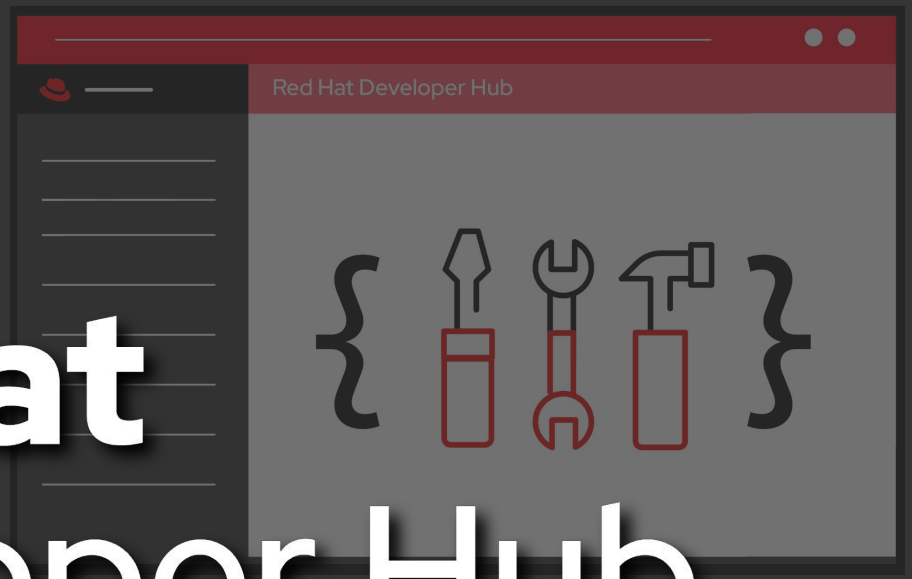
Supported

Enterprise RBAC

Dynamic Plugins

OpenShift Integrated



Red Hat Developer Hub

https://red.ht/rhdh

Based on Backstage.io

Red Hat

Introduction

Richard Hofmeister

- Michigan State University Graduate
  - Music Education and Performance
  - Computer Science and Engineering
- Lead Developer for Mid-Michigan insurance company
- Brought OpenShift into the enterprise
- Specialized in Technology Adoption
- Joined Red Hat in November 2019
  - App Dev & App Platform Specialist

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RED.HT/MI-RHUG

Richard Hofmeister

Senior App Dev Solutions Architect :: hofmeister@redhat.com :: 517-927-6303

LinkedIn :: Richard Hofmeister

Quarter	Speaker	Topic	Slide Deck
Q4 - 2022	Richard Hofmeister	Agenda	pdf
	Brian Dumont	Using the Insights API to apply Compliance Profiles	pdf
	Richard Hofmeister	Application Modernization With Konveyor	pdf
	Patrick Regan	What's New in RHEL 9	pdf
	Brad Krumme	Enterprise Architecture Patterns	pdf
Quarter	**Speaker**	**Topic**	**Slide Deck**
Q3 - 2022	Brian Dumont	Enterprise Automation	pdf
	Alan Patrick	Red Hat Satellite	pdf
	Jay Ryan	Managing Complex Workloads in a Kubernetes Native Environment	pdf
	David Brugger	Empowering Event Driven Architectures Across the Hybrid Cloud	pdf
	Andy Block	Introduction to GitOps and Secrets Management	pdf

Development teams face challenges

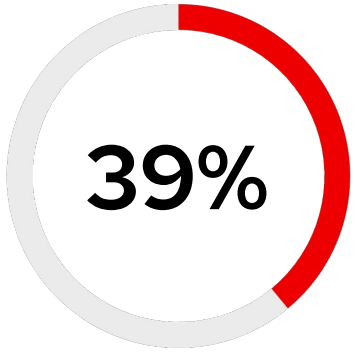
Constant adjustment to new requirements and market changes

As organizations have grown, whether in sheer size, geographical footprint, or functional role(s) - to remain competitive, the number of development teams and applications also has grown

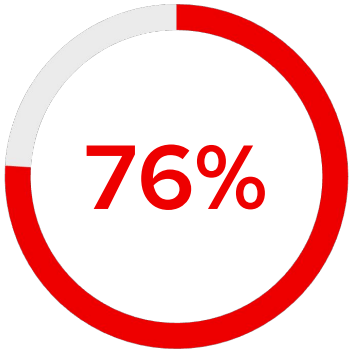
- Onboarding takes too long
- No single source of information
- Tool sprawl leads to analysis paralysis.

Development teams are under pressure

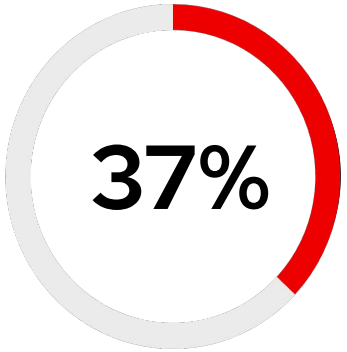
Productivity is slowing down



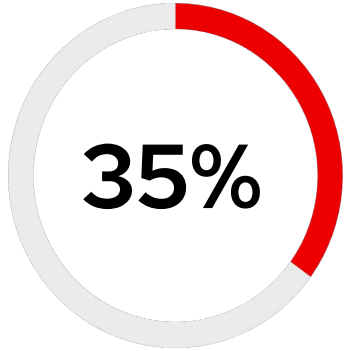
Increasing workload / demand from other teams leads to increased overhead.[1]



More than three-quarters of organizations say the **cognitive load is high enough to negatively impact productivity.**[1]



Adapting to the pressures of digital transformation is third biggest challenge.[1]



Learning skills to adapt to new technologies and approaches.[1]

[1] Salesforce productivity survey

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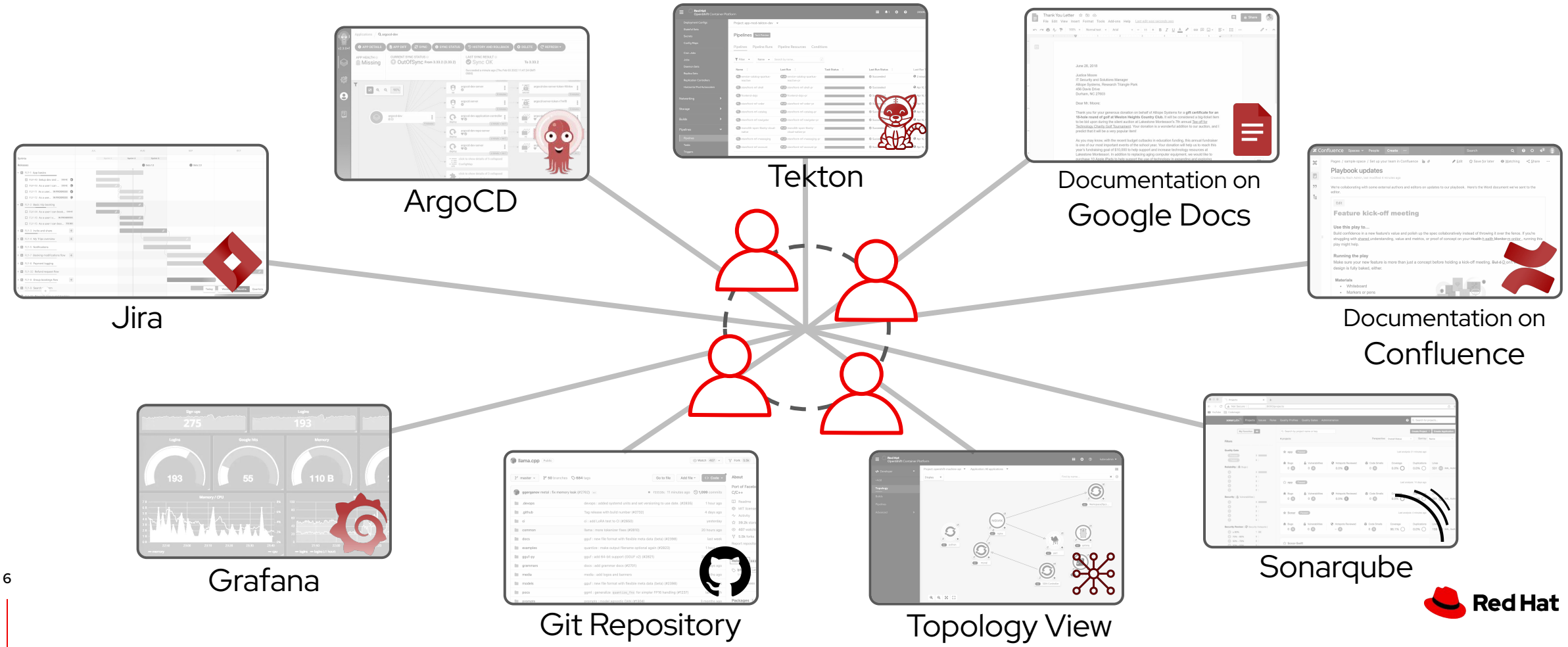
Infinite Bookmarks

Difficulty in managing ALL information relevant to the development team



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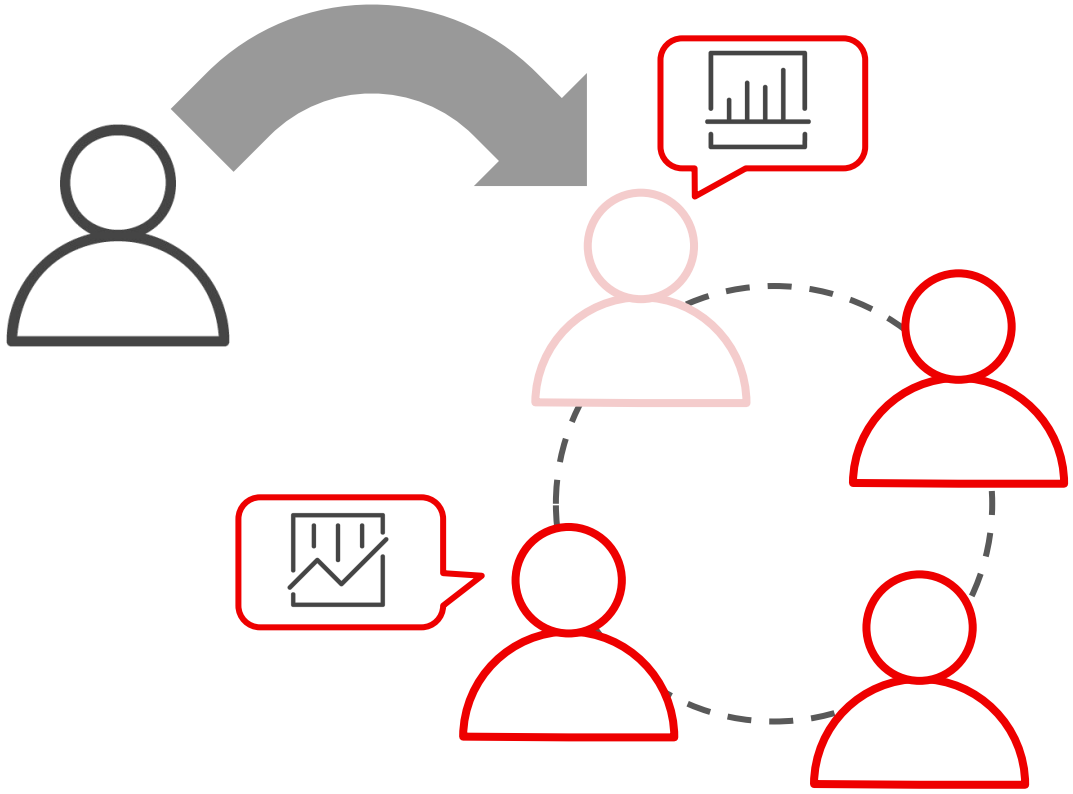
Onboarding Chaos

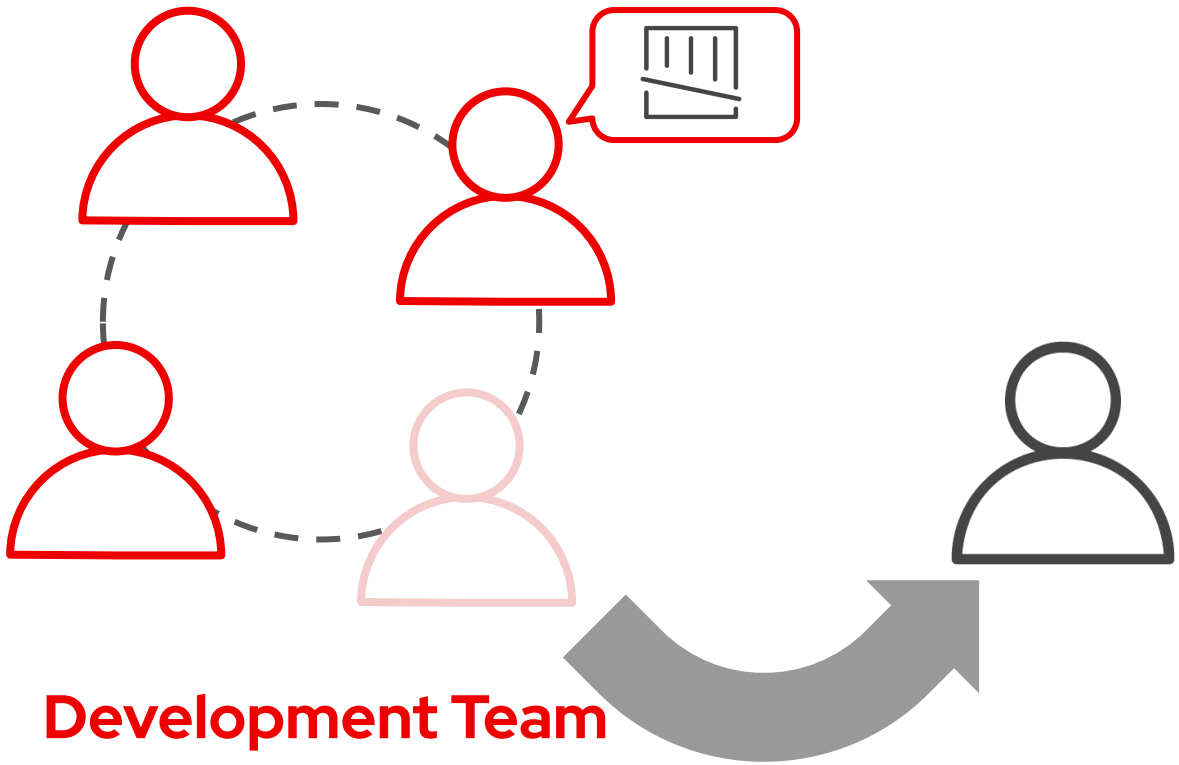
Integrating new members efficiently becomes paramount



Development Team

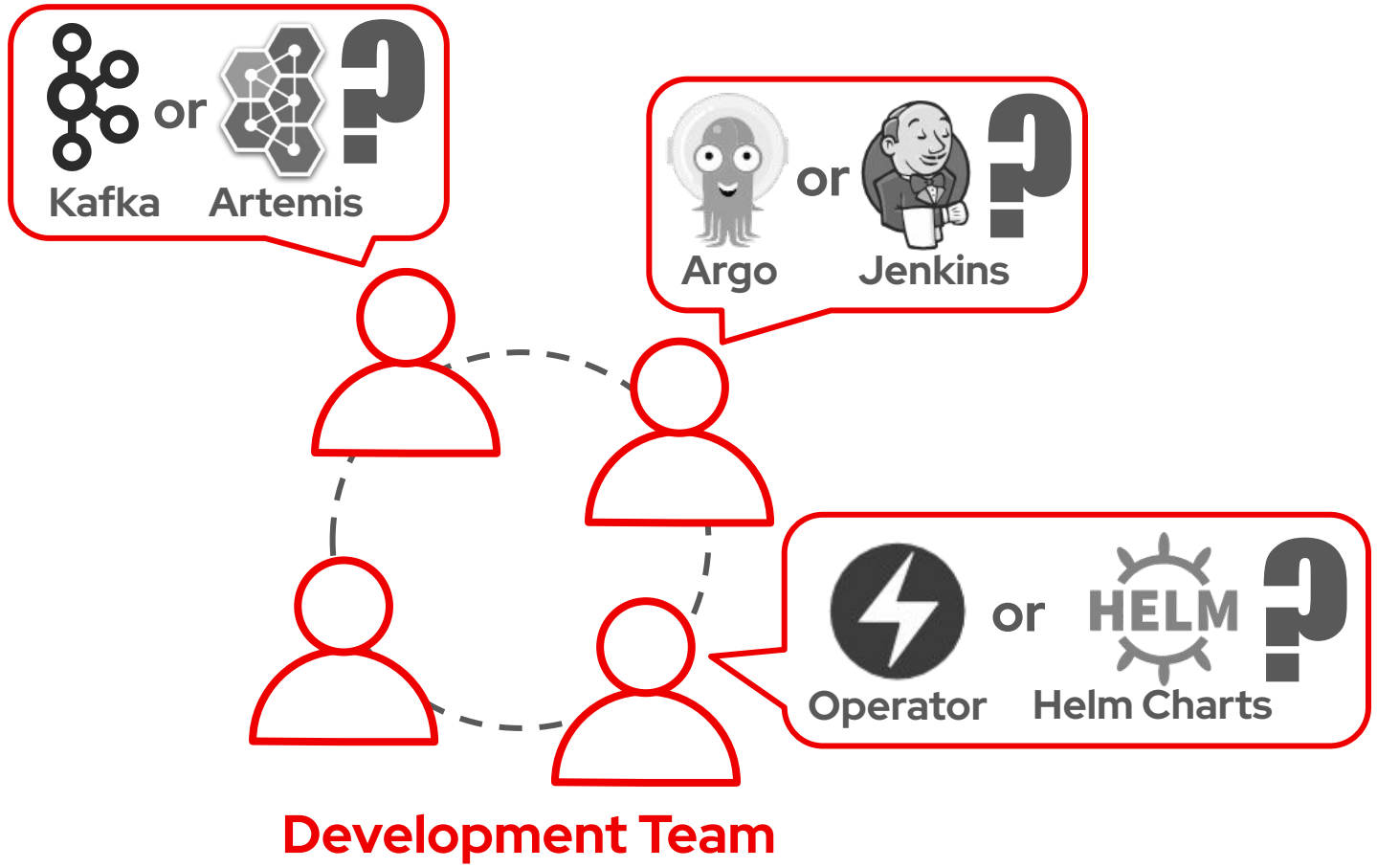
Onboarding Chaos

Furthermore, the departure of people reverberates through the entire team



Technology Overload

Analysis Paralysis - too many choices



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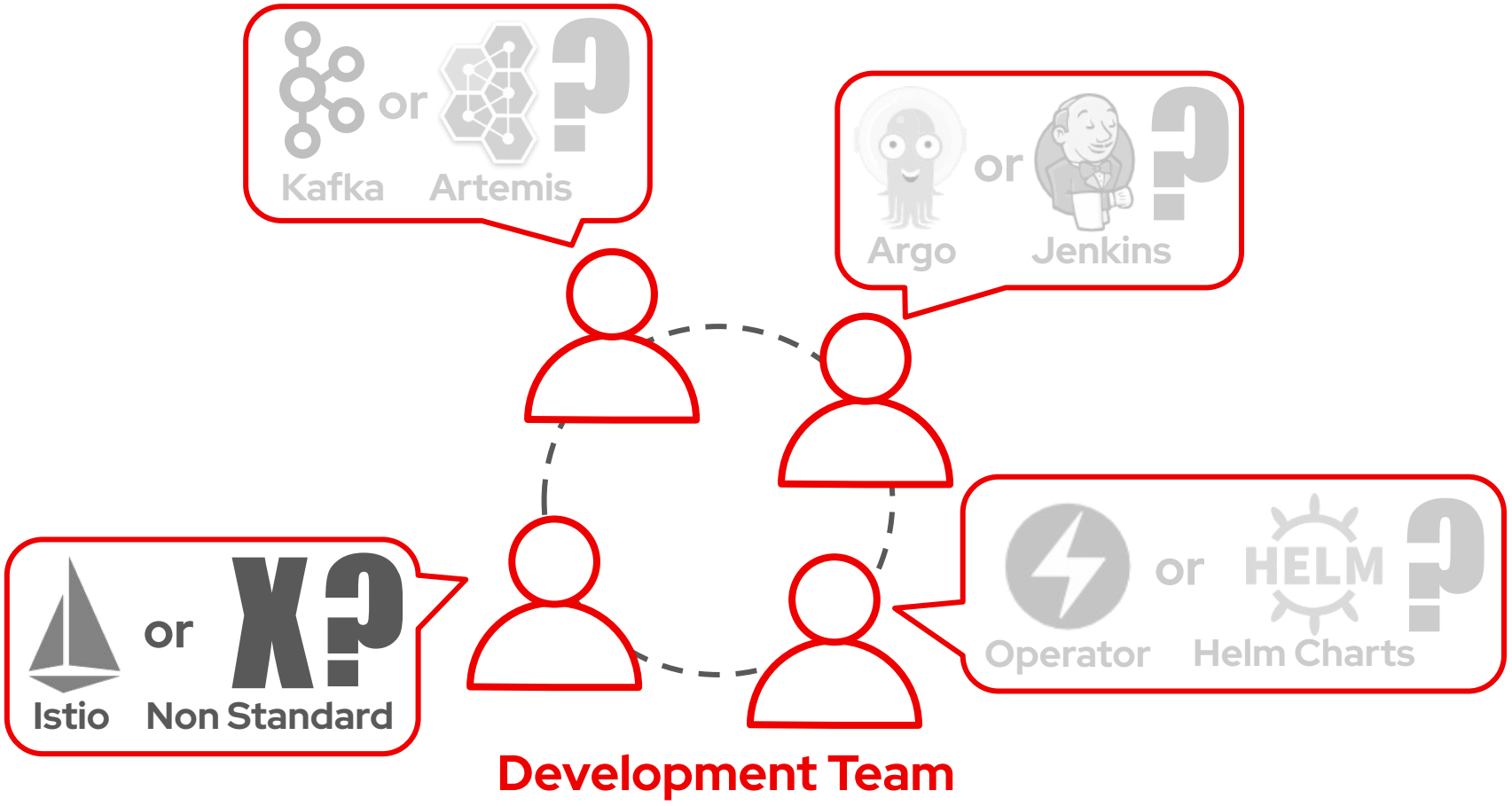
Technology Overload

Sometimes choices becomes **Non-Standard**



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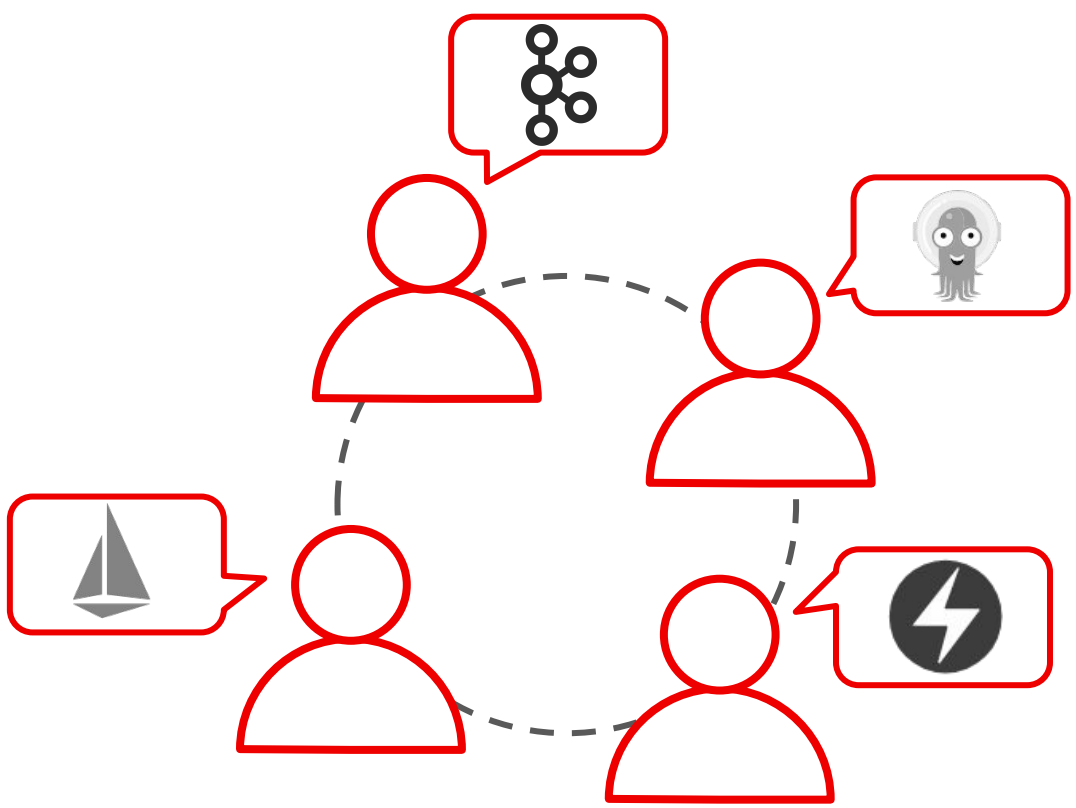
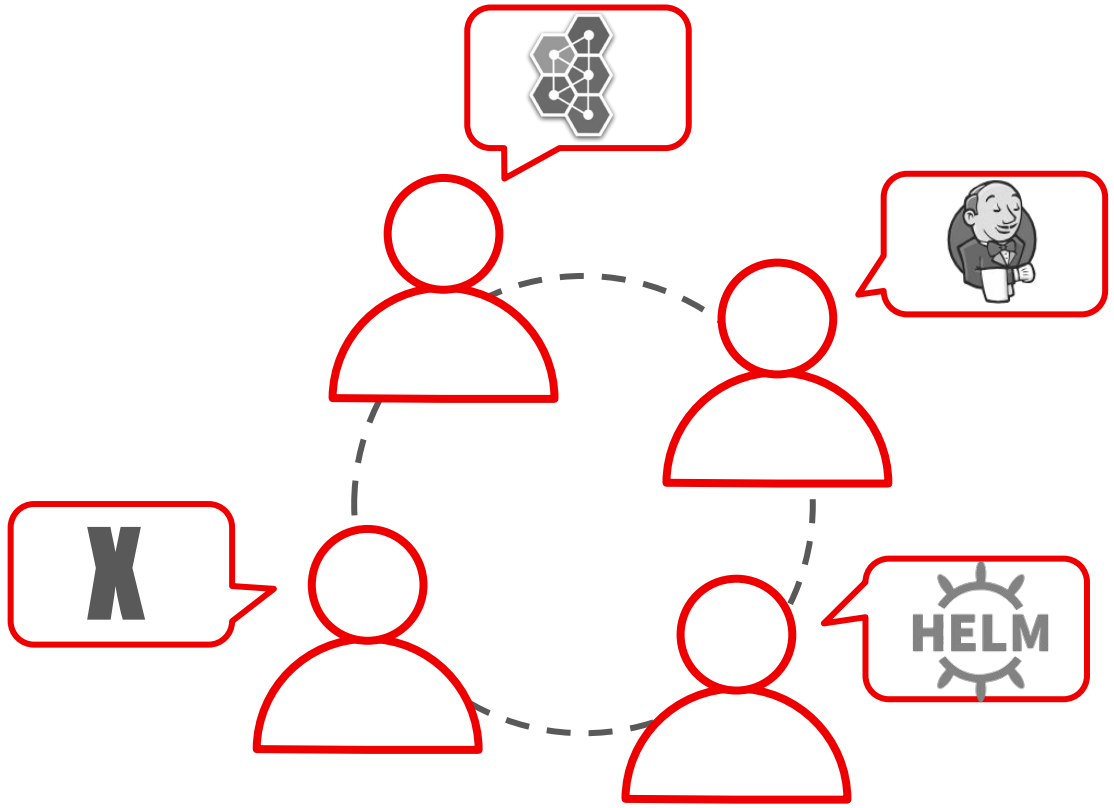
Lack of Standardization

Each team manages a different set of technologies, leading to support nightmares



Development Team #1



Development Team #2

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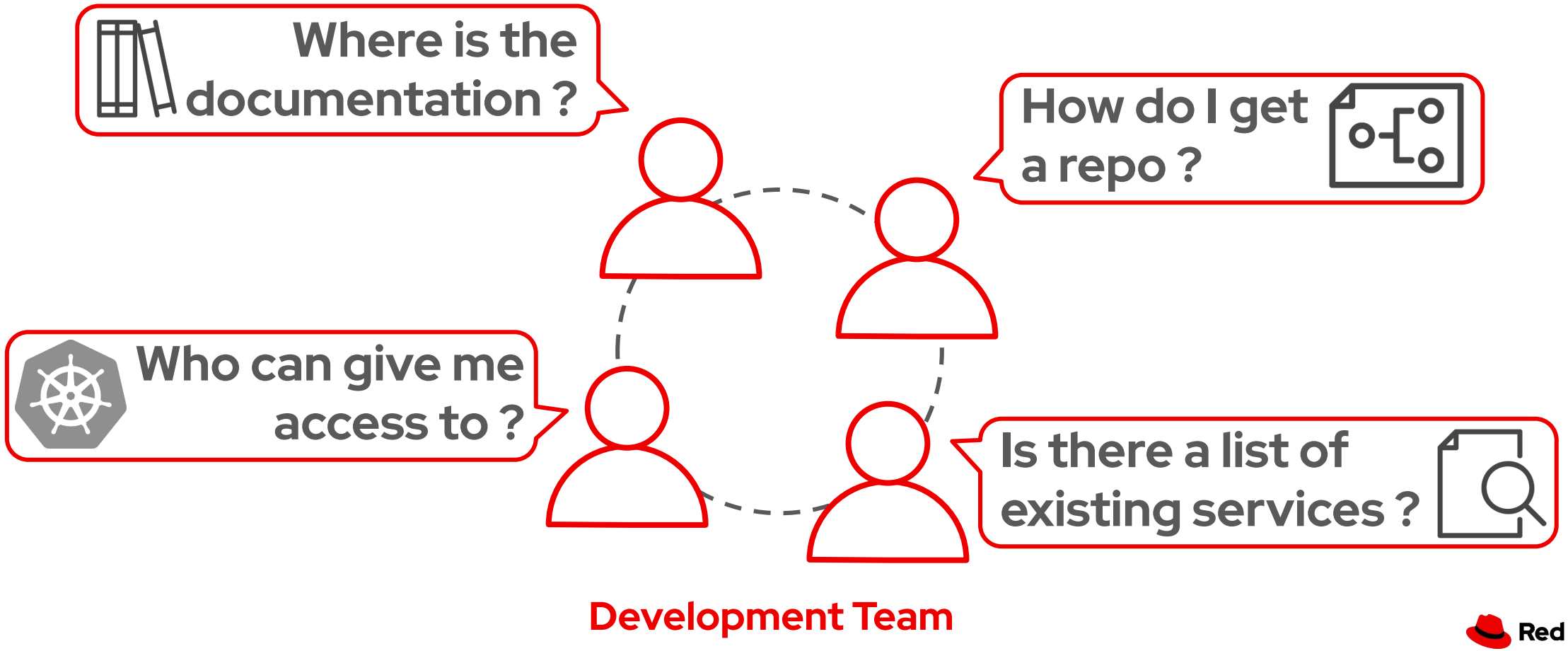
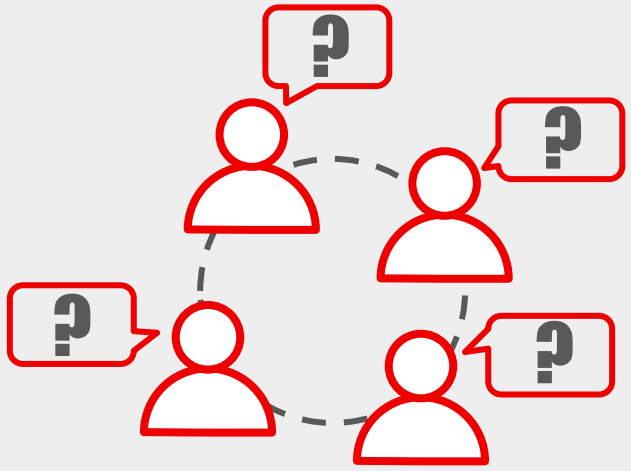
Knowledge Fragmentation

Processes are unclear, impacting overall team productivity

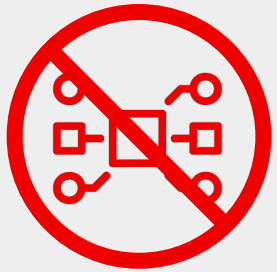


RESULT:

Developer Productivity is **declining**



Development Team



Stifle Innovation

Technical debt ramps up and prevents innovation to be delivered consistently

Deter focus

Lack of focus on capabilities that matters the most to the business

Quality Suffers

Products lack quality and put your business at risk

"**60% of organizations** looking to scale DevOps will adopt an **Internal Developer Platform** to provide infrastructure, deployment pipelines, and other internal services to enable developer self-service by 2025."

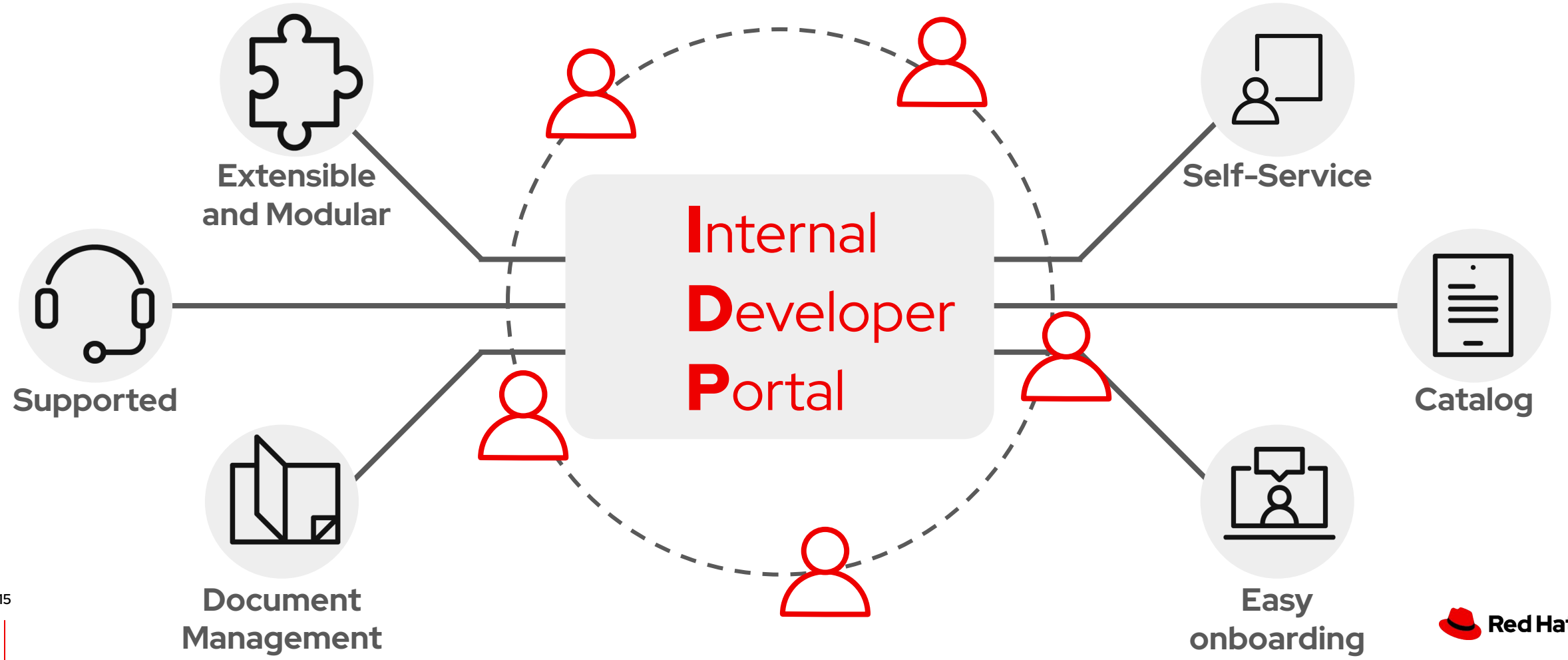
—

IDC, Future Scape

Source: IDC FutureScape: Worldwide Developer and DevOps 2023 Predictions, Oct.

The solution is an Internal Developer Portal

Requirements to boost the development team productivity



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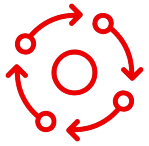
What is IDP Platform Engineering?

Description: *"An Internal Developer Platform (IDP) is built by a platform team to build golden paths and enable developer self-service. An IDP consists of many different techs and tools, glued together in a way that lowers cognitive load on developers without abstracting away context and underlying technologies. Following best practices, platform teams treat their platform as a product and build it based on user research, maintain and continuously improve it."*

Benefits: IDP is layered on top of the existing tooling in an enterprise that will allow faster adoption of new technologies such as OpenShift and result in increased productivity and satisfaction.

Relevant Teams: IDPs are not only for developers. They also reach Operations, Security, PM and QA



Operations

- Accounts for governance and standardization
- Handles logistics for automating deployment tasks

Security

- Ensuring best practices are followed (vulnerability scanning, pen testing, etc)
- Visibility into security posture of applications

Project Managers (PM)

- Project management tool consistency & organization
- Improved planning by defining a clear set of steps & dependencies

Quality Assurance (QA)

- Automated testing integrated into Golden Path
- Visibility into testing process to help identify problems

Source:
https://internaldeveloperplatform.org/what-is-an-internal-developer-platform/

Pillars of an Internal Development Platform (IDP)

All four pillars must be designed for to achieve excellence.

Onboarding

This includes all the task that a developer needs to do to get his/her team, application, component on the platform.

This is the first impression that a developer gets of the platform, usually a leading indicator of the rest of the experience.

Code Time

This includes setting up the coding workstation and the inner loop

A quick workstation setup and fast and reliable inner loop both improve the developer productivity

Build Time

This is basically the ci/cd process that promotes code to production

A reliable and comprehensive ci/cd process is one of the most important factors in team productivity and application reliability.

Run Time

This includes the creation of the infrastructure to run the app and all of the post-production processes (monitoring, incident management)

A self-serviceable and observable infrastructure is what team need to be fully autonomous.

Supported

Enterprise RBAC

Dynamic Plug-ins

OpenShift Integrated

CNCF Backstage*

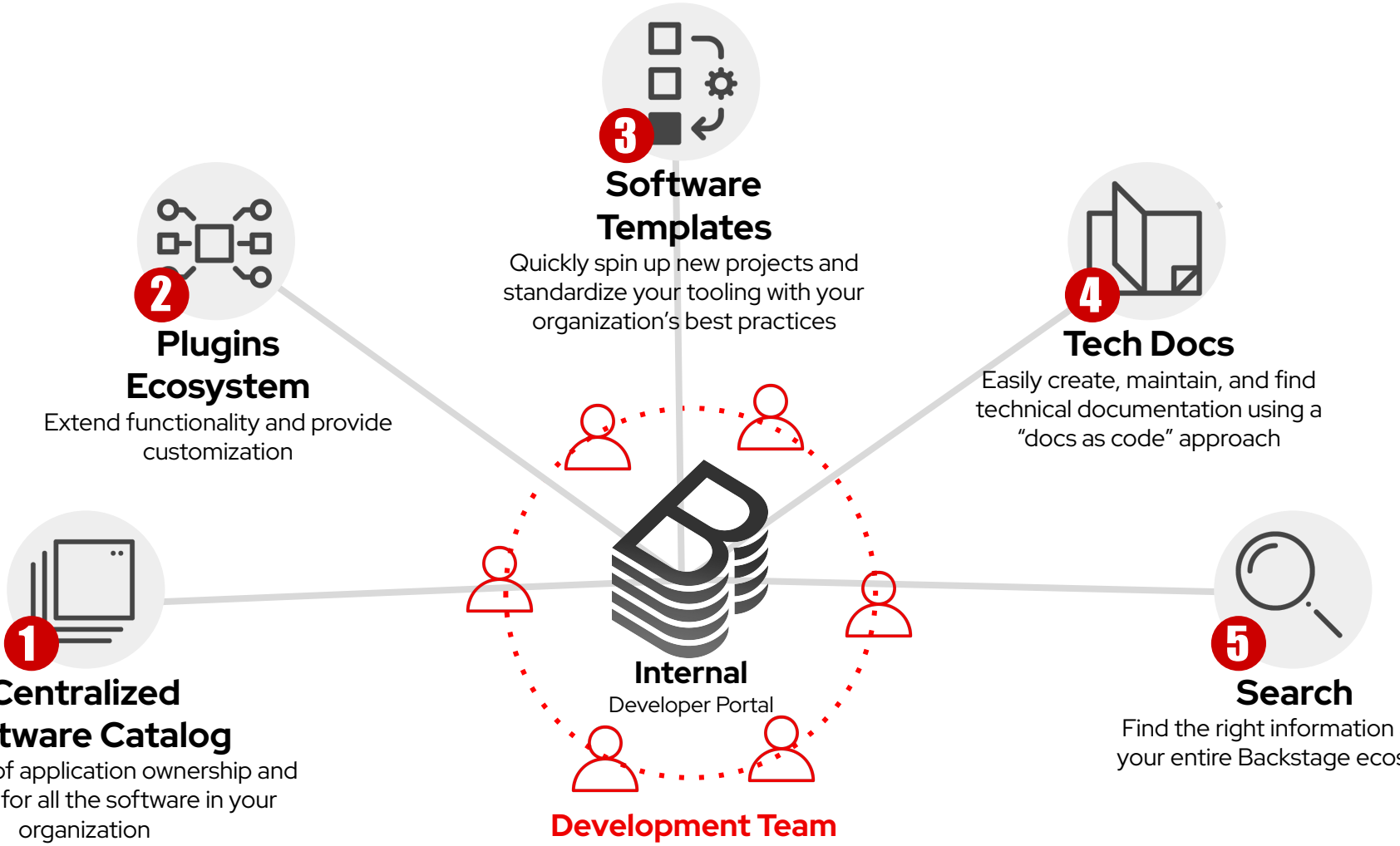
* Donated by Spotify

An **Internal Developer Portal** to help your development team become more productive

Red Hat

CNCF Backstage: Internal Developer Portal

The 5 fundamental pieces



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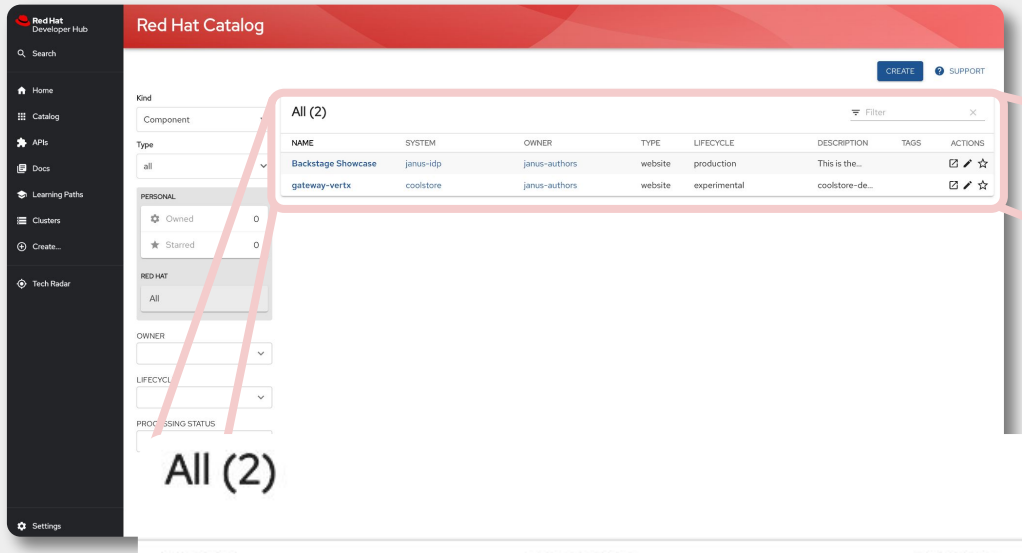
Centralized Self-Managed Software Catalog

Keep track of application ownership and metadata for all the software in your organization



Leverages YOUR existing Git

- Services
- Websites
- Libraries
- Data Pipelines

All (2)

Filter

NAME	SYSTEM	OWNER	TYPE	LIFECYCLE	DESCRIPTION	TAGS	ACTIONS
Backstage Showcase	janus-idp	janus-authors	website	production	This is the...		
gateway-vertx	coolstore	janus-authors	website	experimental	coolstore-de...		

Red Hat

Centralized Self-Managed Software Catalog

Keep track of application ownership and metadata for all the software in your organization

Software Catalog Entities:

- Domain
- System
- Component*
- Resource
- API
- Location

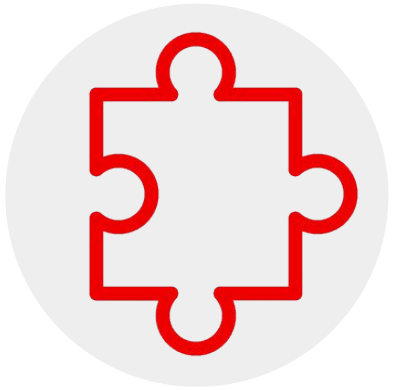
Software Catalog Ownership:

- Group*
  - Type (root, business-unit, team)
- User

```
apiVersion: backstage.io/v1alpha1
kind: Component
metadata:
 name: artist-web
 description: The place to be, for great artists
spec:
 type: website
 lifecycle: production
 owner: artist-relations-team
 system: artist-engagement-portal
 dependsOn:
   - resource:default/artists-db
 providesApis:
   - artist-api
```

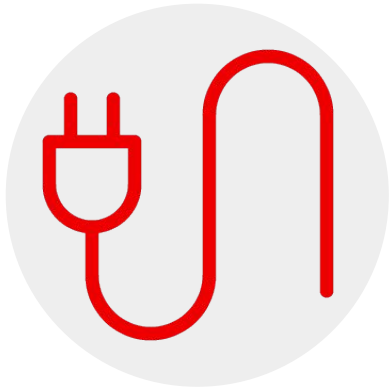
Plug-ins

Extending the Backstage portal to fit your needs



Modular Extensions

Enhancing the functionality and capabilities of the platform



Connect to YOUR tools

Plug-ins allows to your preferred tool being connected through the portal and be available to your development team

Plug-in Catalog

Backstage maintains a plug-in catalog, where users can quickly install new tools and customize the experience

Make your Own

Backstage allows you to create your own plug-ins easily

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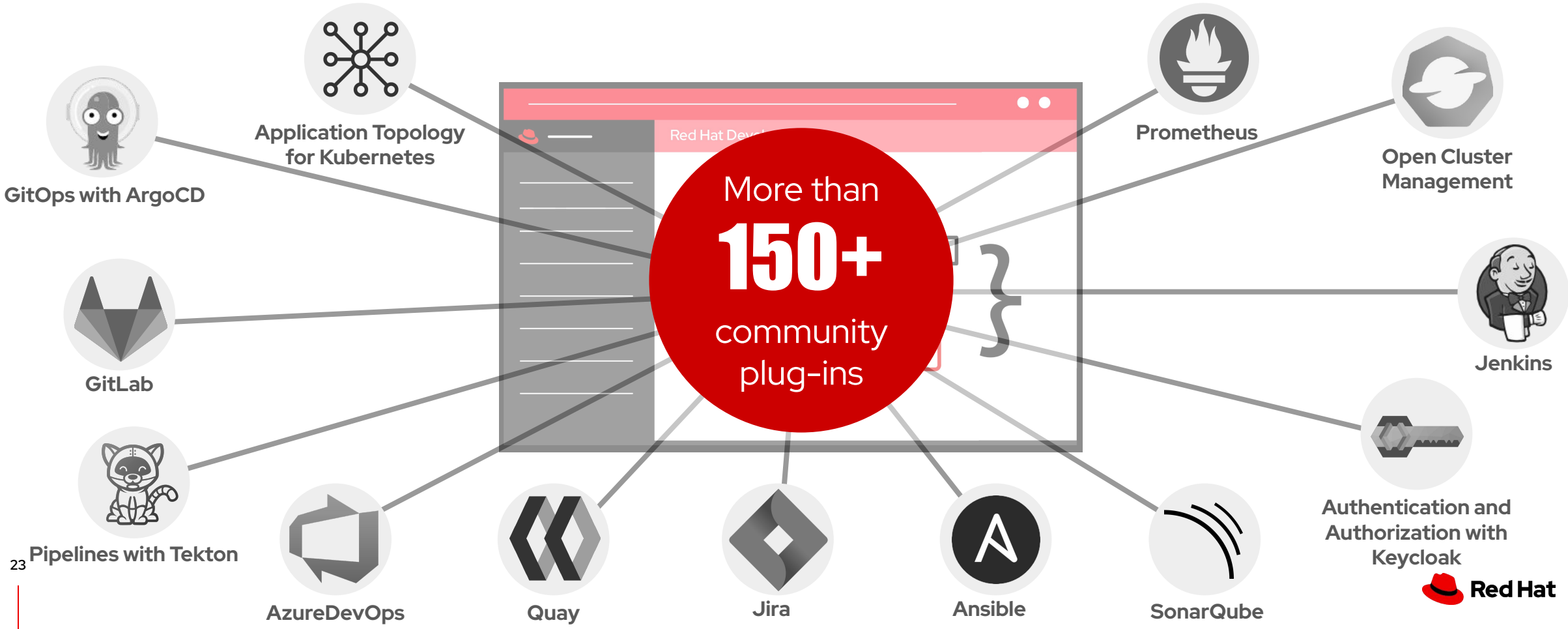
- Supply Chain Management
- CI/CD
- Monitoring
- Issue Tracking
- Code Quality

Plug-ins Ecosystem

Extensible and allows to customize the development team needs



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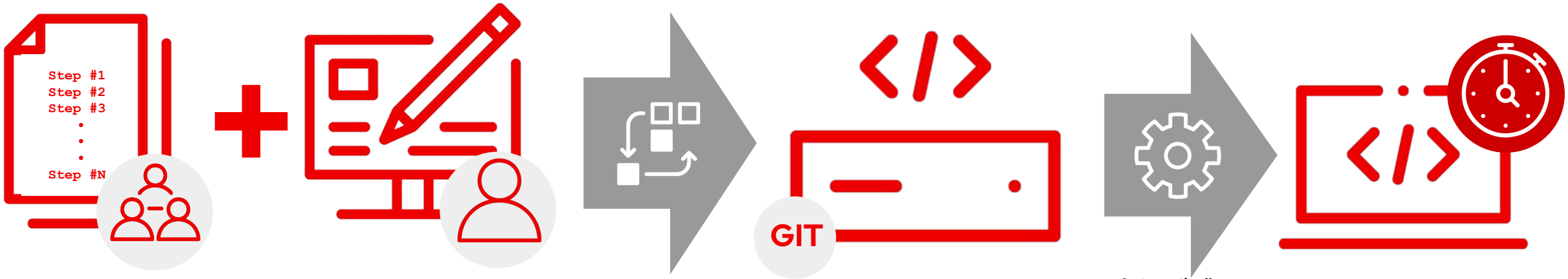
Simplified Onboarding with Software Templates

Quickly spin up new projects and standardize your tooling with your organization’s best practices



Development Team Best Practices

Leverages on existing practices and uses company's guidelines to automate the most common tasks

User fills out a form

Inputs all the necessary data related to this task in order to generate the desired outcome

Automatically created a new Git repository

Everything goes to a Git Repository the development team can working on

Everything done in a matter of minutes

Automatically created and provisioned following organization's guidelines

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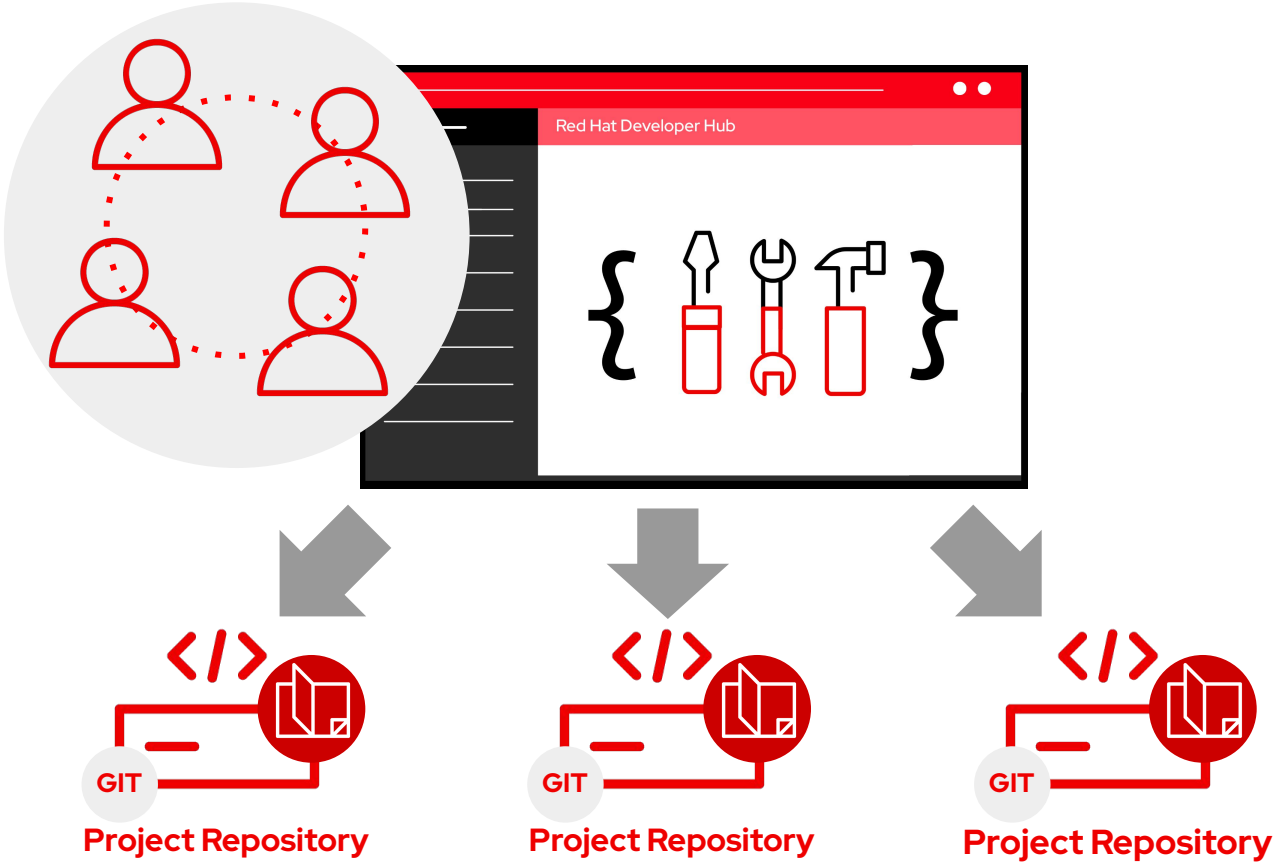
More manageable Technical Documentation

Easily create, maintain and find technical documentation using "docs as code" approach



Access to system architecture & application documentation

Development team writes documentation in Markdown files that live together with their code, giving others access to system architecture and application documentation when and where they need it.

Representation of documentation that isn't proprietary

All the necessary documentation can be stored in any Git repository and not tied to any proprietary solution

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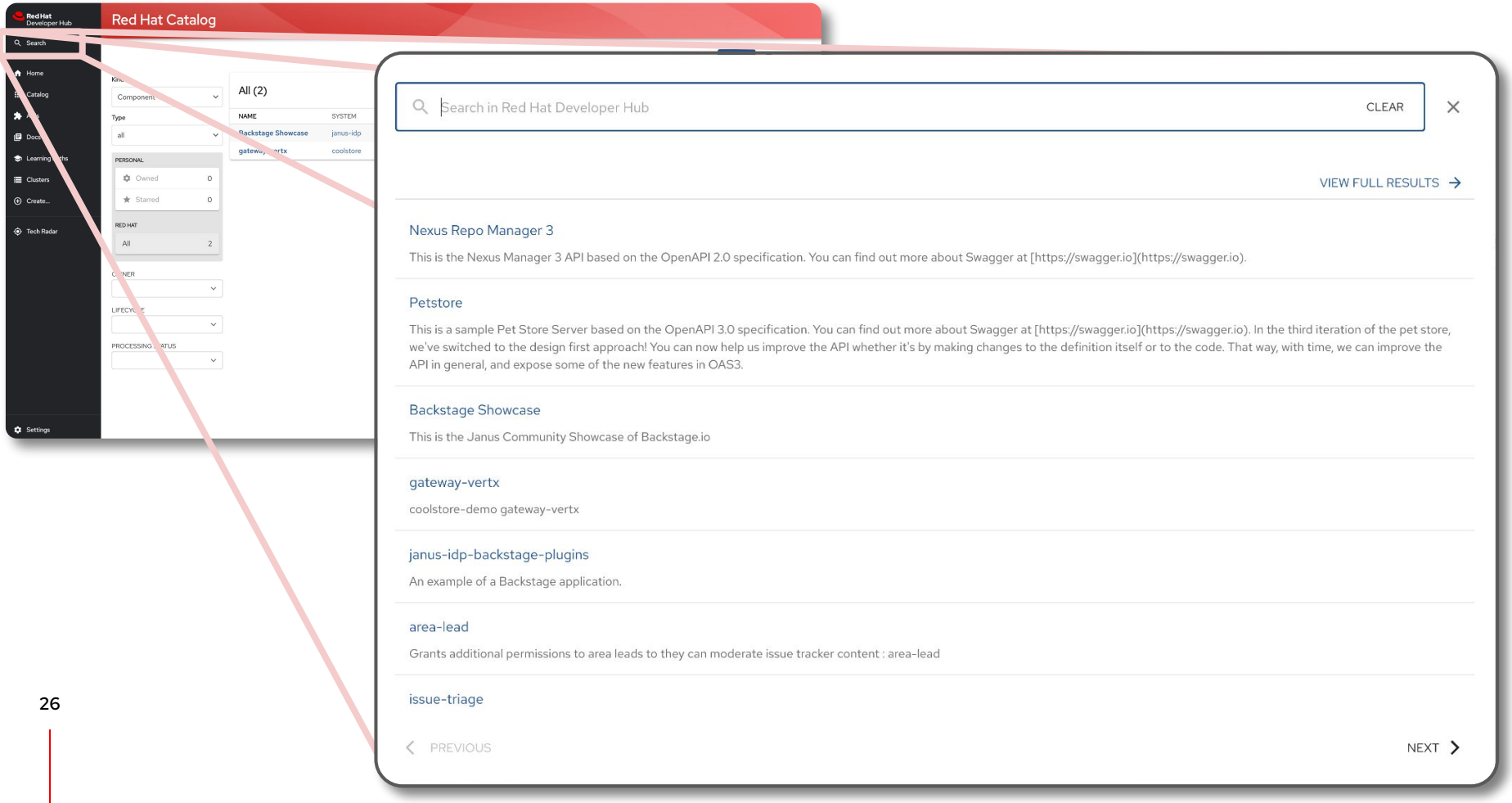
Quickly the right information

Everything from a single point for your entire development team



Find anything YOU need

Allows to easily find information related to your coding, project or documentation needs

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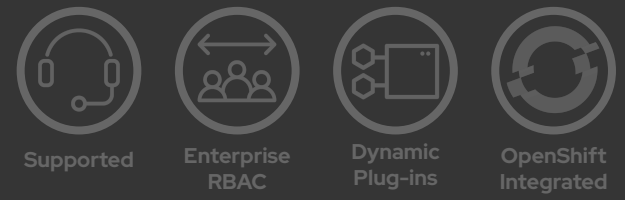


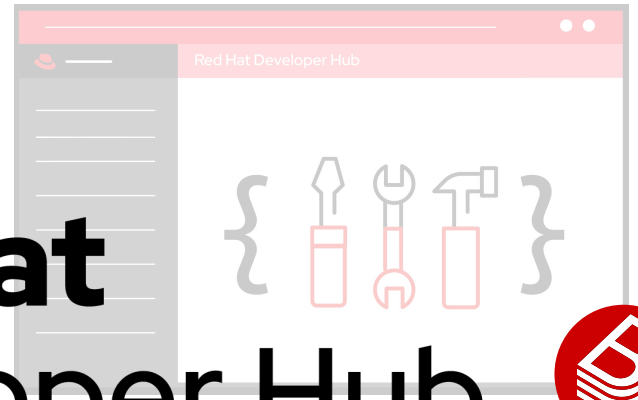
Red Hat Value Added

Red Hat ensures business continuity and the development team will be continuously delivering

Red Hat

Red Hat's version of CNCF Backstage

Ensuring the development team is continually delivering



Red Hat
Developer Hub

Based on
Backstage.io

- **Centralized Catalog**
- **Self-Service**
- **Search**
- **Plug-ins Ecosystem**
- **Software Templates**
- **Technical Documentation**

Red Hat

Enterprise Grade Support 24x7

Support for both Backstage environment and the supported plug-ins

Ensuring business continuity for your whole team

Experienced professionals can assist your team's success and ensure business continuity

Security Resources at your disposal

Constantly offering CVEs and patches to ensure your Backstage environment is stable and reliable at all times

Knowledge Base and Troubleshooting

A vast knowledge base regarding the most common problems and troubleshooting guides to solve the most trivial problems

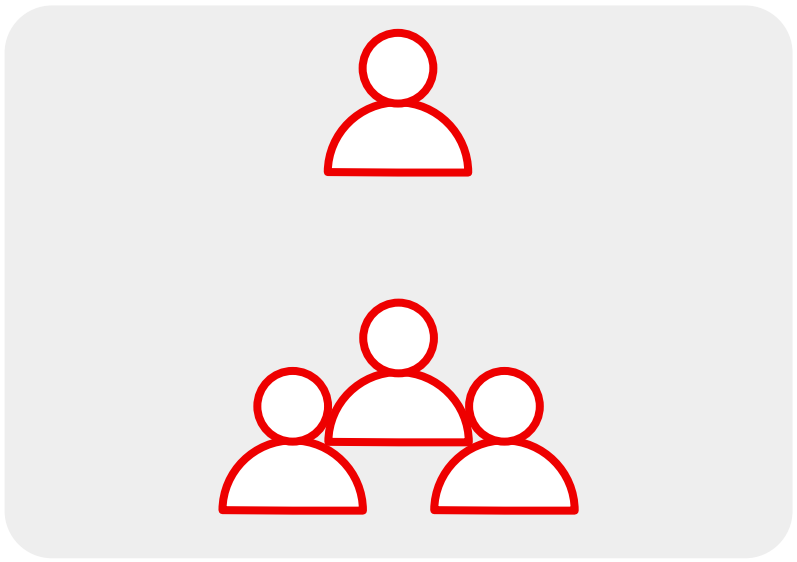
Red Hat
Supported

Supported for Red Hat Plug-ins

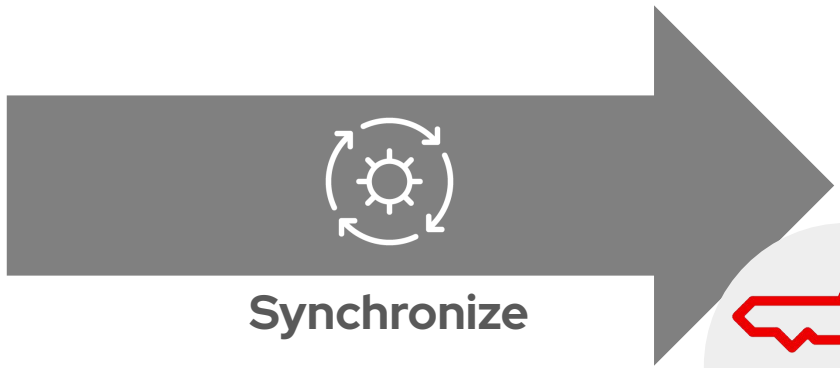
Red Hat is continuously adding new Red Hat plug-ins on Developer Hub

Enterprise Role Based Access Control (RBAC)

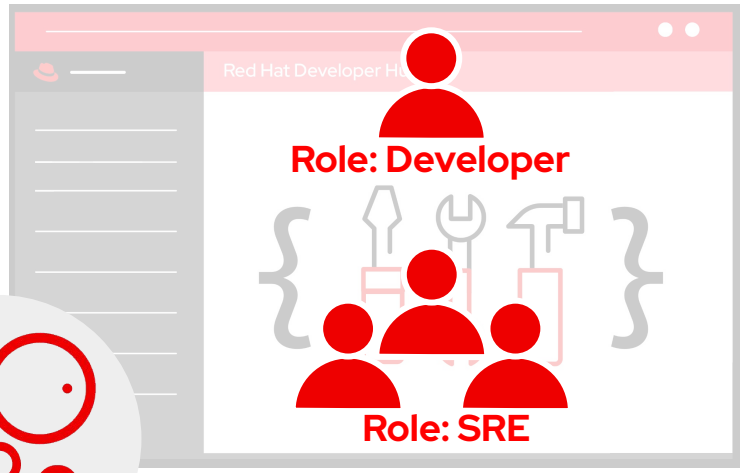
Simplify the RBAC management and adoption for Enterprise compliance



Users and Groups



Using YOUR authentication provider



Define **Roles** and granular security permissions to ensure robust access control in an Enterprise

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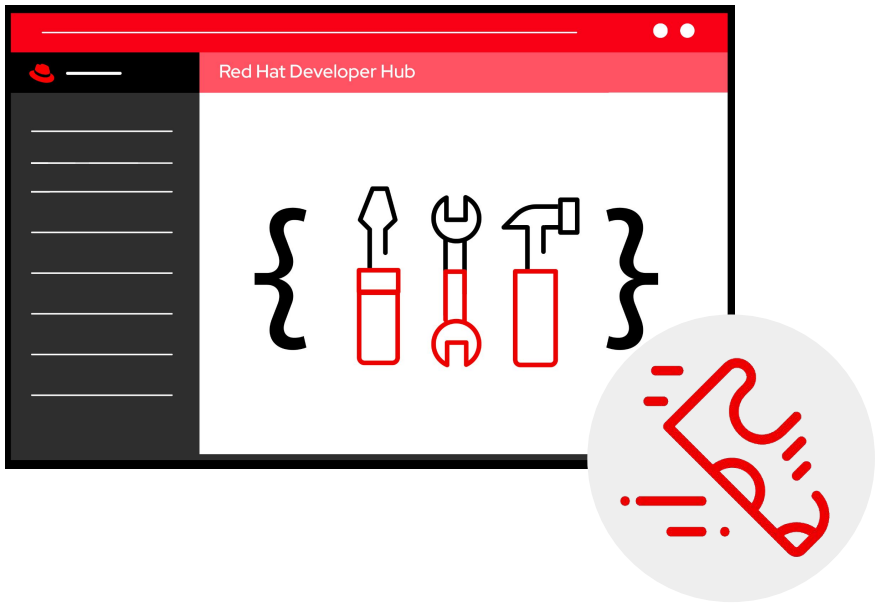
Dynamic plug-in Management

No more downtimes for plug-ins management



Always working

No need to ever rebuild in case of plug-in modification which require downtime for your Backstage environment

Dispense with Rebuilds and Redeploys

Install New Plug-ins

Update Plug-ins

Remove Plug-ins

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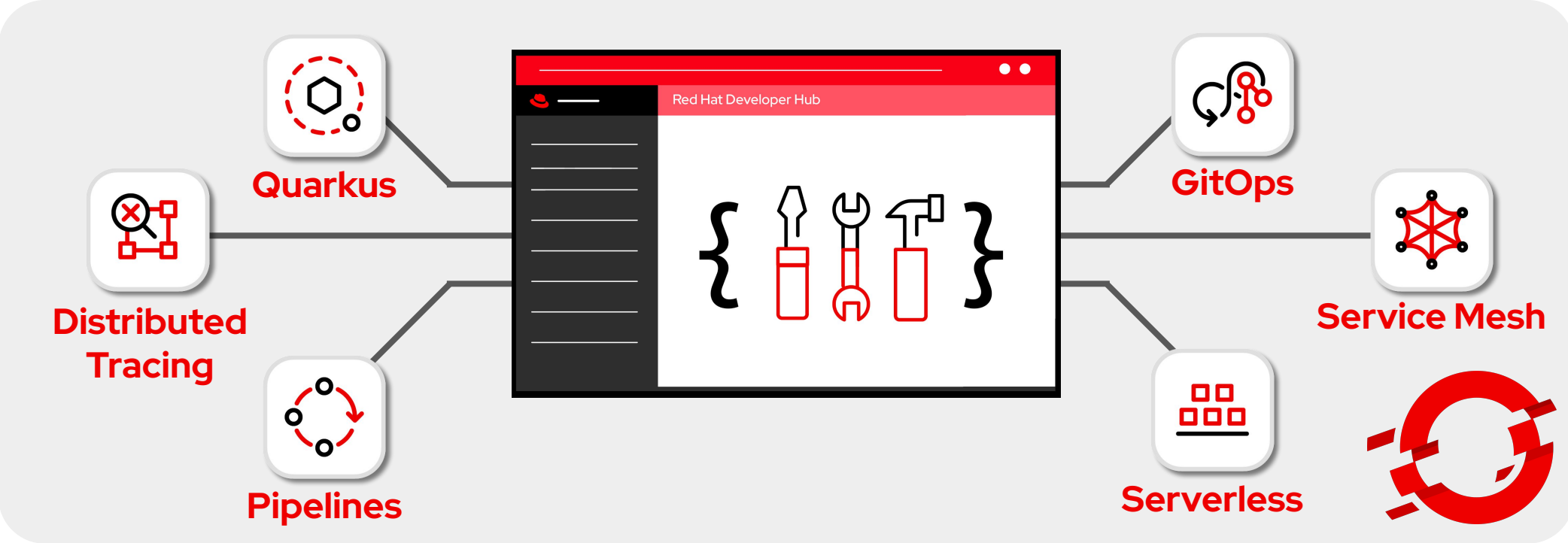
Fully integrated with Red Hat OpenShift

Leverages on several technologies that come with OpenShift



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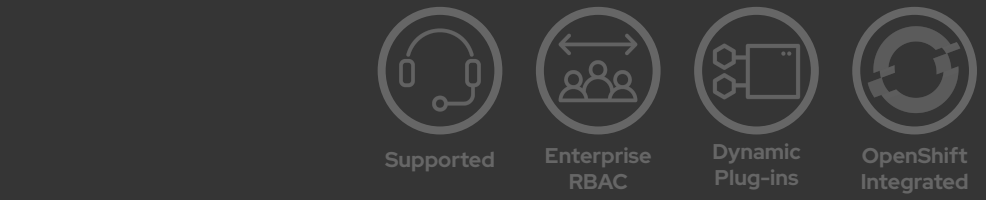


Benefits

At the end of the day, it's all about improve **Developer Productivity** and ensure the business goals are met and users are delighted

Red Hat

Increase Developer Productivity

Spending more time focusing on business problems

Red Hat Developer Hub provides a comprehensive and convenient view, which **reduces friction and increases efficiency** for development teams to build services and applications

Red Hat

Automating the most trivial tasks

Streamline application and developer onboarding with software templates

Software Templates **reduce developer cognitive load** by providing pre-architected and supported approaches to building and deploying a service or software component without having to learn all the details of the technology used to create it.

Delivering constant Innovation

Increase team productivity while lowering the bureaucratic and repetitive tasking

Unification among infrastructure tooling, services, and documentation, creating a streamlined end-to-end development environment.

A comprehensive and convenient view

Helping development teams being productive and focused

Fast Onboarding of new members

Ease access to all necessary resources to new members

Self-Service with a unified dashboard

Single pane of glass to everyone on the development team

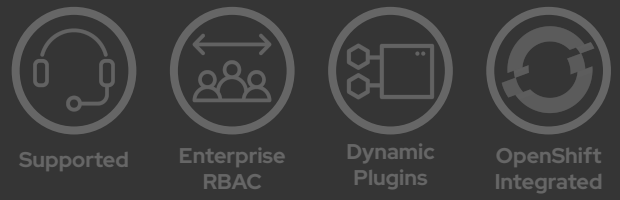
Enterprise Grade Support 24x7

Both Backstage environment and some plug-ins are supported to ensure business continuity

Enterprise RBAC

No matter how many environments you have, you will have access to all your resources following company's guidelines

Red Hat



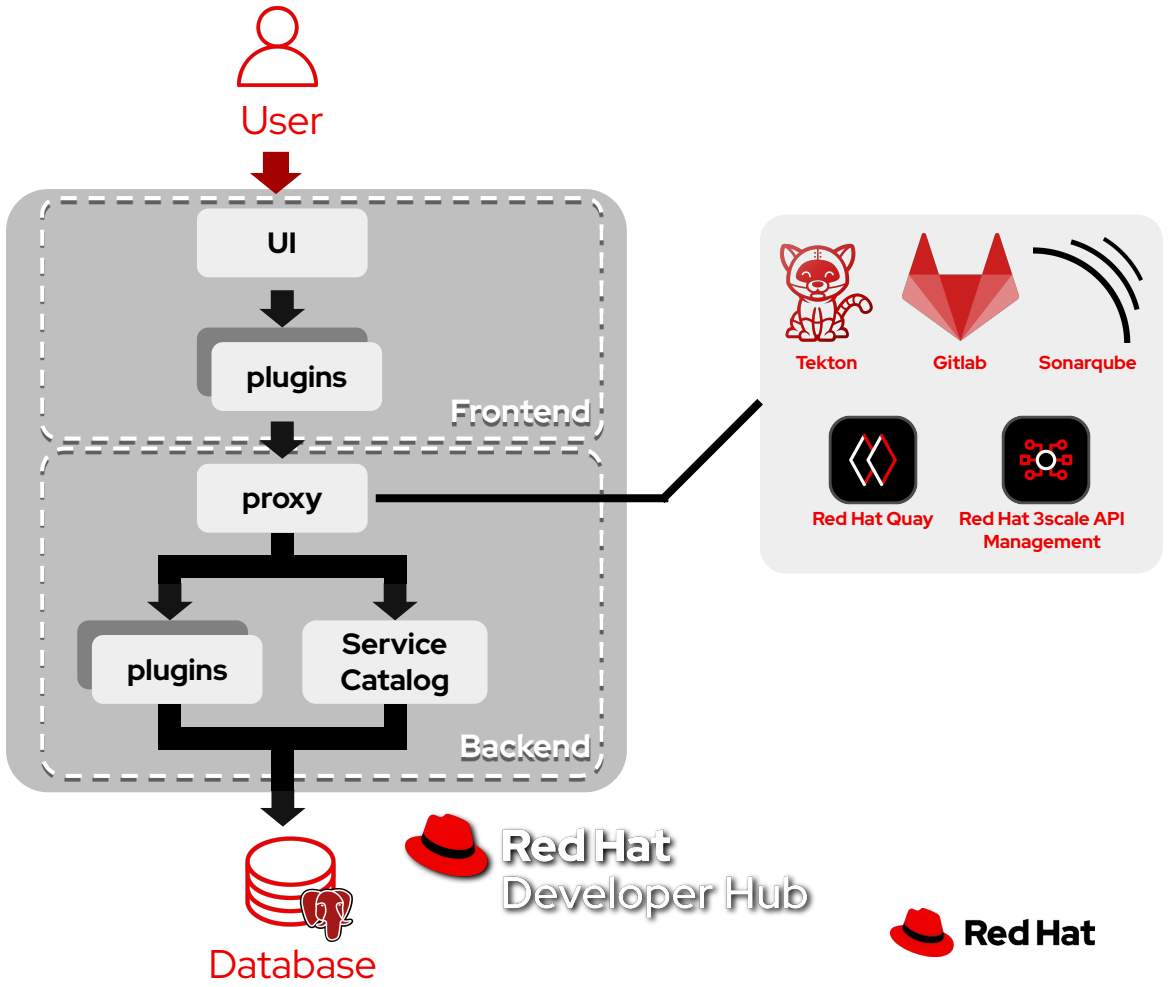
Platform Design and Deployment

Red Hat

Developer Hub Architecture

Adopting constantly to your needs at your own pace

- Preferred to run on OpenShift
  - Also AKS, EKS or GKE
- Certified Container Image
- Helm Chart
- Operator
- Postgres Database



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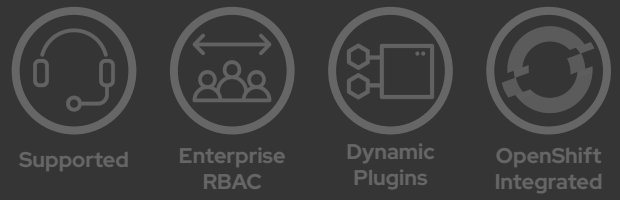
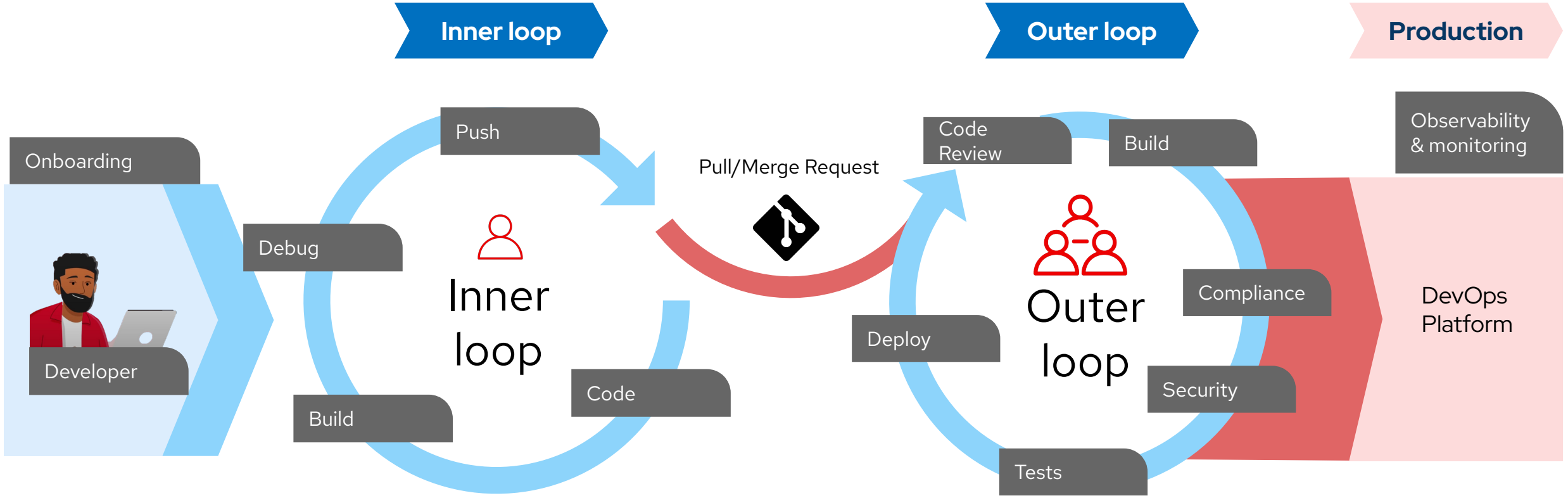


The Developer Story

Red Hat

Developer Flow

How Developer Tools bring customers from code to production



Software Development Life Cycle and Stages

Red Hat

A day in the life of a Developer

Meet Kevin our new Software Developer

Onboarding Challenges:

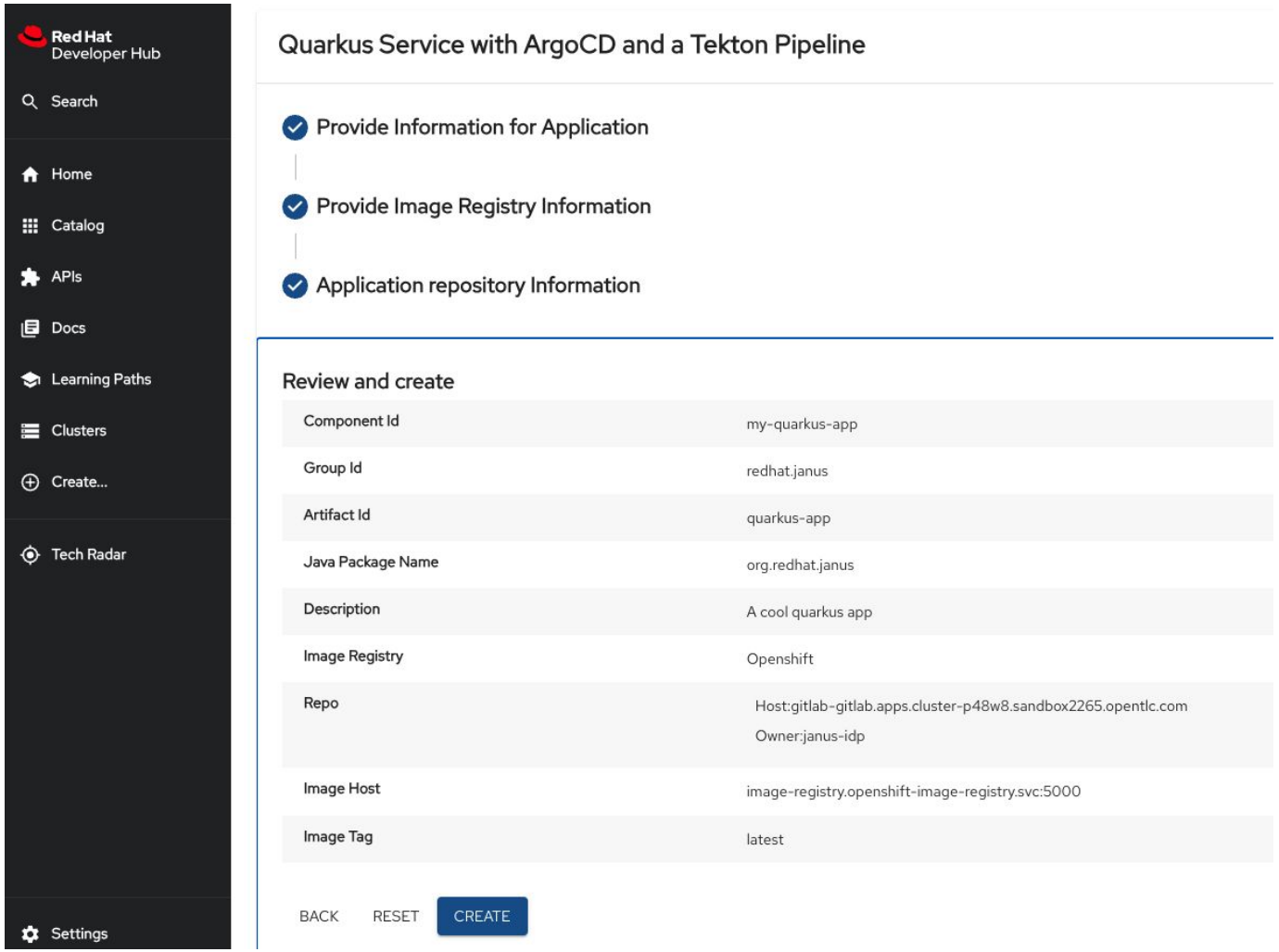
Where is the documentation?

Which branch of the code should I use?

What technology stack should I use for CI/CD, logging … etc.?

I want to provision an environment and start coding. I've created a ticket but its taking forever!

Onboarding with RH Developer Hub



- **Workspace**
- **Git Repository**
- **Documentation**
- **CI/CD**
- **Deploy**
- **Security**
- **Compliance**

Red Hat

Red Hat Developer Hub

Red Hat Plug-ins for Backstage

Includes **supported plugin bundle**

- Authentication and Authorization with Keycloak
- GitOps with Argo CD
- Pipelines with Tekton
- Application Topology for Kubernetes
- Container Image Registry for Quay
- Multi Cluster View with Open Cluster Manager (OCM)

Integrates with industry standards and technologies through a broad ecosystem of community plugins.

GitLab · git · Jenkins · sonarqube · argo · MANY MORE

Based on Backstage, an open source platform for building developer portals.

Backstage

Red Hat Developer Hub - **supported when deployed on**

Customer-managed Red Hat OpenShift	Managed Red Hat OpenShift services	Managed Kubernetes Services
Red Hat OpenShift Platform Plus **Red Hat** OpenShift Container Platform **Red Hat** OpenShift Kubernetes Engine	IBM Cloud · aws · Azure · Google Cloud	EKS (Amazon Elastic Kubernetes Service) · AKS (Azure Kubernetes Service) · GKE (Google Kubernetes Engine)

Single pane of glass to increase engineering productivity.

Self-service with guardrails for cloud-native development.

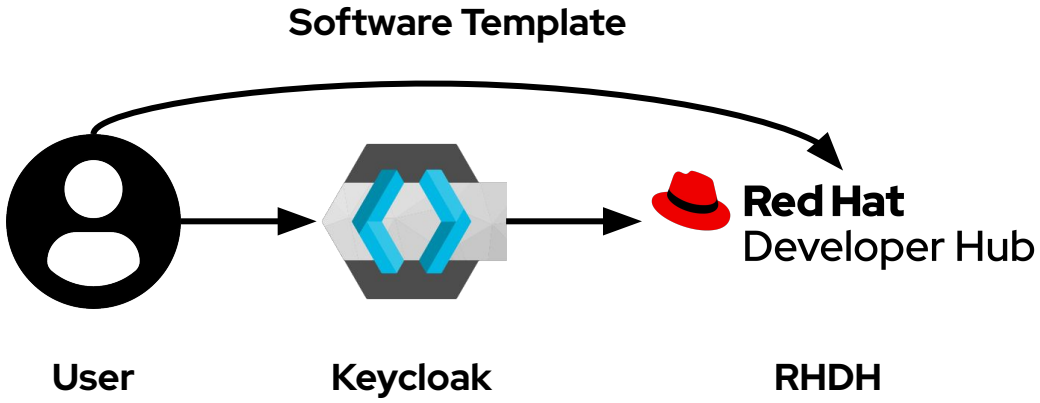
Best practices with GitOps and automation.

Red Hat

Part 1: Golden Path with Red Hat Developer Hub

New Developer Onboarding in minutes!

1. **Authenticate using Keycloak**
2. **Use Quarkus Golden Path Template**

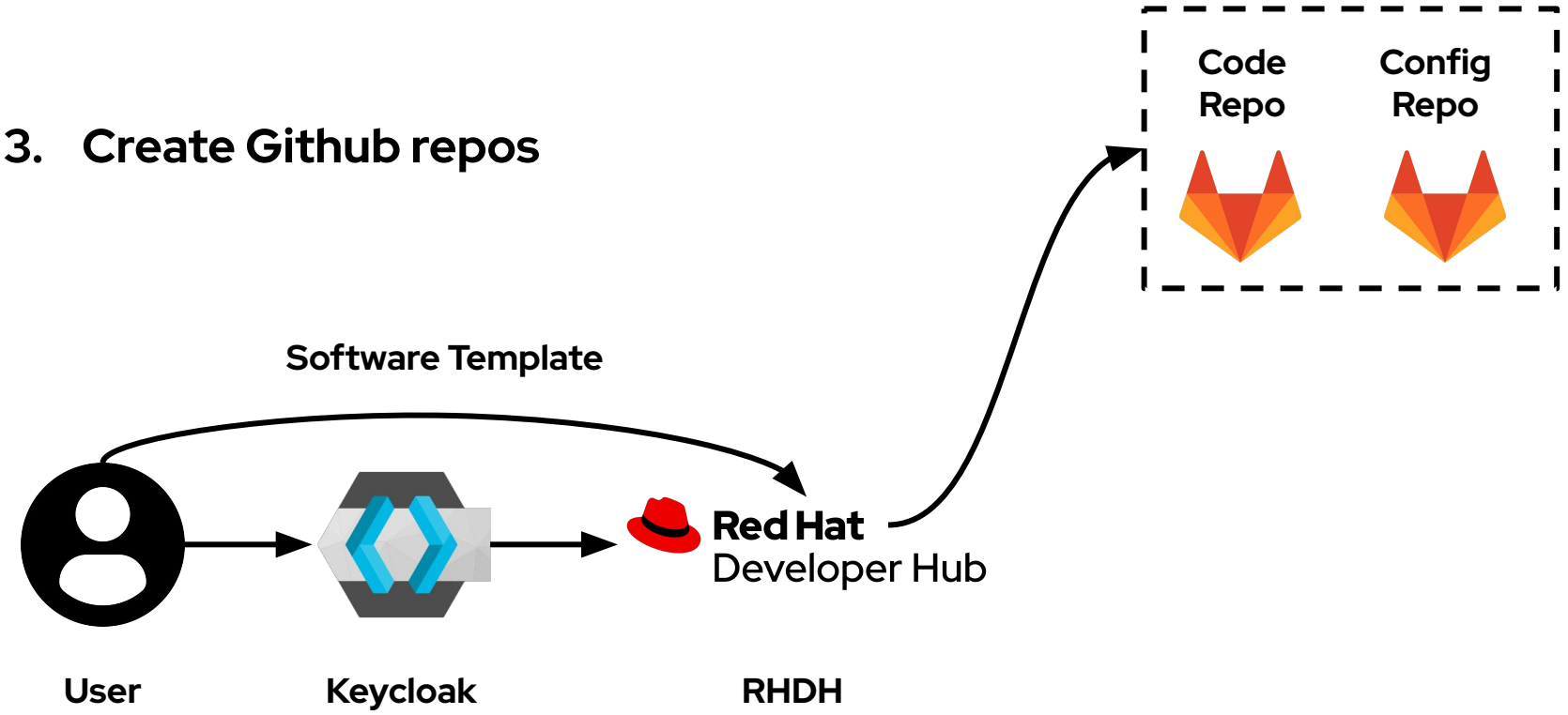


Red Hat

Part 1: Golden Path with Red Hat Developer Hub

New Developer Onboarding in minutes!

3. **Create Github repos**

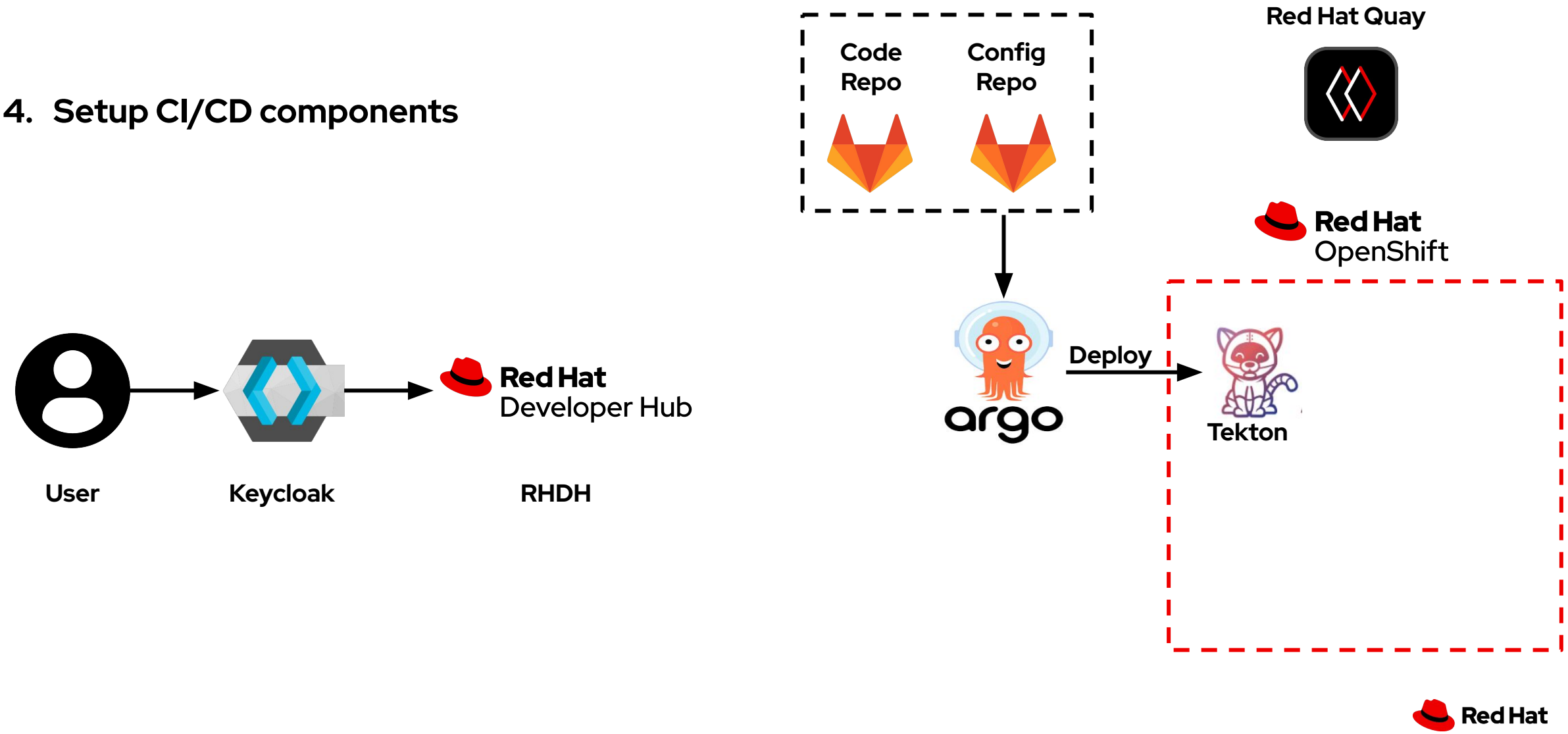


Red Hat

Part 1: Golden Path with Red Hat Developer Hub

New Developer Onboarding in minutes!

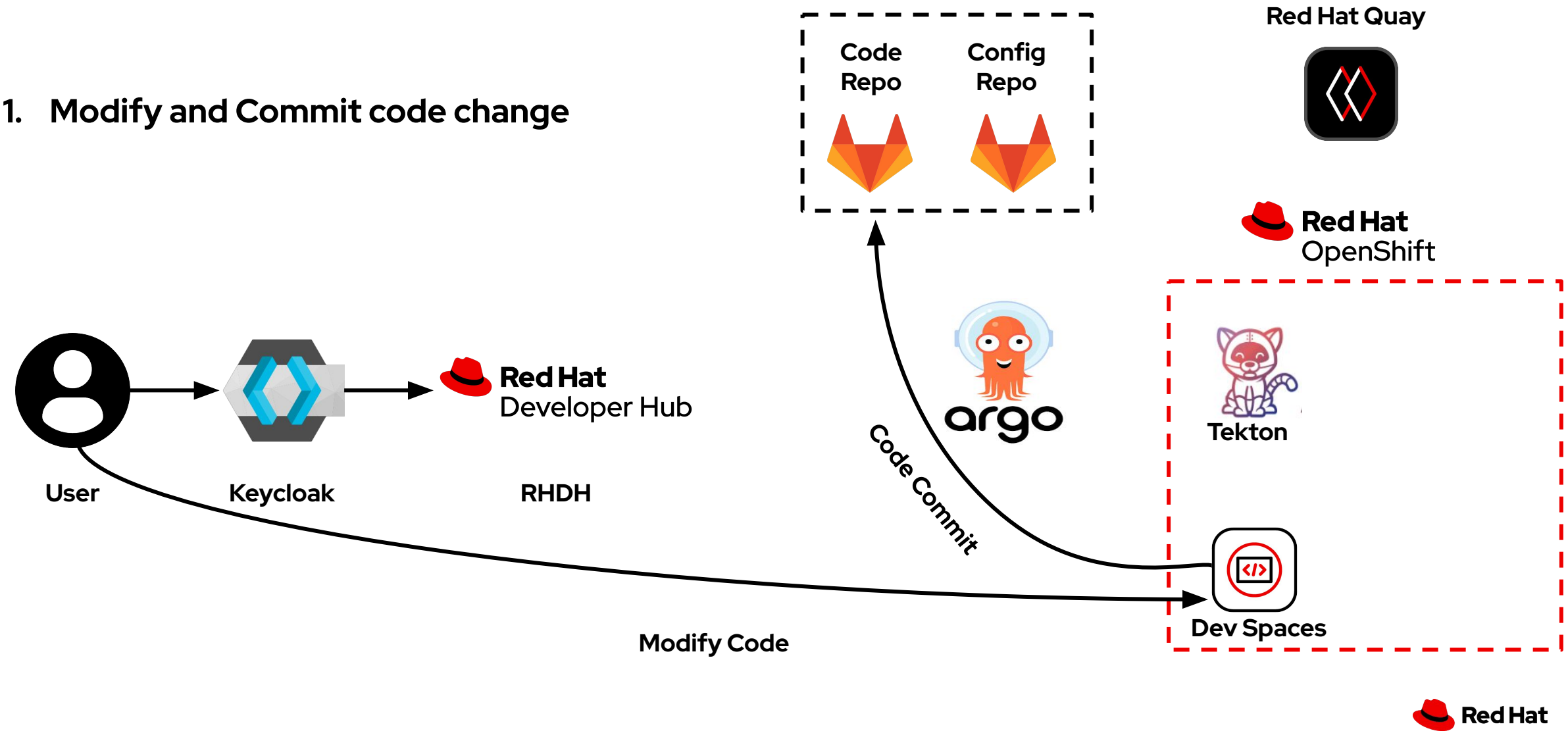
4. Setup CI/CD components



Red Hat

Part 2: Simplifying the Inner & Outer Loops

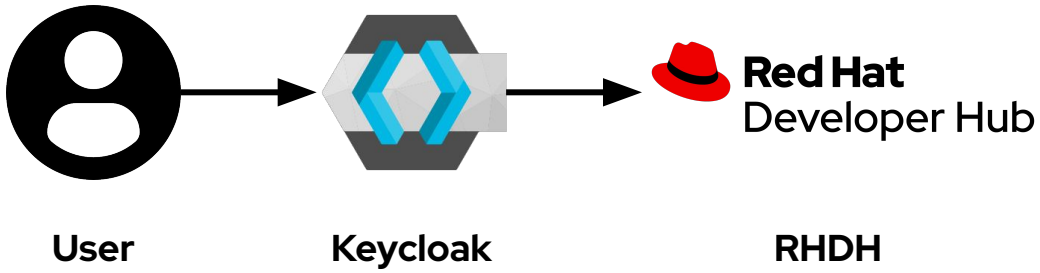
1. **Modify and Commit code change**

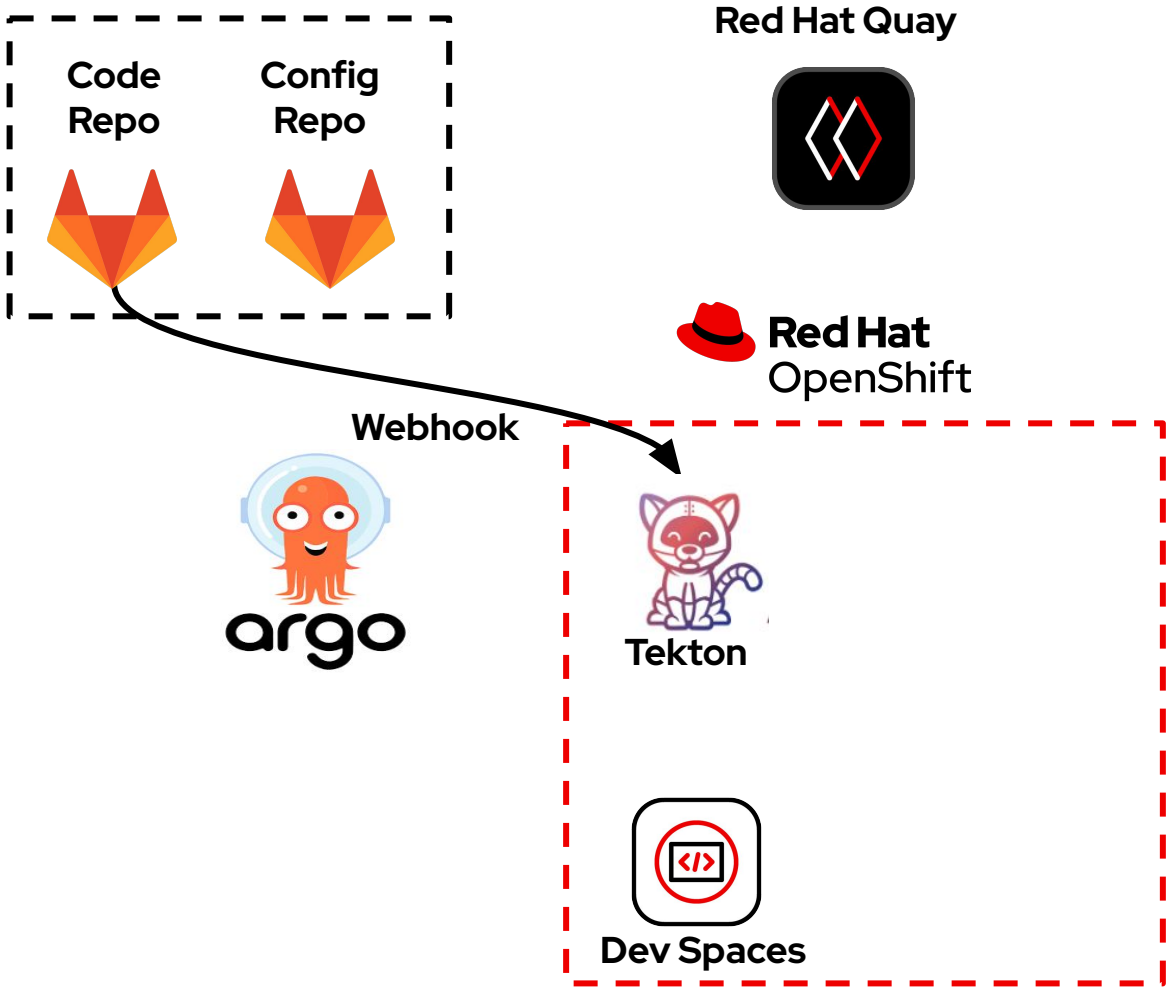


Red Hat

Part 2: Simplifying the Inner & Outer Loops

2. **Build & Push Image, Deploy to dev.**

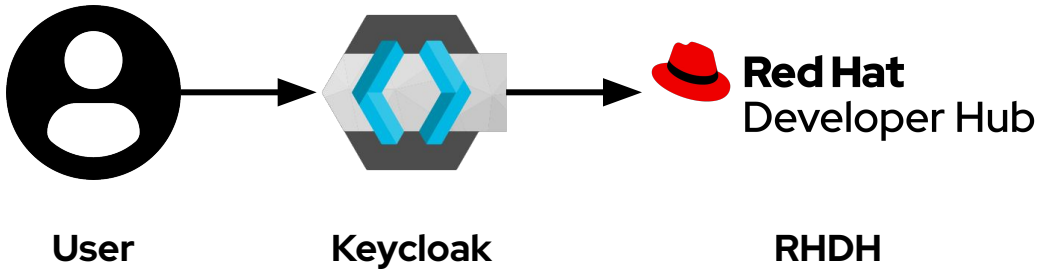


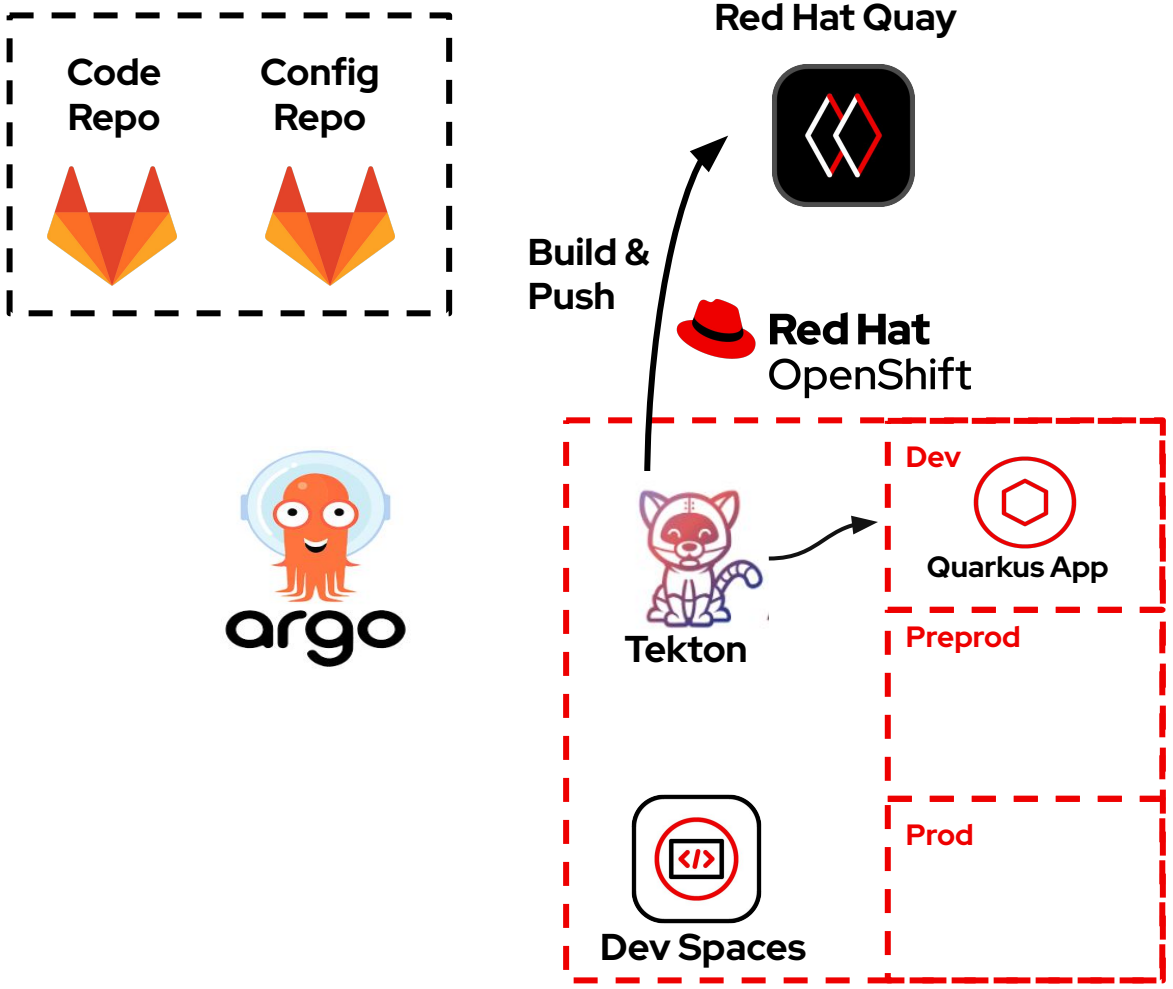


Red Hat

Part 2: Simplifying the Inner & Outer Loops

3. **Build & Push Image, Deploy to Dev.**





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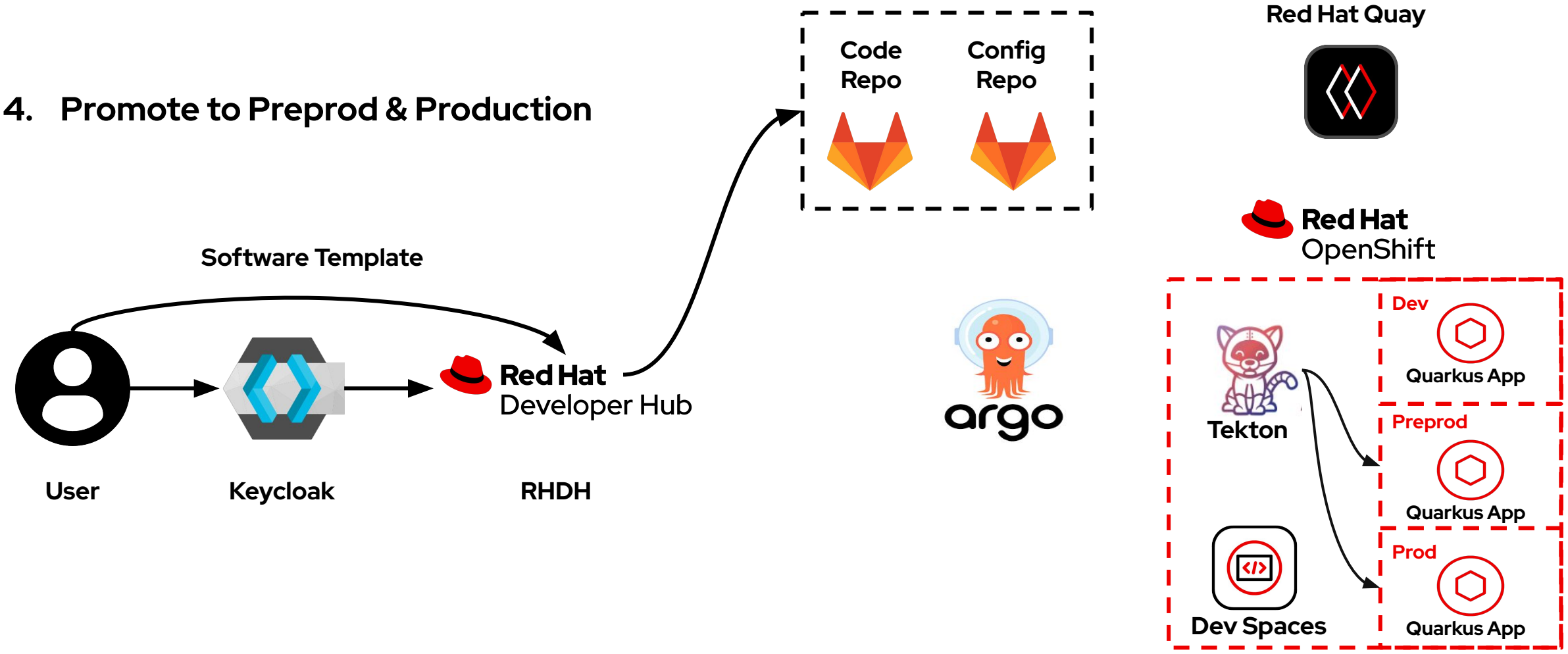
Part 2: Simplifying the Inner & Outer Loops

4. Promote to Preprod & Production



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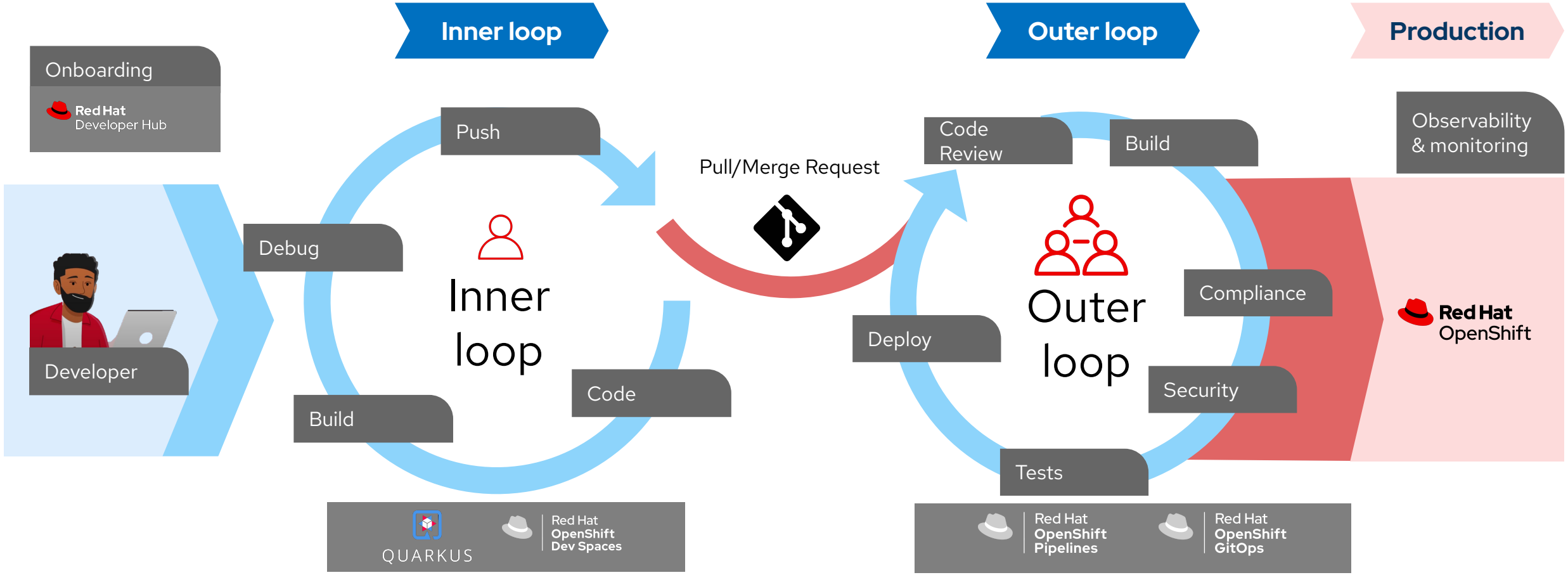
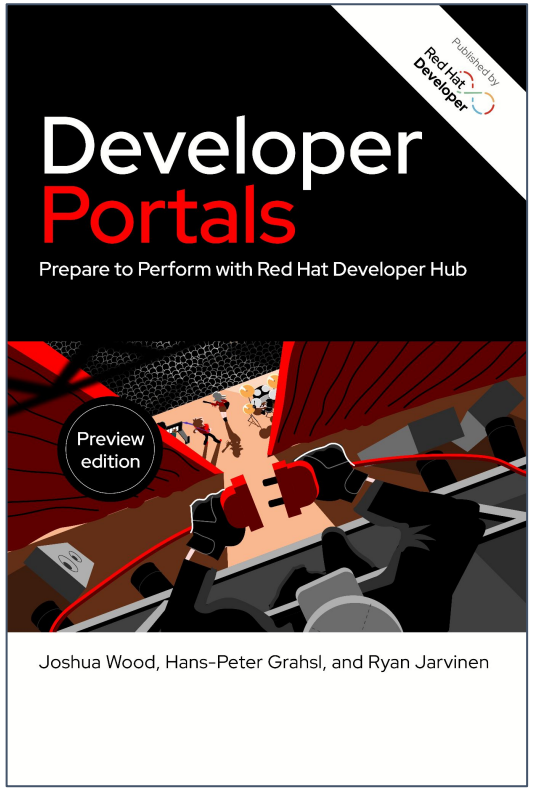
Demo Time!

Questions?


Inner loop
Outer loop
Production
Onboarding
Red Hat Developer Hub
Developer
Push
Debug
Build
Code
Inner loop
Pull/Merge Request
Code Review
Build
Deploy
Compliance
Security
Tests
Outer loop
Observability & monitoring
Red Hat OpenShift
QUARKUS
Red Hat OpenShift Dev Spaces
Red Hat OpenShift Pipelines
Red Hat OpenShift GitOps
Red Hat

Learn from the best

The step-by-step to get the most out of Developer Hub



http://red.ht/backstage-book

Red Hat

Red Hat Developer Hub

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ありがとう
谢谢
תודה לך
Gracias
Obrigado
Bedankt
Дякуємо
Thank You
Merci
Спасибо
Tack
Děkuji
Σας ευχαριστώ
Danke
감사합니다
धन्यवाद
شكرًا لك

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