

# Alambic – R analysis document

*Boris Baldassari*

## Contents

<b>Summary</b>	<b>3</b>
<b>Metrics</b>	<b>4</b>
Stack Overflow Votes (5Y)	4
Project Commits	5
SCM Open Pull requests one week	5
SCM Staled Open Pull requests one month	5
Project Commits one year	5
Number of failed jobs one week	5
Test coverage	6
Last activity	6
Project authors one week	6
CI information	6
Stack Overflow Questions (5Y)	6
Number of minor issues	6
SCM Closed Pull requests	7
SCM Merged Pull requests	7
Duplicated lines (%)	7
Number of functions	7
SCM Still Open Pull requests one year	7
Public API	7
Number of yellow jobs	8
SCM Open Pull requests one year	8
User ML Threads	8
User ML Threads	8
User ML Posts	8
SCM authors one year	9
ITS Open issues (%)	9
Number of stars	9
SCM authors	9
File complexity	9
Technical debt	9
Doc information	10
SCM Changed Lines	10
ITS Open issues	10
SCM Commits one year	10
Stack Overflow Views (5Y)	10
User ML Authors	11
User ML Threads	11
SCM Changed Lines one week	11
Number of green jobs	11
User ML Authors	11
Stack Overflow Askers (5Y)	12
Project authors one month	12
Number of red jobs	12
Package Tangle index	12

Number of jobs . . . . .	12
Public documented API (%) . . . . .	12
SCM authors one week . . . . .	13
Project committers one year . . . . .	13
SCM Commits one month . . . . .	13
Number of critical issues . . . . .	13
SCM committers one year . . . . .	13
SCM information . . . . .	14
ITS issues created last week . . . . .	14
ITS information . . . . .	14
User ML Posts . . . . .	14
Number of releases . . . . .	14
Stack Overflow Answers (5Y) . . . . .	14
SCM Still Open Pull requests one month . . . . .	15
Line coverage . . . . .	15
User ML Posts . . . . .	15
Project Commits one week . . . . .	15
User ML Authors . . . . .	15
SCM committers one month . . . . .	16
Total complexity . . . . .	16
ITS authors last week . . . . .	16
SCM Open Pull requests one month . . . . .	16
Number of blocker issues . . . . .	16
Number of statements . . . . .	17
SCM Changed Lines one year . . . . .	17
Number of lines of code . . . . .	17
Number of releases . . . . .	17
Number of major issues . . . . .	17
ITS issues updated last week . . . . .	18
Commented code . . . . .	18
SCM Still Open Pull requests one week . . . . .	18
SCM Pull requests . . . . .	18
SCM authors one month . . . . .	18
SCM Changed Lines one month . . . . .	19
SCM Commits one week . . . . .	19
Project Commits one month . . . . .	19
Number of info issues . . . . .	19
SCM Commits . . . . .	19
SCM committers one week . . . . .	20
ITS Total issues . . . . .	20
Number of files . . . . .	20
Stack Overflow Answer rate (5Y) . . . . .	20
SCM Open Pull requests . . . . .	20
Open issues . . . . .	20
User ML Posts . . . . .	21
Project committers one week . . . . .	21
Ratio of green jobs . . . . .	21
Number of forks . . . . .	21
ITS issues updated last year . . . . .	21
ITS authors last month . . . . .	22
Project authors . . . . .	22
Access information . . . . .	22
Branch coverage . . . . .	22
Number of comment lines . . . . .	22

Comment lines density . . . . .	23
ITS issues created last year . . . . .	23
Sqale Debt ratio . . . . .	23
Project committers . . . . .	23
Maintainability rating . . . . .	23
ITS issues created last month . . . . .	24
User ML Authors . . . . .	24
ITS authors last year . . . . .	24
SCM committers . . . . .	24
ITS Late issues . . . . .	24
User ML Threads . . . . .	24
ITS issues updated last month . . . . .	25
ITS Authors . . . . .	25
Project authors one year . . . . .	25
ITS Pending issues . . . . .	25
Project committers one month . . . . .	25
<b>Attributes</b>	<b>26</b>
Activity . . . . .	26
Diversity . . . . .	26
Documentation . . . . .	26
Ecosystem . . . . .	26
Process . . . . .	27
Product . . . . .	27
Eclipse Maturity . . . . .	27
Reliability . . . . .	27
Build and Release Management . . . . .	28
Configuration Management . . . . .	28
Support . . . . .	28
<b>Git analysis</b>	<b>28</b>
Weekly commits . . . . .	29
Weekly authors . . . . .	29

## Summary

This plugin generates a PDF document with information about project **modeling.mdt.ocl**.

This plugin is intended as an example of R Markdown document to help people easily setup their own R analysis on software development data.

## Metrics

Mnemo	Value
CI_JOBS	13.00
CI_JOBS_FAILED_1W	2.00
CI_JOBS_GREEN	10.00
CI_JOBS_GREEN_RATIO	83.00
CI_JOBS_RED	2.00
CI_JOBS_YELLOW	0.00
ITS_AUTHORS	170.00
ITS_AUTHORS_1M	1.00
ITS_AUTHORS_1W	1.00
ITS_AUTHORS_1Y	5.00
ITS_CREATED_1M	6.00
ITS_CREATED_1W	2.00
ITS_CREATED_1Y	77.00
ITS_ISSUES_ALL	2069.00
ITS_OPEN	576.00
ITS_OPEN_OLD	0.00
ITS_OPEN_PERCENT	28.00
ITS_OPEN_UNASSIGNED	0.00
ITS_UPDATED_1M	6.00
ITS_UPDATED_1W	2.00
ITS_UPDATED_1Y	77.00
MLS_USR_AUTHORS	500.00
MLS_USR_AUTHORS_1M	0.00
MLS_USR_AUTHORS_1W	0.00
MLS_USR_AUTHORS_1Y	19.00
MLS_USR_POSTS	1489.00
MLS_USR_POSTS_1M	0.00
MLS_USR_POSTS_1W	0.00
MLS_USR_POSTS_1Y	140.00
MLS_USR_THREADS	1489.00
MLS_USR_THREADS_1M	0.00
MLS_USR_THREADS_1W	0.00
MLS_USR_THREADS_1Y	27.00
PROJECT_ACCESS_INFO	3.00
PROJECT_DOC_INFO	4.00
PROJECT_ITS_INFO	5.00
PROJECT_REL_VOL	17.00
PROJECT_SCM_INFO	1.00
SCM_AUTHORS	15.00
SCM_AUTHORS_1M	1.00
SCM_AUTHORS_1W	1.00
SCM_AUTHORS_1Y	1.00
SCM_COMMITS	8441.00
SCM_COMMITS_1M	32.00
SCM_COMMITS_1W	4.00
SCM_COMMITS_1Y	344.00
SCM_COMMITTERS	13.00
SCM_COMMITTERS_1M	1.00
SCM_COMMITTERS_1W	1.00
SCM_COMMITTERS_1Y	1.00
SCM_MOD_LINES	34863587.00
SCM_MOD_LINES_1M	86110.00
SCM_MOD_LINES_1W	444.00
SCM_MOD_LINES_1Y	492248.00
SO_ANSWERS_VOL_5Y	92.00
SO_ANSWER_RATE_5Y	1.15
SO_ASKERS_5Y	66.00
SO_QUESTIONS_VOL_5Y	80.00
SO_VIEWS_VOL_5Y	34244.00
SO_VOTES_VOL_5Y	52.00

## Stack Overflow Votes (5Y)

ID: SO\_VOTES\_VOL\_5Y

Value: 52

Description: The total number of votes on questions related to the project's tag on Stack Overflow during the last 5 years. Having many votes on questions about the project indicates a strong interest from the community. The list of questions and their answers associated to the tag can be browsed on the Stack Overflow web site.

## Project Commits

ID: PROJECT\_COMMITS

Value:

Description: Total number of commits in source code management repositories. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date).

## SCM Open Pull requests one week

ID: SCM\_PRS\_OPENED\_1W

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) that have been opened within the last week in source code management repositories. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one week period starting the day before the data retrieval.

## SCM Staled Open Pull requests one month

ID: SCM\_PRS\_OPENED\_STALED\_1M

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) that are in the opened state and have not been updated since one month. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one month period starting the day before the data retrieval (example: if retrieval is on Feb 3rd, period is from Jan 3rd to Feb 2nd, both included).

## Project Commits one year

ID: PROJECT\_COMMITS\_1Y

Value:

Description: Total number of commits in source code management repositories dated during the last year. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one year period starting the day before the data retrieval (example: if retrieval is on Feb 3rd 2016, period is from Feb 3rd 2015 to Feb 3rd 2016, both included).

## Number of failed jobs one week

ID: CI\_JOBS\_FAILED\_1W

Value: 2 ( 4 / 5 )

Description: The number of jobs that failed during last week on the Hudson engine.

## **Test coverage**

ID: SQ\_COVERAGE

Value:

Description: Overall test coverage.

## **Last activity**

ID: PROJECT\_LAST\_ACTIVITY\_AT

Value:

Description: The date of last activity for this project. This includes any type of action: changes on issues, git commits or pushes, merge requests, comments. . . A project with a old last activity timestamp shows the project is dead (or in agony at least).

## **Project authors one week**

ID: PROJECT\_AUTHORS\_1W

Value:

Description: Total number of identities found as authors of commits in source code management repositories dated during the last week. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one week period starting the day before the data retrieval.

## **CI information**

ID: PROJECT\_CI\_INFO

Value:

Description: Is the continuous integration info correctly filled in the PMI records? The project management infrastructure file holds information about the location of CI services. This test checks the number of ci-related entries defined in the PMI.

## **Stack Overflow Questions (5Y)**

ID: SO\_QUESTIONS\_VOL\_5Y

Value: 80

Description: The number of questions related to the project's tag posted on Stack Overflow during the last 5 years. Having many questions posted about the project indicates a strong interest from the community. The list of questions associated to the tag can be browsed on the Stack Overflow web site.

## **Number of minor issues**

ID: SQ\_VIOLATIONS\_MINOR

Value:

Description: The total number of issues (violations) found by SonarQube with a severity equal to MINOR.

## SCM Closed Pull requests

ID: SCM\_PRS\_CLOSED

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) in the closed state in source code management repositories.

## SCM Merged Pull requests

ID: SCM\_PRS\_MERGED

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) in the 'merged' state in source code management repositories.

## Duplicated lines (%)

ID: SQ\_DUPLICATED\_LINES\_DENSITY

Value:

Description: Density of duplication = Duplicated lines / Lines \* 100.

## Number of functions

ID: SQ\_FUNCS

Value:

Description: Number of functions. Depending on the language, a function is either a function or a method or a paragraph. For Java, constructors are considered as methods and accessors are considered as methods if the sonar.squid.analyse.property.accessors property is set to false. For Cobol, it is the number of paragraphs.

## SCM Still Open Pull requests one year

ID: SCM\_PRS\_OPENED\_STILL\_1Y

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) that have been opened more than one year ago and are still in the opened state in source code management repositories. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one year period starting the day before the data retrieval (example: if retrieval is on Feb 3rd 2016, period is from Feb 3rd 2015 to Feb 3rd 2016, both included).

## Public API

ID: SQ\_PUBLIC\_API

Value:

Description: Number of public Classes + number of public Functions + number of public Properties

## Number of yellow jobs

ID: CI\_JOBS\_YELLOW

Value: 0

Description: The number of yellow (unstable) jobs on the Hudson engine. Yellow jobs in Hudson define unstable builds. According to Hudson's documentation, a build is unstable if it was built successfully and one or more publishers report it unstable. For example if the JUnit publisher is configured and a test fails then the build will be marked unstable.

## SCM Open Pull requests one year

ID: SCM\_PRS\_OPENED\_1Y

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) that have been opened within the last year in source code management repositories. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one year period starting the day before the data retrieval (example: if retrieval is on Feb 3rd 2016, period is from Feb 3rd 2015 to Feb 3rd 2016, both included).

## User ML Threads

ID: MLS\_USR\_THREADS\_1W

Value: 0

Description: The total number of threads (one question followed by zero or more answers) found in the User mailing list during last week. Having many threads shows the mailing list is active. It encourages people to participate, ask and answer questions.

## User ML Threads

ID: MLS\_USR\_THREADS\_1M

Value: 0 ( 1 / 5 )

Description: The total number of threads (one question followed by zero or more answers) found in the User mailing list during last month. Having many threads shows the mailing list is active. It encourages people to participate, ask and answer questions.

## User ML Posts

ID: MLS\_USR\_POSTS

Value: 1489

Description: The total number of posts found in the User mailing list. Having many posts shows the mailing list is active. It encourages people to participate, ask and answer questions.



## **SCM authors one year**

ID: SCM\_AUTHORS\_1Y

Value: 1

Description: Total number of identities found as authors of commits in source code management repositories dated during the last year. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one year period starting the day before the data retrieval (example: if retrieval is on Feb 3rd 2016, period is from Feb 3rd 2015 to Feb 3rd 2016, both included).

## **ITS Open issues (%)**

ID: ITS\_OPEN\_PERCENT

Value: 28

Description: Percentage of open issues compared to the overall number of issues registered in the system.

## **Number of stars**

ID: PROJECT\_STARS

Value:

Description: The number of times people have starred this project. Users use stars to show their interest for a project, and more stars usually mean a greater visibility and interest.

## **SCM authors**

ID: SCM\_AUTHORS

Value: 15

Description: Total number of identities found as authors of commits in source code management repository. Source code management repositories are those considered as such in the project documentation. Commits in all branches are considered. Date used for each commit is 'author date' (when there is a difference between author date and committer date). An identity is considered as author if it appears as such in the commit record (for systems logging several identities related to the commit, authoring identity will be considered).

## **File complexity**

ID: SQ\_CPX\_FILE\_IDX

Value:

Description: Average complexity by file.

## **Technical debt**

ID: SQ\_SQALE\_INDEX

Value:

Description: Effort to fix all maintainability issues. The measure is stored in minutes in the DB.

## Doc information

ID: PROJECT\_DOC\_INFO

Value: 4 ( 4 / 5 )

Description: Is the documentation info correctly filled in the PMI records? The project management infrastructure file holds information about various documentation and manuals. This test checks the number of doc-related entries defined in the PMI: build\_doc, documentation, documentation\_url, forums, gettingstarted\_url, mailing\_lists, website\_url, wiki\_url.

## SCM Changed Lines

ID: SCM\_MOD\_LINES

Value: 34863587

Description: Total number of changed lines (added, removed, changed) in source code management repositories. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date).

## ITS Open issues

ID: ITS\_OPEN

Value: 576 ( 5 / 5 )

Description: Number of issues with a state 'open' at the time of analysis.

## SCM Commits one year

ID: SCM\_COMMITS\_1Y

Value: 344

Description: Total number of commits in source code management repositories dated during the last year. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one year period starting the day before the data retrieval (example: if retrieval is on Feb 3rd 2016, period is from Feb 3rd 2015 to Feb 3rd 2016, both included).

## Stack Overflow Views (5Y)

ID: SO\_VIEWS\_VOL\_5Y

Value: 34244

Description: The total number of views for questions related to the project's tag on Stack Overflow during the last 5 years. Having many views on questions about the project indicates a strong interest from the community. The list of questions and their answers associated to the tag can be browsed on the Stack Overflow web site.

## User ML Authors

ID: MLS\_USR\_AUTHORS\_1Y

Value: 19

Description: The total number of different identities found in the User mailing list during last year. Having many different authors is a sign of diversity and activity. It makes the support more reliable (i.e. increased presence of people) and more complete (i.e. more eyes to solve a problem).

## User ML Threads

ID: MLS\_USR\_THREADS

Value: 1489

Description: The total number of threads (one question followed by zero or more answers) found in the User mailing list. Having many threads shows the mailing list is active. It encourages people to participate, ask and answer questions.

## SCM Changed Lines one week

ID: SCM\_MOD\_LINES\_1W

Value: 444

Description: Total number of changed lines (added, removed, changed) in source code management repositories dated during the last week. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one week period starting the day before the data retrieval.

## Number of green jobs

ID: CI\_JOBS\_GREEN

Value: 10

Description: The number of green (successful) jobs on the Hudson engine. Green (or blue) jobs in Hudson define successful builds.

## User ML Authors

ID: MLS\_USR\_AUTHORS\_1W

Value: 0

Description: The total number of different identities found in the User mailing list during last week. Having many different authors is a sign of diversity and activity. It makes the support more reliable (i.e. increased presence of people) and more complete (i.e. more eyes to solve a problem).

## **Stack Overflow Askers (5Y)**

ID: SO\_ASKERS\_5Y

Value: 66

Description: The number of distinct people asking questions related to the project's tag posted on Stack Overflow during the last 5 years. Having many people ask questions about the project indicates a strong interest from the community, and a good support. The list of questions and their answers associated to the tag can be browsed on the Stack Overflow web site.

## **Project authors one month**

ID: PROJECT\_AUTHORS\_1M

Value:

Description: Total number of identities found as authors of commits in source code management repositories dated during the last month. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one month period starting the day before the data retrieval (example: if retrieval is on Feb 3rd, period is from Jan 3rd to Feb 2nd, both included).

## **Number of red jobs**

ID: CI\_JOBS\_RED

Value: 2

Description: The number of red (failed) jobs on the Hudson engine. Red jobs in Hudson define failed builds.

## **Package Tangle index**

ID: SQ\_PACKAGES\_TANGLE\_IDX

Value:

Description: The Package tangle index, as defined in SonarQube.

## **Number of jobs**

ID: CI\_JOBS

Value: 13

Description: The total number of jobs defined on the Hudson engine.

## **Public documented API (%)**

ID: SQ\_PUBLIC\_API\_DOC\_DENSITY

Value:

Description: Density of public documented API = (Public API - Public undocumented API) / Public API \* 100

## SCM authors one week

ID: SCM\_AUTHORS\_1W

Value: 1

Description: Total number of identities found as authors of commits in source code management repositories dated during the last week. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one week period starting the day before the data retrieval.

## Project committers one year

ID: PROJECT\_COMMITTERS\_1Y

Value:

Description: Total number of identities found as committers of commits in source code management repositories dated during the last year. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'committer date' (when there is a difference between author date and committer date). Time range is measured as a one year period starting the day before the data retrieval (example: if retrieval is on Feb 3rd 2016, period is from Feb 3rd 2015 to Feb 3rd 2016, both included).

## SCM Commits one month

ID: SCM\_COMMITS\_1M

Value: 32 ( 4 / 5 )

Description: Total number of commits in source code management repositories dated during the last month. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one month period starting the day before the data retrieval (example: if retrieval is on Feb 3rd, period is from Jan 3rd to Feb 2nd, both included).

## Number of critical issues

ID: SQ\_VIOLATIONS\_CRITICAL

Value:

Description: The total number of issues (violations) found by SonarQube with a severity equal to CRITICAL.

## SCM committers one year

ID: SCM\_COMMITTERS\_1Y

Value: 1

Description: Total number of identities found as committers of commits in source code management repositories dated during the last year. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'committer date' (when there is a difference between author date and committer date). Time range is measured as a one year period starting the day before the data retrieval (example: if retrieval is on Feb 3rd 2016, period is from Feb 3rd 2015 to Feb 3rd 2016, both included).

## SCM information

ID: PROJECT\_SCM\_INFO

Value: 1 ( 4 / 5 )

Description: Is the source\_repo info correctly filled in the PMI records? The project management infrastructure file holds information about one or more source repositories. This test checks that at least one source repository is defined, and accessible.

## ITS issues created last week

ID: ITS\_CREATED\_1W

Value: 2

Description: Number of issues created during last week. If today is Wed. 2017-02-01 then the range is from Wed. 2017-01-25 to Wed. 2017-02-01.

## ITS information

ID: PROJECT\_ITS\_INFO

Value: 5 ( 5 / 5 )

Description: Is the bugzilla info correctly filled in the PMI records? The project management infrastructure file holds information about one or more bugzilla instances. This test checks that at least one bugzilla instance is defined, with a product identifier, a create\_url to enter a new issue, and a query\_url to fetch all the issues for the project.

## User ML Posts

ID: MLS\_USR\_POSTS\_1M

Value: 0 ( 1 / 5 )

Description: The total number of posts found in the User mailing list during last month. Having many posts shows the mailing list is active. It encourages people to participate, ask and answer questions.

## Number of releases

ID: PMI\_REL\_VOL

Value:

Description: The number of releases recorded in the PMI. Milestones are retrieved from the PMI file and are counted whatever their target release is. Milestones are useful to assess the maturity of the release and improves predictability of the project's output, in terms of quality and time.

## Stack Overflow Answers (5Y)

ID: SO\_ANSWERS\_VOL\_5Y

Value: 92

Description: The number of answers to questions related to the project's tag posted on Stack Overflow during the last 5 years. Having many answers posted about the project indicates a strong interest from the community, and a good support. The list of questions and their answers associated to the tag can be browsed on the Stack Overflow web site.

## **SCM Still Open Pull requests one month**

ID: SCM\_PRS\_OPENED\_STILL\_1M

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) that have been opened more than one month ago and are still in the opened state in source code management repositories. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one month period starting the day before the data retrieval (example: if retrieval is on Feb 3rd, period is from Jan 3rd to Feb 2nd, both included).

## **Line coverage**

ID: SQ\_COVERAGE\_LINE

Value:

Description: Line test coverage.

## **User ML Posts**

ID: MLS\_USR\_POSTS\_1Y

Value: 140

Description: The total number of posts found in the User mailing list during last year. Having many posts shows the mailing list is active. It encourages people to participate, ask and answer questions.

## **Project Commits one week**

ID: PROJECT\_COMMITS\_1W

Value:

Description: Total number of commits in source code management repositories dated during the last week. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one week period starting the day before the data retrieval.

## **User ML Authors**

ID: MLS\_USR\_AUTHORS\_1M

Value: 0 ( 1 / 5 )

Description: The total number of different identities found in the User mailing list during last month. Having many different authors is a sign of diversity and activity. It makes the support more reliable (i.e. increased presence of people) and more complete (i.e. more eyes to solve a problem).

## SCM committers one month

ID: SCM\_COMMITTERS\_1M

Value: 1

Description: Total number of identities found as committers of commits in source code management repositories dated during the last month. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'committer date' (when there is a difference between author date and committer date). Time range is measured as a one month period starting the day before the data retrieval (example: if retrieval is on Feb 3rd, period is from Jan 3rd to Feb 2nd, both included).

## Total complexity

ID: SQ\_CPX

Value:

Description: It is the complexity calculated based on the number of paths through the code. Whenever the control flow of a function splits, the complexity counter gets incremented by one. Each function has a minimum complexity of 1. This calculation varies slightly by language because keywords and functionalities do. For more information on line counting for each language, see <https://docs.sonarqube.org/display/SONAR/Metrics+-+Complexity>.

## ITS authors last week

ID: ITS\_AUTHORS\_1W

Value: 1

Description: Number of authors who created issues during last week. If today is Wed. 2017-02-01 then the range is from Wed. 2017-01-25 to Wed. 2017-02-01.

## SCM Open Pull requests one month

ID: SCM\_PRS\_OPENED\_1M

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) that have been opened within the last month in source code management repositories. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one month period starting the day before the data retrieval (example: if retrieval is on Feb 3rd, period is from Jan 3rd to Feb 2nd, both included).

## Number of blocker issues

ID: SQ\_VIOLATIONS\_BLOCKER

Value:

Description: The total number of issues (violations) found by SonarQube with a severity equal to BLOCKER.



## Number of statements

ID: SQ\_STATEMENTS

Value:

Description: Number of statements. For Java, it is the number of statements as defined in the Java Language Specification but without block definitions. Statements counter gets incremented by one each time a following keyword is encountered: if, else, while, do, for, switch, break, continue, return, throw, synchronized, catch, finally.. Statements counter is not incremented by a class, method, field, annotation definition, package declaration and import declaration. For Cobol, a statement is one of move, if, accept, add, alter, call, cancel, close, compute, continue, delete, display, divide, entry, evaluate, exitProgram, goback, goto, initialize, inspect, merge, multiply, open, perform, read, release, return, rewrite, search, set, sort, start, stop, string, subtract, unstring, write, exec, ibmXmlParse, ibmXmlGenerate, readyReset, mfCommit, mfRollback.

## SCM Changed Lines one year

ID: SCM\_MOD\_LINES\_1Y

Value: 492248

Description: Total number of changed lines (added, removed, changed) in source code management repositories dated during the last year. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one year period starting the day before the data retrieval (example: if retrieval is on Feb 3rd 2016, period is from Feb 3rd 2015 to Feb 3rd 2016, both included).

## Number of lines of code

ID: SQ\_NCLOC

Value:

Description: Number of physical lines that contain at least one character which is neither a whitespace or a tabulation or part of a comment. For Cobol, generated lines of code and pre-processing instructions (SKIP1, SKIP2, SKIP3, COPY, EJECT, REPLACE) are not counted as lines of code.

## Number of releases

ID: PROJECT\_REL\_VOL

Value: 17 ( 5 / 5 )

Description: The number of releases recorded in the PMI. Milestones are retrieved from the PMI file and are counted whatever their target release is. Milestones are useful to assess the maturity of the release and improves predictability of the project's output, in terms of quality and time.

## Number of major issues

ID: SQ\_VIOLATIONS\_MAJOR

Value:

Description: The total number of issues (violations) found by SonarQube with a severity equal to MAJOR.

## **ITS issues updated last week**

ID: ITS\_UPDATED\_1W

Value: 2

Description: Number of issues updated during last week. If today is Wed. 2017-02-01 then the range is from Wed. 2017-01-25 to Wed. 2017-02-01.

## **Commented code**

ID: SQ\_COM\_CODE

Value:

Description: Commented lines of code See more information about commented code on SonarQube doc web site. There is a well-documented debate on Stack Overflow as well.

## **SCM Still Open Pull requests one week**

ID: SCM\_PRS\_OPENED\_STILL\_1W

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) that have been opened more than one week ago and are still in the opened state in source code management repositories. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one week period starting the day before the data retrieval.

## **SCM Pull requests**

ID: SCM\_PRS

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) in source code management repositories. Source code management repositories are those considered as such in the project documentation.

## **SCM authors one month**

ID: SCM\_AUTHORS\_1M

Value: 1 ( 2 / 5 )

Description: Total number of identities found as authors of commits in source code management repositories dated during the last month. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one month period starting the day before the data retrieval (example: if retrieval is on Feb 3rd, period is from Jan 3rd to Feb 2nd, both included).

## SCM Changed Lines one month

ID: SCM\_MOD\_LINES\_1M

Value: 86110 ( 5 / 5 )

Description: Total number of changed lines (added, removed, changed) in source code management repositories dated during the last month. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one month period starting the day before the data retrieval (example: if retrieval is on Feb 3rd, period is from Jan 3rd to Feb 2nd, both included).

## SCM Commits one week

ID: SCM\_COMMITS\_1W

Value: 4

Description: Total number of commits in source code management repositories dated during the last week. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one week period starting the day before the data retrieval.

## Project Commits one month

ID: PROJECT\_COMMITS\_1M

Value:

Description: Total number of commits in source code management repositories dated during the last month. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one month period starting the day before the data retrieval (example: if retrieval is on Feb 3rd, period is from Jan 3rd to Feb 2nd, both included).

## Number of info issues

ID: SQ\_VIOLATIONS\_INFO

Value:

Description: The total number of issues (violations) found by SonarQube with a severity equal to INFO.

## SCM Commits

ID: SCM\_COMMITS

Value: 8441

Description: Total number of commits in source code management repositories. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date).

## **SCM committers one week**

ID: SCM\_COMMITTERS\_1W

Value: 1

Description: Total number of identities found as committers of commits in source code management repositories dated during the last week. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'committer date' (when there is a difference between author date and committer date). Time range is measured as a one week period starting the day before the data retrieval.

## **ITS Total issues**

ID: ITS\_ISSUES\_ALL

Value: 2069

Description: Number of issues registered in the database, whatever their state is.

## **Number of files**

ID: SQ\_FILES

Value:

Description: The total number of files analysed.

## **Stack Overflow Answer rate (5Y)**

ID: SO\_ANSWER\_RATE\_5Y

Value: 1.15

Description: The average number of answers per questions related to the project's tag on Stack Overflow during the last 5 years. Having many answers posted about the project indicates a strong interest from the community, and a good support. The list of questions and their answers associated to the tag can be browsed on the Stack Overflow web site.

## **SCM Open Pull requests**

ID: SCM\_PRS\_OPENED

Value:

Description: Total number of Pull Requests (PRs) or Merge Requests (MRs) in the opened state in source code management repositories.

## **Open issues**

ID: PROJECT\_ISSUES\_OPEN

Value:

Description: The number of issues opened at the time of analysis on the GitLab project. This information is retrieved from GitLab itself, and may differ from numbers gathered from the actual issue tracking system used.

## **User ML Posts**

ID: MLS\_USR\_POSTS\_1W

Value: 0

Description: The total number of posts found in the User mailing list during last week. Having many posts shows the mailing list is active. It encourages people to participate, ask and answer questions.

## **Project committers one week**

ID: PROJECT\_COMMITTERS\_1W

Value:

Description: Total number of identities found as committers of commits in source code management repositories dated during the last week. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'committer date' (when there is a difference between author date and committer date). Time range is measured as a one week period starting the day before the data retrieval.

## **Ratio of green jobs**

ID: CI\_JOBS\_GREEN\_RATIO

Value: 83 ( 4 / 5 )

Description: The number of green (successful) jobs on the Hudson engine, divided by the total number of jobs. Green (or blue) jobs in Hudson define successful builds.

## **Number of forks**

ID: PROJECT\_FORKS

Value:

Description: The number of forks for this project. More forks usually mean a greater activity.

## **ITS issues updated last year**

ID: ITS\_UPDATED\_1Y

Value: 77

Description: Number of issues updated during last year. If today is 2017-02-01 then the range is from 2016-02-01 to 2017-02-01.

## ITS authors last month

ID: ITS\_AUTHORS\_1M

Value: 1 ( 1 / 5 )

Description: Number of authors who created issues during last month. If today is 2017-02-01 then the range is from 2017-01-01 to 2017-02-01.

## Project authors

ID: PROJECT\_AUTHORS

Value:

Description: Total number of identities found as authors of commits in source code management repository. Source code management repositories are those considered as such in the project documentation. Commits in all branches are considered. Date used for each commit is 'author date' (when there is a difference between author date and committer date). An identity is considered as author if it appears as such in the commit record (for systems logging several identities related to the commit, authoring identity will be considered).

## Access information

ID: PROJECT\_ACCESS\_INFO

Value: 3 ( 5 / 5 )

Description: Is the access info (downloads, update sites..) correctly filled in the PMI records? The project management infrastructure file holds information about how to access binaries of the project. This test checks the number of access-related entries defined in the PMI: download\_url, downloads, update\_sites.

## Branch coverage

ID: SQ\_COVERAGE\_BRANCH

Value:

Description: Branch test coverage.

## Number of comment lines

ID: SQ\_COMMENT\_LINES

Value:

Description: Number of lines containing either comment or commented-out code. Non-significant comment lines (empty comment lines, comment lines containing only special characters, etc.) do not increase the number of comment lines. For Java, file headers are not counted as comment lines (as they usually define the license). Lines containing the following instructions are counted both as comments and lines of code: AUTHOR, INSTALLATION, DATE-COMPILED, DATE-WRITTEN, SECURITY.

## Comment lines density

ID: SQ\_COMR

Value:

Description: Density of comment lines = Comment lines / (Lines of code + Comment lines) \* 100. With such a formula, 50% means that the number of lines of code equals the number of comment lines and 100% means that the file only contains comment lines

## ITS issues created last year

ID: ITS\_CREATED\_1Y

Value: 77

Description: Number of issues created during last year. If today is 2017-02-01 then the range is from 2016-02-01 to 2017-02-01.

## Sqale Debt ratio

ID: SQ\_SQALE\_DEBT\_RATIO

Value:

Description: The Technical Debt Ratio, as defined in Sqale.

## Project committers

ID: PROJECT\_COMMITTERS

Value:

Description: Total number of identities found as committers of commits in source code management repository. Source code management repositories are those considered as such in the project documentation. Commits in all branches are considered. Date used for each commit is 'committer date' (when there is a difference between author date and committer date). An identity is considered as committer if it appears as such in the commit record.

## Maintainability rating

ID: SQ\_SQALE\_RATING

Value:

Description: Rating given to your project related to the value of your Technical Debt Ratio. The default Maintainability Rating grid is: A=0-0.05, B=0.06-0.1, C=0.11-0.20, D=0.21-0.5, E=0.51-1. The Maintainability Rating scale can be alternately stated by saying that if the outstanding remediation cost depends on the time that has already gone into the application: A <=5% , B between 6 to 10%, C between 11 to 20%, D between 21 to 50%, and anything over 50% is an E.

## **ITS issues created last month**

ID: ITS\_CREATED\_1M

Value: 6

Description: Number of issues created during last month. If today is 2017-02-01 then the range is from 2017-01-01 to 2017-02-01.

## **User ML Authors**

ID: MLS\_USR\_AUTHORS

Value: 500

Description: The total number of different identities found in the User mailing list. Having many different authors is a sign of diversity and activity. It makes the support more reliable (i.e. increased presence of people) and more complete (i.e. more eyes to solve a problem).

## **ITS authors last year**

ID: ITS\_AUTHORS\_1Y

Value: 5

Description: Number of authors who created issues during last year. If today is 2017-02-01 then the range is from 2016-02-01 to 2017-02-01.

## **SCM committers**

ID: SCM\_COMMITTERS

Value: 13

Description: Total number of identities found as committers of commits in source code management repository. Source code management repositories are those considered as such in the project documentation. Commits in all branches are considered. Date used for each commit is 'committer date' (when there is a difference between author date and committer date). An identity is considered as committer if it appears as such in the commit record.

## **ITS Late issues**

ID: ITS\_LATE

Value:

Description: Number of issues with a past due date. It is considered good practice to keep this number low. Either fix it or maintain its due date.

## **User ML Threads**

ID: MLS\_USR\_THREADS\_1Y

Value: 27



Description: The total number of threads (one question followed by zero or more answers) found in the User mailing list during last year. Having many threads shows the mailing list is active. It encourages people to participate, ask and answer questions.

### **ITS issues updated last month**

ID: ITS\_UPDATED\_1M

Value: 6 ( 3 / 5 )

Description: Number of issues updated during last month. If today is 2017-02-01 then the range is from 2017-01-01 to 2017-02-01.

### **ITS Authors**

ID: ITS\_AUTHORS

Value: 170

Description: Number of different authors who created issues during the lifetime of the project. A high number of authors shows diversity and improves the bus factor of the project.

### **Project authors one year**

ID: PROJECT\_AUTHORS\_1Y

Value:

Description: Total number of identities found as authors of commits in source code management repositories dated during the last year. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'author date' (when there is a difference between author date and committer date). Time range is measured as a one year period starting the day before the data retrieval (example: if retrieval is on Feb 3rd 2016, period is from Feb 3rd 2015 to Feb 3rd 2016, both included).

### **ITS Pending issues**

ID: ITS\_OPEN\_UNASSIGNED

Value: 0

Description: Number of issues in state open with no assignee (i.e. pending). It is considered to be good practice to keep this number low. In an active project, people would either work on the bug (i.e. assign it) or triage it (pass it to some other state or assigning it).

### **Project committers one month**

ID: PROJECT\_COMMITTERS\_1M

Value:

Description: Total number of identities found as committers of commits in source code management repositories dated during the last month. Source code management repositories are those considered as such in the project documentation. Date used for each commit is 'committer date' (when there is a difference between author date and committer date). Time range is measured as a one month period starting the day before the data retrieval (example: if retrieval is on Feb 3rd, period is from Jan 3rd to Feb 2nd, both included).

## Attributes

Mnemo	Value
QM_ACTIVITY	3.40
QM_DIVERSITY	1.30
QM_DOC	4.50
QM_ECOSYSTEM	2.10
QM_PROCESS	4.10
QM_PRODUCT	5.00
QM_QUALITY	3.70
QM_RELIABILITY	5.00
QM_REL_ENG	4.50
QM_SCM	3.30
QM_SUPPORT	1.70

### Activity

ID: QM\_ACTIVITY

Value: 3.4 / 5

Description: The activity of the project's ecosystem, as measured on the mailing lists and configuration management system. An active project will provide a lot of information on the mailing lists, so when an user encounters an issue she will quickly find the information she needs, and has more chances to get answers if she asks. Fixes and improvements are added regularly.

### Diversity

ID: QM\_DIVERSITY

Value: 1.3 / 5

Description: The diversity of the project's ecosystem, as measured on the mailing lists and configuration management system. If many different actors from different companies are involved in the project, then it improves its sustainability (by eliminating a single point of failure) and adaptability to different situations. Having developers and users with different contexts and perspectives on the project helps widening its scope and provide a more generic support.

### Documentation

ID: QM\_DOC

Value: 4.5 / 5

Description: The maturity of code. Good code is vital for maintenance and evolution. It will encourage people to contribute, lower the number of bugs, and make a better product for the end-user as well as for the maintainers.

### Ecosystem

ID: QM\_ECOSYSTEM

Value: 2.1 / 5

Description: The sustainability of the ecosystem evolving around the project. Sustainability is a key point for long term support. If there is a lot of activity, if people can get fast and complete answers, if many people from different companies contribute to the project, then it will have more chance to still be there in a few years, and to continue providing fixes and improvements. Ecosystem requirements have been discussed on the mailing list and during meetings, and have been further described on the Polarsys wiki.

## Process

ID: QM\_PROCESS

Value: 4.1 / 5

Description: The maturity of the process used to run the project. A sound process helps people to do things right and ease collaborative work. If the process is documented, has predictable output, helps enforcing good development practices, etc. then new comers will easily find the information to collaborate, test or change code, or participate in the community. A good process also helps producing a good product [[Ing2003](/documentation/references.html#Ing2003)] – although it is agreed that the process is not enough by itself. Process requirements have been discussed on the mailing list and during meetings, and have been further described on the Polarsys wiki. Some may also recognise CMMi Key Process Areas among the attributes.

## Product

ID: QM\_PRODUCT

Value: 5 / 5

Description: The maturity of the product itself, from the code perspective. Considering the vast amount and diversity of the projects under the Eclipse umbrella, there must be no single definition of quality to fit them all. However, Eclipse has some recommended practices and concerns about product quality. Projects are then expected to extend this foundation. Major concerns identified for Eclipse products quality are linked to the development context of the foundation (open source, very large code base and thousands of contributor worldwide), and its architecture (modular stacks of components). It must be highlighted that product quality is not clearly defined on the public wiki, neither for its definition nor for how it may be assessed. Furthermore, almost all product-related rules (with a few exceptions, like for packages naming) are optional guidelines. . Ecosystem requirements have been discussed on the mailing list and during meetings, and have been further described on the Polarsys wiki.

## Eclipse Maturity

ID: QM\_QUALITY

Value: 3.7 / 5

Description: The overall Maturity of the project. In the context of embedded software, Maturity is usually associated with some kind of reliability (most bugs have been already found) and functionality of code, sustainability of the project (will it still deliver fixes and improvements in a few years), and process predictability. Maturity in the PolarSys context has been further described on the wiki, and is actually precisely defined by the decomposition of this quality model.

## Reliability

ID: QM\_RELIABILITY

Value: 5 / 5

Description: The Reliability of code, as defined in ISO-9126.

## **Build and Release Management**

ID: QM\_REL\_ENG

Value: 4.5 / 5

Description: Does the project apply best practices regarding Build and Release management?

## **Configuration Management**

ID: QM\_SCM

Value: 3.3 / 5

Description: The maturity of the project regarding access and usage of the configuration management system. Configuration management is an essential part of the collaboration in the project. Access to the source should be documented and facilitated for new comers to easily come in.

## **Support**

ID: QM\_SUPPORT

Value: 1.7 / 5

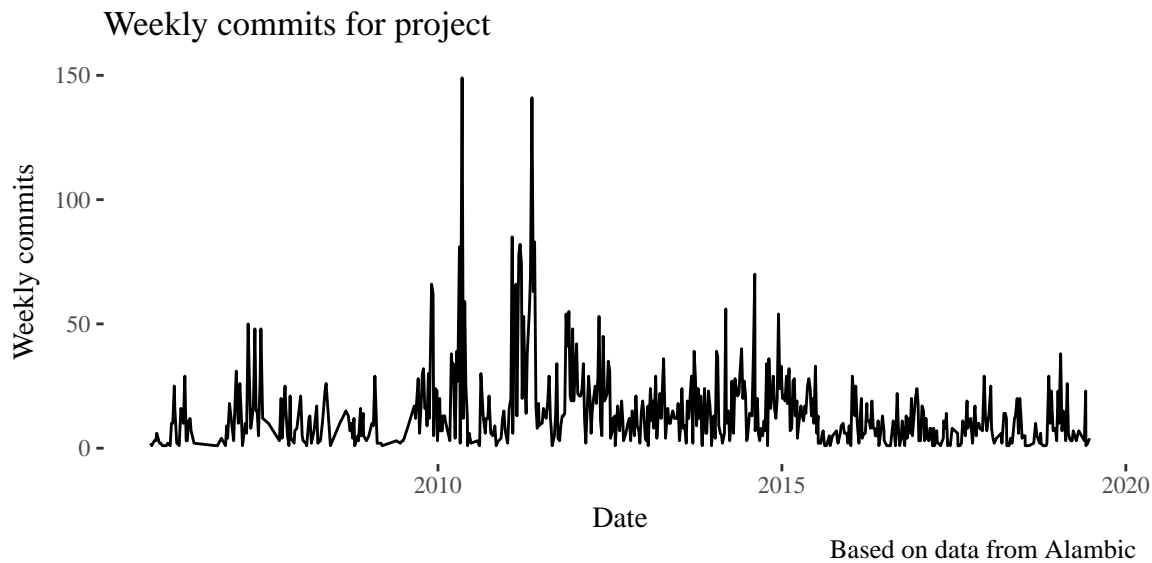
Description: The amount of knowledge provided when someone asks for support. Having many answers on a single question helps better understand how the product works in different conditions, and also provides help for people looking for a similar information later on, since mailing lists are archived and public.

## **Git analysis**

The repository contains a total of 8441 commits made by 15 authors. The first commit was made on the 2005-10-27 and the last analysed commits was made on 2019-06-22.

During the last month, there has been 32 commits made by 1 authors.

## Weekly commits



## Weekly authors

