

L'informatique qui réinvente la finance

Environnement de Développement Outils Open-Source d'Integration Continue

Exemple de Mise en Oeuvre

Arnaud NAUWYNCK arnaud.nauwynck@gmail.com

- Introduction
- Cycle en V ... Junit ... Méthodes Agiles
 - Maven, outils fédérateur
 - Junit surefire, cobertura ...
- Maven Build CI Server : Hudson
- Maven Proxy/Repository : Nexus
- Maven reporting metrics : Sonar
- Autres Outils : JIRA, Wiki, ...

Overview



- Les méthodologies anciennes
- Les "Cycles en V"
- ... peu efficaces

Etude fonctionnelle

Etude technique, conception (implémentation) Test functionnel vérification adéquation demande/livraison

Test technique...

Développement

UNGARD Quelques défauts des méthodologies V

- Cycle très long
- Pas de feed-back rapides
- Sur-spécification / sur-conception / formelle
 - Défaut des approches puristes UML, Merise...
- Tests ... en fin de dev !!!!
 - En pratique : n'existe pas
 - Plus de temps (marge non prévue / retard)
 - Impossible (conception incompatible avec tests)
 - Après les devs ... "plus besoin"

Cycles en V versus Méthodes Agiles

- Cycle très long
- Pas de reed-back rapides
- Sur-spécification UML
- Tests inexistant / en fin de dev !!!!
 - Cycles très COURTS
 - Feed-back rapides, heure:outils / jour:hommes
 - Pas de sur-spécification
 - Tests primordiaux / en DEBUT de dev !!!!
 - Recherche systématique d'efficacité

Synonymes et Variantes des Méthodes "Modernes"

- Extreme Programming
- Scrum
- Méthode Agiles
- Test-Driven development
- Méthodes à cycle court
- Intégration Continue
- Java+Eclipse+JUnit+Maven+SCM+Hudson

UNGARD Les Tests Unitaires... Révolution JUnit

- JUnit = librairie simplissime de tests unitaires
 = Révolution dans le monde du dev
- Méthodes modernes = Tests Unitaires
- Beaucoup repose sur les tests !!!
 - Conception, UseCase => remplacer par Tests
 - Vérifications Functionnelles => Tests
 - Vérifications Techniques => Tests
 - Non regression / refactoring => Tests

- Eclipse : right click > "Run as Junit test"
- "ant junitrunner"
- "mvn test:test" ... implicit dans "mvn install"
- Reporting html:
 - "mvn surefire" ... implicit dans "mvn site"
 - consultable par http après "nightly build"
- Reporting historisés, incrémentals:
 - Hudson, sonar

Détail Exécution Junit sous Maven



- Projet compilé et testé
 - tous les jours "Nightly build" ... Full Tests
 - ... à chaque commit "Snapshot" ... Smoke Tests
 - -=Intégration Continue
- => Outils necessaires :
 - Build automatique (svn, maven, hudson ...)
 - Execution de tests (junit, cobertura ...)
 - Rapport de tests, métriques (mvn site, sonar ..)

Outil de Bug Tracking, Issues Mngt

- BTS = Bug Tracking System
- Workflow typique d'un bug:

Open — Resolved — Unit Tested — Homologated — Closed

- Genéralisation "Issue", Wish list, todo list :
 - Bug, Task, Enhancement, NewFeature ...
- Outils standards :
 - JIRA (c), free for Open source projects only
 - Bugzilla

Outils de Scrum Meeting

- Taches à courtes échéances ... (1 5 jours)
- Besoin != suivi historique, audit...
 - Gestion des priorités
 - Répartition des taches, pair-programming
 - Estimation des difficultés, des charges
- Notions : Story Board, Card, Slot ...
- Outils standards :
 - Oral / Crayon + Papier / Tableau !!
 - Plugin Jira
 - Autres ...

Hudson Main Page

Hudson						🔍 search	0
<u>Hudson</u>						DISABLE	AUTO REFRESH
쯭 <u>New Job</u>						2 a	dd description
💥 <u>Manage Hudson</u>	Tous	5 +					
A People	5	w	JOD †	Last Success	Last Failure	Last Duration	
Build History	0	×	<u>helloworld</u>	7 hr 3 min (<u>#8</u>)	7 hr 53 min (<u>#2</u>)	1 min 52 sec	\bigotimes
Q Project Relationship	Icon:	<u>s m</u> l		Legend	<u> for all</u> <u> for fa</u>	<u>ailures 🔊 for just l</u>	atest builds
E Check File Fingerprint							
Build Queue							
No builds in the queue.							
Build Executor Status							
# Status							
1 Idle							
2 Idle							

Hudson Project Configuration

J
0
0
2
0
0
_
_
)

Hudson Project Page



Hudson Autobuild



Hudson Build Console

Hudson		🔍 search	0
Hudson » helloworld » #12		View as J	plain text
<u>Back to Project</u> <u>Status</u>	Console Output	Progress:	-
📴 <u>Changes</u>			
Console Output	Un changement dans la base de code a provoqué le lancement de ce jo Updating svn://localhost/helloworld/trunk	ъ	
Tag this build	At revision 15		
Previous Build	<pre>Parsing POMs [trunk] \$ D:\Java\jdkl.6.0_10/bin/java -cp "C:\Documents and Settin \maven-plugin\WEB-INF\lib\maven-agent-1.323.jar;D:\Java\maven\boot\ hudson.maven.agent.Main D:\Java\maven D:\Java\tomcat\webapps\hudson 1.323.jar "C:\Documents and Settings\Nedra\.hudson\plugins\maven-pl interceptor-1.323.jar" 2312 "C:\Documents and Settings\Nedra\.hudson \WEB-INF\lib\maven2.1-interceptor-1.2.jar" <===[HUDSON REMOTING CAPACITY]===>0000000000000000000000000000000000</pre>	<pre>igs\Nedra\.hudson\plug (classworlds-1.l.jar" i\WEB-INF\lib\remoting lugin\WEB-INF\lib\mave on\plugins\maven-plugi os\helloworld\workspac</pre>	jins g- m- m :e\trunk
	<pre>[INF0]</pre>		

Nexus

- http://www.google.fr ... nexus maven java sonatype
- => http://www.sonatype.com/products/nexus
- => 5 minutes overview video







20

Nexus Login Page

Sonatype Nexus™	Log In
	Version 1.3.6 Open Source
Sonatype™Servers ≪	Welcome
Nexus	Welcome to the Sonatype Nexus Maven Repository Manager.
Artifact Search	Administrators may login via the link on the top right.
Advanced Search	You may browse and search the repositories using the options on the left.
Views/Repositories	
Repositories System Feeds	
Help	

Nexus Repositories Admin Page

admin | Log Out Sonatype Nexus™ Version 1.3.6 Open Source X X << Sonatype[™] Servers Welcome Repositories Nexus 🤹 Refresh 🛛 👩 Add... 🔻 🥥 Delete 🛛 🔚 Trash... 🔻 🖺 User Managed Repositories 🕶 Artifact Search Repository 🔺 Repository Status Type Format Policy Repos Releases, Snapshots, 3rd party, Maven http 📥 Public Repositories maven2 Q group Public Snapshot Repositories Apache Snapshots, Codehaus Snapsho http:// group maven2 Advanced Search 3rd party In Service http hosted maven2 release **Views/Repositories** http Apache Snapshots maven2 In Service snapshot proxy Repositories Central M1 shadow In Service virtual maven1 http System Feeds Codehaus Snapshots In Service http proxy maven2 snapshot Logs and Config Files Maven Central release In Service http maven2 proxy Administration * http 💌 maven.openga.org maven2 release In Service proxy 4 ъI Server. Routing Mayen Central Scheduled Tasks Configuration Mirrors Browse Repository Targets Log Repository ID central ÷ Security ٠ Repository Name Maven Central Change Password Repository Type 슢 proxy Users. Maven2 Repository Roles. Provider (\mathbf{O}) -**Privileges** Save Reset Help Ŧ

Nexus Artifact Search Page

Sonatype Nexus™

admin | Log Out

Version 1.3.6 Open Source

Sonatype [™] Servers	~	Welcome	×	Repositories		×	Search	×			
Nexus		Keyword Search	 logback 	-classic				×			
Artifact Search		Source Index	Group 🔺		Artifact			Version	Packagi	Classifie	Downloa
logback	P	Maven Central (Ri chiqosiloj	gback	logback-	clas	sic	0.9.17	jar		artifact, j 📥
Advanced Search		Maven Central (Ri chiqosiloj	gback	logback-	clas	sic	0.9.17	jar	sources	artifact
	51	Maven Central (Ri chiqosiloj	gback	logback-	clas	sic	0.9.17	jar	tests	artifact
Views/Repositories		Maven Central (Ri chiqosiloj	gback	logback-	clas	sic	0.9.16	jar		artifact, j
Repositories		Maven Central (Ri chiqosiloj	gback	logback-	clas	sic	0.9.16	jar	sources	artifact
System Feeds		Maven Central (Ri chiqosiloj	gback	logback-	clas	sic	0.9.16	jar	tests	artifact
Logs and Coning Files		Maven Central (Ri chiqosiloj	gback	logback-	clas	sic	0.9.15	jar		artifact, j
Administration		Maven Central (Ri chiqosiloj	gback	logback-	clas	sic	0.9.15	jar	sources	artifact
Server		Maven Central (Ri chiqosiloj	gback	logback-	clas	sic	0.9.15	jar	tests	artifact
Routing		Mayan Cantral (Ri ich ane loi	aback	loghack	clae	eic	001/	iar		artifant i 🔳
Scheduled Tasks		Displaying 50 of	75 records	P Fetch Next 5	0 * ×	Clea	ar Results				
Log		Artifact Inform	nation								*
Security		Group:	ch aos loal	hack	XML ·	<d< th=""><th>enendency></th><th></th><th></th><th></th><th></th></d<>	enendency>				
Decancy		Group.		Duck)(I-IE)	<	groupId>ch.qc	os.logback	<th>Id></th> <th></th>	Id>	
Change Password		Artifact:	logback-cla	ASSIC		5	artifactId>logb	ack-classic 7 < (vorsion	: <th>tId></th> <th></th>	tId>	
Roles		Version:	0.9.17			0</td <td>dependency></td> <td><td>~</td><td></td><td></td></td>	dependency>	<td>~</td> <td></td> <td></td>	~		
Privileges		Download:	artifact, por	n			-				
Help											



Sonar

0				Sonar - Iceweasel			_ - ×
<u>F</u> ile	<u>E</u> dit <u>V</u> iew	Hi <u>s</u> tory	<u>B</u> ookmarks <u>T</u> oo	ols <u>H</u> elp			
+	→ ~ 2	8	http://loca	lhost:9000/	⋒ ☆ ►	∛ √ Google	٩
<mark>8</mark> A	ApacheTc 💿 t	omcat 🧯	cc 🦄 Sonar				
3:	Sonar		÷				~
н	lome (Search pi	rojects			Config	guration Log out	₿.
А	ll projects		Project	Rules compliance	Coverage	Build time 🔻	Links
			HelloWorld	25.0%	0.0%	07:47	Ω
	sonar	6	Alerts feed				
С	onfigure <u>ON</u> OF	F					
	Pow	rered by <u>Sonar</u>	Source - Open Source L	.GPL - v.1.10.1 - Plugins - Documentation -	Ask a question - Bug/feat	ure request	
Do	ne						

Sonar Project Dashboard Screenshot

Sonar - Iceweasel	
<u>File Edit View His</u> tory <u>B</u> ookmarks <u>T</u> ools <u>H</u> elp	
🔶 🔶 🧭 🖆 🖳 http://localhost:9000/project/index/fr.an:HelloWorld 💦 🏠 🗸 🚱 Google	
8 ApacheTc 💿 tomcat 💿 cc 🦳 Sonar	
Sonar 순	~
Home Search projects HelloWorld Configuration Log out Dashboard Version 1.0-SNAPSHOT on Thu, 10 Sep 2009 07:47, using profile Sonar way. Image: Configuration Image: Configurati	ut 🖨
Violations drilldown Time machine Clouds Hotspots Settings Lines of code B 11.1% Duplications 11.1% Duplications 0.0% 0 lines 0 blocks 0 files Duplications 0 lines 0 blocks 0 files Duplications 0 lines 0 blocks 0 accessors Duplications 0 lines 1 classes 1 methods 0 accessors Duplications 0 lines 0 blocks 0 files Duplications 0 lines 0 blocks 0 files Duplications 0 lines 0 blocks 0 accessors Duplications 0 lines 0 blocks 0 files Duplications 0 lines 0 blocks 0 files Duplications 0 lines 0 blocks 0 files Duplications 0 lines 1 classes 1 classes 1 classes 1 classes 1 classes 1 classes 1 classes 1 classes 1 classes 1 classes 0 files Duplications 0 blocks 0 files Duplications 0 blocks 0 files Duplications 0 blocks 0 files Duplications 1 classes 1 classes	
Solitions Violations Z 1 Usa. 0 Blocker 0 1 1 1 1 1 </td <td>Delete</td>	Delete
Lines of code Image: Compliance Set as default	

Powered by SonarSource - Open Source LGPL - v.1.10.1 - Plugins - Documentation - Ask a question - Bug/feature request

Sonar Junit Measures

0	Sonar - Iceweasel	_ - ×
<u>File Edit View History Boo</u>	okmarks <u>T</u> ools <u>H</u> elp	
◆ → ∨ ₴ ⊗ 쓸 Г	ျ http://localhost:9000/drilldown/measures/1? 💦 😭 🗸 🔀 🗸 Google	٢
Charache Te Desmont Des		
8 Apachelc I tomcat I cc	Sonar	
Sonar	· 윤	~
Home Search projects H	lelloWorld Configuration Log out 🚔	<u>^</u>
Dashboard Dashboa	<u>rrd</u> » Measures drilldown	
Violations drilldown Unit te	sts	
Time machine 3 📥		
Clouds	AppTest	3
Settings		
sonar		
		Ξ
АррТе	st	
Source	IPerma	alink]
30010	20/ Tests Direction 100 mg	
55.	3% lests: 3 Fautres/Errors: 1/1 Duration: 190 ms	
	Duration Unit test name	
	⊘ 16 ms testApp	
expa	and 🕕 9 ms testFailRuntimeEx	
expa	and 🛕 1 ms testFailAssert	
Powered by SoperSource	- Open Source LCPL - v 1.10.1 - Pluging - Documentation - Ask a question - Bug/feature request	~

Sonar JUnit Screenshot

Sonar - Iceweasel	_ = ×
<u>F</u> ile <u>E</u> dit <u>V</u> iew Hi <u>s</u> tory <u>B</u> ookmarks <u>T</u> ools <u>H</u> elp	
🔶 🔸 🧭 🛞 🖀 🔄 http://localhost:9000/drilldown/measures/1 🗟 🖓 🗸 Google	
8 ApacheTc 💿 tomcat 💿 cc 🦳 Sonar	
Sonar 순	~
Home Search projects HelloWorld Configuration Log out a	
Dashboard Dashboard » Measures drilldown Violations drilldown Unit tests Time machine 1	_
Clouds Hotspots Settings Sonar	1
AppTest Sources Tests	nalink]
100.0% Tests: 1 Failures/Errors: 0/0 Duration: 235 ms	
Duration Unit test name	
📀 50 ms testApp	
Powered by SonarSource - Open Source LGPL - v.1.10.1 - Plugins - Documentation - Ask a question - Bug/feature request	



- Installation du poste Développeur
- Installation du Server d'Intégration

- OS = Linux (unix), Windows, Mac, ...
 - outils shell (bash, ls, find, grep, sed, awk....)
 portés sous Windows, ex: Cygwin
- Java : Jdk (= Jre + tools)
- Maven
- Eclipse
- Client Subversion / Git
 - Command "svn" (dans /bin/svn)
 - Plugin Eclipse: subclipse/subversive, Tortoise

Poste Dev : Cygwin

- Cygwin: www.cygwin.com ... click install
- Config factorisée dans "setenv-xyz.sh"
 - Démarrer dans ~/.profile, ou explicitement
 - "source setenv.sh" = " . setenv.sh" != fork sh !!!
- Astuces sous cygwin:
 - Cygwin convertit le PATH windows en unix: "\" => "/", ";" => ":"
 - Filesystem unix + "/cygdrive/c/" + mais cmd "mount" absente
 - Editer cygwin.bat pour customizer les vars et le working dir... use CHERE_INVOKE=1

- Java : Jdk (= Jre + tools)...
 - Cf site www sun, Click install ou unzip
 - (Rq: version avec source "jsdk", java.dev.net)
 - export JAVA_HOME=...
 - export PATH=\$PATH:\$JAVA_HOME/bin
- Config version java 1.4 / 5 (generics) / 6 ...
 - Dans maven pom.xml ...
 - Dans Eclipse: Preferences > Java > compiler / jdk

- Maven = www.maven.org ... unzip
 - export MAVEN_HOME=...
 - Export PATH=\$PATH:\$MAVEN_HOME/bin
 - ~/.m2/settings.xml optionnel, pour proxy http
- Hello World project :
 - Mvn archetype:create
 DgroupId=fr.iut.tps ... nom du package
 DartifactId=helloworld ... nom du jar
 D ... optionnel (pom, jar, war, jsp, ...)
 Mvn install

Poste Dev : Eclipse

- Eclipse ... www.eclipse.org click unzip
 - Gestion des installs/ plugins :
 - Use Window>Preferences>Install... Update Site
 - copy&paste *.jar dans "/dropins"
 - copy&paste fichier "*.lnk" dans /dropins
 - Gestion des multi workspaces
 - Option "-data ws1 -showlocation" pour chaque launcher "startEclipse_ws1_trunk.sh"
 - Options jvm: "-vm .../jre/bin -vmdata -Xmx1000m ..."
 - Settings sauvés dans "ws1/.metadata/.plugins/..."
 - Sources séparés des ws... cf "Import project"

- Config Eclipse pour Maven
 - Preferences>Java>BuildPath Variable M2_HOME=~/.m2/repository
 - Optionnel : plugin mevenide
- Config Eclipse pour Subversion
 - Plugin subclipse www.tigris.org
 - Subversive
 - NB: clients svn et subclipse de même version! (fichiers metadata /.svn/)

- Subversion... par projet, lors du checkout:
 svn co svn://server/repo/prj/trunk
 - Consultable a posteriori par "Svn info"
- maven repos et maven proxys
 - Dans pom.xml et/ou settings.xml, et ~/settings
 - repos = ibiblio.org + repos dédiés
 + repo d'entreprise (nexus)
 - proxy = pour firewall (mieux: cf nexus)
 - Cf infos administratives dans pom.xml (site web, jira, svn...)

- Si Poste dev caché derrière firewall...
- Cf config Firefox pour proxy http
- => auto configuré dans Eclipse
 - Parfois necéssaire pour outils xml (validation schéma xsd/dtd)..
 - Pour "Update Site"
- => à configurer dans maven pour proxy http
 - Cf ~/.m2/settings.xml ou prj/settings.xml
 - Mieux: use Nexus maven proxy
- Sous WinNT... use "NTLM Proxy" local server

- Jdk, maven ... Idem poste client
- OS = Linux ... avoid Windows on servers !!
- Mauvais points Windows ... vs Linux
 - Mem par process limité à 1Go en 32bits
 ... version 64 bits meilleure
 - IO moins performants....
 antivirus/securité/partage très consommateurs et souvent mal installés
 - Moins stable
 - Session mono-utilisateur, administration plus difficile...

Server Integ : Subversion / Git

- Installation svnserve : unzip / apt-get install...
- Creation Repository
 - "svnadmin create myrepo"
 - "cd myrepo/conf"
 - Edit .conf, passwd, authz?, hooks? => ...
- Start : svnserve -d -r /.../myrepo –port ...1234
- Creation projet:
 - Svn mkdir svn://host:port/...project/trunk -m ""
- Test checkout projet:
 - Svn co svn://host:port/...project/trunk

Server Integ : Hudson

- Hudson = click download hudson.war
- Start: "java -jar hudson.war"
- Open browser... http://localhost:8080
- Optional config:
 - export HUDSON_HOME=...
- Edit ... hudson > configure
 - Change port?
 - Enable plugins: svn, sonar, ...

- Dans Hudson : add project
 - Set project name
 - Set subversion "svn://host:port/.../trunk/project"
 - Svn options: quiet delay + retry
 - Set builder = maven2 + path to "pom.xml"
 - Mvn options: -Dvar=value... -P profile... -Xmx...
- Hudson maven magic :
 - analyse auto des pom.xml multi-projets
 - => définit les modules
 - -=> compile dans l'ordre et/ou en parallele!

- Download, unzip
- Start: sonar/bin/linux/sonar.sh start
- Open browser http://localhost:9000
- Configure:
 - Change database derby => postgres / mysql...
 - Change jvm (cf wrapper.properties), port, ...
- Import ... nothing to do! Cf mvn sonar:sonar
- Configure for client-side: in hudson / maven
 - Hudson: cf plugin, use "sonar postgoal", jdbc
 - Maven: confjdbc in settings.xml or pom.xml

SUNGARD Flux de Données mvn – hudson - sonar



- Download + unzip + start ...
- Open browser http://localhost:8080
- Configure
 - Choose data dirs, port, jdbc database ...
- Define Project, Module, Users, Group...
- Configure url in pom.xml (for info, mvn site)

Server Integ: autres ...

- Wiki
 - Ex: confluence (cf jira), ...
- Svn Web viewer
 - Ex:
- Apache site + download site
- Email Server
- Instant Messenger (jabber)
- Project management ... Eclipse Jazz



Questions ??

arnaud.nauwynck@gmail.com