

**With
Great Pipelines
comes
Great Responsibility**

Standardizing Multi-Region Deployments @ Razorpay

Nanda Kishore B - Nov 8th 2025

About me

- Nanda Kishore B
- Passionate Builder 
- ❤️ Systems

About Razorpay

Presence Across 3 Continents

Taking Indian payment prowess global

200Mn+

Unique
customers

100Mn+

Offline touch
points

Processing

\$150Bn+

TPV

Supporting

5mn+

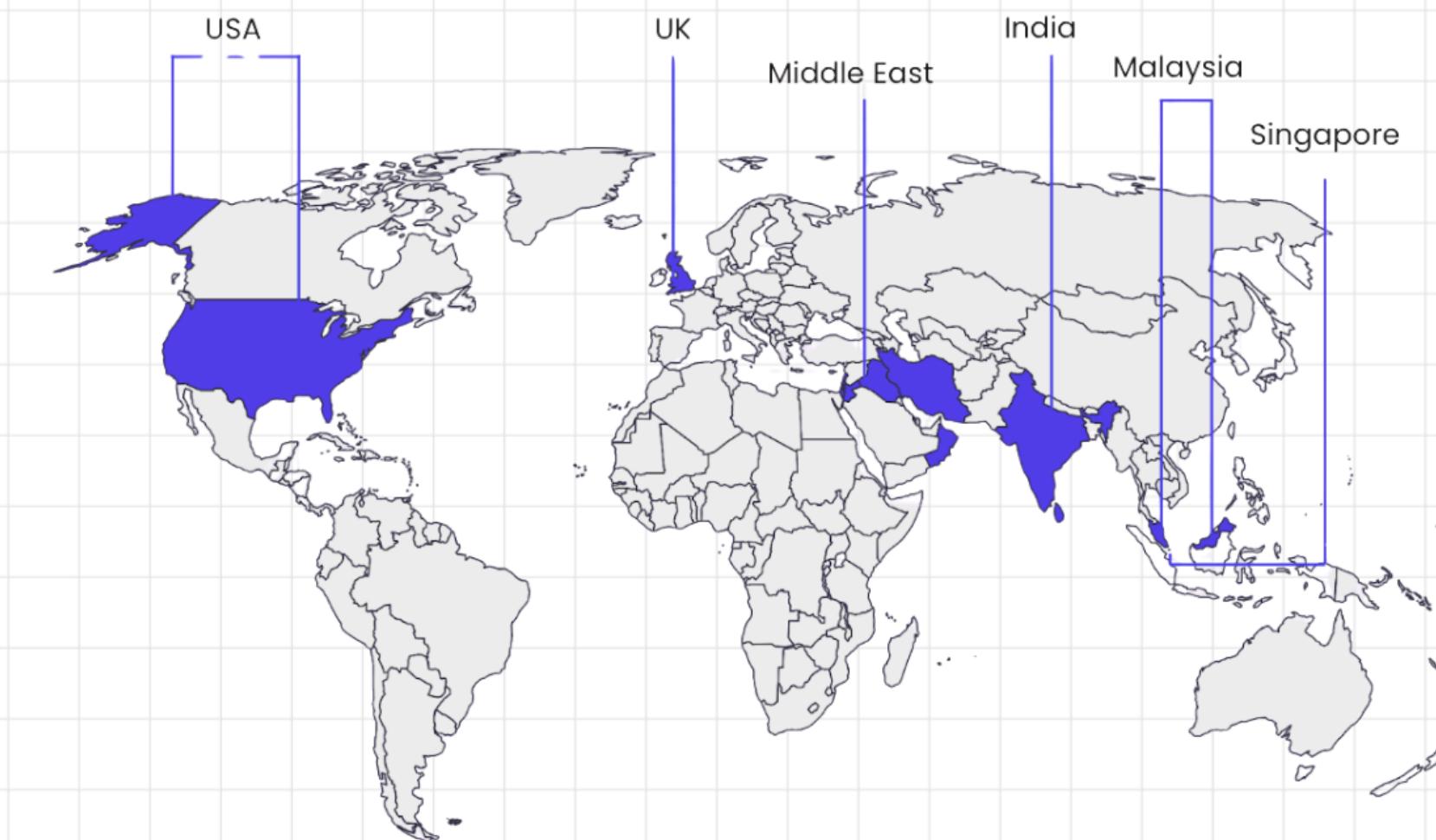
Businesses

60+

Banks

Operating from

6 countries



What is Spinnaker (for the uninitiated)

- Our Deployment Platform
- Continuous Delivery(CD) platform open-sourced by Netflix
- Focused on safe, repeatable, and multi-cloud deployments.
- Used to define pipelines - sequence of verify, deploy and rollback stages
- Rzp uses Spinnaker to deploy hundreds of services daily across multiple regions
- Think of it as “Kubernetes + CI + progressive rollout brain + guardrails = Spinnaker.”



The Mumbai Era



- Life was simple in one region
- One Spinnaker (hosted in AWS Mumbai Region).
- One Mumbai (Prod Region to deal with).
- One way to deploy.



The Great Expansion (Singapore 🇸🇬)

- Singapore calls. Multi-Region begins.
- New Clusters. New “Cell”.
- Same (Mumbai) Spinnaker
- Say Goodbye to Weekends



The Forest of Chaos

- Shared Spinnaker
- Deployed 30/150+ services in SG
- $30 \times 5 = 150$ pipelines manually modified.
- Sometimes, **Powered by Ctrl-C, Driven by Ctrl-V** 🤦
- Pipeline Config Drift across environments.



Mislinked stage related to
Singapore 🇸🇬
caused an outage
in Mumbai 🇮🇳



The Turning Point

- Realization: We need structure, not scripts
- Helm-based releases as Standard currency
- When a checkout in Singapore 🇸🇬 sneezes, Mumbai 🇮🇳 shouldn't catch a cold.

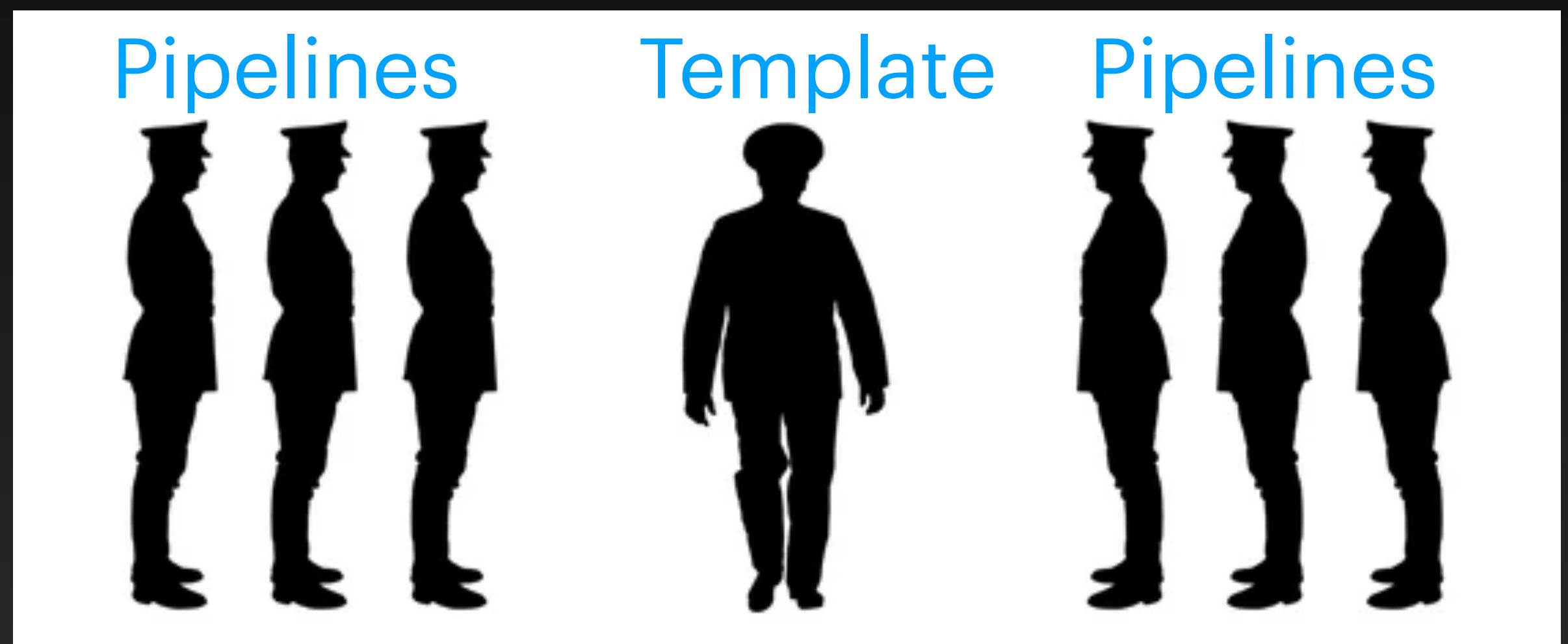


Structure = Pipeline-Templates

Fault Isolation = Regional Spinnakers

Pipeline Templates

- Native to Spinnaker
- Centralized Config (no need to reinvent the 🎪)
- Custom Stages for Helm Releases, Canary and Mirror Deployments
- Central Policy Enforcement
- Individual pipelines just “refer” to “latest” copy of the template



Pipeline Template (in Action)

NNAKER

Search Projects Applications Pipeline Templates Search

Pipeline Templates Region ag

[Region Agnostic] Dual Deploy to CDE and NonCDE Clusters in a Single AWS Account or a Cell nandakishore.b@razorpay.com 10/17/2025, 3:12 PM 60788fd2-7a9f-4858-bcd9-69a86cd7278d@.▼

[Region Agnostic] Deploy to a AWS Region nandakishore.b+@razorpay.com 10/17/2025, 3:12 PM 664e59d6-943b-44e7-a3ab-fa5db69705f6...▼

Pipeline-Template

Actual Pipeline “referring” the template

Pipeline JSON

CONFIGURATION RENDERED PIPELINE

The JSON below represents the pipeline configuration in its persisted state.

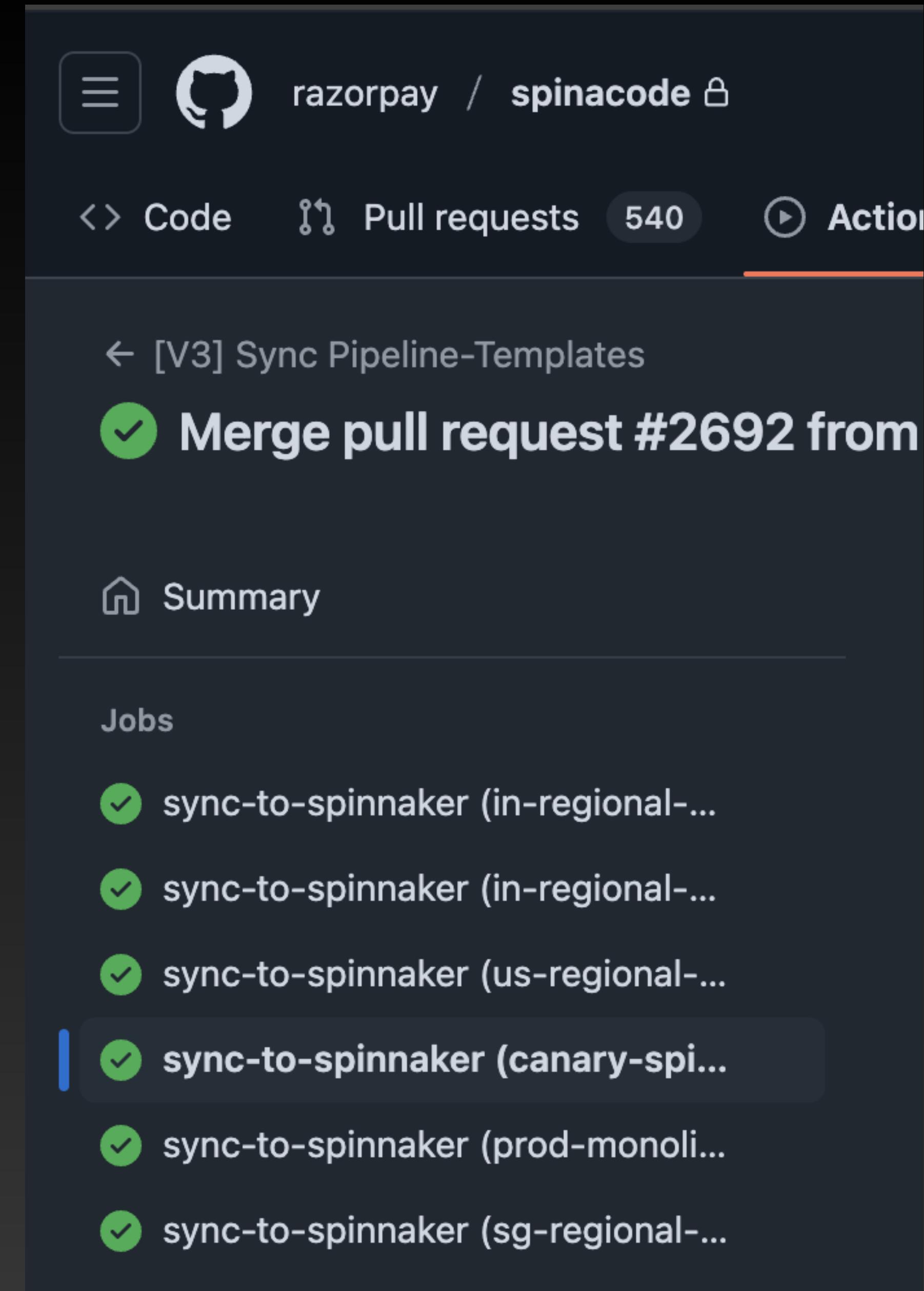
```
4 "lastModifiedBy": "jarvis-rzp",
5 "limitConcurrent": true,
6 "locked": {
7   "allowUnlockUi": false,
8   "description": "Note: Pipeline Templates govern this pipeline. UI edits are blocked for consistency.",
9   "ui": true
10 },
11 "notifications": [],
12 "parameterConfig": [],
13 "schema": "v2",
14 "stages": [
15   {
16     "template": {
17       "artifactAccount": "front50ArtifactCredentials",
18       "reference": "spinnaker://86b9be02-1cf3-4e52-adb0-12685582e688:latest",
19       "type": "front50/pipelineTemplate"
20     },
21     "triggers": []
22   },
23   {
24     "variables": {
25       "application": "prod-singapore-checkout-service",
26       "canary_config_id": "59eaaab0-75ac-4930-bab4-0758f9000342",
27       "canary_marginal_threshold": "50",
28       "canary_pass_threshold": "75",
29       "cellId": "sg-cell-101",
30       "commit_txt_host": "https://checkout-service.razorpay.com",
31       "default_overrides": "checkout_service_image_tag=c.rzp.io/razorpay/checkout-service:api-${ parameters.image_tag }",
32       "deployments_config": "[{\\"baseline_deployment_name\\":\\"checkout-service-baseline\\",\\"canary_deployment_name\\":\\"",
33       "github_repo_name": "checkout-service",
34       "helm_chart_overrides_file": "razorpay/kube-manifests/contents/singapore/prod/noncde/checkout-service/values.yaml",
35       "helm_chart_path_prefix": "checkout-service/checkout-service-1-",
36       "isGreenClusterScaledDown": "true",
37       "mirror_config_id": "0aa2d6f6-7a50-4895-b1f2-7ea36f0f13c0",
38       "mirror_deployments_config": "[{\\"original_deployment_name\\":\\"checkout-service\\",\\"mirror_deployment_name\\":\\"",
39       "mirror_experiment_scope_name": "mirror",
40       "mirror_marginal_threshold": "80",
41       "mirror_pass_threshold": "90",
42       "namespace": "checkout-service",
43       "pre_deploy_notification_text": "<!subteam^S03PZKSEP4K| checkout-backend-oncall >\nProd Checkout Backend Deployment",
44       "region": "Singapore",
45       "serviceEnvironment": "NonCDE",
46       "slack_channel": "payments_checkout_releases",
47       "traffic_weights_for_canary_steps": "1,2,10",
48       "user_groups_mentions": "<!subteam^S03PZKSEP4K| checkout-backend-oncall >"}
49   }
```

Look ma! Just 40 lines config, even if the pipeline contains 1000 stages

GitOps

takes center-stage

- Fully native to Engineering teams
- All checks-and-balances enforced as CI Checks



**With Great Templates comes Great
Responsibility**

Guard-Rails

- `spin pipeline-template plan` 🤦
- CI Checks ✅
- Preview Pipelines ✅
 - No executions/back-doors ✅
- Per Region ✅

A screenshot of a GitHub Actions comment from a bot named "github-actions". The comment was posted 3 weeks ago and contains the following text:

[CRITICAL] Pipeline Template Change(s) detected and 1016 Pipelines will be affected

Impact Summary

- 13 template file(s) modified
- 1016 pipeline(s) will be affected across all regions

Mandatory Review Before Merge

- Changes to templates can break all referencing pipelines
- Test all changes using the preview pipelines listed below
- Notify impacted service owners if needed
- Coordinate with Platform/DevOps for review and approval

Preview Pipeline URLs

HYD Region

- [hyd - \[API Monolith\] Deploy to just one K8s Cluster](#)
- [hyd - \[Data Platform - Region Agnostic\] Deploy to just one K8s Cluster](#)
- [hyd - \[Region Agnostic\] Deploy to just one K8s Cluster](#)
- [hyd - \[Region Agnostic\] Deploy to a AWS Region](#)
- [hyd - \[Region Agnostic\] Deploy to all Blue and Green K8s Clusters in a Single AWS Account or a Cell](#)
- [hyd - \[Region Agnostic\] Deploy to just Blue K8s Clusters in a Single AWS Account or a Cell](#)
- [hyd - \[Region Agnostic\] Dual Deploy to CDE and NonCDE Clusters in a Single AWS Account or a Cell](#)

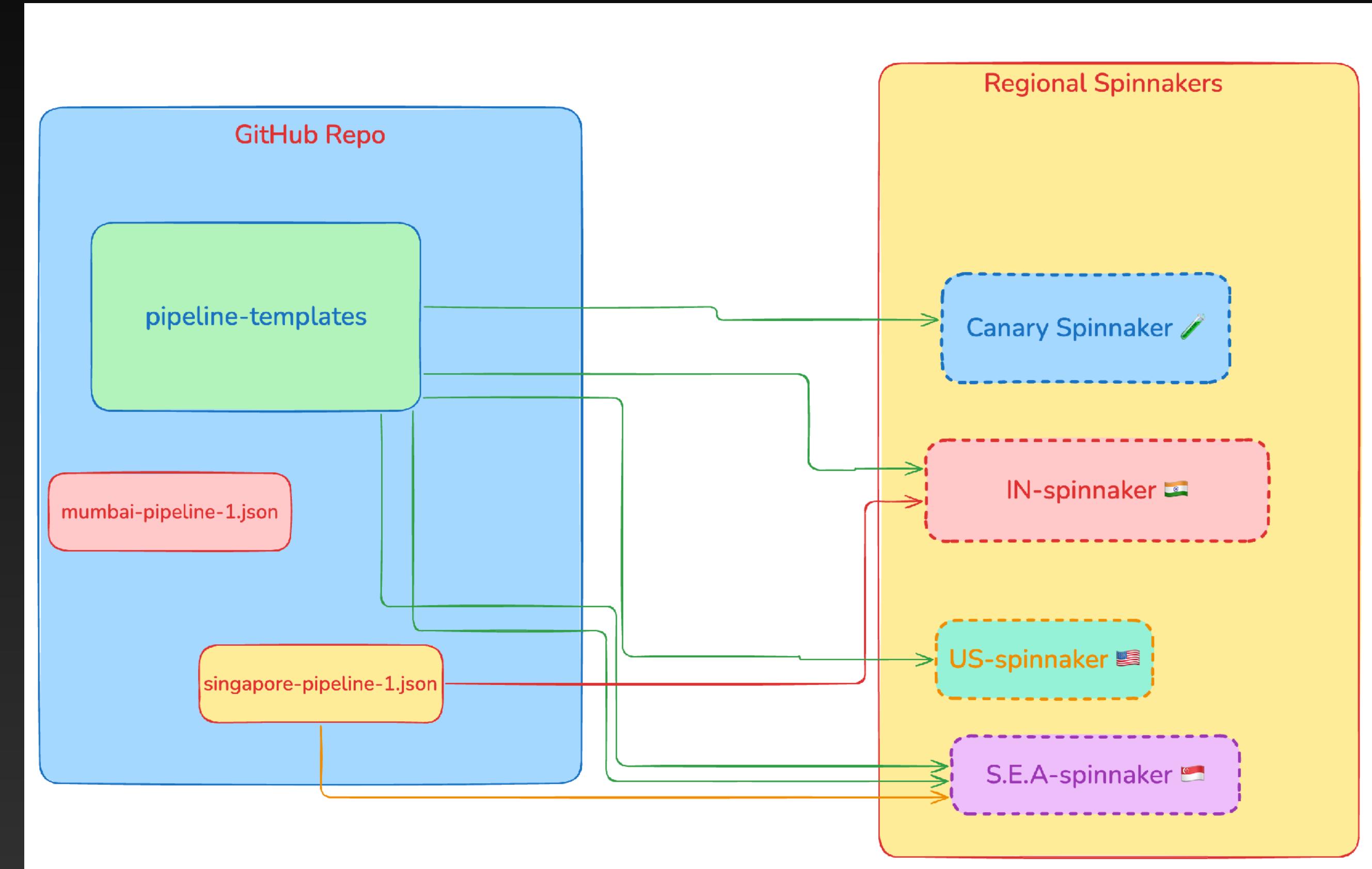
MUM-DR Region

- [mum-dr - \[API Monolith\] Deploy to just one K8s Cluster](#)
- [mum-dr - \[Data Platform - Region Agnostic\] Deploy to just one K8s Cluster](#)
- [mum-dr - \[Region Agnostic\] Deploy to just one K8s Cluster](#)
- [mum-dr - \[Region Agnostic\] Deploy to a AWS Region](#)

Two red arrows point from the "No executions/back-doors" bullet point in the list above to the "Preview Pipeline URLs" section of the screenshot. One arrow points from the "No executions/back-doors" bullet point to the "HYD Region" section, and another arrow points from the "Per Region" bullet point to the "MUM-DR Region" section.

Regional Spinnakers

- Isolated by design
- Region-wise releases
- Each region owns its destiny, yet aligned



But no Global Deployer



Because one bad push, shouldn't take down the whole 

Rollout & Migration

- Used US 🇺🇸 as a first pilot region
- Created Canary Pipelines first in US 🇺🇸
- Singapore 🇸🇬 followed.
- Standardized Mumbai 🇮🇳 Spinnaker setup and created full end-to-end V3 pipelines



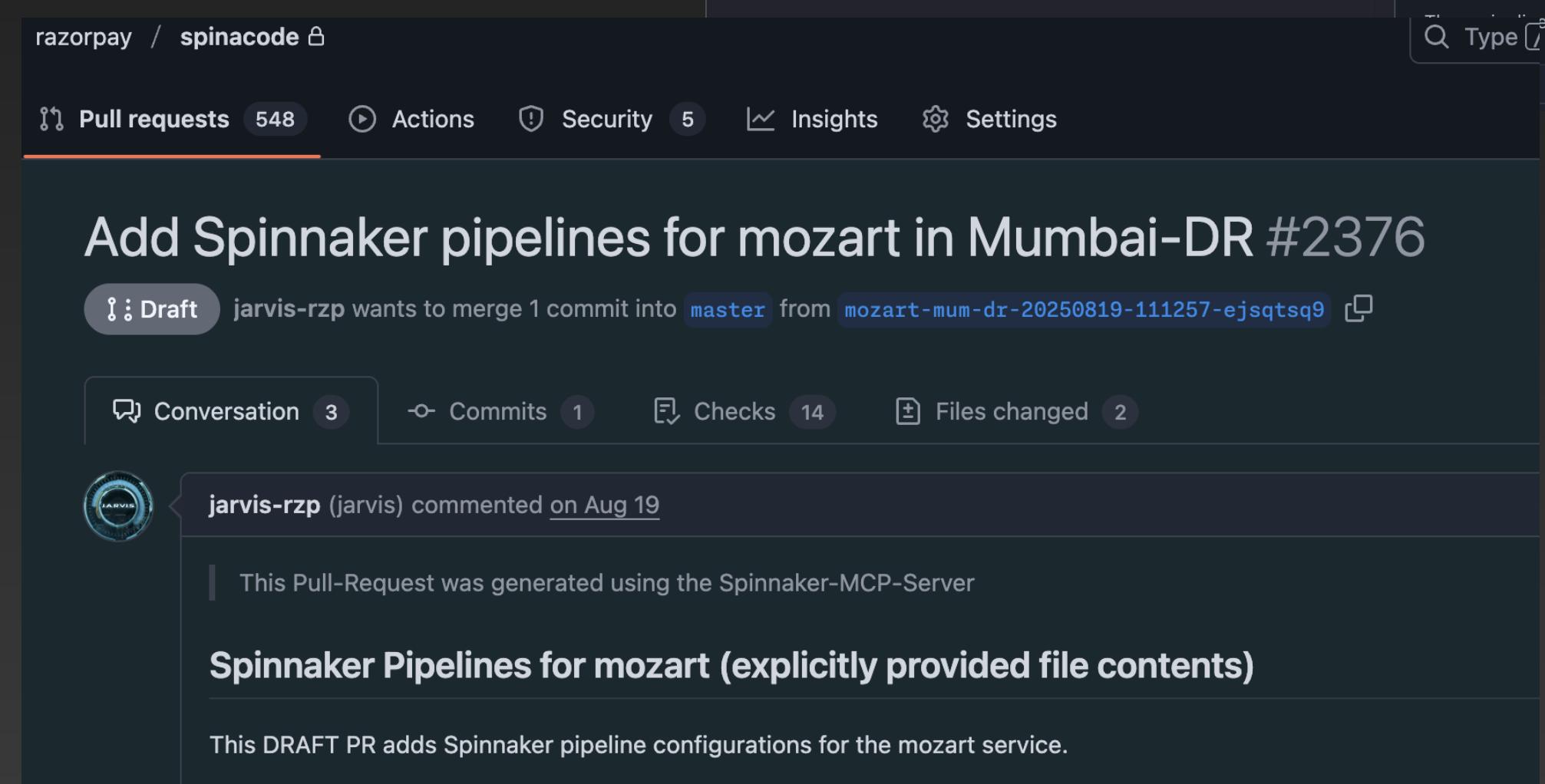
Tools are easy to Build

But adoption, selling, story-telling
are hard

- Every DevOps/Platform person ever

Closer to the Service Teams

- Spinnaker MCP Server
- Self-Serve Migration pipelines empowering teams
- Track adoption



```
mcp.json - v3
{
  "mcpServers": {
    "remote-spinnaker-mcp-server": {
      "name": "remote-spinnaker-mcp-server",
      "type": "streamable-http",
      "url": "https://spinnaker-mcp.razorpay.com",
      "streamable": true
    }
  }
}

{
  "id": "fea5ac0e-668a-4491-8aaa-3c5ea266e324",
  "applications": [
    "prod-mum-dr-payment-service"
  ],
  "keepWaitingPipelines": false,
  "application": "prod-mum-dr-payment-service",
  "exclude": [],
  "id": "d2539764-bebd-40df-b200-2e9520cf4b80",
  "keepWaitingPipelines": false,
  "application": "prod-mum-dr-payment-service",
  "exclude": [],
  "id": "82426dd1-1a5b-4385-874b-669a3afe00b4",
  "keepWaitingPipelines": false
}
```

I'll help you generate a pipeline for payment-service in Mumbai-DR with CDE environment using traefikservice traffic routing.

✓ Ran generate_pipeline

config { "prompt": "Generate pipeline for payment-service in Mumbai-DR with CDE environment using traefikservice" }

Perfect! I've successfully generated the pipeline files for payment-service in Mumbai-DR with CDE environment using traefikservice traffic routing. These files locally in the appropriate directory structure.

canary-config.json (new) +126 -1

deploy-to-a-region.json (new) +29 -1

progressive-canary-deployment-through-traefikservice-to-blue-and-green-clusters.json (new) +71 -1

Summary

10 files have been created in generated-pipelines/v3/payment-service/prod/mum-dr/:

The Impact

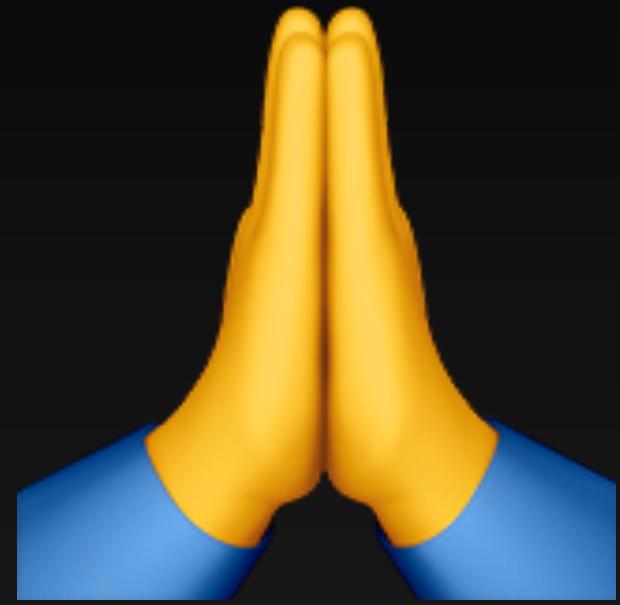
- ✓ Standardized multi-region deployments
- ✓ Regional Spinnakers for fault isolation
- ✓ Pipeline-Templates as shared contracts
- ✓ Canary discipline across teams
- ✓ Self-Serve adoption tooling
- ✓ Foundation for Cell Automation



The End... Or the Beginning

Because in DevOps, peace is temporary - But Evolution is permanent

Thank You



Shout-out to RootConf/HasGeek teams

Q & A