COMMUNITY

Infrastructure-Agnostic Continuous Delivery

Sven Merk, SAP SE
Oliver Nocon, SAP SE

About Us

Our customers
distribute 78%
of world's food &
82% medical
devices

Our customers
produce more
than 79% of the
world's chocolate.

77% of the world's transaction
revenue
touches an SAP system

THE BEST RUN SAP

Our customers
produce more than
77% of the
world's beer.

Our customers
manufacture more
than 180,000
automobiles
per day.

Elite performers - State of DevOps 2019

208
times more
frequent code deployments

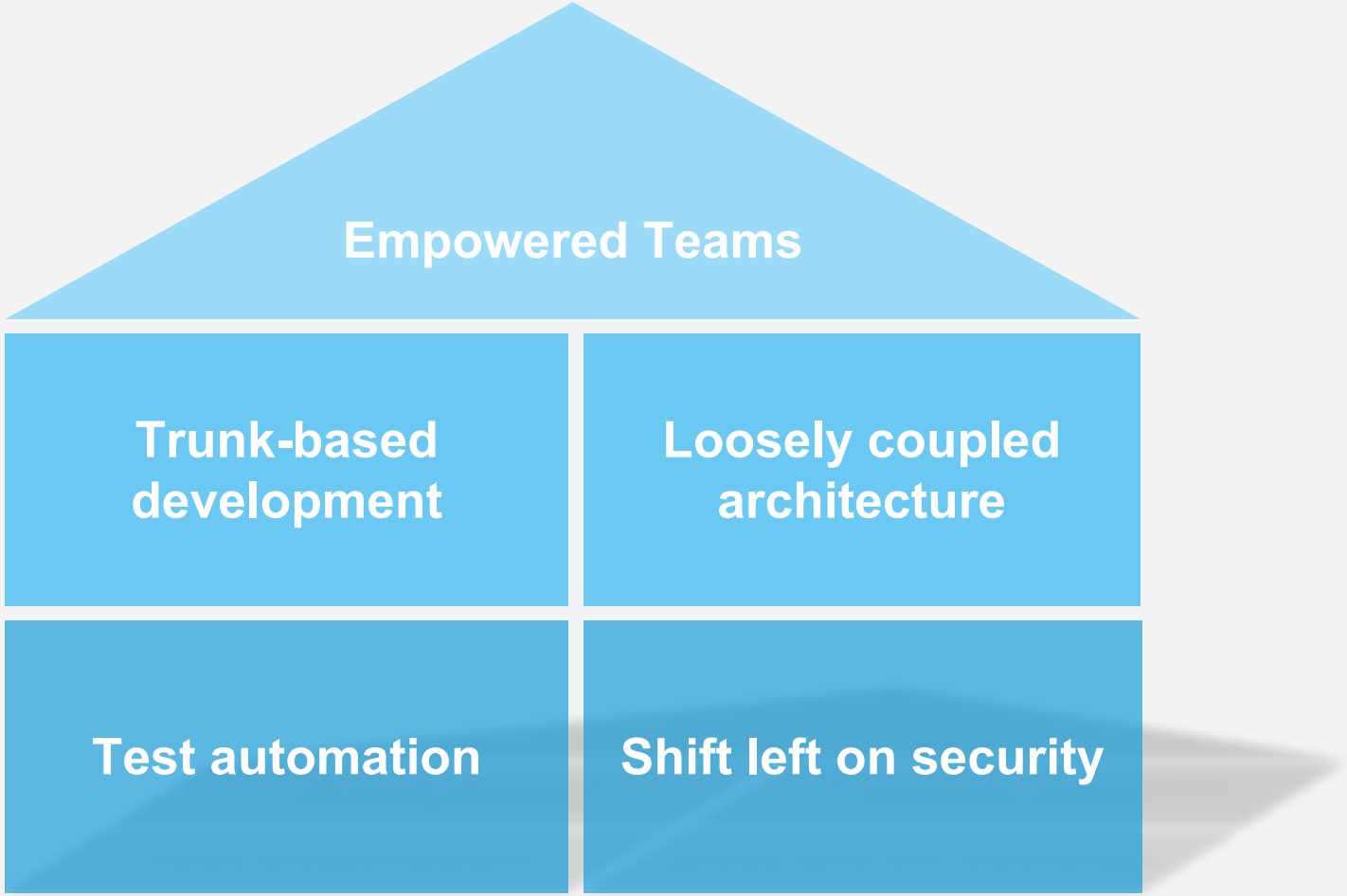
106
times faster
lead time from commit to deploy

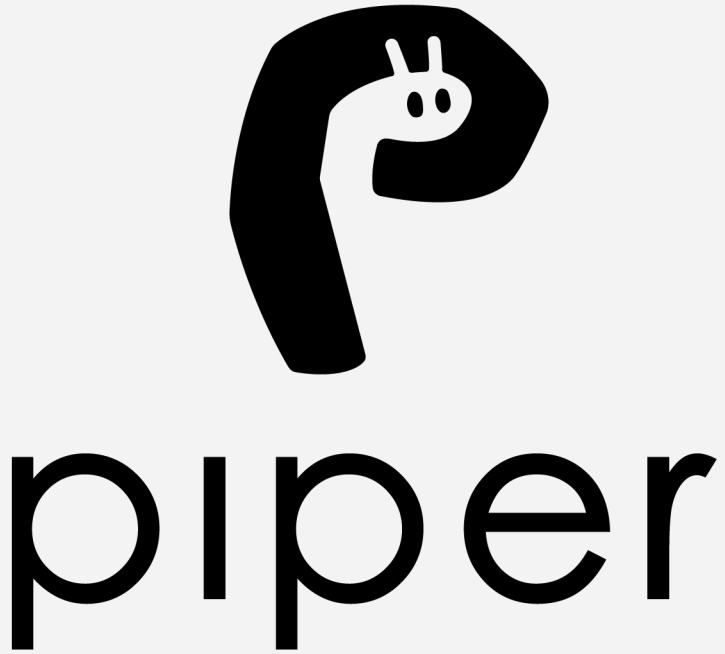
2604
times faster
time to recover from incidents

7
times lower
change failure rate

Source: https://services.google.com/fh/files/misc/state-of-devops-2019.pdf

Development Culture (according to DORA research)





https://project-piper.io

Shared codified knowledge – ready to use

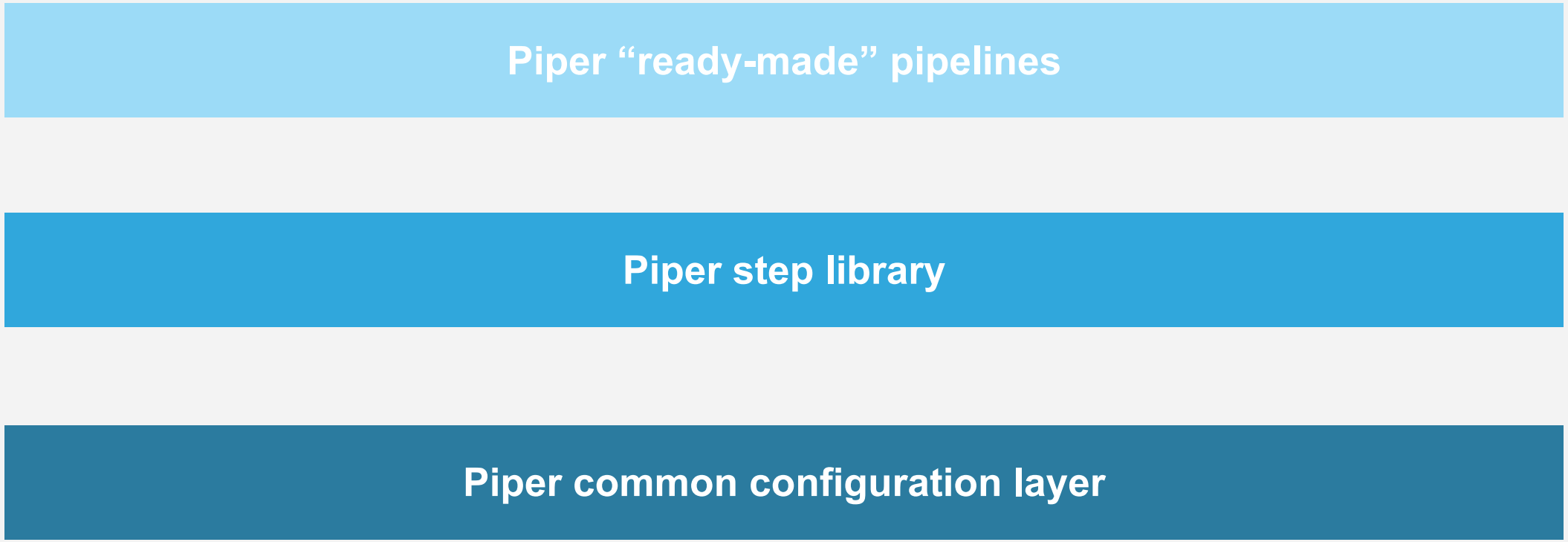
Piper “ready-made” pipelines

Shared codified knowledge – ready to use

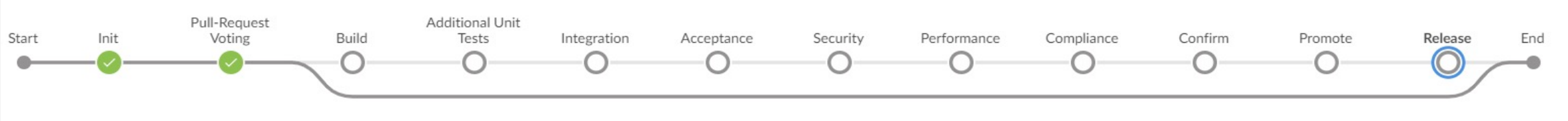
Piper “ready-made” pipelines

Piper step library

Shared codified knowledge – ready to use



Getting started …



Pipeline script (Jenkins)

```
@Library('piper-lib-os') _

piperPipeline script: this
```

Initial config (Pull-Request voting, other things can be added iteratively)

```
general:
  buildTool: npm
```

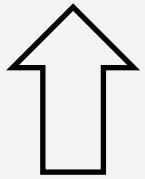
Separation of pipeline logic and configuration

Provided

Pipeline script (currently Jenkins)

```
@Library('piper-lib-os') _

piperPipeline script: this
```



innovate “centrally”

→ reduce teams’ cognitive load

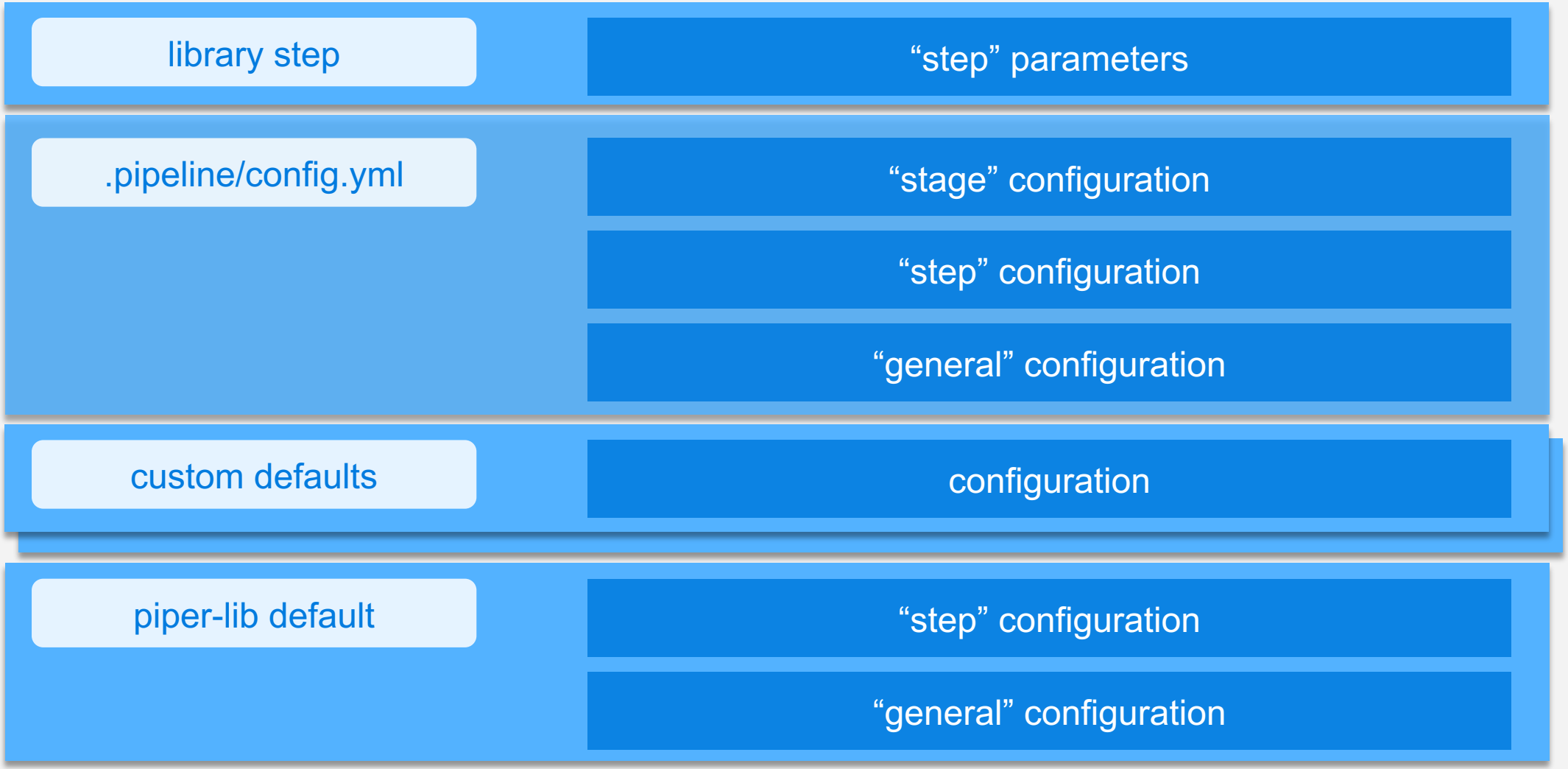
Team-owned

Configuration (universal)

```
general:
  buildTool: npm
stages:
  Security:
    verbose: true
steps:
  artifactPrepareVersion:
    shortCommitId: true
    ...
```

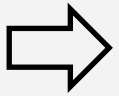
Stage extension

Common configuration layer



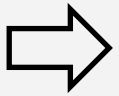
Example: Automatic versioning

```
general:
  buildTool: maven
steps:
  artifactPrepareVersion:
    shortCommitId: true
    ...
```



1.2.3-20210101010203_218a743

```
general:
  buildTool: npm
steps:
  artifactPrepareVersion:
    versioningType: library
    ...
```



1.2.3

https://www.project-piper.io/steps/artifactPrepareVersion/

Jenkins: Shifting Gears

Published on 2018-08-31 by Kohsuke Kawaguchi

Tweet

development core

Kohsuke here. This is a message for my fellow Jenkins developers.

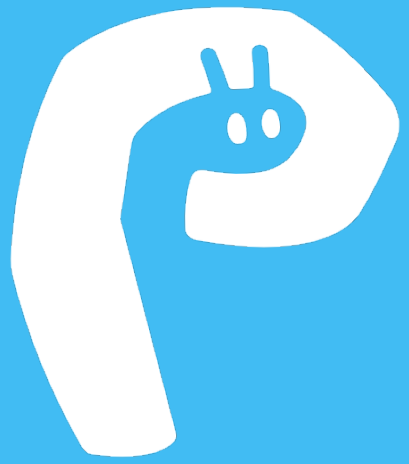
Jenkins has been on an amazing run, but I believe we are trapped in a local optimum, and losing appeal to people who fall outside of our traditional sweet spot. We need to take on new efforts to solve this. One is “cloud native Jenkins” that creates a flavor of Jenkins that runs well on Kubernetes. The other is “gear shift”, where we take an evolutionary line from the current Jenkins 2, but with breaking changes in order to gain higher development speed.

CD.FOUNDATION

there is more …

Project “Piper” evolution

Jenkins



CI/CD “ready-made” pipelines

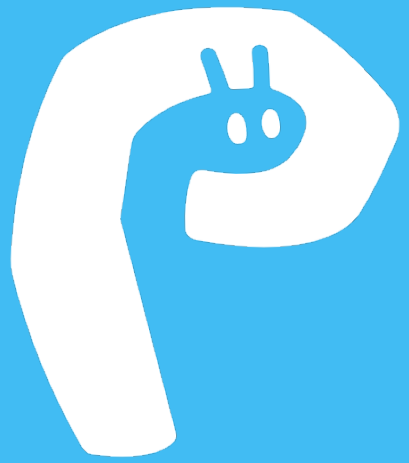
CD step library

Common configuration layer

Project “Piper” evolution

Jenkins

GitHub Actions



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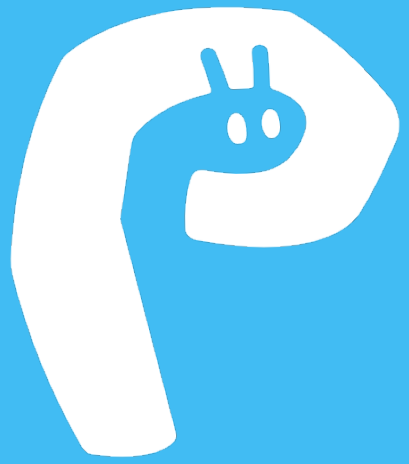
Project “Piper” evolution

Jenkins	GitHub Actions	Tekton



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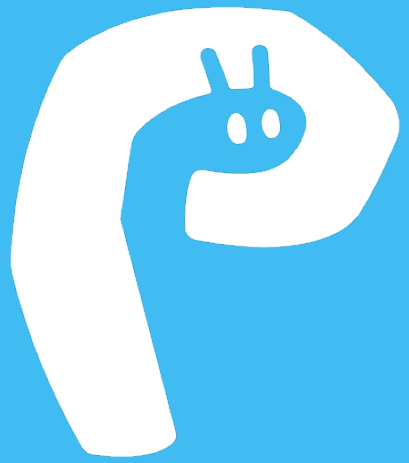

CI/CD “ready-made” pipelines

CD step library

Common configuration layer

“Infrastructure-Agnostic” Continuous Delivery

Configure once – run anywhere …

```
general:
  buildTool: npm
  vaultPath: my/demo/path
  vaultNamespace: my/demo/namespace
  vaultServerUrl: https://vault.demo.com
  # relevant for Jenkins only:
  vaultAppRoleTokenCredentialsId: vaultToken
  vaultAppRoleSecretTokenCredentialsId: vaultSecret
steps:
  artifactPrepareVersion:
    shortCommitId: true
```

Jenkins library

```
@Library(['piper-lib-os']) _

node {
    stage('Checkout & Version') {
      deleteDir()
      checkout scm
      artifactPrepareVersion script: this
    }
}
```

Shell

```
~/test $ export PIPER_vaultAppRoleID=appRole
~/test $ export PIPER_vaultAppRoleSecretID=appRoleSecret
~/test $ git clone ...
~/test $ piper artifactPrepareVersion
```

GitHub actions

```
name: CI
on:
  push:
    branches: [ master ]
env:
  PIPER_vaultAppRoleID: ${{ secrets.VAULTAPPROLEID }}
  PIPER_vaultAppRoleSecretID: ${{ secrets.VAULTAPPROLESECRETID }}
jobs:
  init:
    runs-on: [ self-hosted ]
    steps:
      - name: checkout
        uses: actions/checkout@v2
      - name: setVersion
        uses: SAP/project-piper-action@master
        with:
          piper-version: master
          command: artifactPrepareVersion
```

Tekton (work in progress)

```yaml
apiVersion: tekton.dev/v1beta1
kind: Task
metadata:
  name: piper
spec:
  params:
    - name: command
      type: string
    - name: flags
      type: array
    - name: image
      type: string
      default: node:lts-stretch
    - name: piper-version
      type: string
      default: master
    - name: vault-app-role-id
      default: ''
    - name: vault-app-role-secret-id
      default: ''
  results:
    - name: docker-image
      description: The docker image retrieved out of the configurat
    - name: config
      description: The complete configuration, in case requested
  steps:
    - name: get-piper
      image: <so far custom piper Docker image>
      imagePullPolicy: Always
      script: |
        #!/busybox/sh
        cp /piper $(workspaces.piper-workspace.path)
        chmod +x $(workspaces.piper-workspace.path)/piper
    - name: execute-piper
      image: $(params.image)
      workingDir: $(workspaces.piper-workspace.path)
      args: ["$(params.flags[*])"]
      script: |
        #!/bin/bash
        if [ "$(params.command)" == 'getConfig' ]
        then
          apt-get update && apt-get -y install jq
          $(workspaces.piper-workspace.path)/piper $(params.command) $@ > piper-config.json
          cat piper-config.json | tee "$(results.config.path)"
          jq -j .dockerImage piper-config.json | tee "$(results.docker-image.path)"
        else
          $(workspaces.piper-workspace.path)/piper $(params.command) $@
        fi
      env:
      - name: PIPER_vaultAppRoleID
        value: $(params.vault-app-role-id)
      - name: PIPER_vaultAppRoleSecretID
        value: $(params.vault-app-role-secret-id)
  workspaces:
    - name: piper-workspace
```

What's next?

☑ Piper "agnostic" common configuration layer

What's next?

☑ Piper "agnostic" step library

☑ Piper "agnostic" common configuration layer

What's next?

☐ Piper "agnostic ready-made" pipelines

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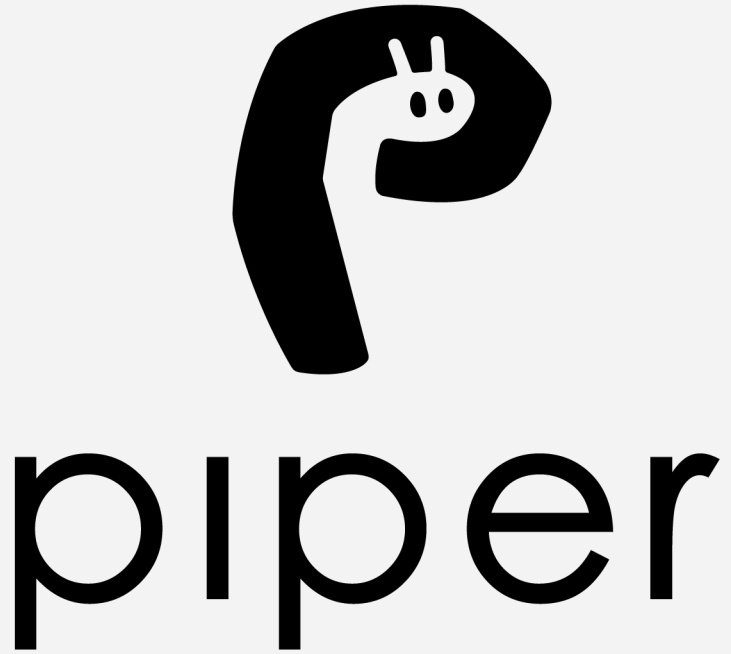

https://project-piper.io

Thank you!

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Oliver Nocon, SAP SE

CHIEF EXPERT AND CD/DEVOPS COACH

https://www.linkedin.com/in/onocon