Jenkins
e-Portfolio

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THE BEST RUN **SAP**

Agenda

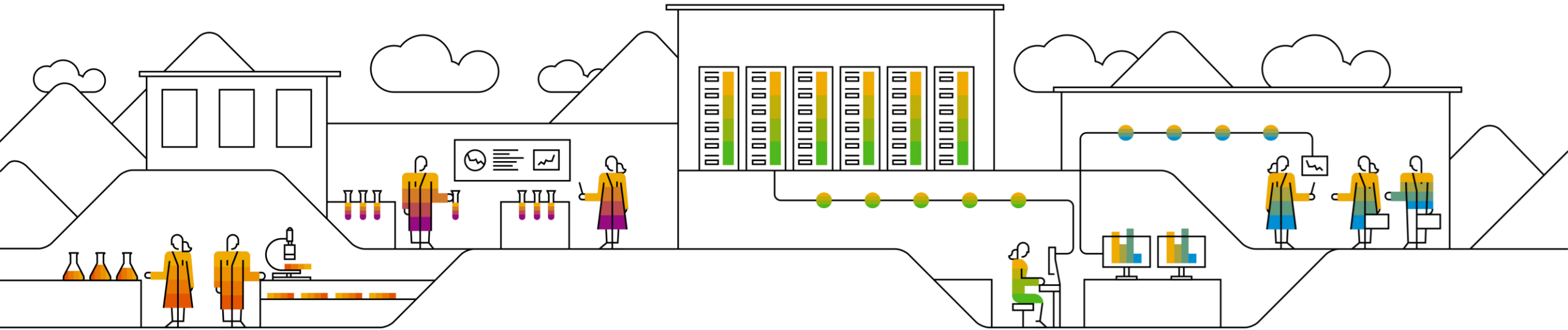## Continuous integration tools (CI)

- What are continuous integration tools for?
- Features

Hudson / Jenkins

- General information
- Installation (for Ubuntu)
- Blue Ocean Plugin
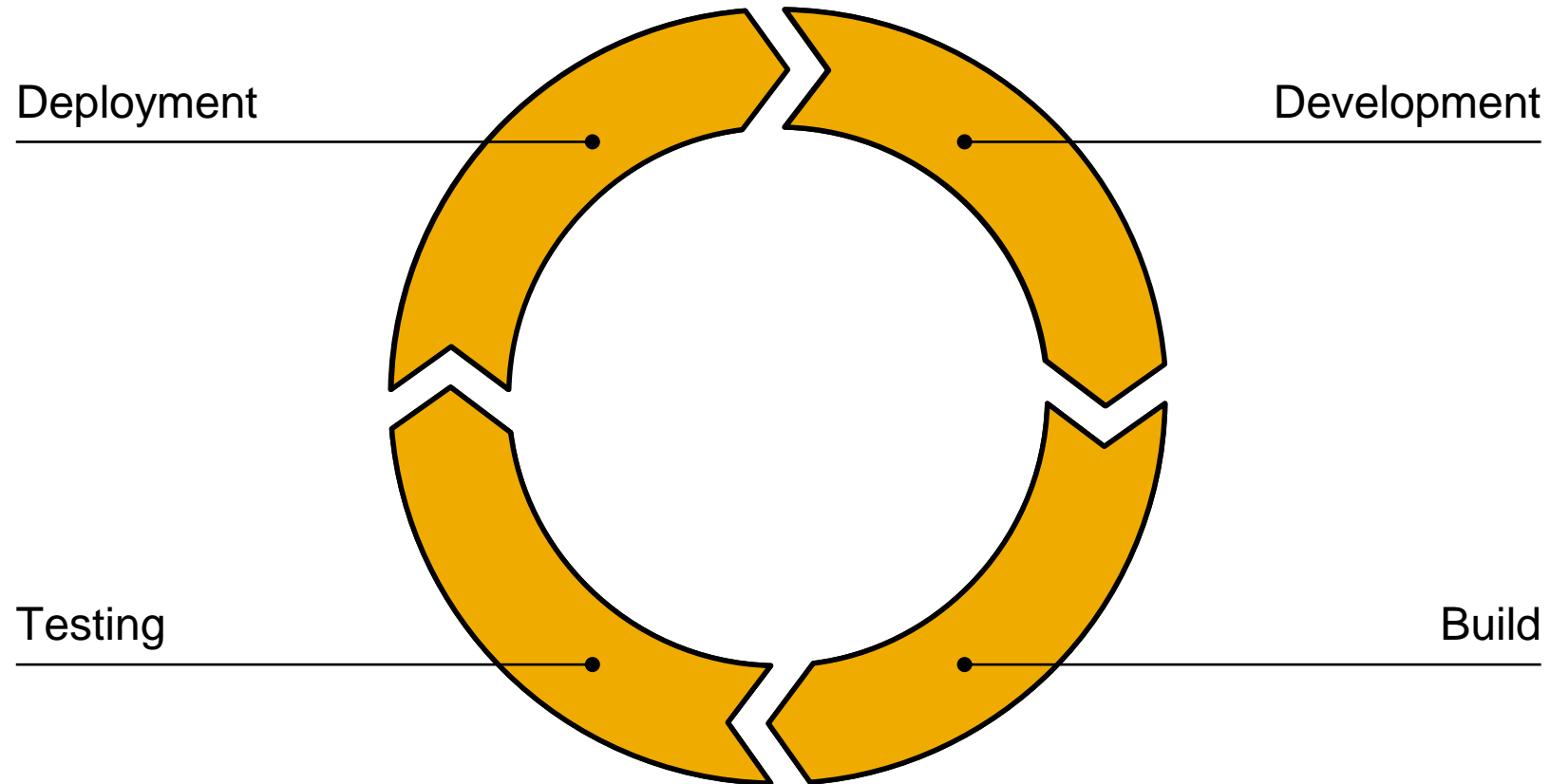- Multibranch Pipelines
- GitHub Integration

Demo

Continuous **integration** tools

What are continuous integration tools for?

Steps from Development to Deployment

Deployment

Development

Testing

Build

What are continuous integration tools for?
Purpose

– Main Purpose: **Automate Everything!**

– Preventing integration problems ("integration hell")

– Improve productivity

Hudson / Jenkins

Jenkins

Hudson / Jenkins
General Information

- CI tools

- Written in Java

- Hudson was created by Kohsuke Kawaguchi, Sun Microsystems / Oracle.

- Hudson is no longer maintained and was announces as obsolete in 2017.

- Jenkins is considered as a fork of Hudson

Hudson / Jenkins

Installation (for Ubuntu)

- Requirements:

  - Java JDK 8

- Adding Jenkins Debian repository

  - `wget -q -O - https://pkg.jenkins.io/debian/jenkins.io.key | sudo apt-key add -`

- Installing Jenkins:

  - `sudo apt update`
  - `sudo apt install jenkins`

- Check Jenkins service

  - `sudo systemctl status jenkins`

Hudson / Jenkins

Installation (for Ubuntu)

- Adjusting firewall (ufw)
  - `sudo ufw allow 8080`
  - `sudo ufw status`

- Setting up Jenkins
  - Enter Token (`sudo cat /var/lib/jenkins/secrets/initialAdminPassword`)
  - Install suggested plugins
  - Create administrative user
  - Configure Jenkins URL mapping
  - Let's get started! 😉

Hudson / Jenkins

Blue Ocean Plugin

– Plugin within Jenkins

– Considered as the next generation of Jenkins

– Improved UI with better user experience
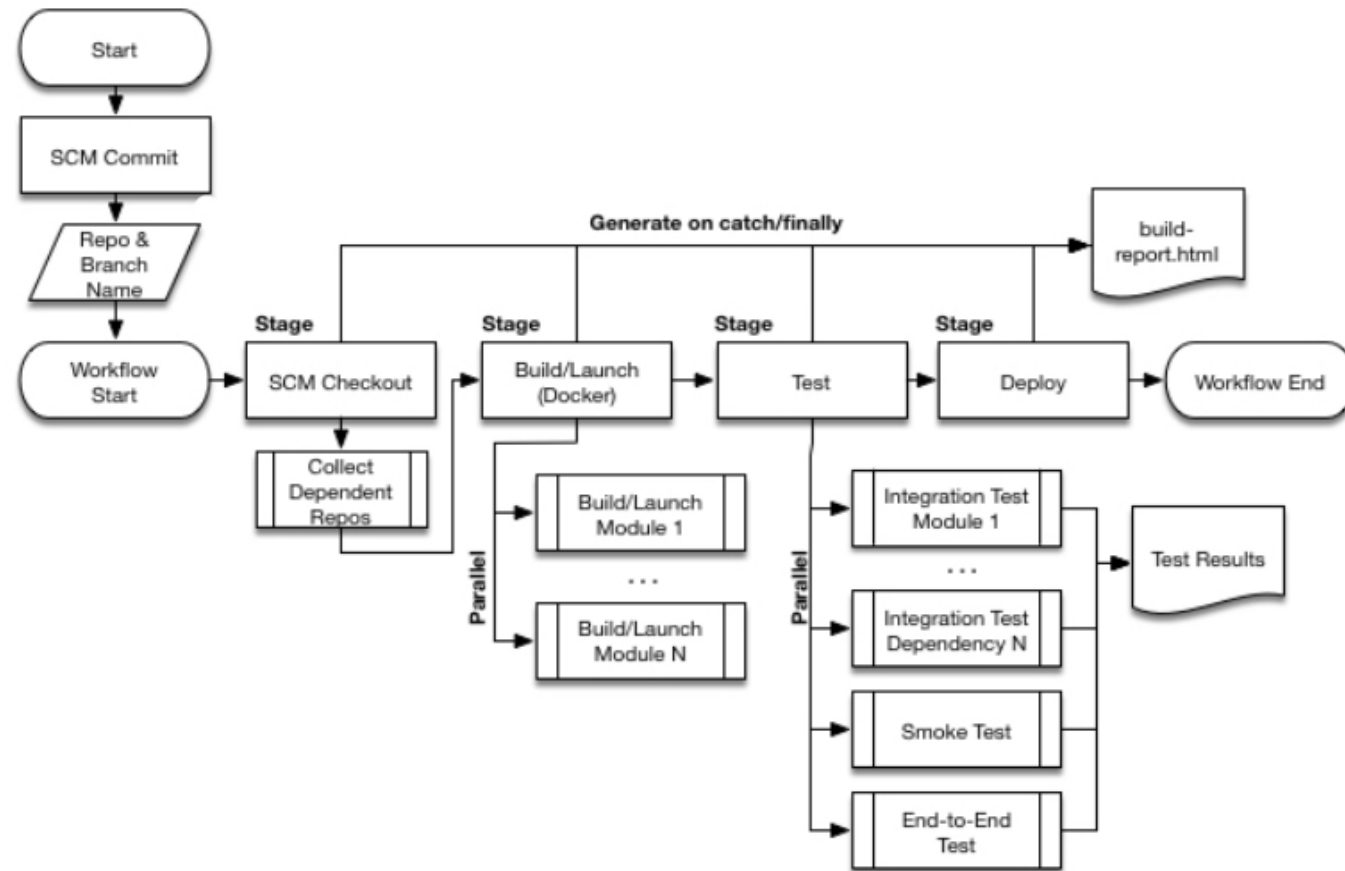
– Contains only some features of the "old" Jenkins

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Hudson / Jenkins

Multibranch Pipelines

- "Jenkins pipeline […] is a suite of plugins that supports implementing and integrating *continuous delivery pipelines* into Jenkins"

- Integration of version control system

- Defining own steps

Hudson / Jenkins

Multibranch Pipelines

Hudson / Jenkins

Multibranch Pipelines

- Jenkinsfile

  - JSON Format

  - Pipeline build for all branches and pull requests

  - Code review with builds

- Example:

```
pipeline {
        agent any
        stages {
                stage('Build') {
                        steps {
                                // build steps
                        }
                }
                stage('Test') {
                        steps {
                                // test steps
                        }
                }
                stage('Deploy') {
                        steps {
                                // deploy steps
                        }
                }
        }
}
```

Hudson / Jenkins
GitHub integration

- Branches

- Pull Requests

Hudson / Jenkins

GitHub Integration (Tutorial)

– Generate a token

  – Settings → Developer Settings → Personal Access Tokens

  – Enter a name

  – Select *repo, read:org, admin:repo_hook*

  – **Copy token!!!**

– Enter token in Jenkins

Token description

Token Name

What's this token for?

Select scopes

Scopes define the access for personal tokens. Read more about OAuth scopes.

☑ **repo**   Full control of private repositories
  ☑ repo:status   Access commit status
  ☑ repo_deployment   Access deployment status
  ☑ public_repo   Access public repositories
  ☑ repo:invite   Access repository invitations

☐ **admin:org**   Full control of orgs and teams
  ☐ write:org   Read and write org and team membership
  ☑ read:org   Read org and team membership

☐ **admin:public_key**   Full control of user public keys
  ☐ write:public_key   Write user public keys
  ☐ read:public_key   Read user public keys

☑ **admin:repo_hook**   Full control of repository hooks
  ☑ write:repo_hook   Write repository hooks
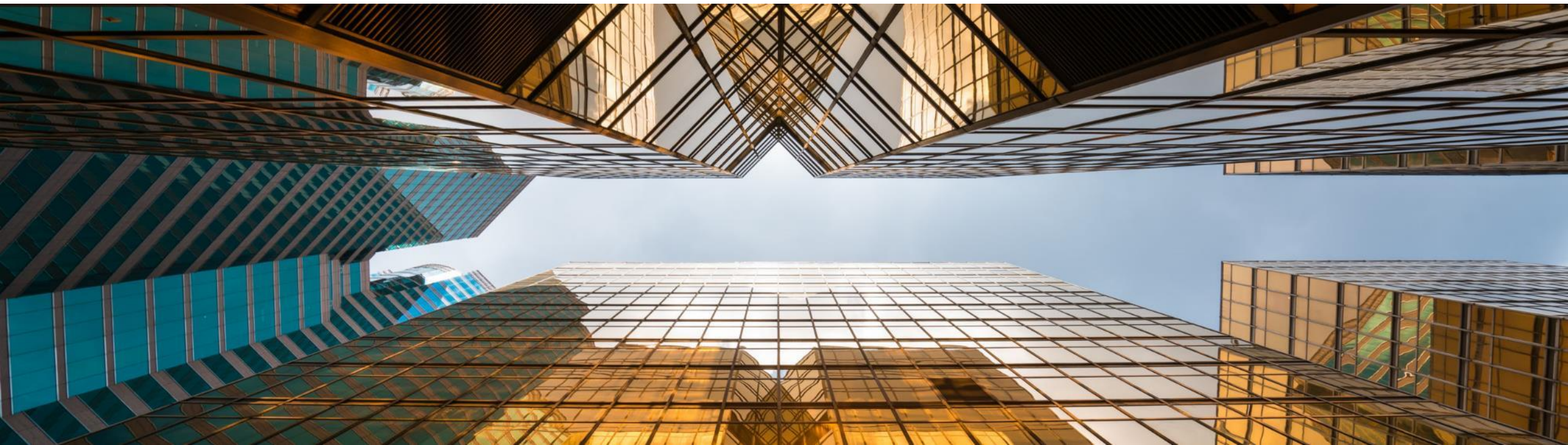 ☑ read:repo_hook   Read repository hooks

Tokens you have generated that can be used to access the GitHub API.

Make sure to copy your new personal access token now. You won't be able to see it again!

✓   Delete

Demo

Thank you.

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