

Finding code smells with sonar

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INTERN

Content

- Search project
- Sonar types
- Vulnerabilities
- Code smells
- Sonar project overview
- Conclusion



Newer release-unit

- Our release-unit
- Tests from beginning
- Regular check and fix of sonar-issues

The screenshot shows the SonarQube dashboard for the project 'partner-partner-read-srv' (master branch). The dashboard is divided into several sections, each with a 'Measures' link and a 'Passed' status indicator. The 'Quality Gate' is currently 'Passed'. The 'Reliability Measures' section shows 0 bugs. The 'Security Measures' section shows 9 security hotspots. The 'Maintainability Measures' section shows 42min debt and 50 code smells. The 'Coverage Measures' section shows 70.2% coverage and 184 unit tests. The 'Duplications Measures' section shows 0.0% duplications. The right sidebar contains information about the project, including a 'Lines of Code' chart (6.7k total, 4.7k Java, 1.9k XML, 27 JSP) and a 'Project Activity' chart. The 'About This Project' section describes the project as a parent POM for Liberty projects. The 'Quality Gate' section shows the default gate is 'CSS'. The 'Quality Profiles' section shows profiles for Java, JSP, XML, and CSS. The 'External Links' section includes links to the project's website and continuous integration.

partner-partner-read-srv | master

February 10, 2021, 1:19 AM | Version 0.10.3-SNAPSHOT

Overview | Issues | Measures | Code | Activity

Quality Gate **Passed**

Reliability Measures | New code: since 0.10.1-SNAPSHOT started 6 days ago

0 Bugs

0 New Bugs

Security Measures

0 Vulnerabilities | 9 Security Hotspots | 0 New Vulnerabilities | 0 New Security Hotspots

Maintainability Measures

42min Debt | 50 Code Smells | 0 New Debt | 0 New Code Smells

Coverage Measures

70.2% Coverage | 184 Unit Tests | Coverage on New Code

Duplications Measures

0.0% Duplications | 0 Duplicated Blocks | 0.0% Duplications on 18 New Lines

About This Project

Parent POM fuer Liberty Projekte welche in einem Docker Image enden sollen. Ergänzt das dockerpomcss mit Liberty spezifischen Konfigurationen.

kundenbetreuung, vertrieb

6.7k Lines of Code

Java 4.7k | XML 1.9k | JSP 27

Project Activity

February 10, 2021

0.10.3-SNAPSHOT

February 9, 2021

Project Analyzed

February 8, 2021

Project Analyzed

Show More

Quality Gate

(Default) CSS

Quality Profiles

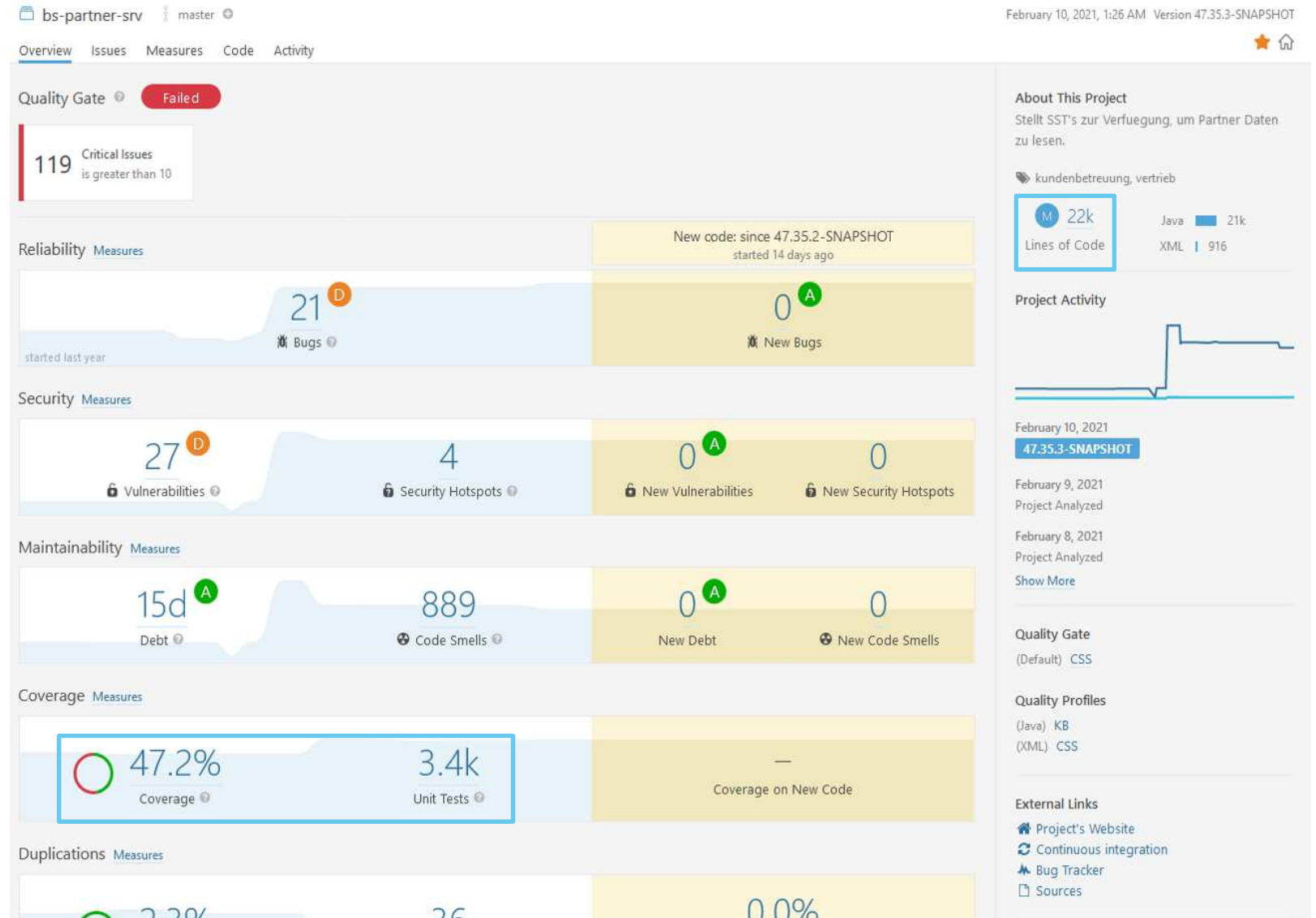
(Java) KB | (JSP) FindBugs Security JSP | (XML) CSS

External Links

Project's Website | Continuous integration

Old release-unit

- Shared release-unit
- Depth to big to fix



Sonar types


The screenshot shows the SonarQube interface with filters applied. The 'Type' filter is set to 'Bug'. The table below shows the count for each issue type.

Type	Count
Bug	21
Vulnerability	27
Code Smell	893
Security Hotspot	4

- Bugs
 - possible nullpointer, unnecessary null-checks...
 - condition always evaluate to “false” or “true”
- Vulnerability
 - Some code smells
- Code smells
 - Mostly clean-code
 - Some code smells
- Security hotspots
 - Possible missing role-checks

Vulnerabilities

COU:
Inappropriate intimacy



▼ Rule	
<input type="text" value="Search for rules..."/>	
(Java) Class variable fields should not have public accessibility	24
(Java) "@Deprecated" code should not be used	2
(Java) Basic authentication should not be used	1

Code smells

BLO:
large method or
class

BLO:
dataclumps

▼ Rule	
<input type="text" value="Search for rules..."/>	
(Java) The diamond operator ("<>") should be used	113
(Java) Assertion arguments should be passed in the correct order	84
(Java) Synchronized classes Vector, Hashtable, Stack and StringBuffer should not be used	74
(Java) Cognitive Complexity of methods should not be too high	67
(Java) Collection.isEmpty() should be used to test for emptiness	56
(Java) Modifiers should be declared in the correct order	47
(Java) String literals should not be duplicated	30
(Java) "@Deprecated" code should not be used	28
(Java) Redundant casts should not be used	23
(Java) Boolean literals should not be redundant	22
(Java) Boolean expressions should not be gratuitous	20
(Java) Collapsible "if" statements should be merged	20
(Java) Utility classes should not have public constructors	20
(Java) Type parameter names should comply with a naming convention	19
(Java) Try-catch blocks should not be nested	18

Cognitiv complexity example

```
Refactor this method to reduce its Cognitive Complexity from 31 to the 15 allowed. See Rule 5 years ago L89  
Code Smell Critical Open RL Reto Lehre 21min effort Comment brain-overload
```

```
90 rola...  
91 reto... BSAAdresseQuerySearchGemeindedatenOutContainer bsOut = this.partnerFactory.createBSAdresseQuerySearchGemeindedatenOu  
92 rola...  
93 reto... 1 if (siebelOut != null 2 && siebelOut.getfSiebelMessage() != null && siebelOut.getfSiebelMessage().getfintObjInst(  
94 rola... && siebelOut.getfSiebelMessage().getfintObjInst().size() > 0) {  
95  
96 List<Service_Locator_Zipcode_AdminIC> siebelDaten = siebelOut.getfSiebelMessage().getfintObjInst();  
97  
98 3 for (Service_Locator_Zipcode_AdminIC obj : siebelDaten) {  
99 BSGemeindedatenImpl gemeinde = new BSGemeindedatenImpl();  
100 chri... gemeinde.setOnrp(obj.getfOrdkey());  
  
113 chri... */  
114 chri...  
115 4 if (obj.getfLatitude() != null 5 && obj.getfLatitude().trim().length() > 0 && obj.getfLongitude() != null  
116 && obj.getfLongitude().trim().length() > 0) {  
117 chri... BSGeoKoordinaten geoKoord = new BSGeoKoordinatenImpl();  
  
125 chri... Set<BSOrganisationReferenz> agenturenSet = new HashSet<BSOrganisationReferenz>();  
126  
127 reto... 6 if (agenturen != null) {  
128 chri... 7 for (AVIS_Gemeinde_SST_Agentur_VBCIC agentur : agenturen) {  
129 8 if (agentur == null) {  
130 continue;  
131 }  
132  
133 reto... 9 if (StringUtils.isEmpty(agentur.getfAVIS_Agentur_Nr()) 10 || StringUtils.isEmpty(agentur.getfAVIS_Ager  
134 reto... LOGGER.info("Leere/Ungueltige Agentur gefunden in Gemeinde Nr. " + obj.getfGemeinde_Nr());  
135 chri... continue;  
141 reto... orgRef.setTyp(AVISToBSConverter.convertCode(agentur.getfAVIS_Agentur_Typ(), "DIVISION_TYPE", DivisionTy  
142 chri...  
143 11 if (agentur.getfAVIS_Agentur_Typ() == null) {  
144 step... throw new BSEException("DIVISION_TYPE should not be NULL");  
145 chri... }  
  
CSS Versicherung
```


Sonar code smells

- Most code smells in Sonar are not „real“ code smells like described here (<https://sourcemaking.com/refactoring/smells>)
- They are mostly clean-code-issues
 - Unused variables
 - Unused imports
 - Unused assignments
 - Commented code
 - Wrong assertions
 - Not immediatly returned value
 - ...

Project overview

- Maintainability
 - Splitted new and old code
- Complexity
 - Amount of testcases to have full coverage
 - Complexity to understand the code

Project Overview

bs-partner-srv

403 / 403 files

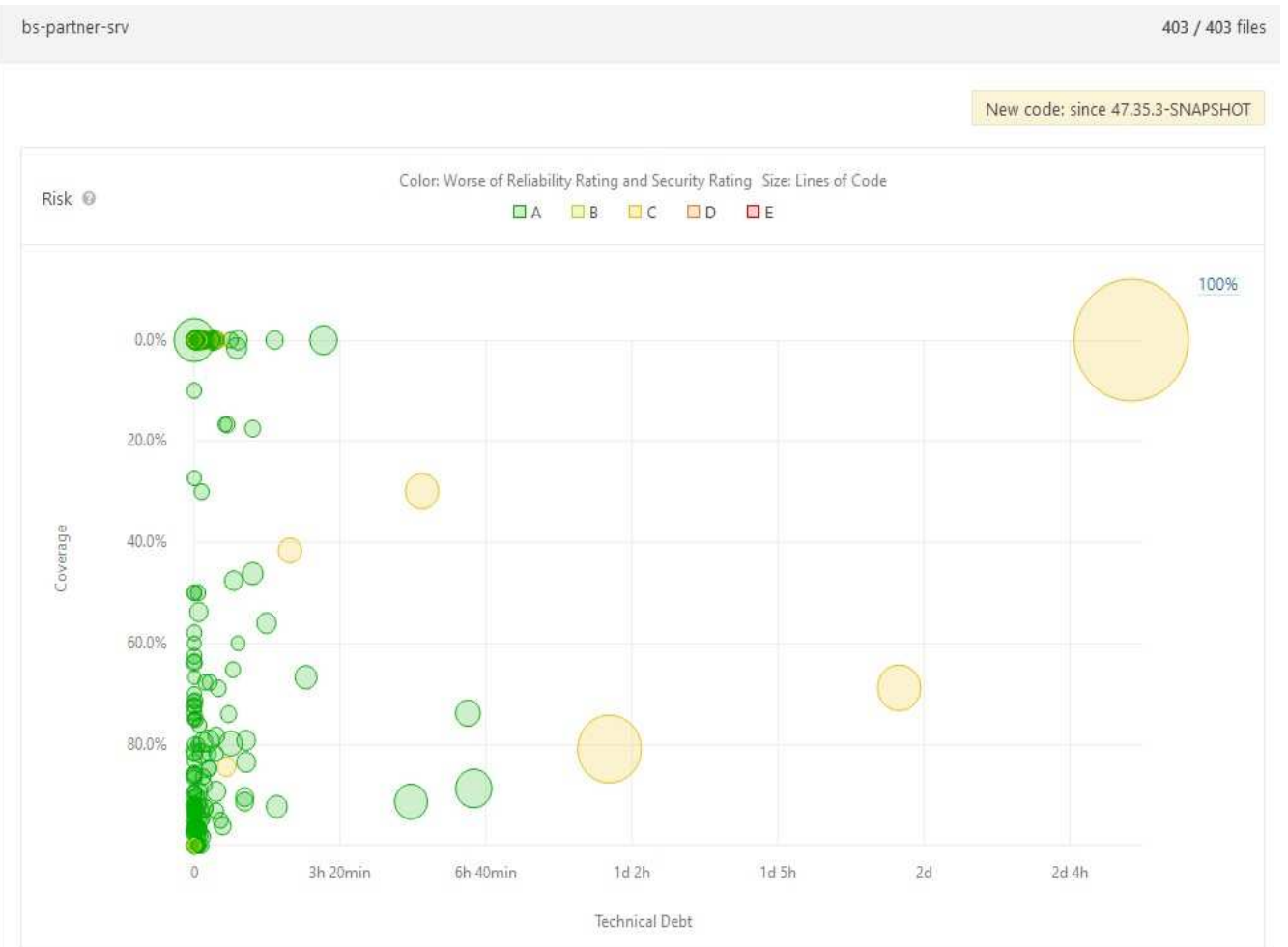
New code: since 47.35.3-SNAPSHOT

Risk

Color: Worse of Reliability Rating and Security Rating Size: Lines of Code

A B C D E

Category	Item	Value
Reliability	Overview	
	On new code	
	Bugs	0
	Rating	A
Remediation Effort		0
Overall	Bugs	21
	Rating	D
	Remediation Effort	2h 45min
Security	Overview	
	On new code	
	Code Smells	1
	Debt	0
Maintainability	Debt Ratio	0.0%
	Rating	A
	Overall	
	Code Smells	893
	Debt	15d
	Debt Ratio	1.1%
	Rating	A
Effort to Reach A	0	
Coverage	Overview	
	Duplications	
	Size	
Complexity	Cyclomatic Complexity	3,283
	Cognitive Complexity	3,895
	Issues	Cognitive Complexity



Conclusion

- Sonar is good at:
 - Clean-code-violations
 - Code coverage
 - Big picture of quality
- Sonar is less good at:
 - Code smells
 - Design-failures
 -
- Searching code smells is not easy
- I think you have to stumble over them and recognize them

Images and links

- Images

- <https://www.yourpurebredpuppy.com/reviews/bloodhounds.html>

- Links

- <https://sourcemaking.com/refactoring/smells>