

Souat...

**QGL - SI3** 

Philippe Collet



## Sonar

- Plateforme Web pour gérer la qualité du code
  - Gérée par la société SonarSource depuis 2008

- SonarSource : outil commercial
- SonarQube: version Open-Source by SonarSource

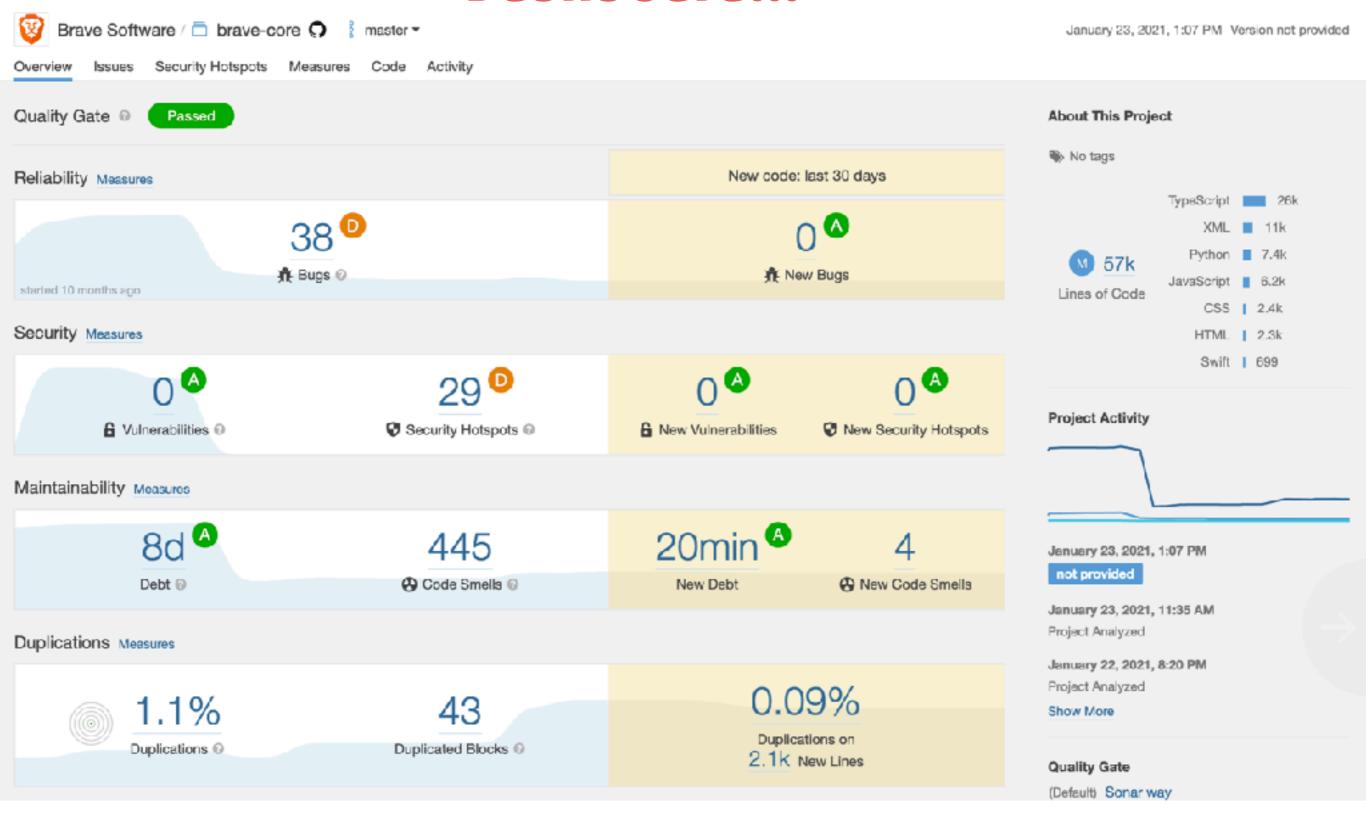
## Objectifs

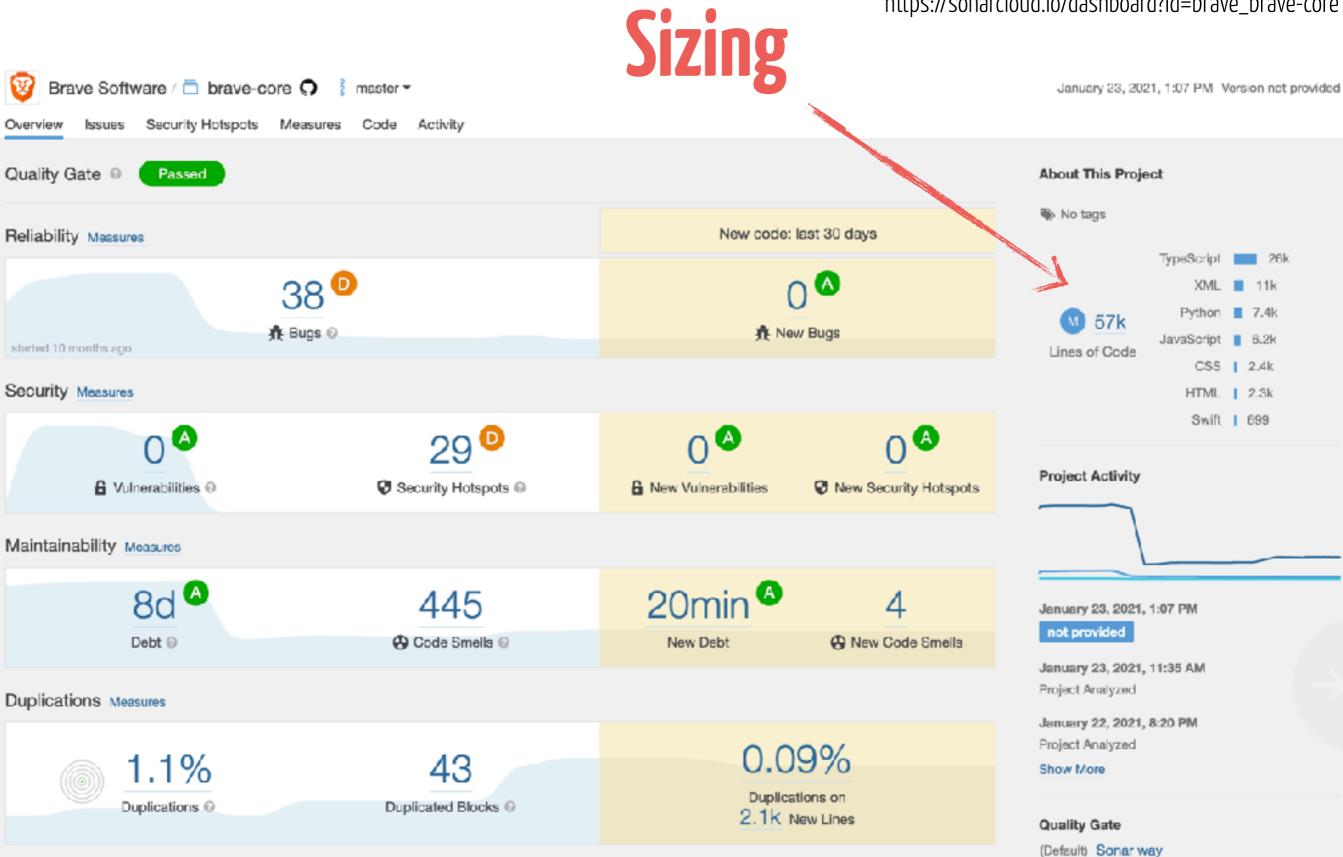
• Fournir une analyse complète de la qualité d'un projet de développement à partir de métriques

Evaluer la qualité du code

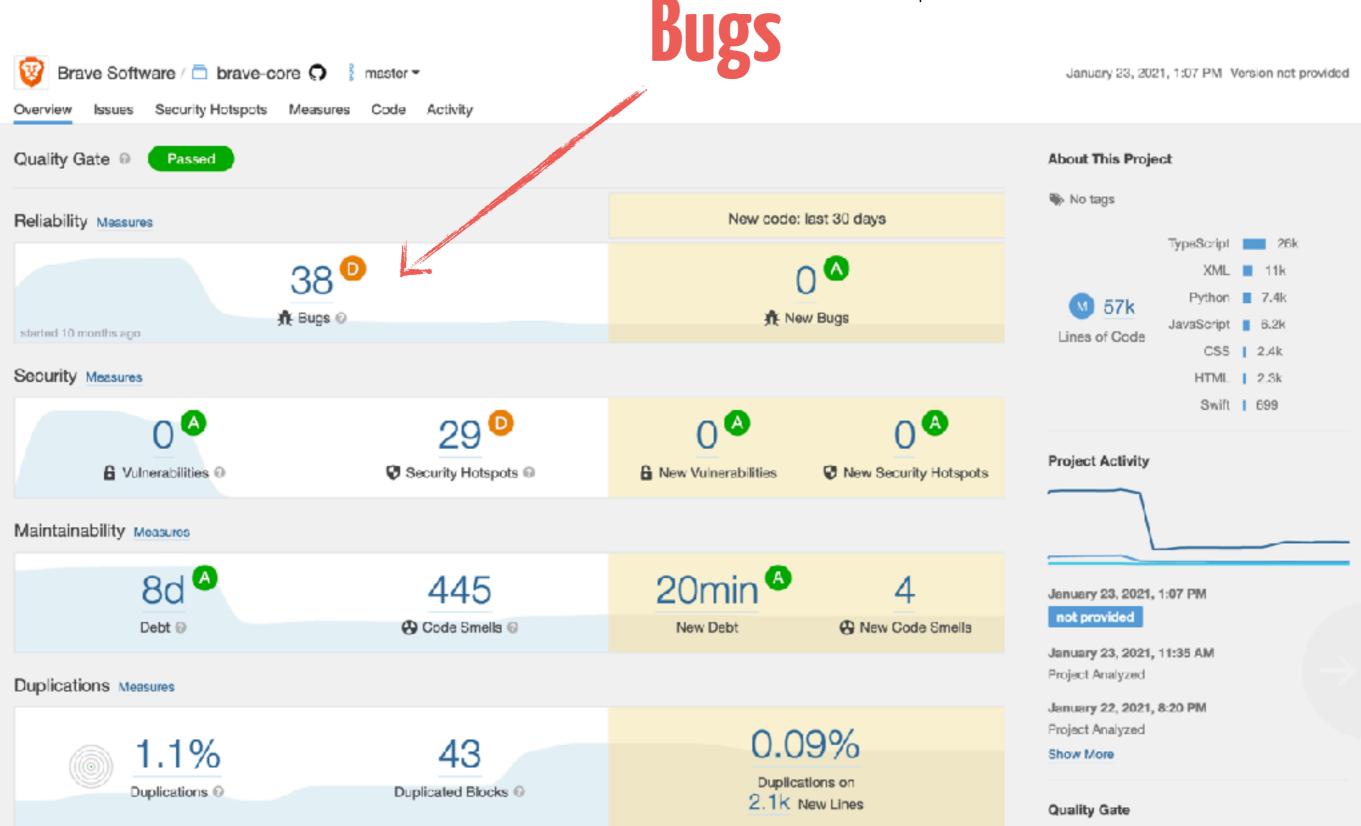
• En connaître l'évolution au cours du développement

## Dashboard...





(Default) Sonar way



Security Hotspots Measures Code Activity

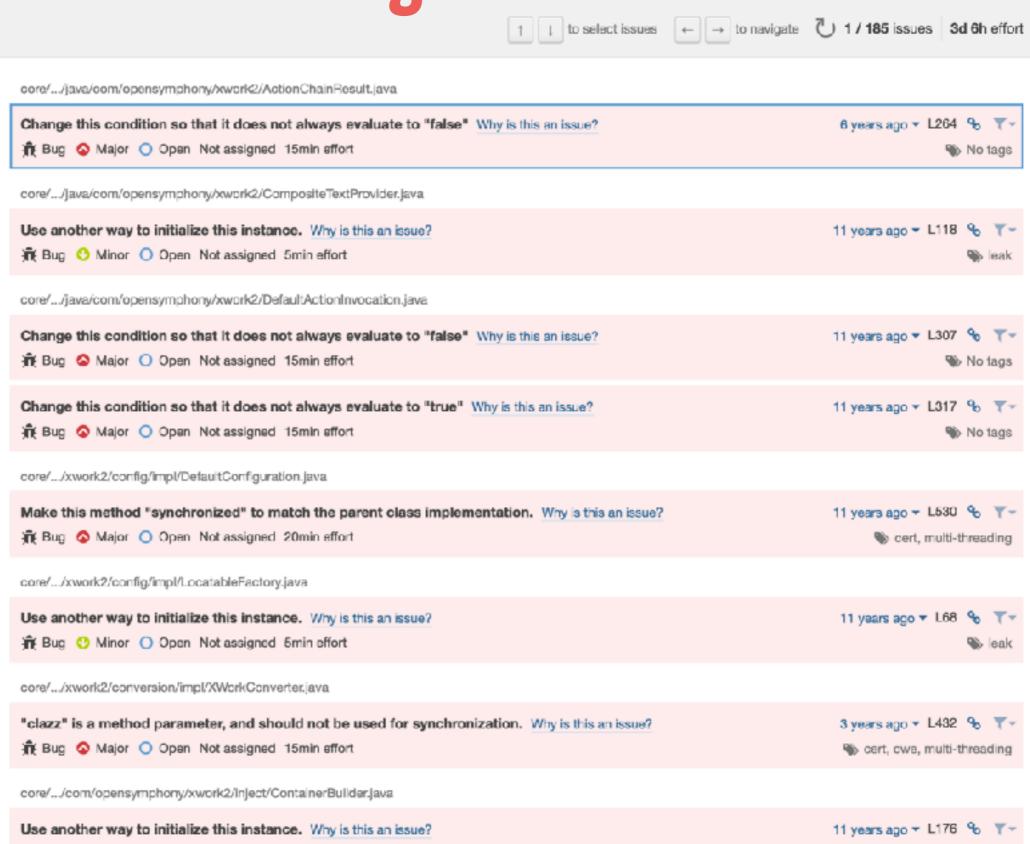
🛊 Bug 🔮 Minor 🔘 Open Not assigned 5min effort

Bugs

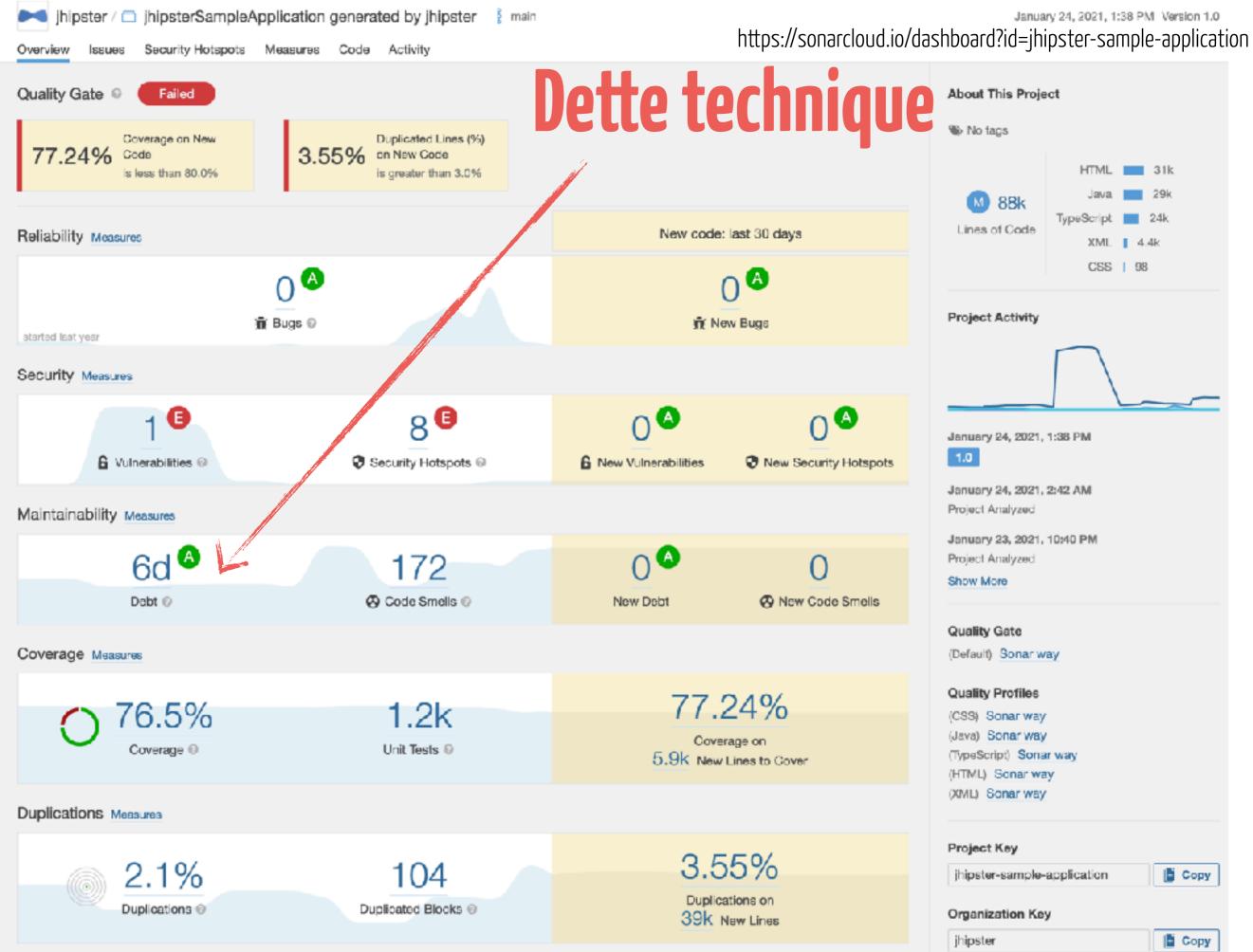
Clear All Filters **Filters** Clear → Type BUG 185 ₩ Bug Sulnerability 117 Code Smell 6.9k 96 + click to add to selection Severity Blocker Minor 39 Critical Major 138 > Resolution > Status Security Category > Creation Date > Language > Rule > Tag > Directory > File > Assignee

Overview

Issues







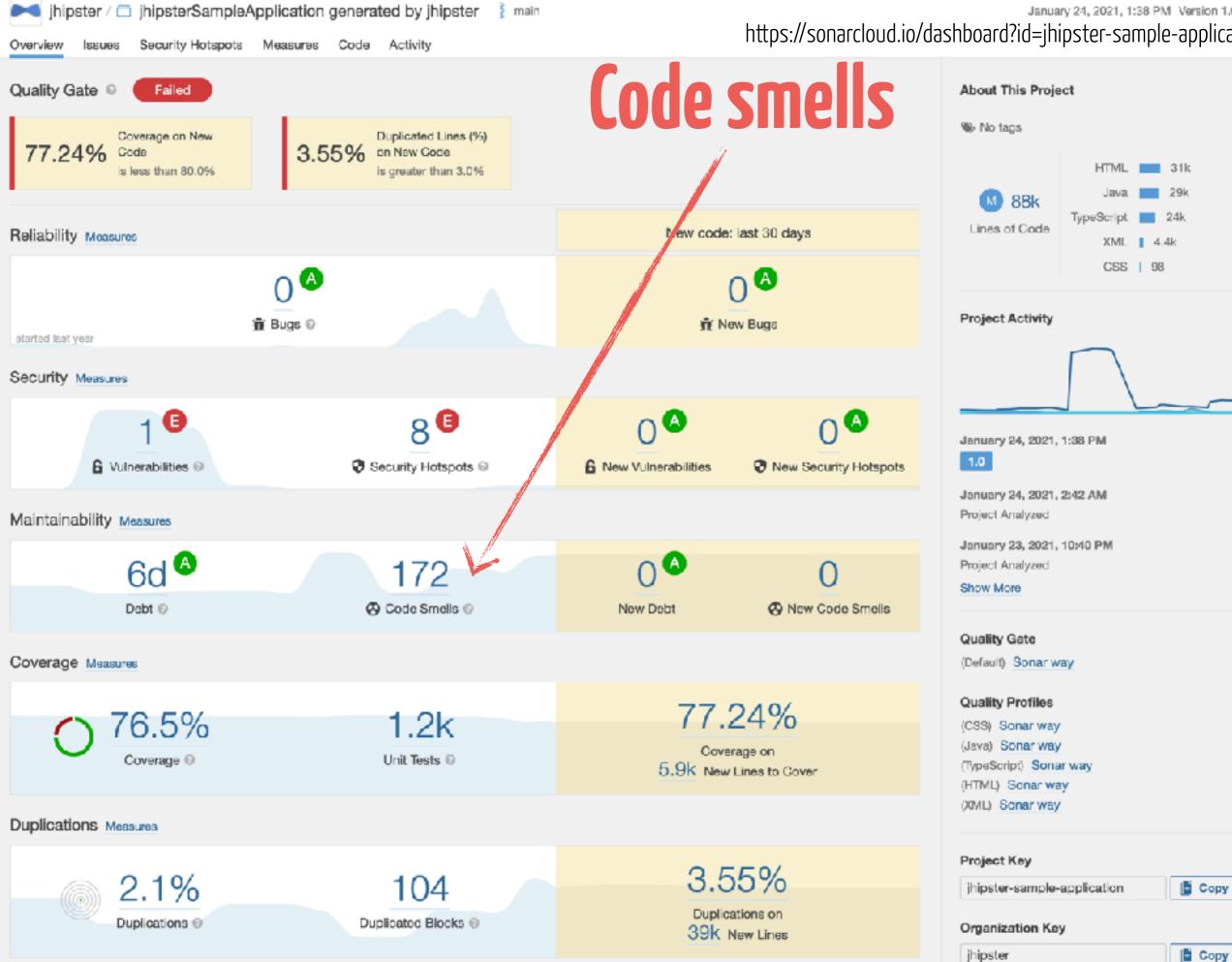
nain

Dette technique

Overview Issues Security Hotspots Measures Code Activity Project Overview > Releasability > Reliability @ > Security @ > Security Review © ∨ Maintainability 
② TECHNICAL DEBT P Overview On new code Code Smells 0 Debt 0 Debt Ratio 0.0% A Rating Overall Code Smells 172 Debt 6d 2h Debt Ratio 0.1% Rating A Effort to Reach A 0 Coverage > Duplications > Size > Complexity @

> Issues

Pechnical Deb: 6d 2h	jhipsterSampleApplication gene	View as ☐ List →	to select files	← → to navigate 1,424 files
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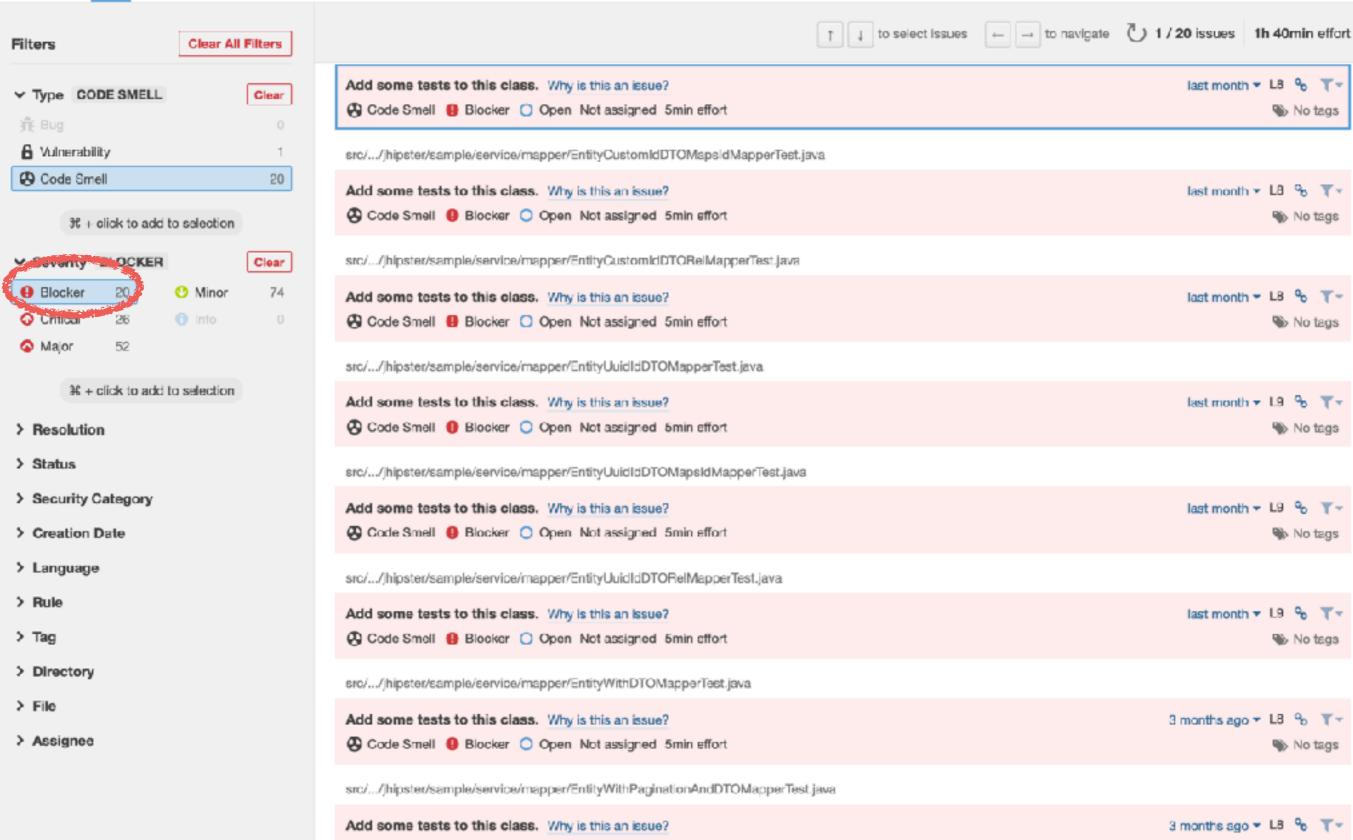
3 months ago 🕶 L8 😘 🟋 🕆

3 months ago ▼ L8 % T =

No tags

Overview

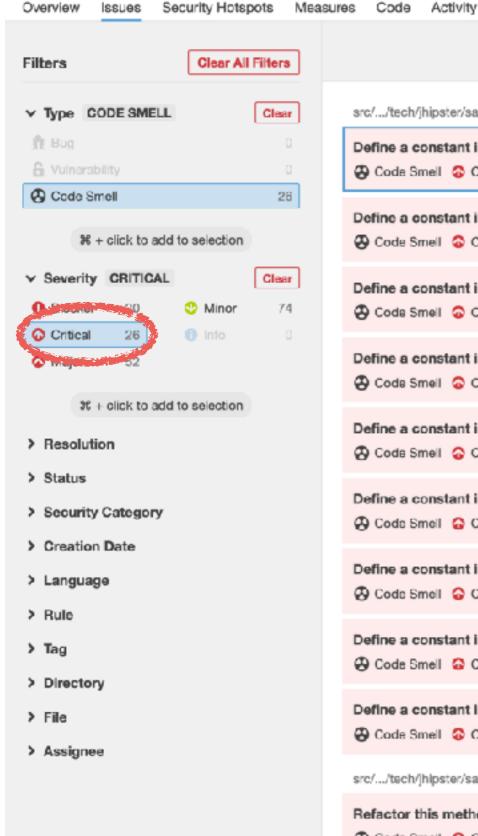
jhipster / = jhipsterSampleApplication generated by jhipster { mail DOCKET EVE



Code Smell 
Blocker 
Open Not assigned 5min effort

4 months ago ▼ L59 % T ▼

No tags



↑ to select issues ← → to navigate 1/26 issues 2d effort src/.../tech/jhipster/sample/config/CacheConfiguration.java Define a constant instead of duplicating this literal ".testManyToOnes" 6 times. Why is this an issue? last month . L60 % T . Code Smell Critical Open Not assigned 14min effort. 🐿 No tags Define a constant instead of duplicating this literal ".testManyToManies" 6 times. Why is this an issue? last month = L61 % T = Code Smell Critical Open Not assigned 14min effort No tags Define a constant instead of duplicating this literal ".userManyToManies" 7 times. Why is this an issue? last month = L62 % T = Code Smell Critical Open Not assigned 16min effort No tags Define a constant instead of duplicating this literal ".manyToOneBacks" 4 times. Why is this an issue? last month - L131 % T -Code Smell Critical Open Not assigned 10min effort No tags Define a constant instead of duplicating this literal ".manyToManyBacks" 4 times. Why is this an issue? last month v L132 % Tv Code Smell Critical Open Not assigned 10min effort No tags Define a constant instead of duplicating this literal ".manyToOneMapsIdBacks" 4 times. Why is this an issue? last month v L134 % Tv Code Smell Critical Copen Not assigned 10min effort No taos last month v L135 % Tv Define a constant instead of duplicating this literal ".manyToManyMapsIdBacks" 4 times. Why is this an issue? 🐼 Code Smell 🙆 Critical 🔘 Open Not assigned 10min effort. No tags Define a constant instead of duplicating this literal ".manyToManies" 5 times. Why is this an issue? last month v L137 % Tv Code Smell Critical Open Not assigned 12min effort No tags Define a constant instead of duplicating this literal "\_manyToManyMapsids" 4 times. Why is this an issue? last month - L138 % T-Code Smell Critical Open Not assigned 10min effort. No tags src/.../tech/jhlpster/sampla/service/BankAccountQueryService.java last year ▼ L78 % ▼ ▼ Refactor this method to reduce its Cognitive Complexity from 31 to the 15 allowed. Why is this an issue? Code Smell Critical Copen Not assigned 21min effort No tags src/.../tech/jhipster/sample/service/FieldTestMapstructAndServiceClassEntityService.java

Refactor this method to reduce its Cognitive Complexity from 110 to the 15 allowed. Why is this an issue?

Code Smell Critical Open Not assigned 1h40min effort

## Proposition de correction

Security Hotspots Measures Overview U 10 / 26 Issues ...ter/sample/config/CacheConfiguration.java. Define a constant instead of duplicating this literal ".testManyToOnes" 6 times. Code Smell :: Define a constant instead of duplicating this literal ".testManyToManies" 6 times. Code Smell ⊕8 Define a constant instead of duplicating this literal ".userManyToManies" 7 times. Code Smell Define a constant instead of duplicating this literal ".manyToOneBacks" 4 times. Code Smell +4 Define a constant instead of duplicating this literal ".manyToManyBacks" 4 times. Code Smell ---Define a constant instead of duplicating this literal ".manyToOneMapsIdBacks" 4 times. Code Smell Define a constant instead of duplicating this literal ".manyToManyMapsIdBacks" 4 times. Code Smell +4 Define a constant instead of duplicating this literal ".manyToManies" 5 times. Code Smell +5 Define a constant instead of

durdication this literal

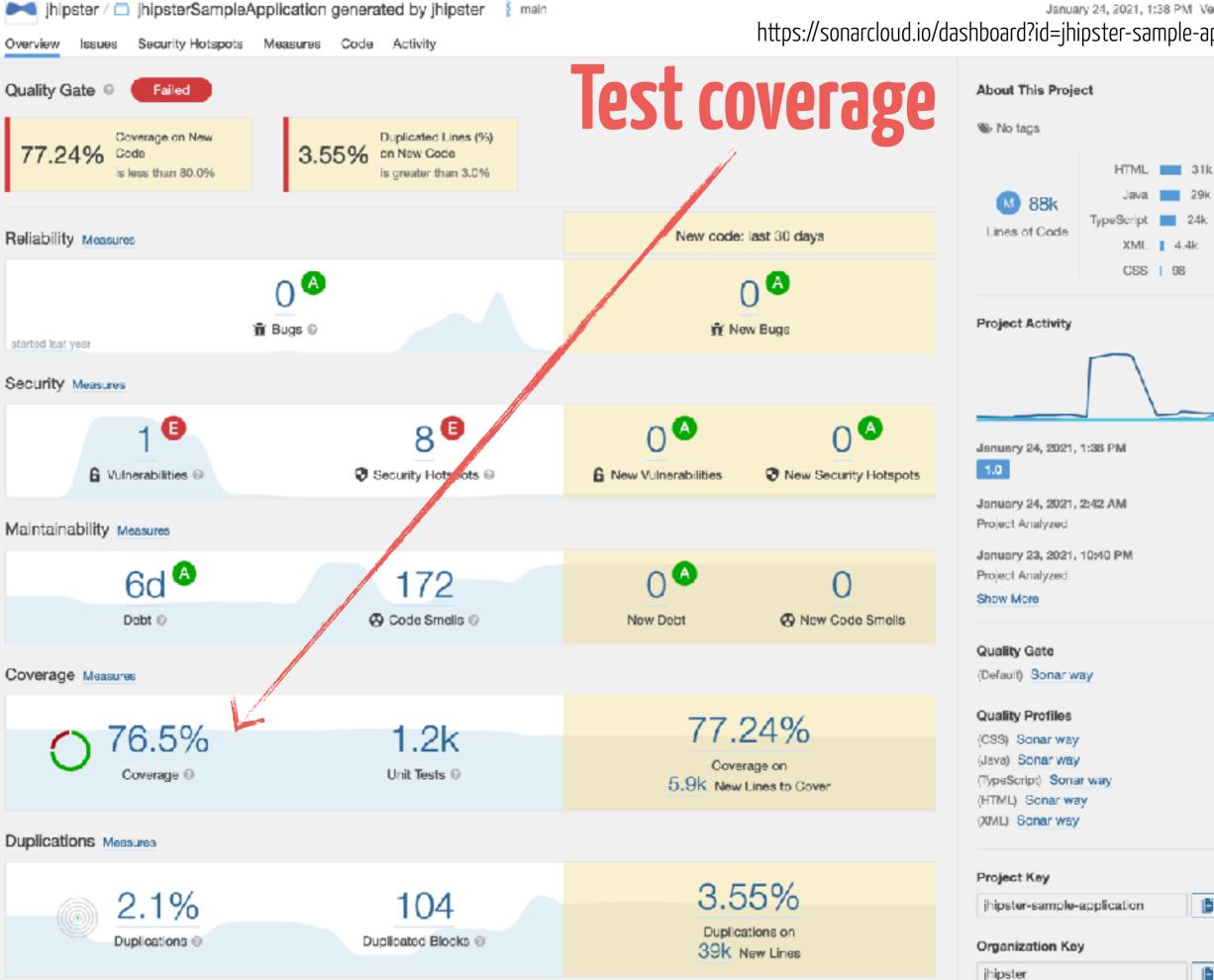
```
Code Activity

    jhipsterSampleApplication generated by

                                        src/main/java/tech/jhipster/sample/service
                                                                                                          See all issues in this file
                                       /BankAccountQueryService.java
jhipster
+
  73
               /*ok
                * Function to convert {@link BankAccountCriteria} to a {@link Specification}
  74
                * @param criteria The object which holds all the filters, which the entities should match.
  75
  76
                * @return the matching (@link Specification) of the entity.
  77
  78
               protected Specification<BankAccountEntity> createSpecification(BankAccountCriteria criteria) {
           Refactor this method to reduce its Cognitive Complexity from 31 to the 15 allowed. Why is this an last year = L78 %
           issue?
           A Code Smell O Critical O Open Not assigned 21min effort
                                                                                                        No tags
  79
                   Specification<BankAccountEntity> specification = Specification.where(null);
                if (criteria != null) {
  80
                    2 if (criteria.getId() != null) {
  81
  82
                           specification = specification.and(buildRangeSpecification(criteria.getId(), BankAccountEntity_.id));
  83
  84
                    3 if (criteria.getName() != null) {
  85
                           specification = specification.and(buildStringSpecification(criteria.getName(), BankAccountEntity_.nam
  86
  87
                    4 if (criteria.getGuid() != null) {
  88
                           specification = specification.and(buildSpecification(criteria.getGuid(), BankAccountEntity_.guid));
  89
  90
                    [5] if (criteria.getBankNumber() != null) {
  91
                           specification = specification.and{buildRangeSpecification(criteria.getBankNumber(), BankAccountEntity
  92
  93
                    6 if (criteria.getAgencyNumber() != null) {
  94
                           specification = specification.and(buildRangeSpecification(criteria.getAgencyNumber(), BankAccountEntil
  95
  96
                    1 if (criteria.getLastOperationDuration() != null) {
  97
                           specification =
  98
                               specification.and(
  99
                                    buildRangeSpecification(criteria.getLastOperationDuration(), BankAccountEntity_.lastOperation
                               );
 100
 101
                    8 if (criteria.getMeanOperationDuration() != null) {
 192
                           specification =
 103
 194
                               specification.and(
 105
                                   buildRangeSpecification(criteria.getMeanOperationDuration(), BankAccountEntity_.meanOperation
 196
                               );
 197
 198
                    9 if (criteria.getMeanQueueDuration() != null) {
 199
                           specification =
 110
                               specification.and(buildRangeSpecification(criteria.getMeanQueueDuration(), BankAccountEntity_.med
 111
 112
                    if (criteria.getBalance() != null) {
```

Сору

**В** Сору



to select files ← → to navigate 745 files

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100%

29s

jhipsterSampleApplication gene...

Test coverage

#### Overview Issues Security Hotspots Measures Code Activity **Project Overview** > Releasability > Reliability @ > Security @ > Security Review @ > Maintainability () P Overview On new code Coverage 77.2% Lines to Covar 5,857 Uncovered Lines 804 Line Coverage 86.3% Conditions to Cover 2,495 Uncovered Conditions 1,097 Condition Coverage 56.0% Overall 76.5% Coverage Lines to Cover 19,807 Uncovered Lines 3,458 Line Coverage 82.5% 5,745 Conditions to Cover Uncovered Conditions 2,549 Condition Coverage 55.6% ests Unit Tests 1,245 Errors

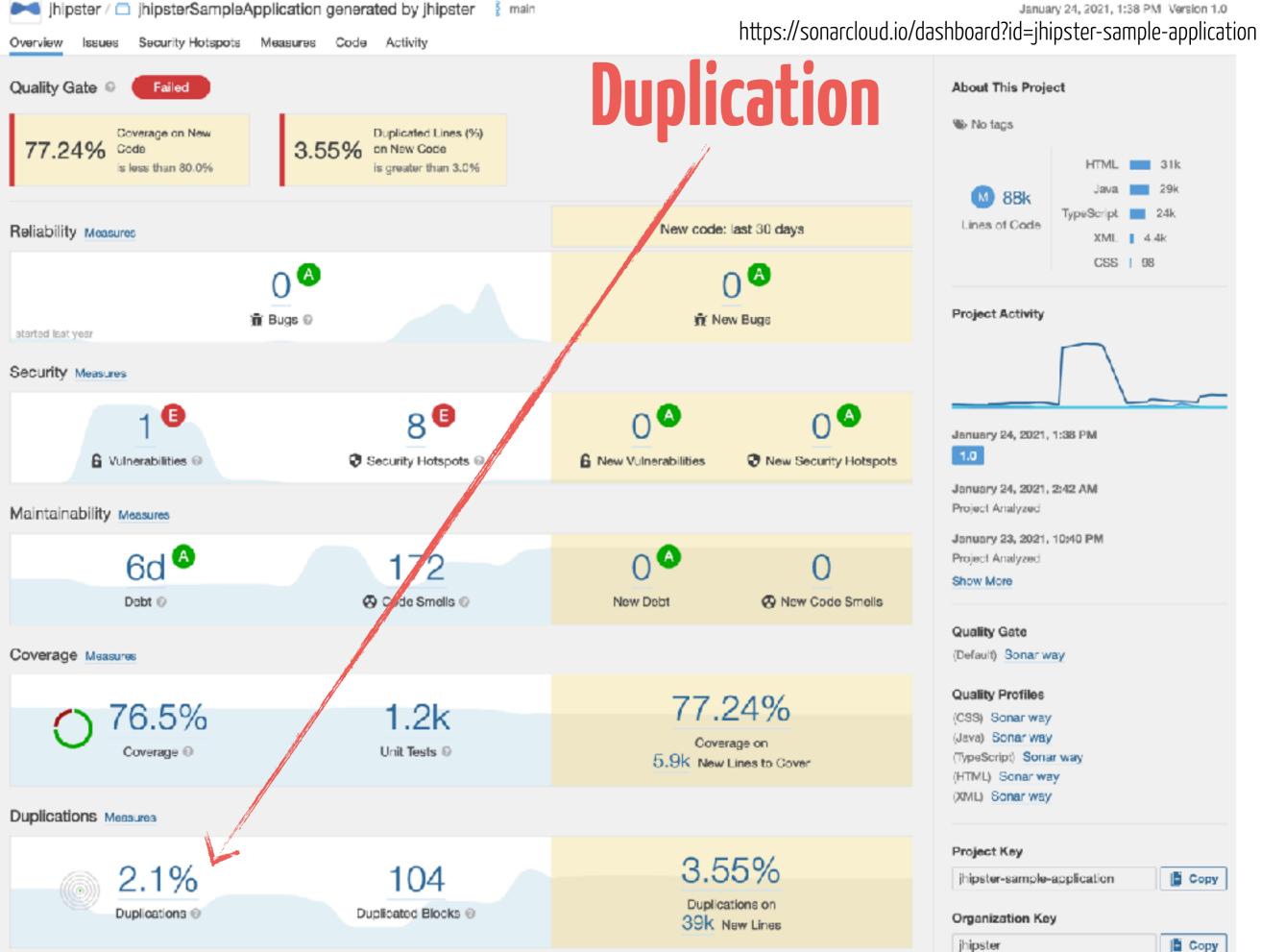
Fallures

Skipped

Success

Duration

Solo Gampio perodio rigorio.	, ac	50100111100	io navig	1101110
verage 76.5% -			New code:	ast 30 days
		Coverage	Uncovered Lines	Uncovered Conditions
src/main/webapp/app/account/account.route.ts		0.0%	2	_
src/main/webapp/app/account/activate/activate.route.ts		0.0%	1	-
src/main/webapp/app/layouts/navbar/active-menu.directive.ts		0.0%	6	-
src/main/webapp/app-routing.module.ts		0.0%	1	-
src/main/wabapp/app/app.module.ts		0.0%	5	-
src/main/java/tech/jhipster/sample/ApplicationWebXml.java		0.0%	3	-
src/main/webapp/app/core/interceptor/auth-expired.interceptor.ts		0.0%	5	-
src/main/webapp/app/core/interceptor/auth.interceptor.ts		0.0%	6	-
src/main/webapp/app/entities/test-root/bank-account-my-suffix/route/bank-ac	count-my-suffix-routing.module.ts	0.0%	1	-
src/main/webapp/app/admin/configuration/configuration.rcute.ts		0.0%	1	-
src/main/webapp/app/config/datepicker-adapter.ts		0.0%	4	-
src/main/webapp/app/config/dayjs.ts		0.0%	3	-
src/main/webapp/app/entities/test-root/division/route/division-routing.module	.ts	0.0%	1	-
src/main/webapp/app/admin/docs/docs.route.ts		0.0%	1	-
src/main/webapp/app/shared/date/duration.pipe.ts		0.0%	3	-
src/main/webapp/app/entities/entity-custom-id-dto-maps-id/route/entity-custom-	om-id-dto-maps-id-routing.module.ts	0.0%	1	-
src/maln/webapp/app/entitles/entity-custom-id-dto-rel/route/entity-custom-id-	-dto-rel-routing.module.ts	0.0%	1	-
src/main/webapp/app/entities/entity-custom-id-dto/route/entity-custom-id-dto	o-routing.module.ts	0.0%	1	-
src/main/webapp/app/entities/entity-custom-id-maps-id/route/entity-custom-id/route/entity	d-maps-id-routing.module.ts	0.0%	1	-
src/main/webapp/app/entities/entity-oustom-id-relationship/route/entity-custor	m-id-relationship-routing.module.ts	0.0%	1	-
src/main/webapp/app/entities/entity-custom-id/route/entity-custom-id-routing	j.module.ts	0.0%	1	-



## Structure

- · un runner, qui lance des analyse et compile les résultats
  - Plugin maven, plugin gradle, etc.
  - Runner stand-alone en Java
  - · Attention, tant que le runner n'est pas de nouveau exécuté, la BD n'est pas mise à jour
- · une base de données, qui stocke les analyses des projets étudiés
- un serveur web pour consulter les données
  - Par défaut : http://localhost:9000

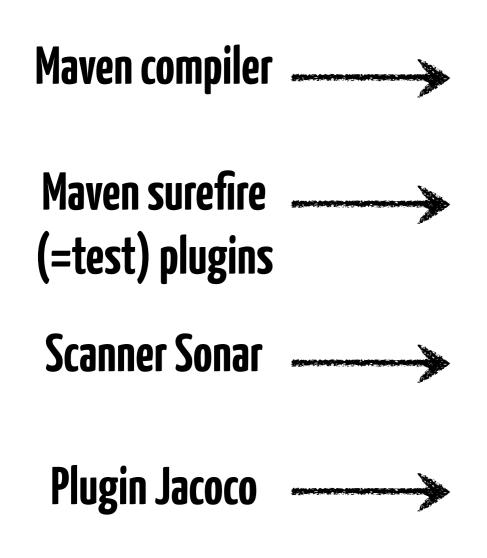
## Installations possibles

- Avec Docker (système de containers légers, incontournable actuellement)
  - docker run -d --name sonarqube -p 9000:9000 sonarqube
    - (lancement de la dernière image sonarqube = « latest » image)
    - Plus d'info : <a href="https://hub.docker.com/\_/sonarqube/">https://hub.docker.com/\_/sonarqube/</a>

- Installation stand-alone de SonarQube
  - https://docs.sonarqube.org/latest/setup/get-started-2-minutes/

## Configuration Maven avec couverture de tests

Ajout des plugins du scanner Sonar et de Jacoco (calcul de couverture de tests) dans le pom.xml



```
<plugin>
   <artifactId>maven-compiler-plugin</artifactId>
   <version>3.8.1
</plugin>
<plugin>
   <groupId>org.apache.maven.plugins
   <artifactId>maven-surefire-plugin</artifactId>
   <version>2.22.2
</plugin>
<plugin>
 <groupId>org.sonarsource.scanner.maven</groupId>
 <artifactId>sonar-maven-plugin</artifactId>
 <version>3.7.0.1746
</plugin>
<plugin>
 <groupId>org.jacoco</groupId>
 <artifactId>jacoco-maven-plugin</artifactId>
 <version>0.8.6
</plugin>
```

## Configuration Maven avec couverture de tests

Ajout d'un profil pour compiler avec Jacoco dans le pom.xml

### Nom du profil

#### Prepare-agent

= calcul de couverture pendant la compilation et le passage des tests

#### Prepare-agent

= génération du rapport de couverture Jacoco

```
ofiles>
  cprofile>
    <id>coverage</id>
      <plugins>
        <plugin>
          <groupId>org.jacoco</groupId>
          <artifactId>jacoco-maven-plugin</artifactId>
          <executions>
            <execution>
              <id>prepare-agent</id>
              <qoals>
                <goal>prepare-agent</goal>
              </goals>
            </execution>
            <execution>
              <id>report</id>
              <qoals>
                <qoal>report</qoal>
              </goals>
            </execution>
          </executions>
        </plugin>
      </plugins>
    </build>
  </profile>
                                                      21
</profiles>
```

## Configuration Maven avec couverture de tests

Exécution en même temps (ou séparément) que la compilation et les tests

\$ mvn clean verify -Pcoverage sonar:sonar



Passage des tests et exportation des sorties Jacobo

Exécution du profil

Scanner sonar sur le code et Récupération du rapport de couverture de tests

```
$ mvn clean verify -Pcoverage
```

\$ mvn sonar:sonar

## Dans votre projet

#### Solution préférable pour l'instant :

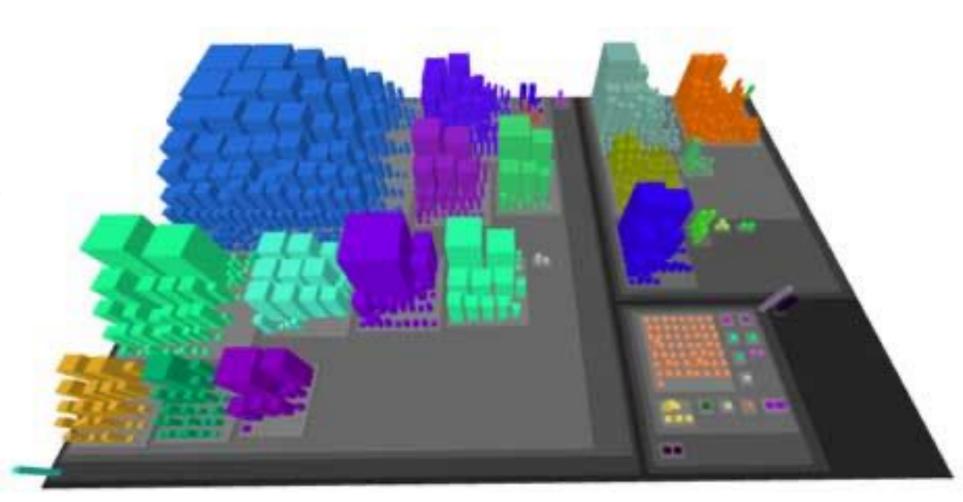
- Faire le setup simple dans le module player
- Exécuter la commande maven/sonar dans le module player

Attention, si vous exécutez la commande sur le projet global, les classes source du projet tooling seront comptés dans le calcul de couverture (et donc le taux de couverture sera faux et plus bas)

## Projets exemples et pom.xml de référence

- Projet simple :
  - https://github.com/SonarSource/sonar-scanning-examples/tree/master/ sonarqube-scanner-maven/maven-basic
- Projet multi-modules (pour plus tard peut être)
  - https://github.com/SonarSource/sonar-scanning-examples/tree/master/ sonarqube-scanner-maven/maven-multimodule

# Plugin dans Sonar...



- SoftVis3D
  - https://softvis3d.com/#/
- Installation depuis Sonar: 'Administration -> Marketplace'
  - Attention, cela met à jour l'image Docker si vous utilisez celle-ci...



## Jacoco, maven et JDK 10+

- · L'appel à jacoco directement en ligne de commande ne marche plus en JDK 10+
  - Incompatibilité entre Maven Surefire, le plugin Sonar, le JDK, etc.

#### • OBSOLETE:

- mvn org.jacoco:jacoco-maven-plugin:prepare-agent clean package
- mvn sonar:sonar



- Suivant l'installation, il est parfois nécessaire de fournir l'adresse du serveur et un token de login :
  - mvn sonar:sonar -Dsonar.host.url=http://localhost:9000 -Dsonar.login LONG\_TOKEN\_HERE
- Sonar 8.6 (= latest à l'édition de ce cours) force l'authentification par défaut
  - https://docs.sonarqube.org/8.6/setup/upgrade-notes/
  - Pour faire des essais sur une version localhost: Manually disable the Force user authentication property from Administration > Configuration > General Settings > Security.



- Client Docker
  - http://www.docker.com
  - Sous Linux et Mac, tout va très bien (Docker Desktop sur Mac
- Sous Windows, il vous faut
  - Soit une version Pro avec HyperV activé (Docker Desktop)
    - https://docs.docker.com/docker-for-windows/install/
  - Soit une version Home (Docker Desktop + WSL 2 backend)
    - https://docs.docker.com/docker-for-windows/install-windows-home/

## Références et démos

- https://docs.sonarqube.org/latest/analysis/languages/java/
- https://docs.sonarqube.org/latest/analysis/scan/sonarscanner-for-maven/
- https://github.com/SonarSource/sonar-scanning-examples

- https://next.sonarqube.com/sonarqube/projects?sort=-analysis\_date
- https://sonarcloud.io/projects et entrez des noms de projet ou baladez vous