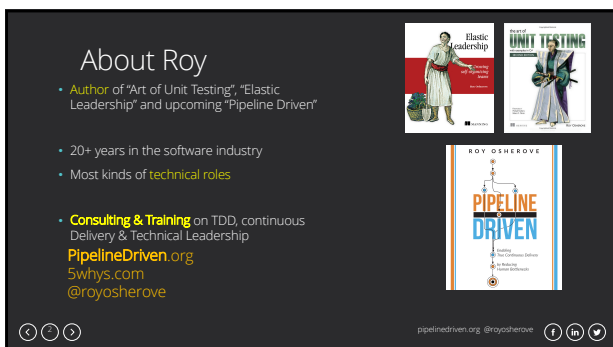
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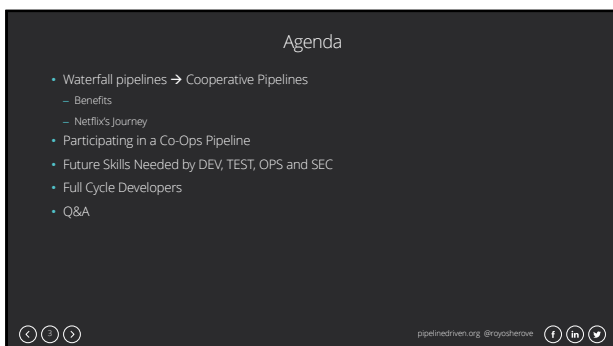
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Summary

|                  |  |
|------------------|--|
| Pipelines        | Cooperative Pipelines can enable true continuous delivery            |
| Change the rules | Without adopting new rules, we can't achieve the promised benefits   |
| It's good for us | It's in our best interests to move the industry towards this pattern |

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True Continuous Delivery

NETFLIX

Google

facebook

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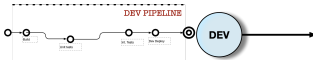
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Waterfall Pipeline



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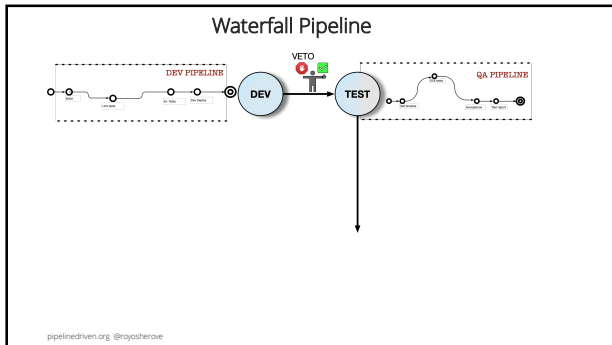
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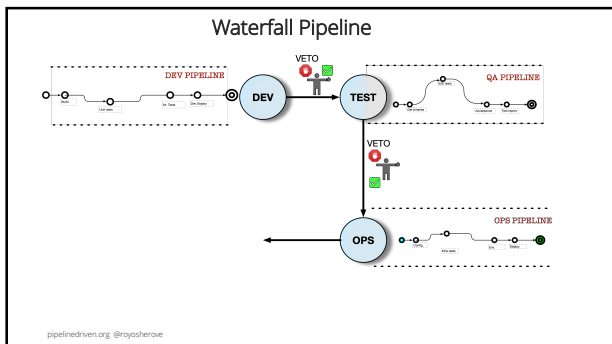
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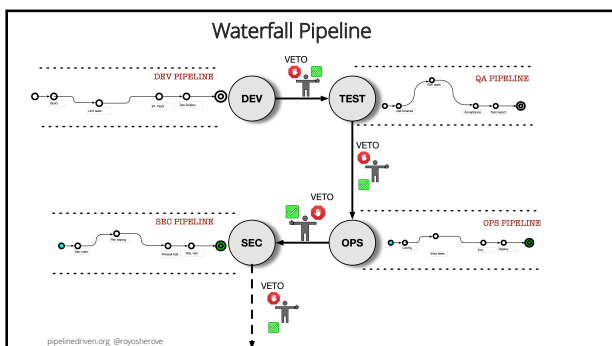
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# What's the difference?



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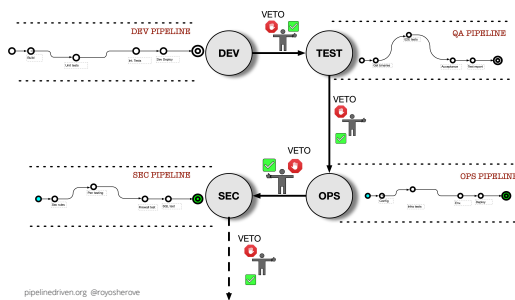
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## Waterfall Pipeline



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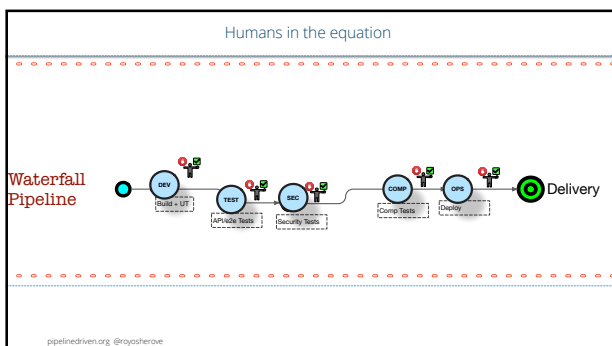
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## Humans in the equation



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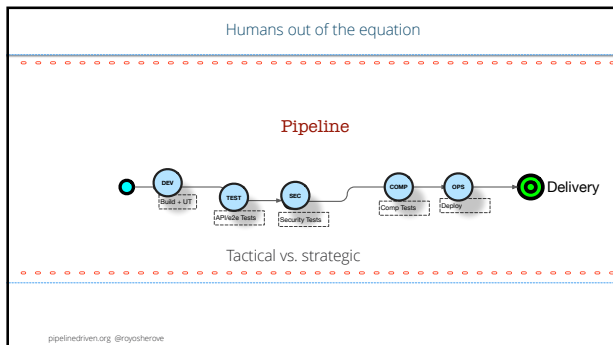
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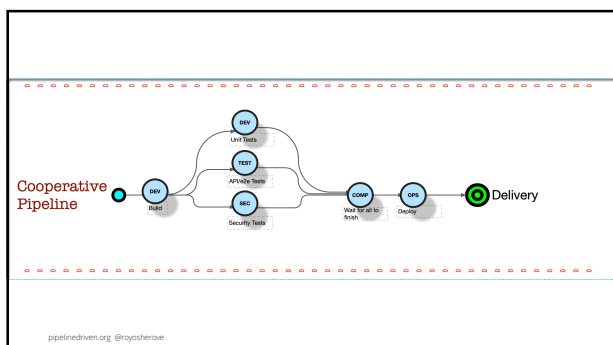
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Theory of constraints - The Four Questions

- What is the **power** of the technology?
- What limitation/restriction/constraint does it decrease ?
- What rules/processes helped us accommodate the limitation until now?
- What rules should we use now instead?

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Theory of constraints - The Four Questions

- What is the power of the technology?
- What **limitation**/restriction/constraint does it decrease ?
- What rules/processes helped us accommodate the limitation until now?
- What rules should we use now instead?

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Theory of constraints - The Four Questions

- What is the power of the technology?
- What limitation/restriction/constraint does it decrease ?
- What rules/processes helped us accommodate the limitation **until now**?
- What rules should we use now instead?

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Theory of constraints - The Four Questions

- What is the power of the technology?
- What limitation/restriction/constraint does it decrease ?
- What rules/processes helped us accommodate the limitation until now?
- What rules should we use **now instead**?

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The CAR - The Four Questions

- What is the power of the technology?
  - Reaches long distances fast
- What limitation/restriction/constraint does it decrease?
  - Can only walk or bike (short distances)
- What rules/processes helped us accommodate the limitation until now?
  - Look for jobs in your own town
- What rules should we use now instead?
  - Also look for jobs in other towns

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What is the power of pipelines?

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What is the power of the technology?  
(what can it enable?)

|                                |                           |
|--------------------------------|---------------------------|
| ENDLESS<br>REPEATABLE<br>TESTS | ENDLESS<br>ENVIRONMENTS   |
| FULL<br>FEEDBACK &<br>HISTORY  | MULTI TASKING<br>AT SCALE |

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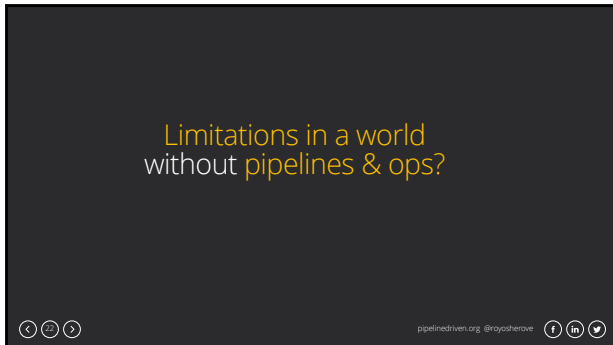
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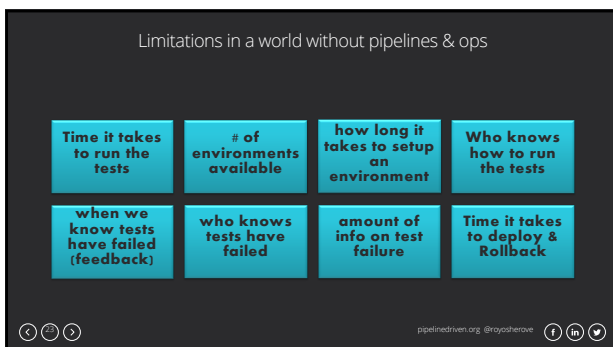
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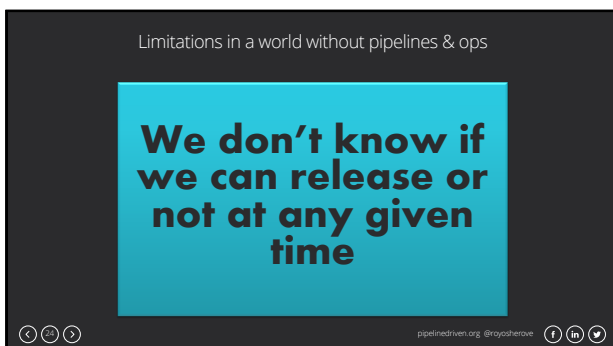
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What Rules/Processes exist because of the limitation?

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What rules/processes helped us accommodate the limitation so far?

- Run the slow manual tests once a week/sprint/month
- Only run the tests on one of the branches
- Code freezes & extra branches
- QA approve releases and moving code downstream
- Separate QA folks from the dev folks
- Release a version only when QA approves
- Definition of done means "it worked once" without repeating
- Each expertise has a human confidence gate
- Work in large batches of changes (sprint or months full of features)
- Focus on your own expertise.
- Create bug items

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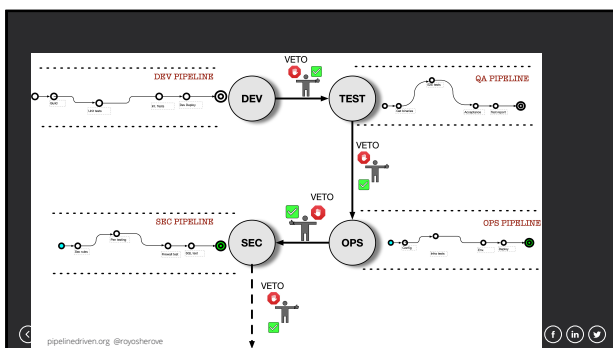
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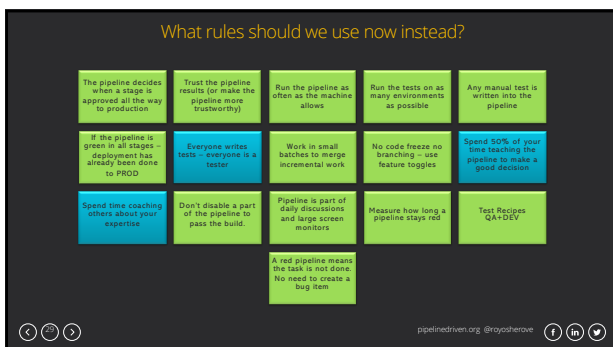
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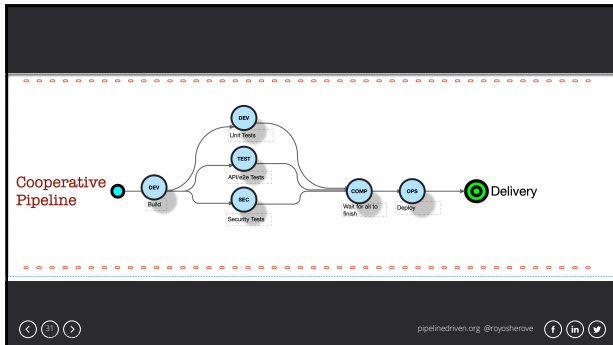
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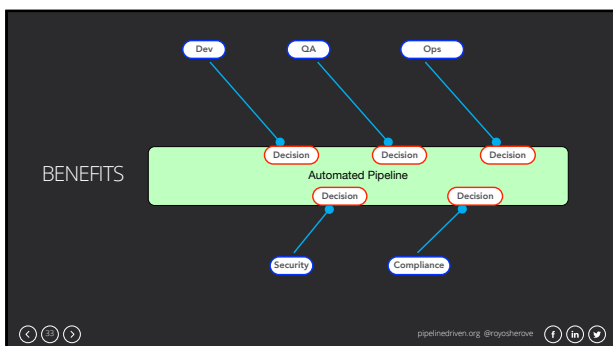
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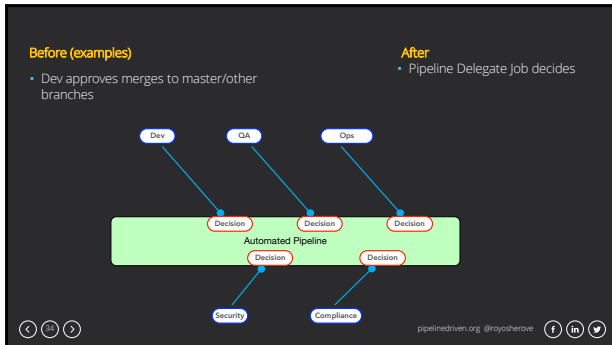
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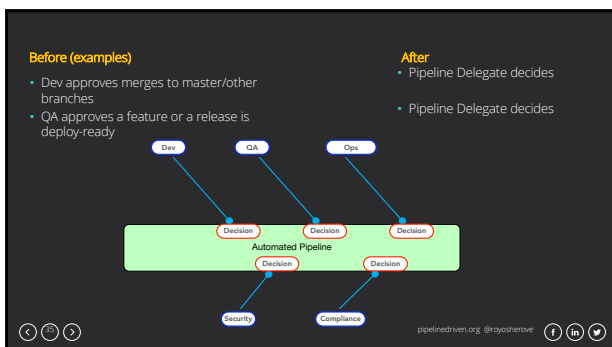
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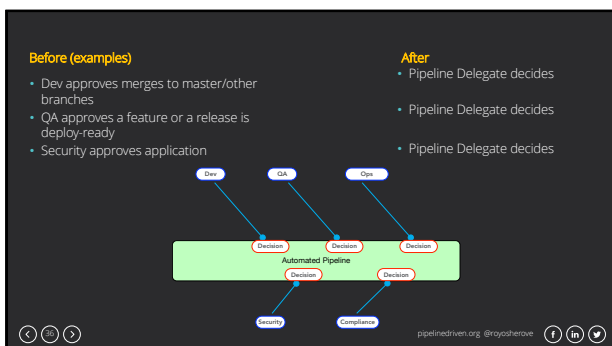
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**Before (examples)**

- Dev approves merges to master/other branches
- QA approves a feature or a release is deploy-ready
- Security approves application
- Ops approves, configures, deploys environments
- Ops deploys & rolls back application

**After**

- Pipeline Delegate decides
- Pipeline Delegate decides
- Pipeline Delegate decides
- Pipeline Delegate decides
- Pipeline Delegate decides

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**Before (examples)**

- STRESS
- STRESS
- STRESS
- STRESS
- STRESS

**After**

- LESS STRESS
- LESS STRESS
- LESS STRESS
- LESS STRESS
- LESS STRESS
- LESS STRESS
- LESS STRESS

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Do we **trust** our **pipeline**?

Could we?  
Should we?

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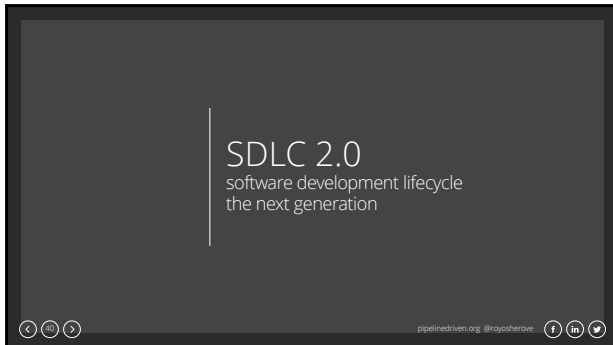
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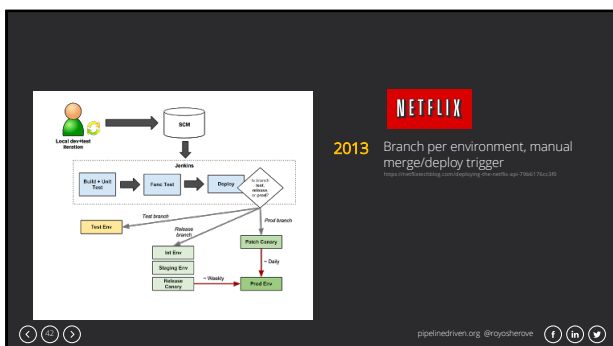
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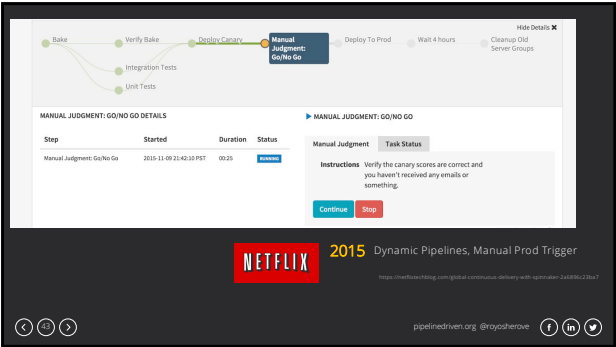
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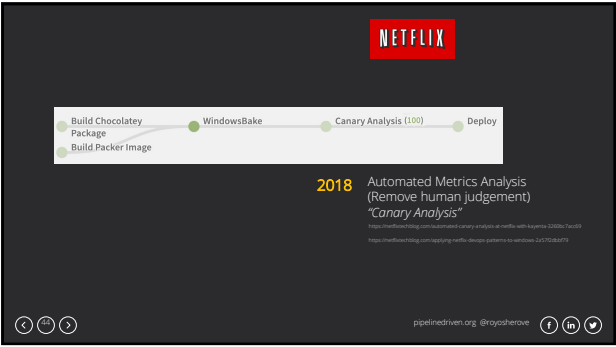
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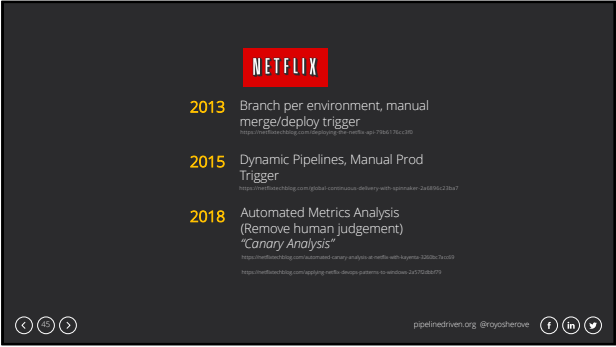
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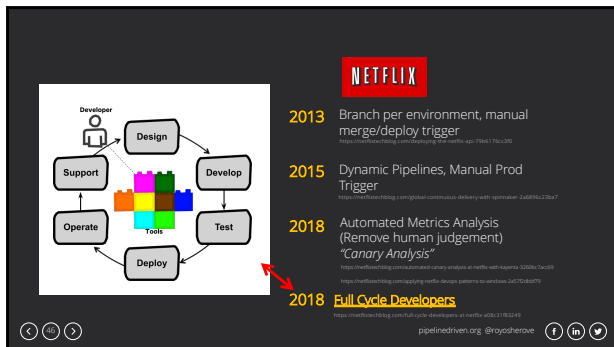
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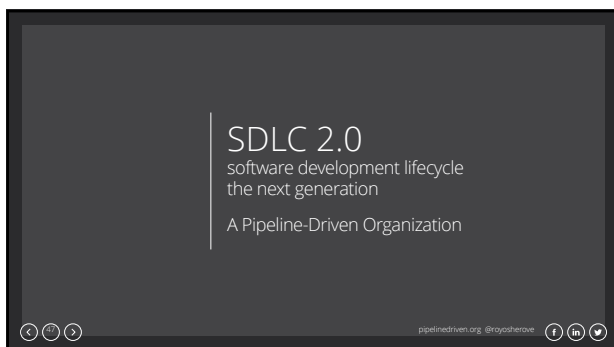
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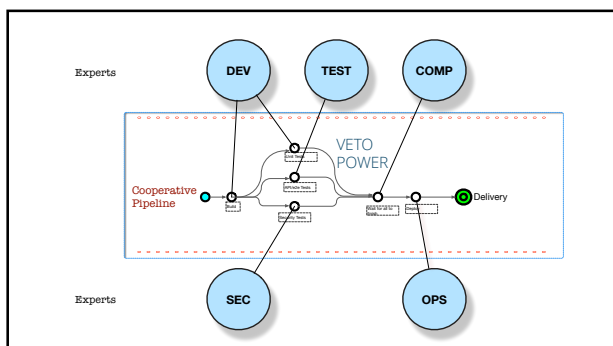
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How to Veto: exit status code non zero

|      |                                   |
|------|-----------------------------------|
| Bash | <code>exit 1</code>               |
| C#   | <code>Environment.Exit(1);</code> |
| Java | <code>System.exit(1);</code>      |

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52

What's in it for me?

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53

The Skill Challenge

DEV 2.0

- Full stack
- Automated Testing
- Infrastructure Automation
- Security
- Pipeline Integration
- Coaching

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54




**2013** Branch per environment, manual merge/deploy trigger  
<https://netflixtechblog.com/branch-per-environment-798d178dc395>

**2015** Dynamic Pipelines, Manual Prod Trigger  
<https://netflixtechblog.com/global-continuous-delivery-with-operators-2ad89d23eaf7>

**2018** Automated Metrics Analysis (Remove human judgement) "Canary Analysis"  
<https://netflixtechblog.com/automated-canary-analysis-at-netflix-with-luqman-1d03dc7ac03d>  
<https://netflixtechblog.com/applying-netflix-design-patterns-to-aws-aws-2d752d8d79>



[pipelinedriven.org](https://pipelinedriven.org) @grayshero 

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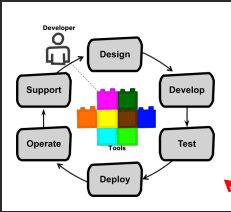
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**2013** Branch per environment, manual merge/deploy trigger  
<https://netflixtechblog.com/branch-per-environment-798d178dc395>

**2015** Dynamic Pipelines, Manual Prod Trigger  
<https://netflixtechblog.com/global-continuous-delivery-with-operators-2ad89d23eaf7>

**2018** Automated Metrics Analysis (Remove human judgement) "Canary Analysis"  
<https://netflixtechblog.com/automated-canary-analysis-at-netflix-with-luqman-1d03dc7ac03d>  
<https://netflixtechblog.com/applying-netflix-design-patterns-to-aws-aws-2d752d8d79>

**2018 Full Cycle Developers**  
<https://netflixtechblog.com/full-cycle-developers-at-netflix-ad8d11782d45>



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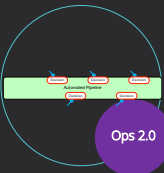
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### The Skill Challenge



**Ops 2.0**

- Infrastructure as code
- Automated Testing & Coding
- Pipeline Integration
- Coaching



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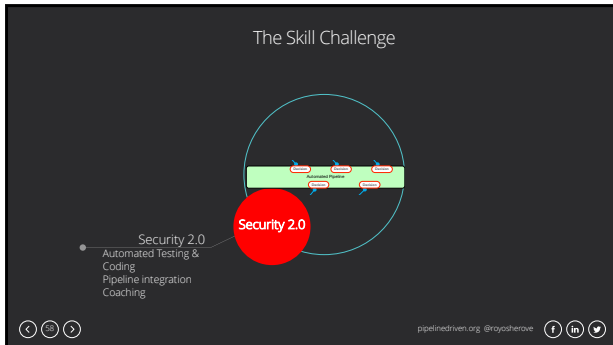
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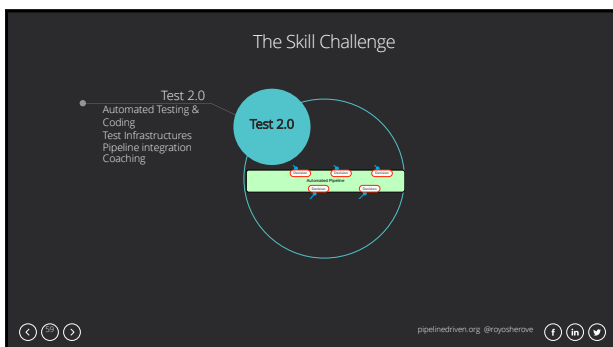
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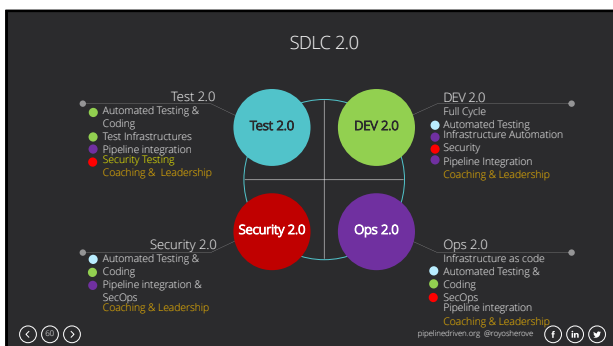
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# Summary

|                  |  |
|------------------|--|
| Pipelines        | Cooperative Pipelines can enable true continuous delivery            |
| Change the rules | Without adopting new rules, we can't achieve the promised benefits   |
| It's good for us | It's in our best interests to move the industry towards this pattern |

◀ ▶ ↺

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# Resources




PipelineDriven.org

Twitch.com/royosherove

@royOsheroVe

◀ ▶ ↺

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# Time for a short song?

◀ ▶ ↺

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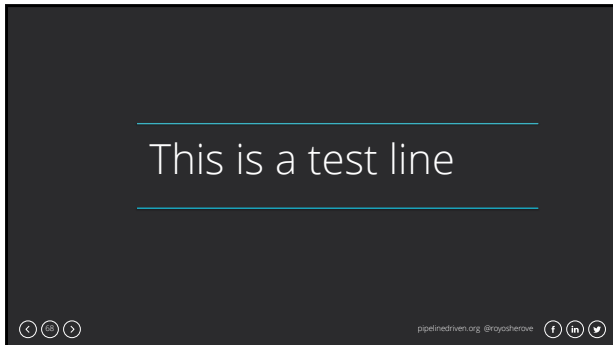
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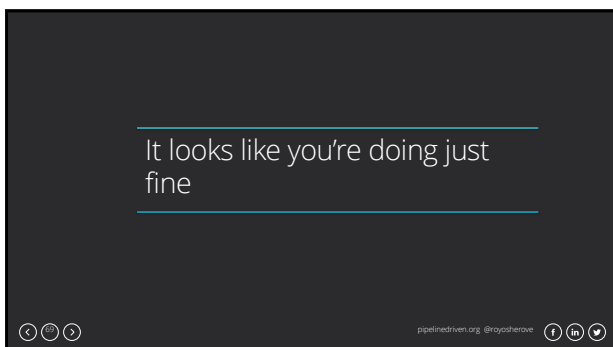
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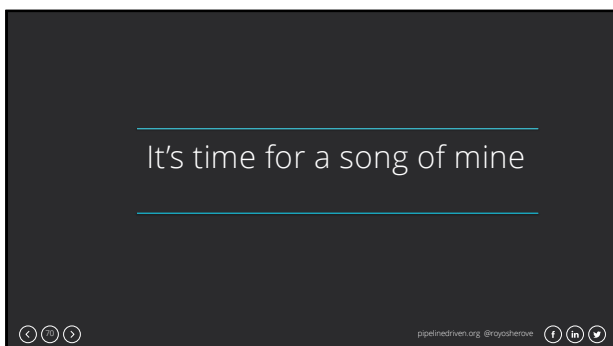
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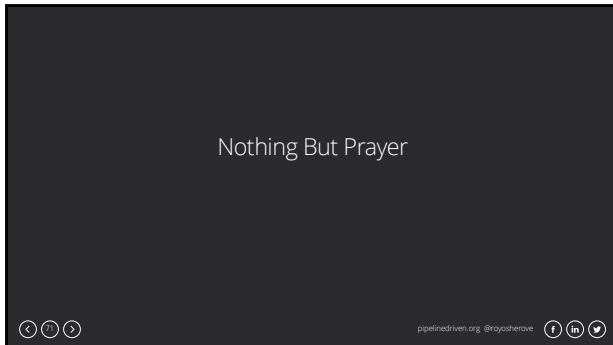
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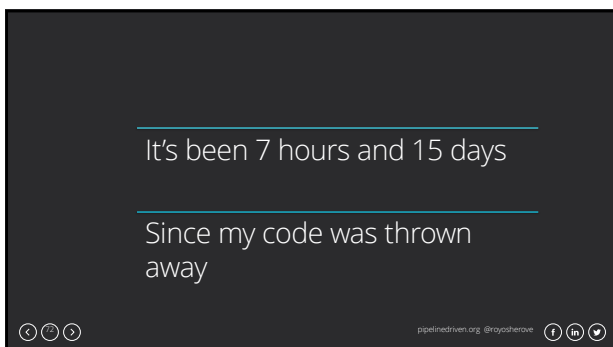
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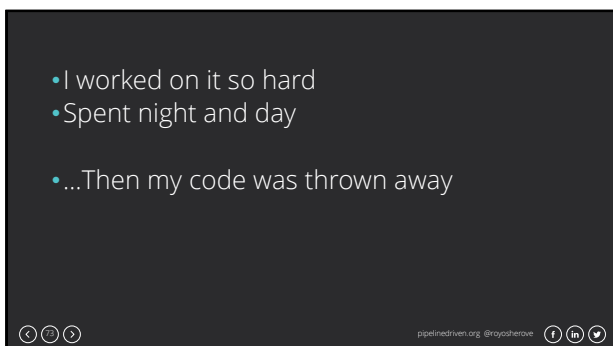
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- I was working on this branch for a couple of weeks
- (just like everybody else)

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- When I tried to merge
- The source control
- laughed at me
- Cause nothing.
- I said NOTHING was working for NOBODY

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- All the builds failed
- All the builds failed
- Screw me

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It's been so lonely without a  
passing build

Like a bird without her song

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Nothing can stop these  
massive builds from failing

Tell me branchy, where did I go  
wrong

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78

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Yes I did my best to make sure  
this didn't happen

Pulled the latest version all the  
time

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79

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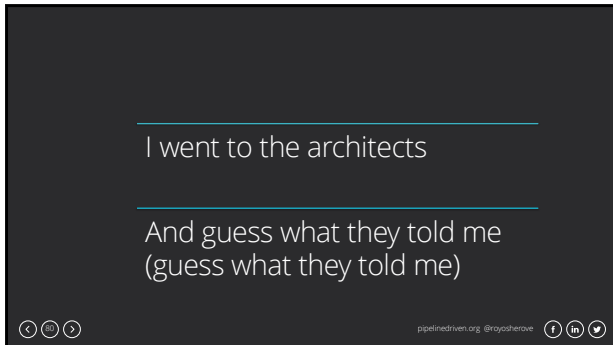
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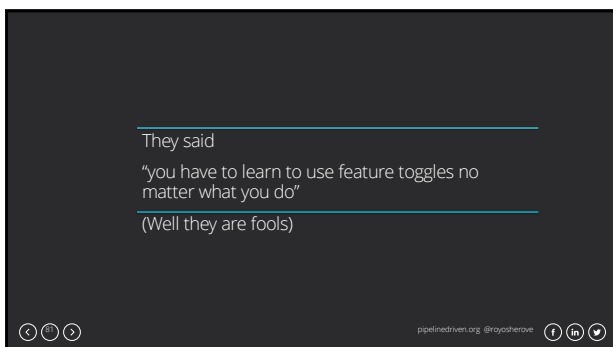
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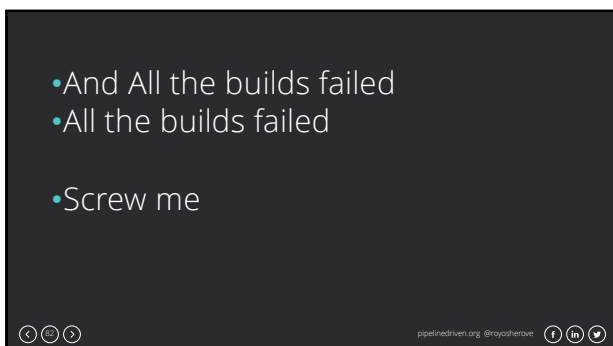
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- And all the tests that I promised, baby
- Are in the backlog
- There's no time, they went away


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83

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- I know that debugging this module
- is extremely hard
- But I'm willing to give another try


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- And Nothing but prayer
- Nothing but prayer
- Will do


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- Nothing but prayer
- Nothing but prayer
  
- Will do. (x1)



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86

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- Nothing but prayer
- Nothing but prayer
  
- Will do. (x2)



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87

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Thank You!

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88

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