



Berner Fachhochschule
Haute école spécialisée bernoise
Bern University of Applied Sciences

Intégration Continue

Séminaire Informatique – 21.01.2016

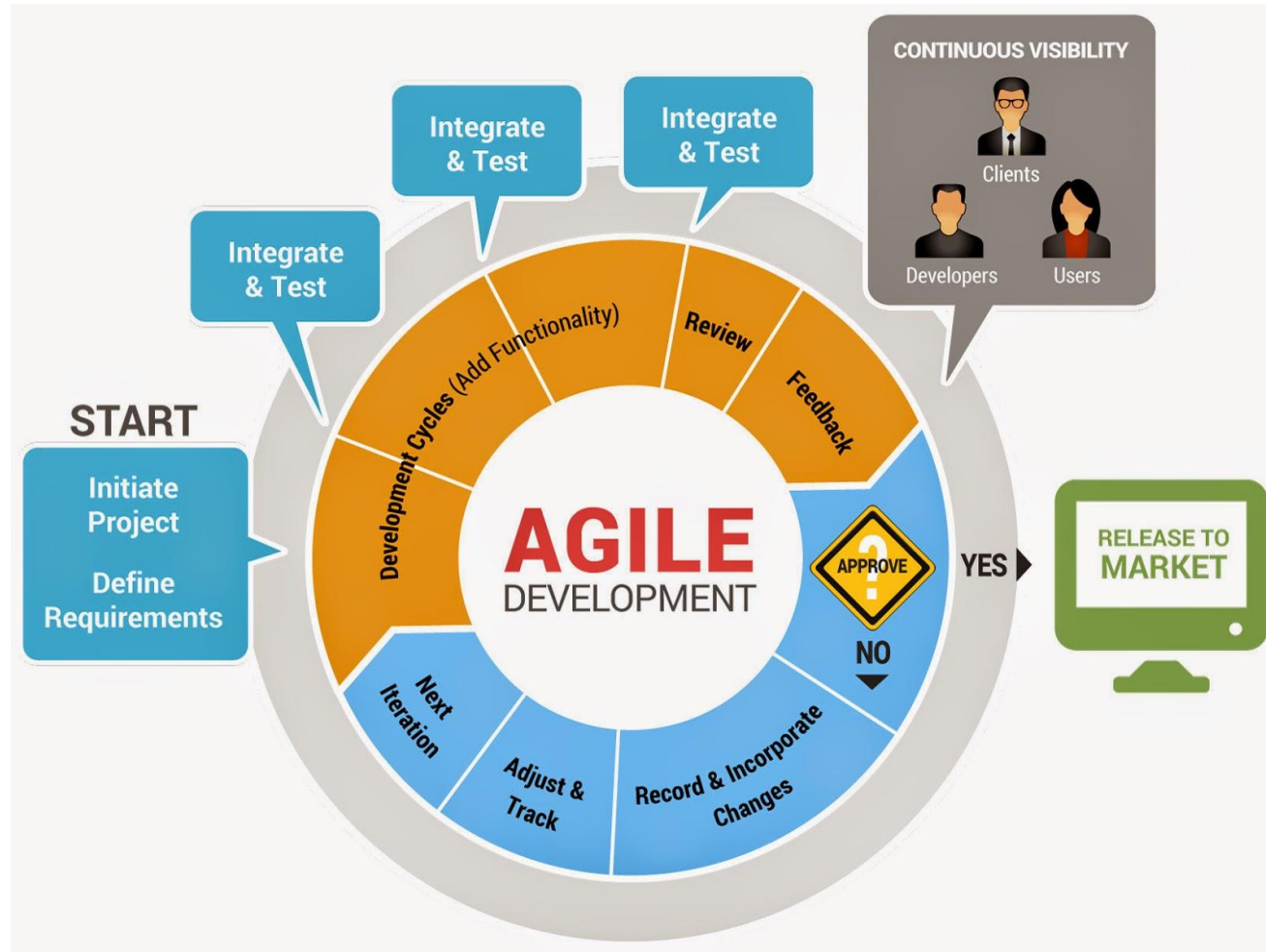
David Aeschlimann & Emanuel Knecht

Aperçu

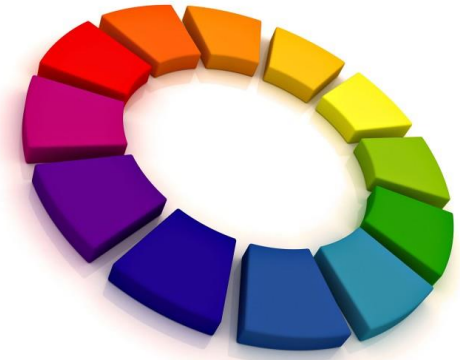
- ▶ Définition
- ▶ Concepts
- ▶ Bénéfice
- ▶ Evaluation
 - ▶ Bilan
 - ▶ Démonstration

Définition

Processus de développement logiciel

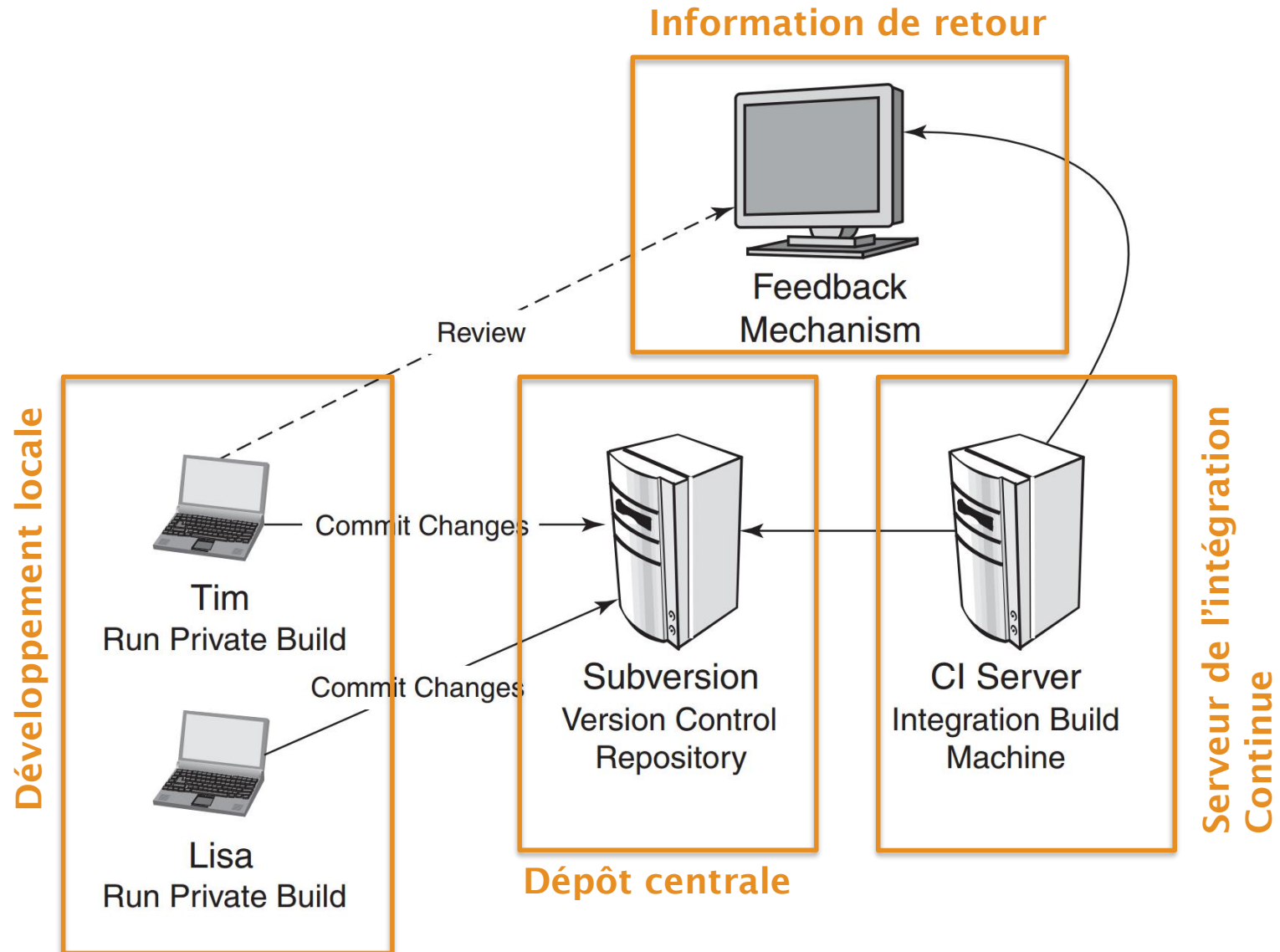


Intégration Continue



- ▶ Développement - Travailler en équipe
- ▶ **Intégration**
 - ▶ Réunification des changements
 - ▶ Contrôle de la fonctionnalité (tests)
 - ▶ Contrôle de la coopération des composants
- ▶ **Continue**
 - ▶ Intervalle de l'intégration (continuellement)
 - ▶ Une ou plusieurs fois par journée
- ▶ **Automatiquement** – Bouton d'intégration

Architecture Exemple



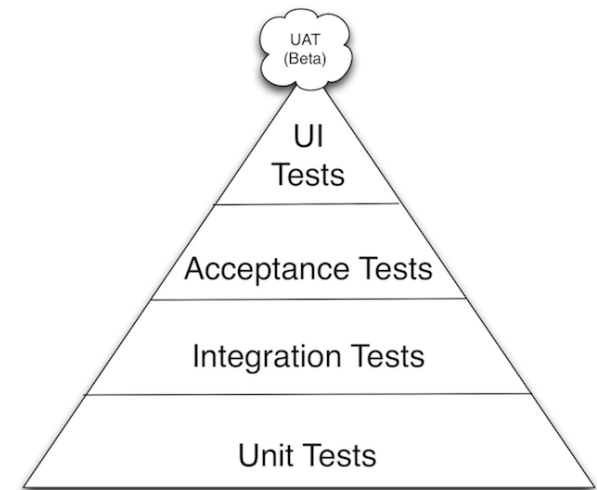
Concepts

Construction continue

- ▶ Construction et compilation continue
 - ▶ En utilisant des manager de construction (script)
 - ▶ Les fichiers du projet
 - ▶ Dépendances du projet
 - ▶ Déclencher par le serveur d'IC
- ▶ Java Exemple
 - ▶ Maven
 - ▶ Gradle
 - ▶ Ant

Tests continue

- ▶ Tests contrôle la fonctionnalité...
 - ▶ D'un bout de code, système, application
- ▶ Exécution des testes continuellement par le serveur IC
- ▶ Trois types de tests
 - ▶ Tests unitaires
 - ▶ Tests d'intégration
 - ▶ Tests d'acceptation
- ▶ Les trois types de tests...
 - ▶ Intervalle et longueur d'exécution différent
 - ▶ Scripts de construction différent



Inspections continue

- ▶ Inspections contrôle la forme du code
 - 1. Réduire la complexité du code source
 - 2. Déterminer la dépendance d'un paquet
 - 3. Imposer les standards de l'entreprise
 - 4. Réduire le code copié
 - 5. Déterminer la couverture de code

Couverture de code

Project Coverage summary

Name	Classes		Conditionals		Files		Lines		Packages	
Cobertura Coverage Report	45%	<div><div>23/51</div></div>	74%	<div><div>469/630</div></div>	45%	<div><div>23/51</div></div>	28%	<div><div>1450/5222</div></div>	88%	<div><div>7/8</div></div>

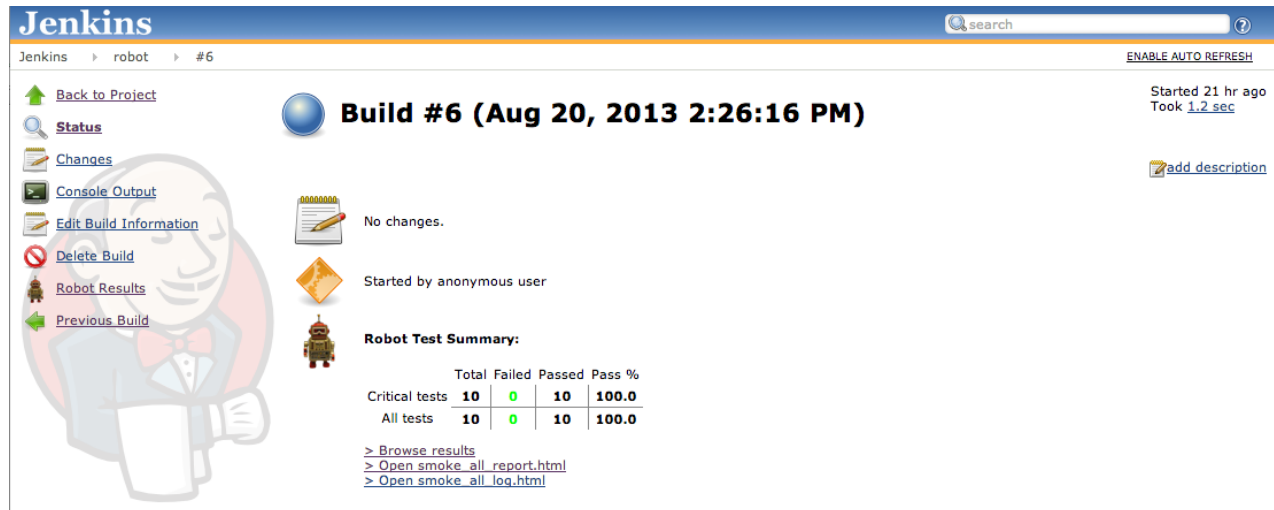
Coverage Breakdown by Package

Name	Classes		Conditionals		Files		Lines	
Stop-tabac	0%	<div><div>0/1</div></div>	N/A		0%	<div><div>0/1</div></div>	0%	<div><div>0/5</div></div>
Stop-tabac.Classes	100%	<div><div>1/1</div></div>	47%	<div><div>8/17</div></div>	100%	<div><div>1/1</div></div>	27%	<div><div>58/213</div></div>
Stop-tabac.Classes.Controller	19%	<div><div>3/16</div></div>	73%	<div><div>22/30</div></div>	19%	<div><div>3/16</div></div>	5%	<div><div>120/2665</div></div>
Stop-tabac.Classes.Manager	100%	<div><div>3/3</div></div>	63%	<div><div>20/32</div></div>	100%	<div><div>3/3</div></div>	65%	<div><div>103/158</div></div>
Stop-tabac.Classes.Model	75%	<div><div>6/8</div></div>	81%	<div><div>249/306</div></div>	75%	<div><div>6/8</div></div>	77%	<div><div>669/869</div></div>
Stop-tabac.Classes.Service	56%	<div><div>5/9</div></div>	69%	<div><div>163/235</div></div>	56%	<div><div>5/9</div></div>	47%	<div><div>388/830</div></div>
Stop-tabac.Classes.Utils	60%	<div><div>3/5</div></div>	N/A		60%	<div><div>3/5</div></div>	59%	<div><div>74/126</div></div>
Stop-tabac.Classes.View	25%	<div><div>2/8</div></div>	70%	<div><div>7/10</div></div>	25%	<div><div>2/8</div></div>	11%	<div><div>38/356</div></div>

<http://blog.octo.com/en/ios-development-right-code-coverage/>

Information en retour continue

- ▶ Le résultat des constructions, tests et inspections
 - ▶ Interface web
 - ▶ Email
 - ▶ Ordiphone
 - ▶ Chat



The screenshot shows the Jenkins web interface for a build named 'Build #6 (Aug 20, 2013 2:26:16 PM)'. The interface includes a sidebar with navigation links like 'Back to Project', 'Status', 'Changes', 'Console Output', 'Edit Build Information', 'Delete Build', 'Robot Results', and 'Previous Build'. The main content area displays the build status as 'No changes.' and 'Started by anonymous user'. Below this is a 'Robot Test Summary' table showing 100% pass rate for both critical and all tests. A large, faint watermark of a man in a tuxedo is visible in the background of the screenshot.

Jenkins search ?

Jenkins > robot > #6 [ENABLE AUTO REFRESH](#)

[Back to Project](#)

[Status](#)

[Changes](#)

[Console Output](#)

[Edit Build Information](#)

[Delete Build](#)

[Robot Results](#)

[Previous Build](#)

Build #6 (Aug 20, 2013 2:26:16 PM)

Started 21 hr ago
Took [1.2 sec](#)

[add description](#)

No changes.

Started by anonymous user

Robot Test Summary:

	Total	Failed	Passed	Pass %
Critical tests	10	0	10	100.0
All tests	10	0	10	100.0

> [Browse results](#)
> [Open smoke_all_report.html](#)
> [Open smoke_all_log.html](#)

Autres concepts

- ▶ Intégration de base de données continue
- ▶ Déploiement continue

Bénéfice

Bénéfices

- ▶ Déroulement du projet sans accroc
- ▶ Éviter des tâches répétitives
 - ▶ Concentration sur le code
- Économiser du temps et monnaie!
- ▶ Éviter des risques
 - ▶ Logiciel pas près
 - ▶ Découverte tarde des erreurs
 - ▶ Manque de visibilité
 - ▶ Logiciel de basse qualité

Évaluation

Logiciel de construction en Java



Maven™



Largeur	Ant (secondes)	Maven (secondes)	Gradle (secondes)
Petit1	7.54	6.56	3.26
Petit2	8.01	7.10	3.37
Petit3	7.57	6.49	3.41
Grand1	27.42	24.32	11.43
Grand2	35.25	23.45	12.25
Grand3	28.17	25.01	12.05

Table 4.1 – Évaluation de logiciel de construction Java

Buildscript examples

```
<project>

  <target name="clean">
    <delete dir="build"/>
  </target>

  <target name="compile">
    <mkdir dir="build/classes"/>
    <javac srcdir="src" destdir="build/classes"/>
  </target>

  <target name="jar">
    <mkdir dir="build/jar"/>
    <jar destfile="build/jar/HelloWorld.jar" basedir="build/classes">
      <manifest>
        <attribute name="Main-Class" value="oata.HelloWorld"/>
      </manifest>
    </jar>
  </target>

  <target name="run">
    <java jar="build/jar/HelloWorld.jar" fork="true"/>
  </target>

</project>
```

```
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>

  <groupId>com.mycompany.app</groupId>
  <artifactId>my-app</artifactId>
  <version>1.0-SNAPSHOT</version>
  <packaging>jar</packaging>

  <name>Maven Quick Start Archetype</name>
  <url>http://maven.apache.org</url>

  <dependencies>
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>4.8.2</version>
      <scope>test</scope>
    </dependency>
  </dependencies>

</project>
```

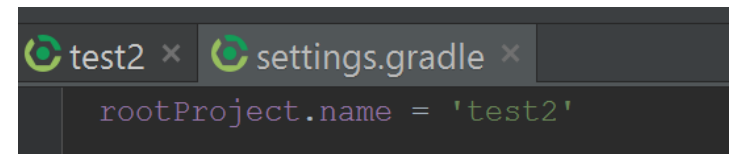
```
group 'ch.bfh.test2'
version '1.0-SNAPSHOT'

apply plugin: 'java'

sourceCompatibility = 1.5

repositories {
    mavenCentral()
}

dependencies {
    testCompile group: 'junit', name: 'junit', version: '4.11'
}
```



```
test2 × settings.gradle ×
rootProject.name = 'test2'
```

Serveurs choisis



Travis CI



Jenkins



Visual Studio Online

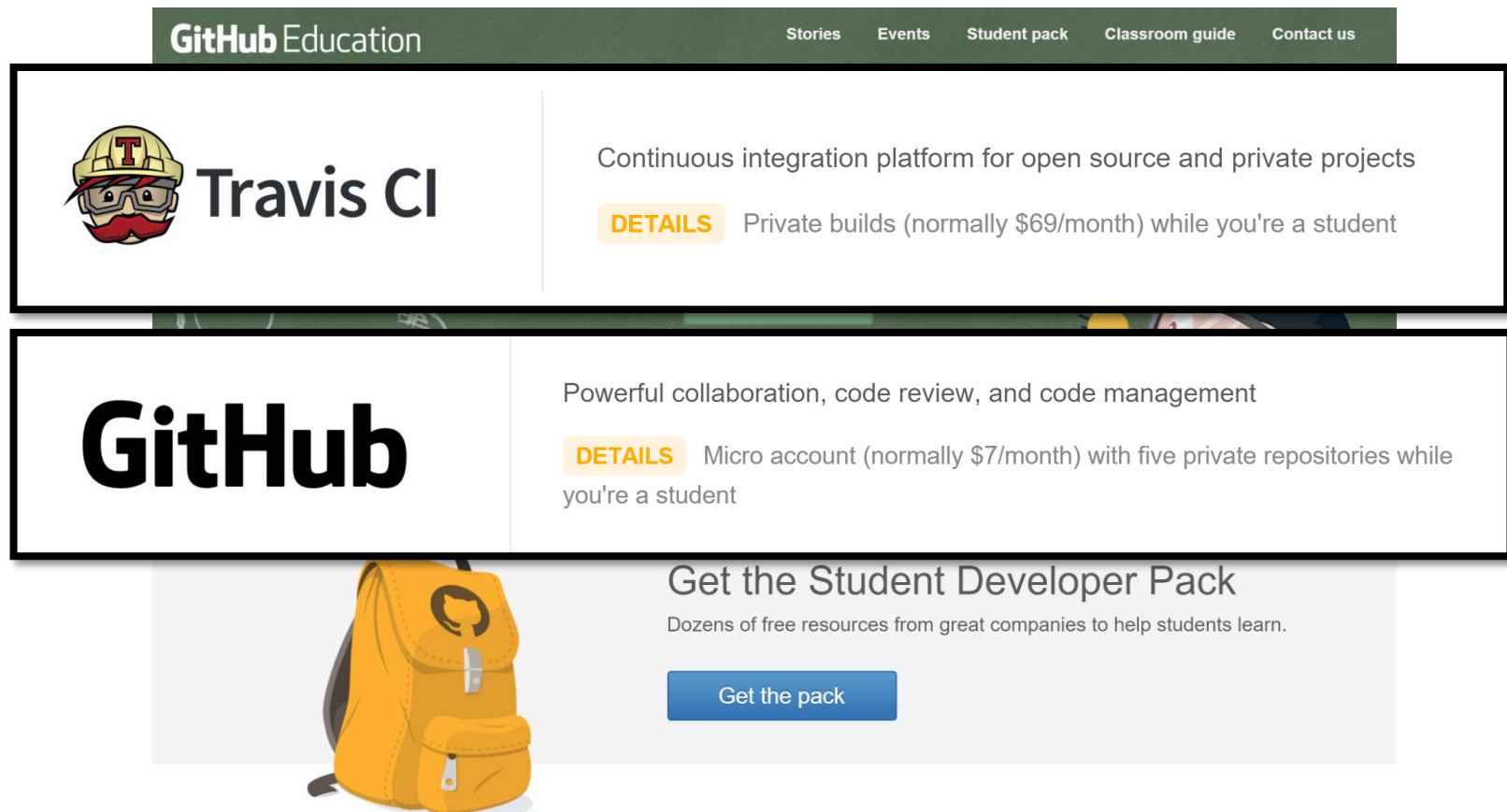
Resultats

Critères	Jenkins	TeamCity	Travis CI	Team Foundation Server
Caractéristique du produit				
Outils de gestion des versions	Subversion/CVS(+plugins)	Subversion/CVS(+plugins)	github/Git	Git/TFVC
Outils de construction	✓	✓✓(CLI)	✓	✓
Information en retour	✓(Courriel, Plugins)	✓	✓✓	✓✓
Identification	✓✓	✓	--	✓✓
Extensibilité	✓✓	✓	-	✓
Générale				
Fiabilité et longévité	✓✓	✓✓	✓✓	✓✓
Environnement cible	multi-plateforme	multi-plateforme	Linux	Microsoft Windows
Infrastructure	On-premises	On-premises	On-premises/SaaS	On-premises/SaaS
Coûts	gratuit	Freemium*	Freemium*	Freemium
Type de logiciel	Open Source (MIT)	Propriétaire	Open Source (MIT)	Propriétaire
Taille de la communauté				
Nombre d'utilisateurs	127'000	30'000 clients	240'000 projets	pas connus (beaucoup)
Nombre de plugins	✓✓	✓	--	-
Utilisation				
Facilité d'utilisation	✓	✓	✓✓	✓✓
Complexité de l'installation	✓	✓	✓✓	✓✓

Demonstration

- ▶ Une petite indication pour votre travail bachelor


- ▶ <https://education.github.com/>



The screenshot displays the GitHub Education website. At the top is a dark green navigation bar with the text "GitHub Education" on the left and links for "Stories", "Events", "Student pack", "Classroom guide", and "Contact us" on the right. Below this, the page is divided into three main sections. The first section features the Travis CI logo (a yellow hard hat with a red 'T' and a red mustache) and the text "Travis CI". To the right, it describes Travis CI as a "Continuous integration platform for open source and private projects" and includes a yellow "DETAILS" button followed by the text "Private builds (normally \$69/month) while you're a student". The second section features the GitHub logo and describes it as "Powerful collaboration, code review, and code management". It also includes a yellow "DETAILS" button followed by the text "Micro account (normally \$7/month) with five private repositories while you're a student". The third section is titled "Get the Student Developer Pack" and includes the text "Dozens of free resources from great companies to help students learn." and a blue "Get the pack" button. To the left of this section is an illustration of a yellow backpack with a GitHub logo on it.

GitHub Education

Stories Events Student pack Classroom guide Contact us

 **Travis CI**

Continuous integration platform for open source and private projects

DETAILS Private builds (normally \$69/month) while you're a student

GitHub

Powerful collaboration, code review, and code management

DETAILS Micro account (normally \$7/month) with five private repositories while you're a student

Get the Student Developer Pack

Dozens of free resources from great companies to help students learn.

Get the pack

Demonstration

- ▶ Système de l'intégration continue très facile
- ▶ Travis Pro & github
 - ▶ Automatisation de la construction et des testes
 - ▶ Déploiement

Un dépôt privée sur github.com

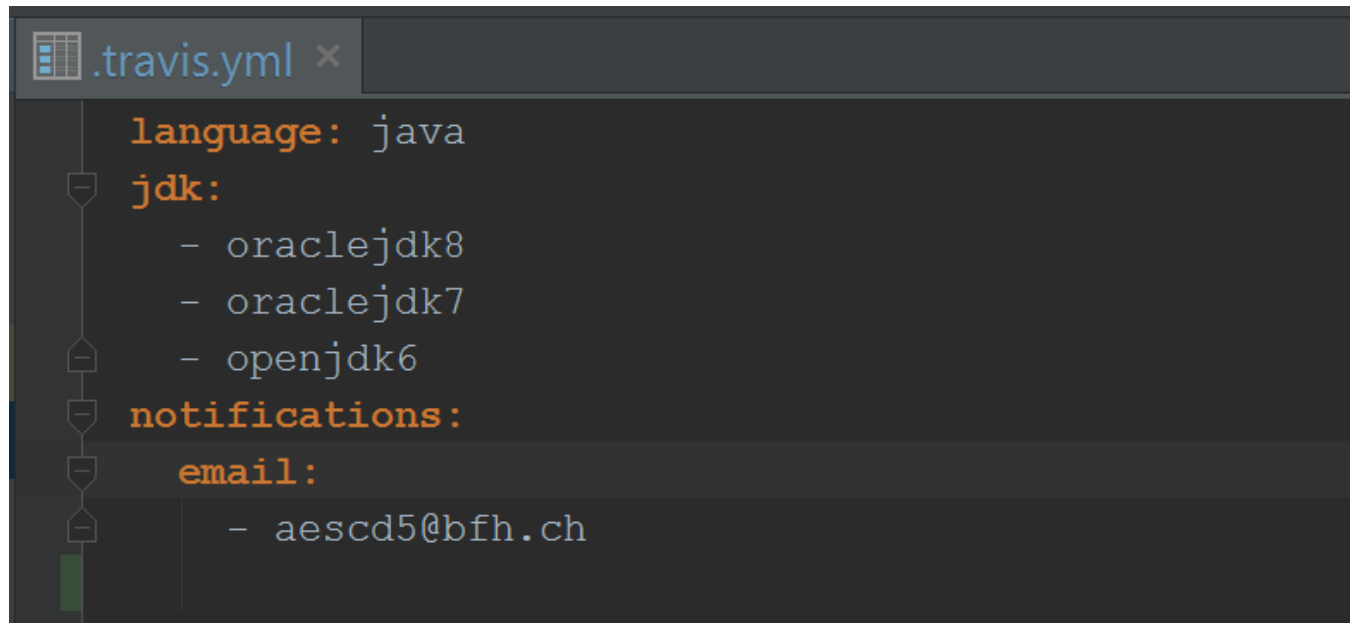
<https://github.com/TashunkoWitko/>

Travis Professional

<https://travis-ci.com/>

Configuration .travis.yml

- ▶ Compte github.com (avec un dépôt)
- ▶ Login avec le compte github sur travis-ci.com
- ▶ Fichier de configuration



```
.travis.yml x
language: java
jdk:
  - oraclejdk8
  - oraclejdk7
  - openjdk6
notifications:
  email:
    - aescd5@bfh.ch
```

The image shows a code editor window with a tab labeled ".travis.yml x". The editor contains a YAML configuration for Travis CI. The configuration specifies the language as Java, lists three JDK versions (oraclejdk8, oraclejdk7, and openjdk6) under the "jdk" key, and sets up email notifications under the "notifications" key with the email address "aescd5@bfh.ch". The editor has a dark theme and a sidebar on the left showing a file tree.

Merci beaucoup pour votre attention

