

Jenkins Job DSL

Configuration as Code



- **Introduction**
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- **How to create jobs/views**
- **Job DSL**
- **Questions**



Tomas Norre Mikkelsen

- AOE GmbH - June 2013
- DevOps/Automation
- TYPO3.org, Crawler
- Golf, #t3runners

 @tomasnorre





We are the champions

- Team FourSquare





I have been running marathons
- but still I consider myself being lazy!



What is Jenkins?





**The leading open source automation server,
Jenkins provides hundreds of plugins to support
building, deploying and automating any project.**

- <https://jenkins.io/>



What can we use Jenkins for



- Run Unit tests
- Build docker images
- Build artifacts
- Deploy website/applications
- Publish TER Extensions on Git-tag
- etc.



Create a Jenkins job

The screenshot shows the Jenkins web interface with a dark theme. At the top, there is a navigation bar with links for 'Jenkins', 'T3EE16-JENKINS', 'search', 'Tomas Norre Mikkelsen', and 'log out'. Below the navigation bar, there is a sidebar on the left containing various Jenkins management links: 'New Item', 'People', 'Build History', 'Edit View', 'Delete View', 'Project Relationship', 'Check File Fingerprint', 'Manage Jenkins', 'My Views', and 'Credentials'. The main content area is titled 'T3EE16-JENKINS' and contains tabs for 'All', 'Cookbooks', 'Fritdrop', 'Gnillive', 'Helper Jobs', 'Milpoer', and 'Nico'. A button labeled '+' is also present. A message in the center of the page states: 'This view has no jobs associated with it. You can either [add some existing jobs](#) to this view or create a [new job](#) in this view.' Below this message, there are two collapsed sections: 'Build Queue' (which says 'No builds in the queue.') and 'Build Executor Status' (which lists '1 Idle' and '2 Idle').



Every configuration is XML

```
<?xml version='1.0' encoding='UTF-8'?>
<project>
    <description></description>
    <keepDependencies>false</keepDependencies>
    <properties>
        <hudson.plugins.buildblocker.BuildBlockerProperty plugin="build-blocker-plugin@1.7.3">
            <useBuildBlocker>false</useBuildBlocker>
            <blockLevel>GLOBAL</blockLevel>
            <scanQueueFor>DISABLED</scanQueueFor>
            <blockingJobs></blockingJobs>
        </hudson.plugins.buildblocker.BuildBlockerProperty>
        <com.sonyericsson.rebuild.RebuildSettings plugin="rebuild@1.25">
            <autoRebuild>false</autoRebuild>
            <rebuildDisabled>false</rebuildDisabled>
        </com.sonyericsson.rebuild.RebuildSettings>
    </properties>
    <scm class="hudson.scm.NullSCM"/>
    <canRoam>true</canRoam>
    <disabled>false</disabled>
    <blockBuildWhenDownstreamBuilding>false</blockBuildWhenDownstreamBuilding>
    <blockBuildWhenUpstreamBuilding>false</blockBuildWhenUpstreamBuilding>
    <triggers/>
    <concurrentBuild>false</concurrentBuild>
    <builders>
        <hudson.tasks.Shell>
            <command>#!/bin/sh
                echo &quot;Welcome to T3EE16 - Jenkins JobDSL&quot;</command>
            </hudson.tasks.Shell>
        </builders>
        <publishers/>
        <buildWrappers/>
    </project>
```



Challenges

- Copying jobs
- Adjusting same setting multiple times
- UI can be slow
- Fields hidden under advanced button



Job DSL

- Domain Specific Language
- Groovy
- Can be extend with configure blocks



File structure

```
.  
├── Config  
│   └── settings.groovy  
├── Jobs  
│   ├── t3ee.groovy  
│   └── views.groovy  
├── README.md  
├── bart_tools_job-dsl_seed.groovy  
├── build  
│   └── workspace  
│       ├── Config  
│       │   └── settings.groovy  
│       ├── Jobs  
│       │   ├── t3ee.groovy  
│       │   └── views.groovy  
│       ├── t3ee_groovy_latest_job.xml  
│       ├── t3ee_groovy_production_job.xml  
│       └── t3ee_groovy_stage_job.xml  
├── build.gradle  
├── gradle  
│   └── wrapper  
│       ├── gradle-wrapper.jar  
│       └── gradle-wrapper.properties  
├── gradlew  
└── gradlew.bat  
└── settings.gradle
```



Groove Job

```
job ('t3ee_groovy') {  
    steps {  
        shell('''  
#!/bin/sh  
  
echo "Welcome to T3EE16 - Jenkins JobDSL"  
''')  
    }  
}
```



Play ground

Jenkins Job DSL Playground [Docs](#)

Run Groovy XML

```
1 job('t3ee_groovy') {  
2     steps {  
3         shell('''  
4 #!/bin/sh  
5 echo "Welcome to T3EE16 - Jenkins JobDSL"  
6         ''')  
7     }  
8 }  
9  
  
1 <!-- 1. t3ee_groovy -->  
2 <project>  
3 <actions></actions>  
4 <description></description>  
5 <keepDependencies>false</keepDependencies>  
6 <properties></properties>  
7 <scm class='hudson.scm.NullSCM'></scm>  
8 <canRoam>true</canRoam>  
9 <disabled>false</disabled>  
10 <blockBuildWhenDownstreamBuilding>false</blockBuildWhenDownstreamBuilding>  
11 <blockBuildWhenUpstreamBuilding>false</blockBuildWhenUpstreamBuilding>  
12 <triggers class='vector'></triggers>  
13 <concurrentBuild>false</concurrentBuild>  
14 <builders>  
15     <hudson.tasks.Shell>  
16         <command>  
17 #!/bin/sh  
18 echo "Welcome to T3EE16 - Jenkins JobDSL"  
19         </command>  
20     </hudson.tasks.Shell>  
21 </builders>  
22 <publishers></publishers>  
23 <buildWrappers></buildWrappers>  
24 </project>  
25
```



How to setup Jenkins JobDSL

- install Job DSL plugin
- Seeder job



Seeder Job

General Source Code Management Build Triggers Build Environment Build Post-build Actions

Project name: bart_job_dsl_seeder

Description:

[Plain text] [Preview](#)

Block build if certain jobs are running

Discard old builds

Strategy: Log Rotation

Days to keep builds: 10
if not empty, build records are only kept up to this number of days

Max # of builds to keep: 10
if not empty, only up to this number of build records are kept

[Advanced...](#)

GitHub project

Rebuild options:

- Rebuild Without Asking For Parameters
- Disable Rebuilding for this job

This project is parameterized

Throttle builds

Prepare an environment for the run

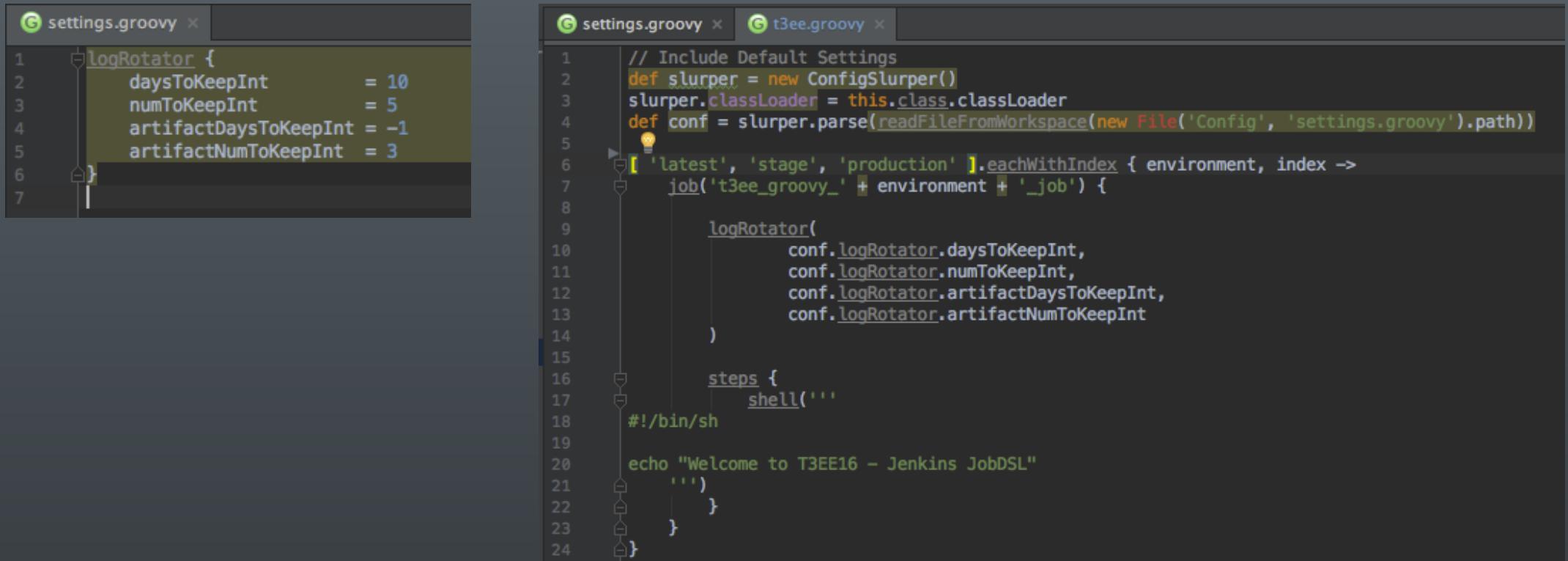
Disable this project

Execute concurrent builds if necessary

[Save](#) [Apply](#) [Advanced...](#)



Shared configuration



The image shows two side-by-side code editors, both titled "settings.groovy". The left editor contains a single configuration block:

```
1 logRotator {  
2     daysToKeepInt      = 10  
3     numToKeepInt       = 5  
4     artifactDaysToInt = -1  
5     artifactNumToInt  = 3  
6 }  
7
```

The right editor contains a more complex script that includes the shared configuration from the left editor:

```
1 // Include Default Settings  
2 def slurper = new ConfigSlurper()  
3 slurper.classLoader = this.class.classLoader  
4 def conf = slurper.parse(readFileFromWorkspace(new File('Config', 'settings.groovy').path))  
5  
6 [ 'latest', 'stage', 'production' ].eachWithIndex { environment, index ->  
7     job('t3ee_groovy_' + environment + '_job') {  
8         logRotator(  
9             conf.logRotator.daysToKeepInt,  
10            conf.logRotator.numToKeepInt,  
11            conf.logRotator.artifactDaysToInt,  
12            conf.logRotator.artifactNumToInt  
13        )  
14    }  
15  
16     steps {  
17         shell('''  
18 #!/bin/sh  
19  
20 echo "Welcome to T3EE16 - Jenkins JobDSL"  
21 ''')  
22     }  
23 }  
24 }
```



Looping for environments

Jenkins ➤ T3EE16-JENKINS ➤

New Item People Build History Edit View Delete View Project Relationship Check File Fingerprint Manage Jenkins My Views Credentials

search Tomas Norre Mikkelsen log out ENABLE AUTO REFRESH

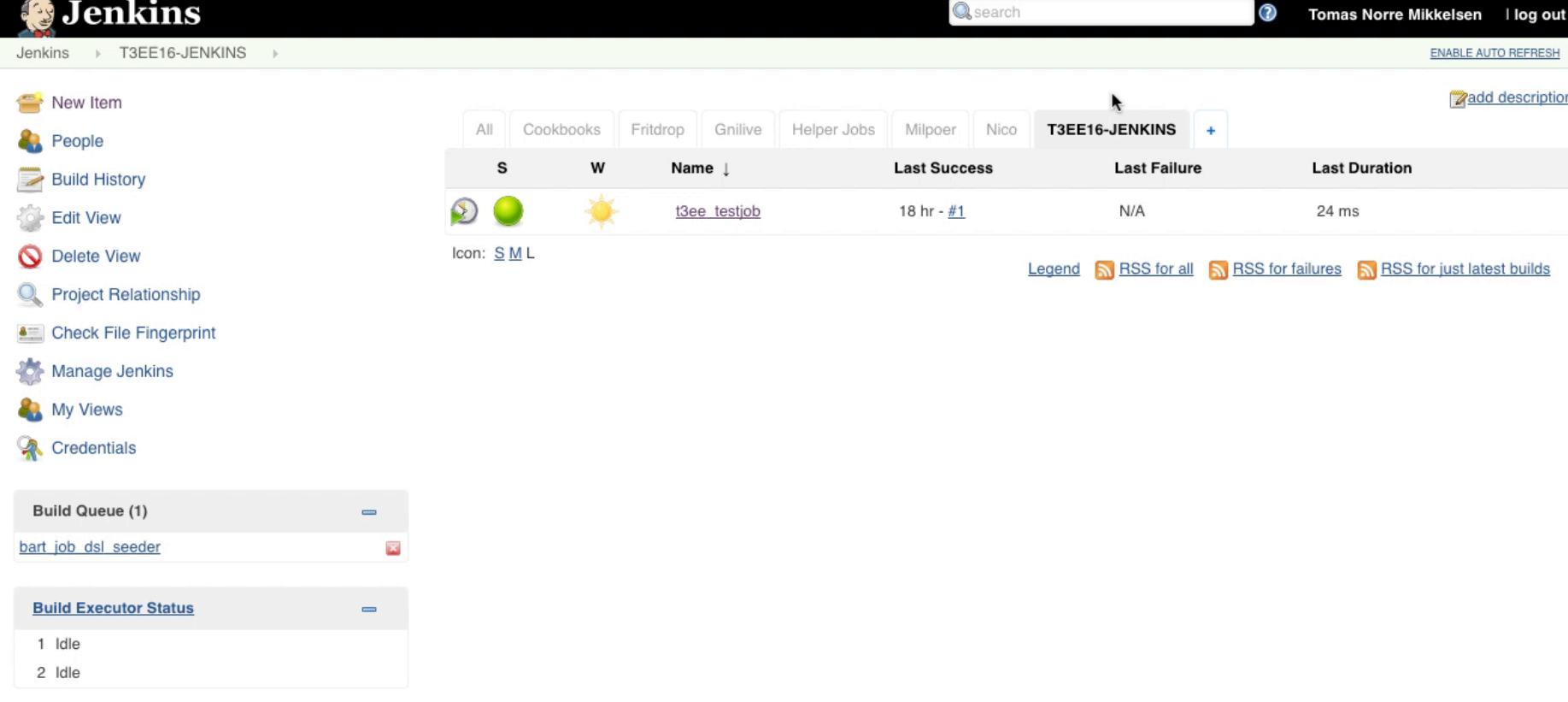
All Cookbooks Fritdrop Gnilive Helper Jobs Milpoer Nico T3EE16-JENKINS + add description

S	W	Name ↓	Last Success	Last Failure	Last Duration
		t3ee_testjob	18 hr - #1	N/A	24 ms

Icon: S M L Legend RSS for all RSS for failures RSS for just latest builds

Build Queue (1)
bart_job_dsl_seeder

Build Executor Status
1 Idle
2 Idle



Setting up views

```
listView('T3EE16-JENKINS') {  
    jobs {  
        regex("t3ee_.*")  
    }  
    bart_default_columns(delegate)  
}  
  
/**  
 * Default Columns for the Views.  
 */  
private void bart_default_columns(context) {  
    context.columns {  
        buildButton()  
        status()  
        weather()  
        name()  
        lastSuccess()  
        lastFailure()  
        lastDuration()  
    }  
}
```

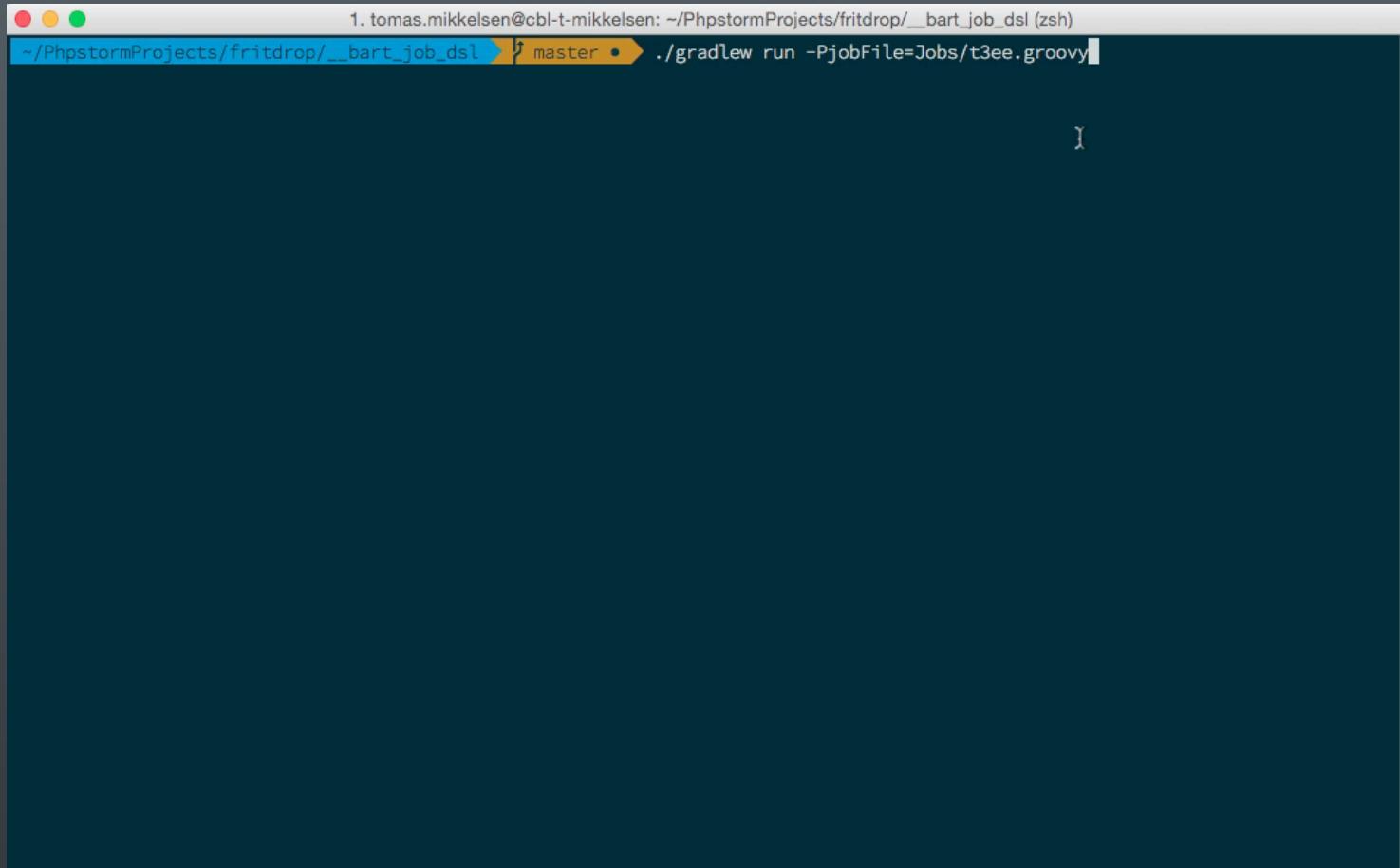
All	Cookbooks	Fritdrop	Gnilive	Helper Jobs	Milpoer	Nico	T3EE16-JENKINS
S	W	Name ↓	Last Success				
			t3ee_groovy_latest_job				N/A
			t3ee_groovy_production_job				N/A
			t3ee_groovy_stage_job				N/A
			t3ee_testjob				18 hr - #1

Icon: [S](#) [M](#) [L](#)

[Legend](#) [RSS for all](#)



How to test your jobs



A screenshot of a terminal window on a Mac OS X system. The window title bar says "1. tomas.mikkelsen@cbl-t-mikkelsen: ~/PhpstormProjects/fritdrop/_bart_job_dsl (zsh)". The command line shows the user is in the directory "~/PhpstormProjects/fritdrop/_bart_job_dsl" and is running "master" (indicated by a blue arrow icon). The command entered is "./gradlew run -PjobFile=Jobs/t3ee.groovy". The terminal has a dark background and light-colored text.



Pros & Cons



- Version Control
- More readable
- Change shared configurations
- Test locally
- Review



- Not all plugins are supported
- Learning curve



Best practice

- Start converting few jobs
- All jobs goes to version control
- Trigger seed job on SCM changes
- Don't commit credentials
- Think about design, refactor, streamline etc.
it's code treat it like code.





**Developers want to write code,
so let them do what they love!**

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Questions?



@tomasnorre



tomas.mikkelsen@aoe.com



Links

- <https://jenkinsci.github.io/job-dsl-plugin/> - Documentation
- <http://job-dsl.herokuapp.com/> - Play Ground
- <http://www.groovy-lang.org/> - Groove Website
- https://github.com/tomasnorre/t3ee16_jenkins - Example Repository

