CCSL CENTRO DE COMPETÊNCIA EM SOFTWARE LIVRE
FLOSS Competence Center

Semi-Automatic Evaluation of Free and Open Source Software Quality

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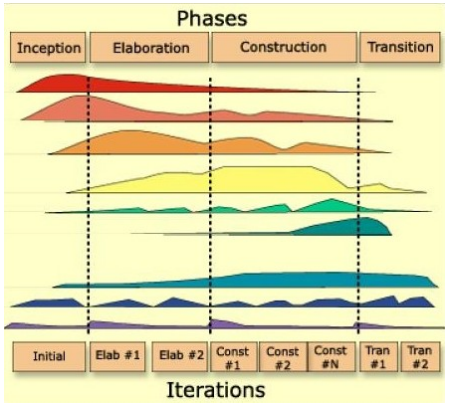
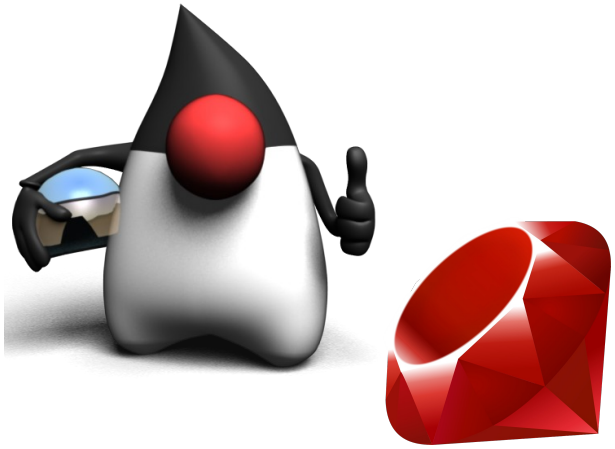
- Ph.D Student at CCSL-IME-USP
- Visiting researcher at SIUC (USA)
- Free Software Communities:
  - *PSL-RN and ASL.org*
  - *Analizo, Kalibro, and Noosfero (Mezuro)*

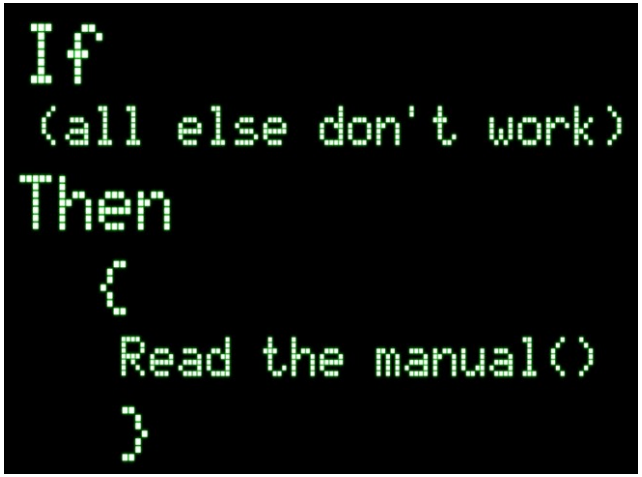
What is Quality?

What is Quality?

What is Software Quality?







Quality is a perception ...

User:

- Featues, no bugs, short releases, performance ...

Quality is a perception ...

Developers:

- Clean code, flexibility, modularity, automated tests, etc

What is Software Development?

- Modeling (Jacobsen)
- Engineering (Meyer)
- Discipline (Humphreys)
- Poetry (Cockburn)
- Craft (Knuth)
- Art (Gabriel)
- Science (Jain)

source: from Alistair Cockburn

An important aspect of software development is neglected in some software engineering communities ...

We should look at the most important deliverable on a software project:

The Code

from the free software communities ...

“Show me the Code!”

We want more ...

Show me a Beautiful and Clean Code!

Beautiful Code

- brings pleasure to the reader
- makes the writer happy
- makes working in groups fun

Beautiful Code

- fewer bugs
- maintainability
- team productivity

Beauty is fundamental

vinicius de morais

In Software Development,

Beauty

Leads to

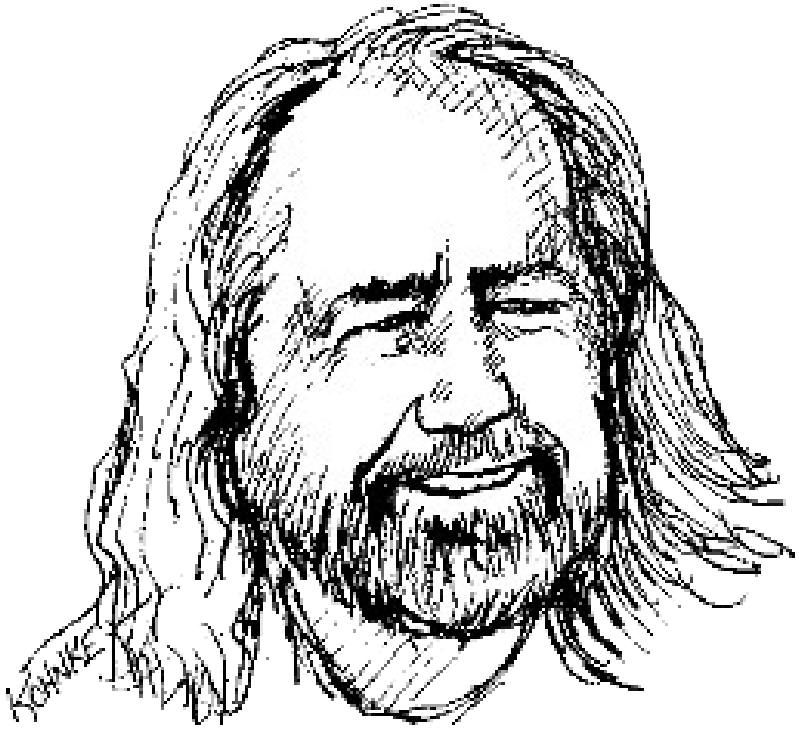
Quality

What is Clean Code?

Bjarne Stroustrup
Inventor of C++

"I like my code to be **elegant** and **efficient**. The logic should be **straighforward** to make it hard for bugs to hide, the **dependencies minimal to ease maintenance, error handling complete** according to an articulated strategy, and **performance close to optimal** so as not to tempt people to make the code messy with unprincipled optimizations. **Clean code does one thing well.**"

What is Clean Code?

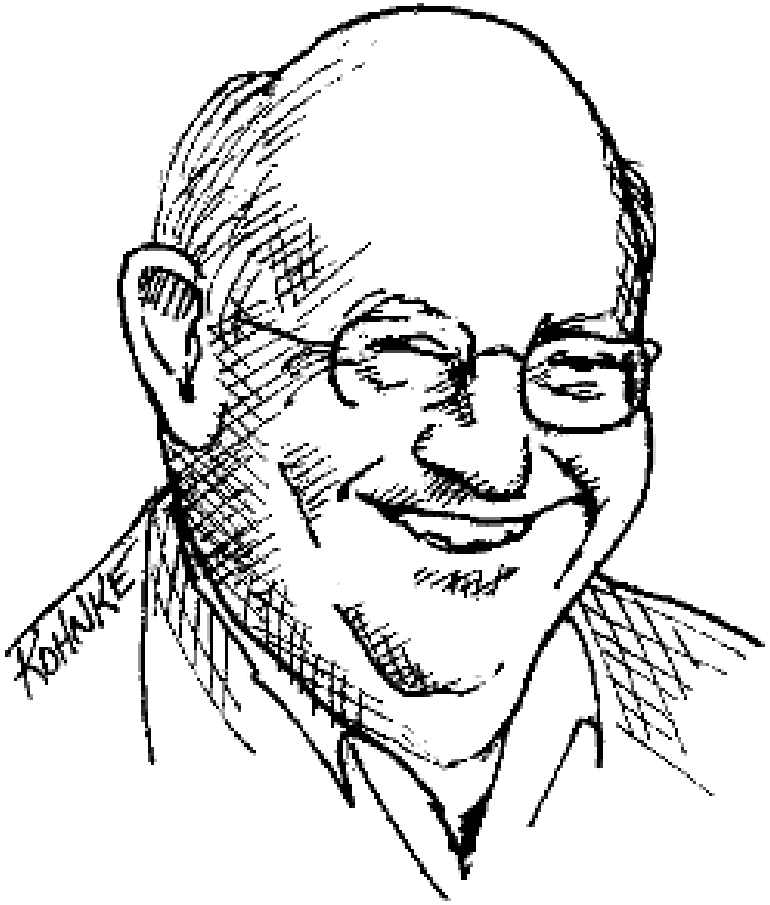


Grady Booch

Author of *Object Oriented Analysis and Design with Applications*

"Clean code is **simple** and **direct**. Clean code **reads like well-written prose**. Clean code never obscures the designer's intent but rather is full of crisp [clearly defined] abstractions and **straighforward** lines of control."

What is Clean Code?



Dave Thomas

Founder of OTI, godfather of the Eclipse Strategy

"**Clean code can be read**, and enhanced by a developer other than its original author. **It has unit and acceptance tests**. It has **meaningful names**. It provides **one way** rather than many ways for doing one thing. It has **minimal dependencies**, which are explicitly defined, and provides a clear and **minimal API**. Code should be **literate** since depending on the language, not all necessary information can be expressed clearly in code alone."

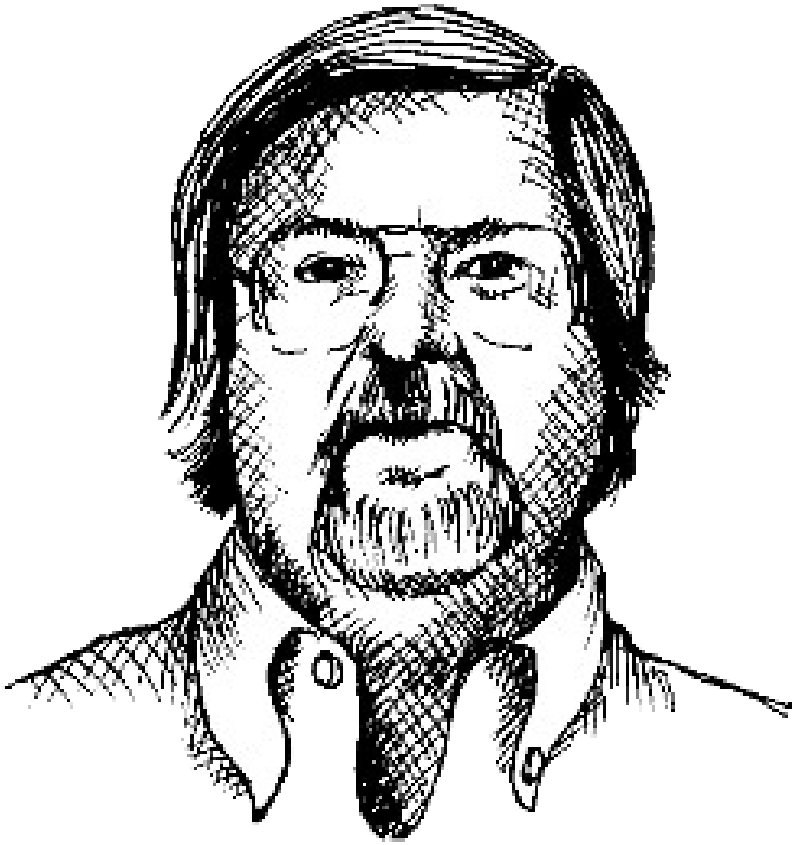
What is Clean Code?

Michael Feathers

Author of *Working Effectively With Legacy Code*

"I could list all of the qualities that I notice in clean code, but there is one overarching quality that leads to all of them. **Clean code always looks it was written by someone who cares. There is nothing obvious that you can do to make it better.** All of those things were thought about by the code's author, and if you try to imagine improvements, you're led back to where you are, sitting in appreciation of the code someone left for you – **code left by someone who cares deeply about the craft.**"

What is Clean Code?



Ron Jeffries

Author of *Extreme Programming Installed*

"In recent years I begin, and nearly end, with Beck's rules of simple code. In priority order, simple code:

- **Runs all tests**
- **Contains no duplication**
- **Expresses all the design ideas** that are in the system
- **Minimizes the number of entities** such as classes, methods, functions, and the like."

What is Clean Code?

Ward Cunningham

Inventor of Wiki, Fit and much more

”Godfather of all those who care about code”

You know you are working on clean code when **each routine you read turns out to be pretty much what you expected**. You can call it **beautiful** code when the codes also **makes it look like the language was made for the problem**.”

What is Clean Code?

Simple

Efficient

Without obvious improvements

Straightforward

Expressive

Contains no duplications

Turns out to be what you expected

Runs all tests

Full of meaning

Literal

Reads well

Beautiful: when the language was made for the problem

Minimal

Written by someone who cares

What is Clean Code?

- Meaningful Names
  - Code is basically names and reserved words
  - Choosing good names takes time but saves more than it takes
  - Names should be expressive and should answer questions

What is Clean Code?

- Functions should be small!
- Functions that do one thing can't be divided into sections
  - Functions should do one thing
  - Functions should do it well
  - Functions should do it only
  - One level of abstractionuments

What is Clean Code?

- Functions should minimize the number of arguments
  - don't use flag arguments
- Functions should not have side effects
- Don't Repeat Yourself (DRY)
  - duplication is the root of all evil in software

Functions should be short, well named and nicely organized

in the end

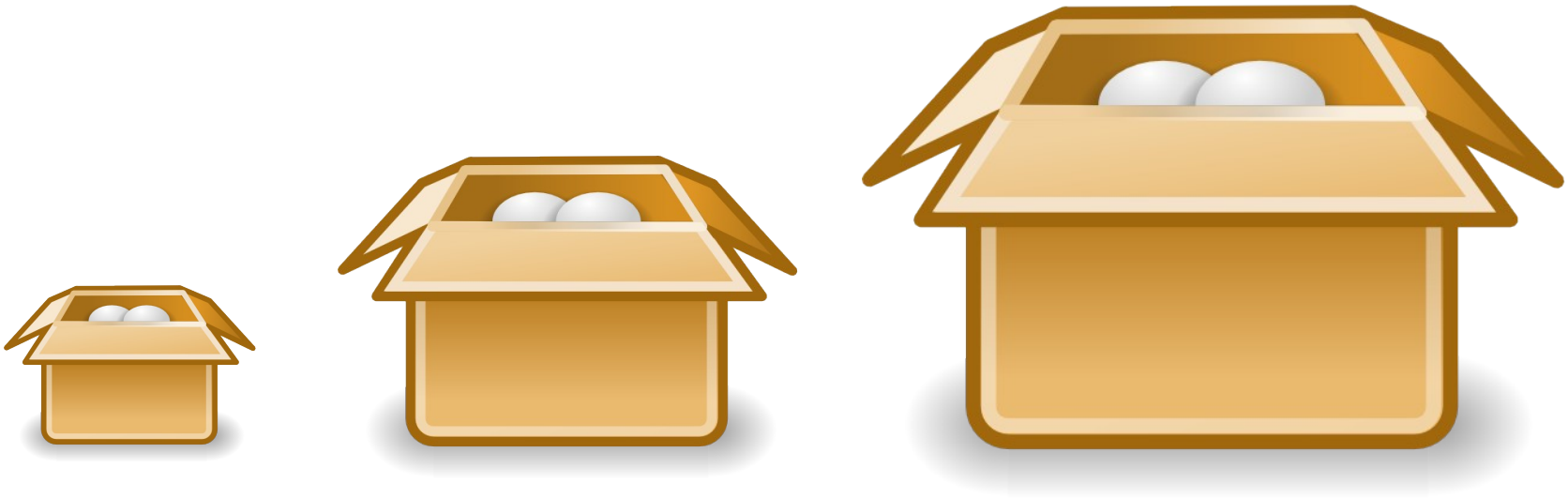
Code is the only truth

There are other clean code attributes ...

(ask us for a detailed technical report if you're interested)

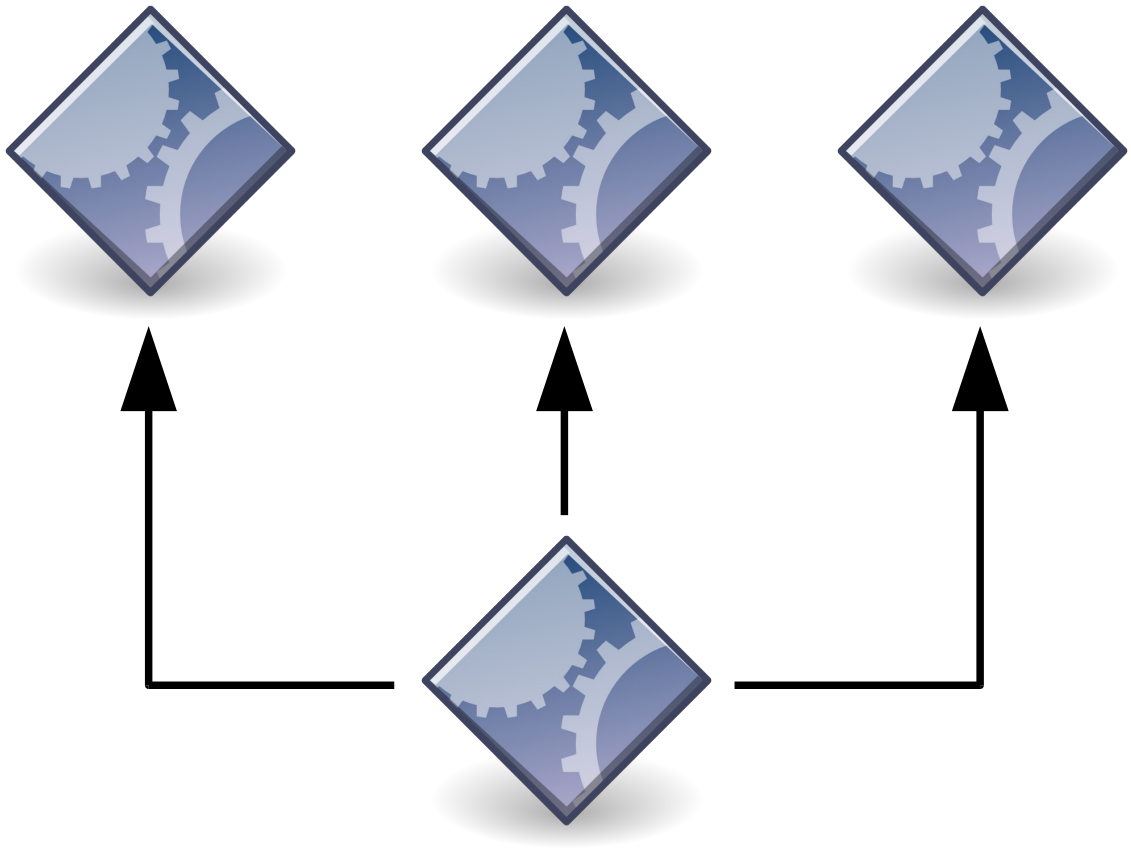
Source Code Metrics

Size



Cohesion

Coupling



We are mapping ...

Clean Code Concepts to Source Code Metrics

Ex: Clean Code → Metrics

- Clean code problem
  - Large methods
- Source code metrics
  - Maximum Nesting Level (MaxNesting), Lines of Code (LOC), and Cyclomatic Complexity (MacCabe)

Ex: Clean Code → Metrics

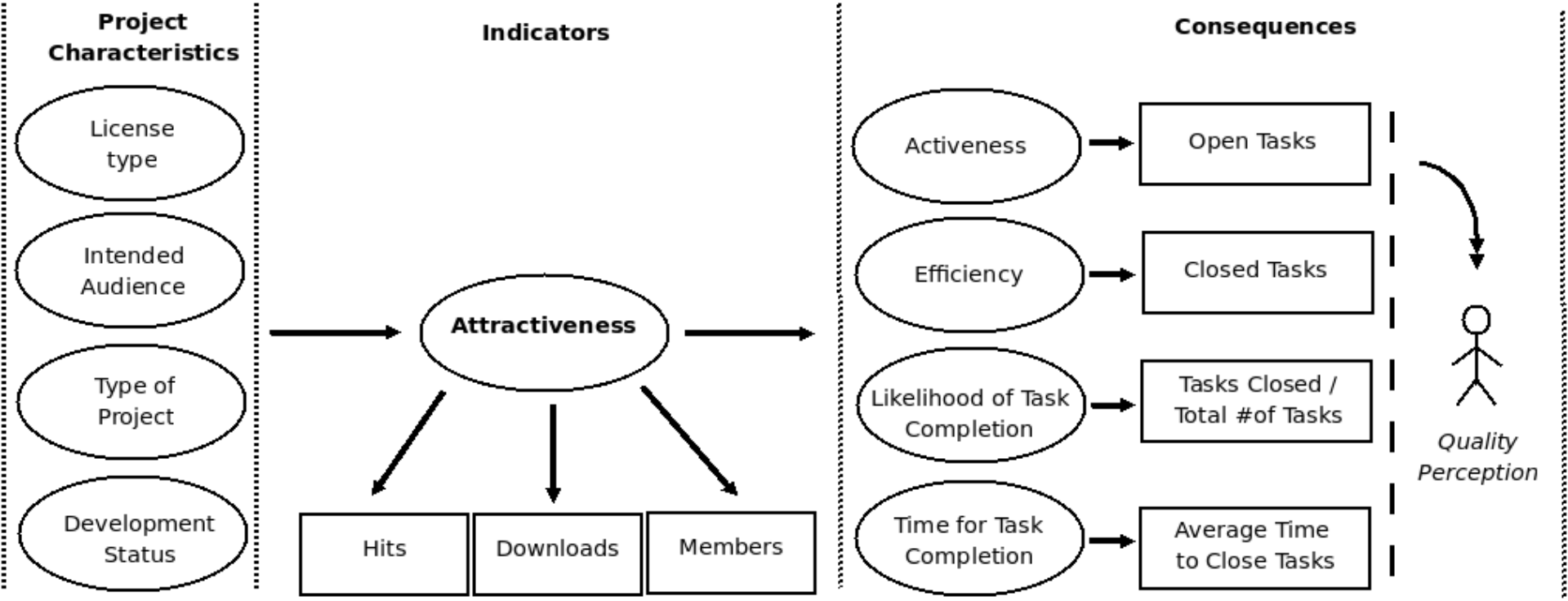
- Clean code problem
  - high coupling, lack of flexibility
- Source code metrics
  - Number of External Calls (NEC) and Number of Called Classes (NCC)

Source Code quality
influences
FLOSS Attractiveness

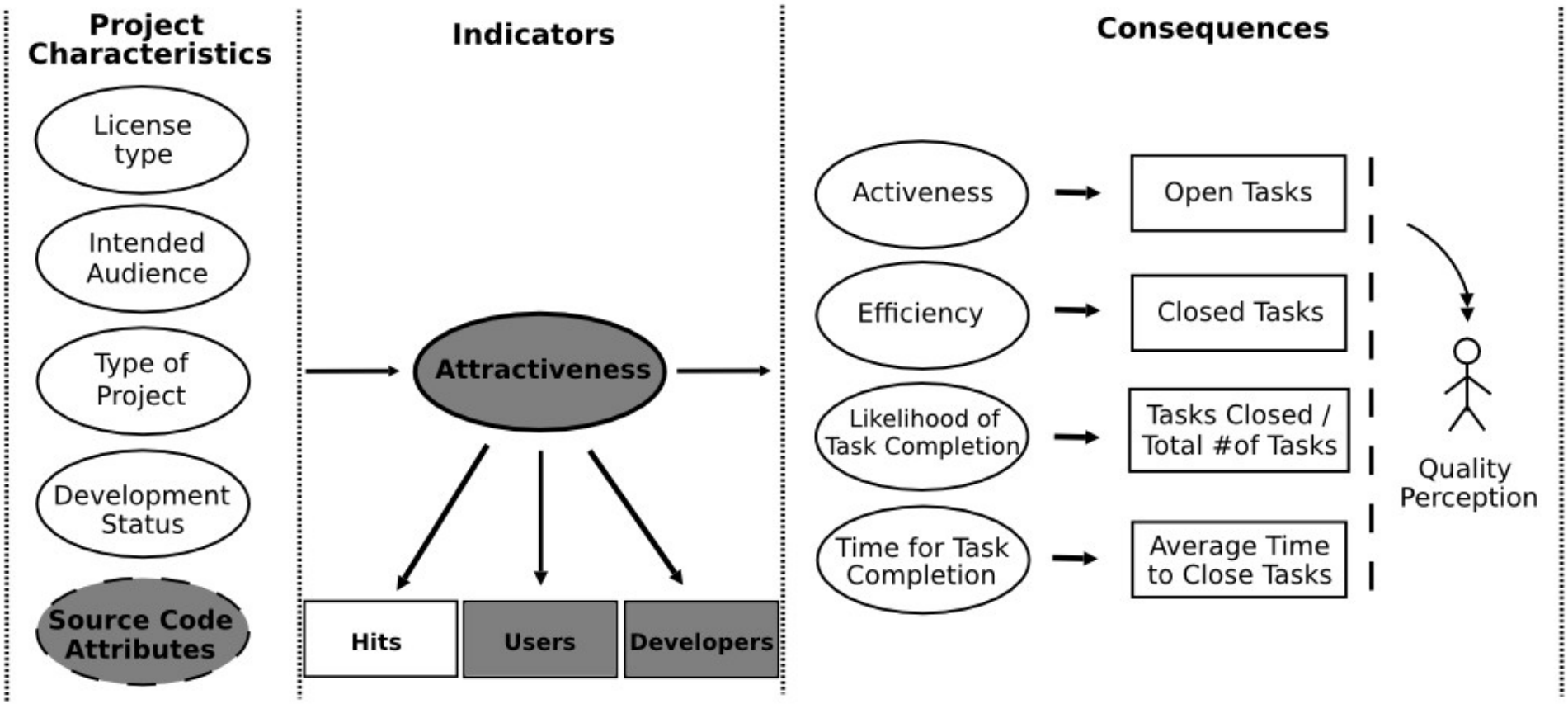
“Given enough eyeballs, all bugs are shallow”

Attractiveness is the capacity of bringing users and developers to a project

Attractiveness (I)



Attractiveness (II)



Source Code → Attractiveness

6.773 C projects analyzed (from sourceforge.net)

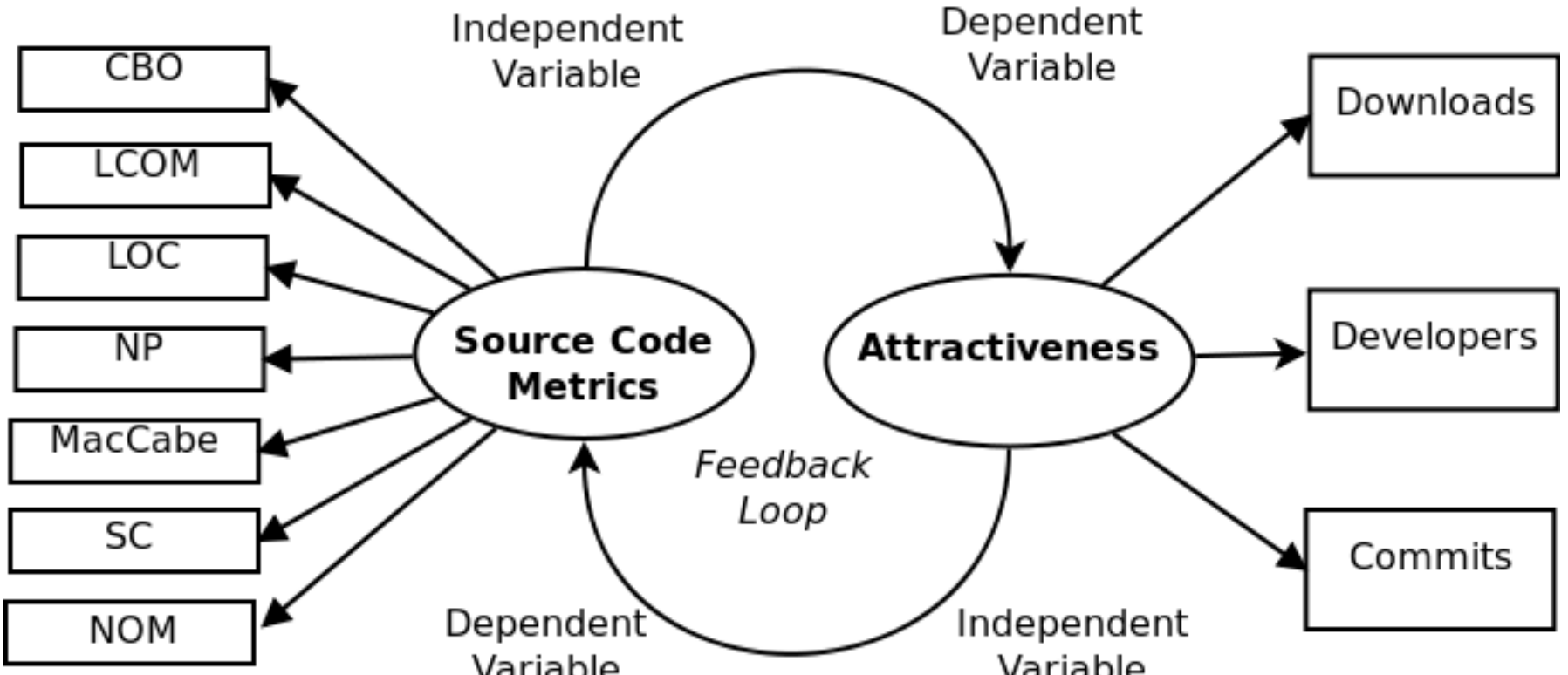
	Downloads				Members			
Metric	β	Std. β	T-value	P-value	β	Std. β	T-value	P-value
(Constant)	1.551	-	6.12	<0.001	-0.668	-	-8.47	<0.001
Structural Complexity (log)	-0.286	-0,150	-8.616	<0.001	-0.033	-0.058	-3.238	0.001
Lines of Code (log)	0.856	0.506	18.624	<0.001	0.126	0.249	8.846	<0.001
Number of Modules (log)	0.008	0.004	0.186	0.852	0.087	0.148	6.625	<0.001
R	0.425				0.348			
R^2	0.180				0.121			

18%

12%

a detailed scientific paper is available in our web site

Attractiveness (III)



It is being selected according to the mapping between clean code concepts and source code metrics

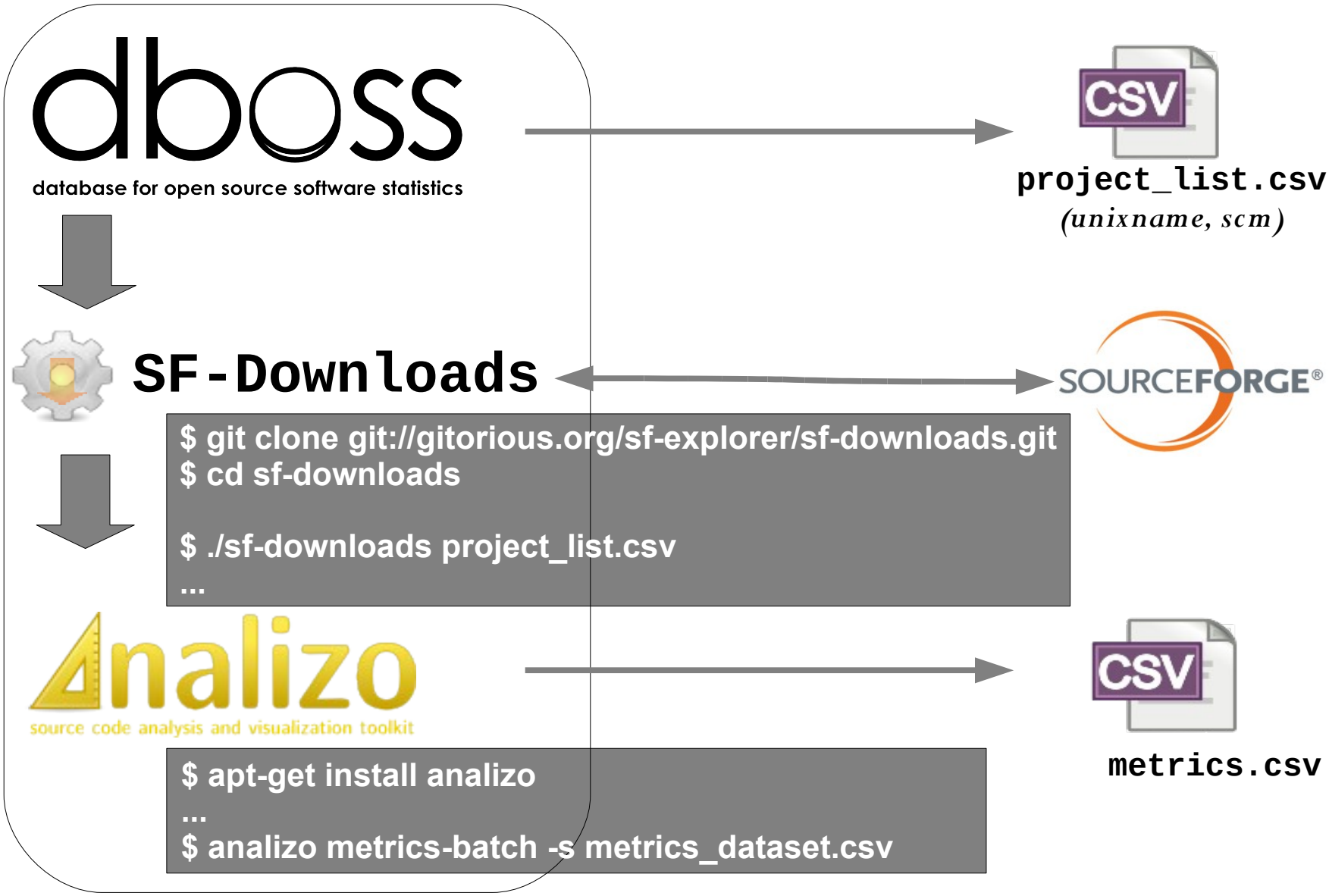
At this moment, we are downloading ...

~ 42.000

Source Forge projects

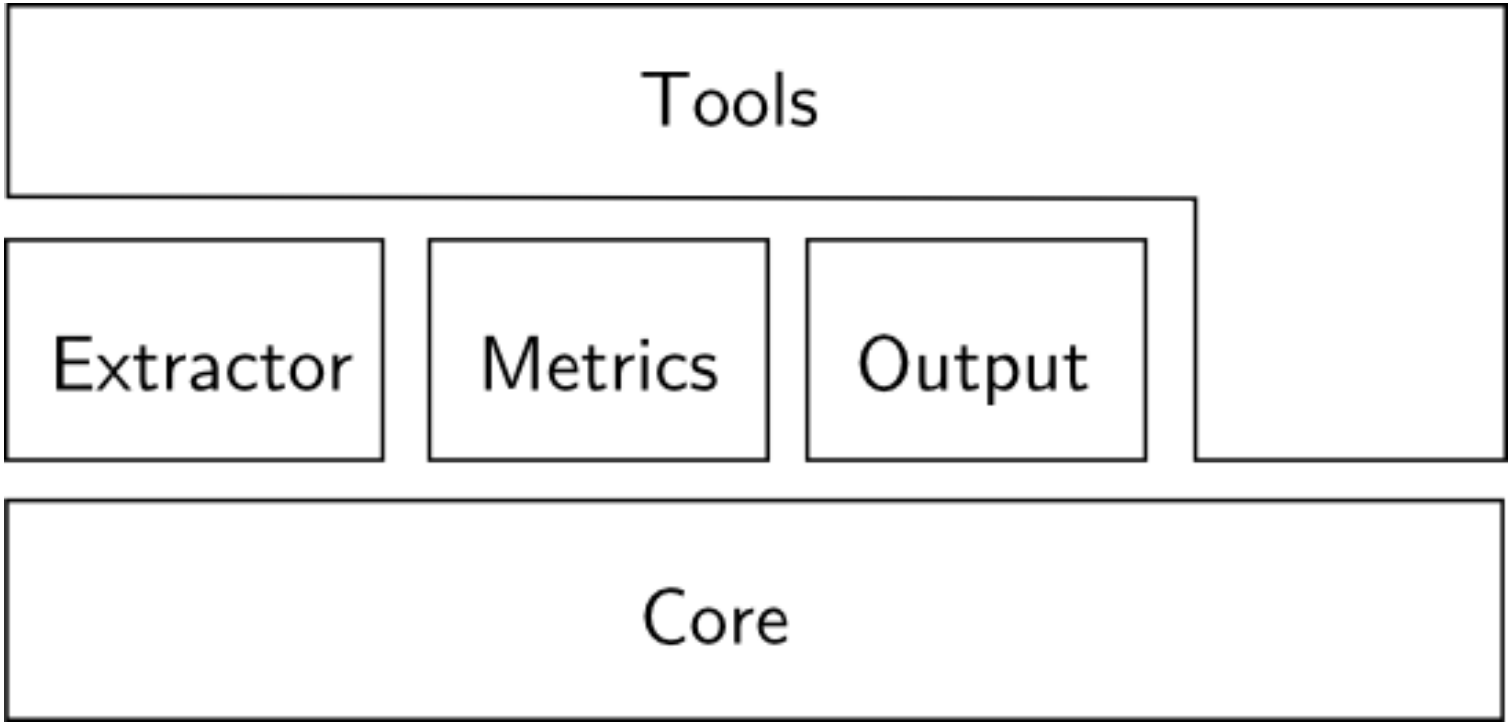
(C, C++, and Java)

How?

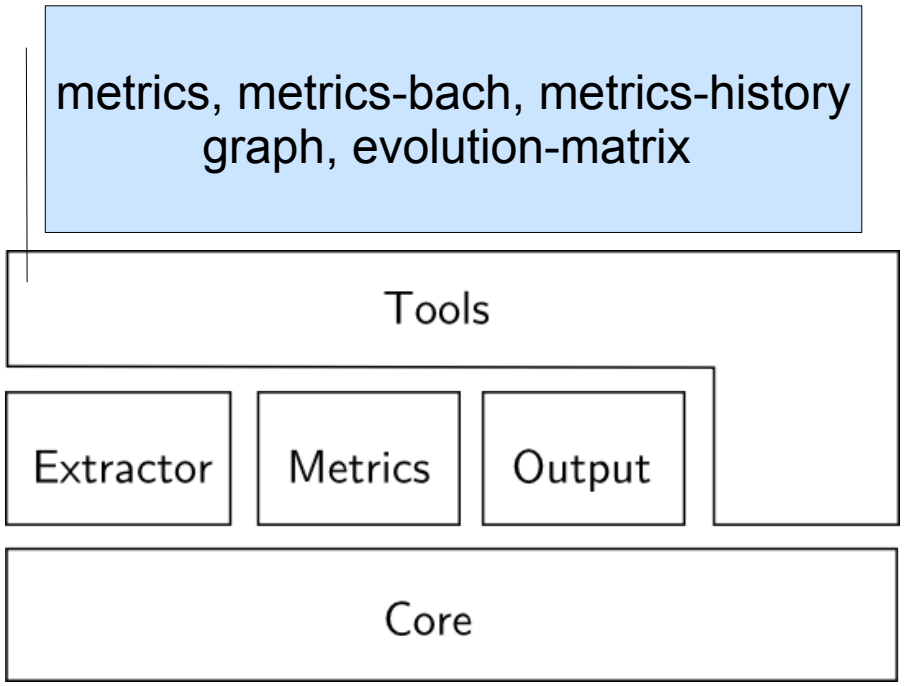

dboss
database for open source software statistics
CSV
project_list.csv
(unixname, scm)
SF-Downloads
SOURCEFORGE®
$ git clone git://gitorious.org/sf-explorer/sf-downloads.git
$ cd sf-downloads
$ ./sf-downloads project_list.csv
...
analizo
source code analysis and visualization toolkit
CSV
metrics.csv
$ apt-get install analizo
...
$ analizo metrics-batch -s metrics_dataset.csv

Analizo Toolkit

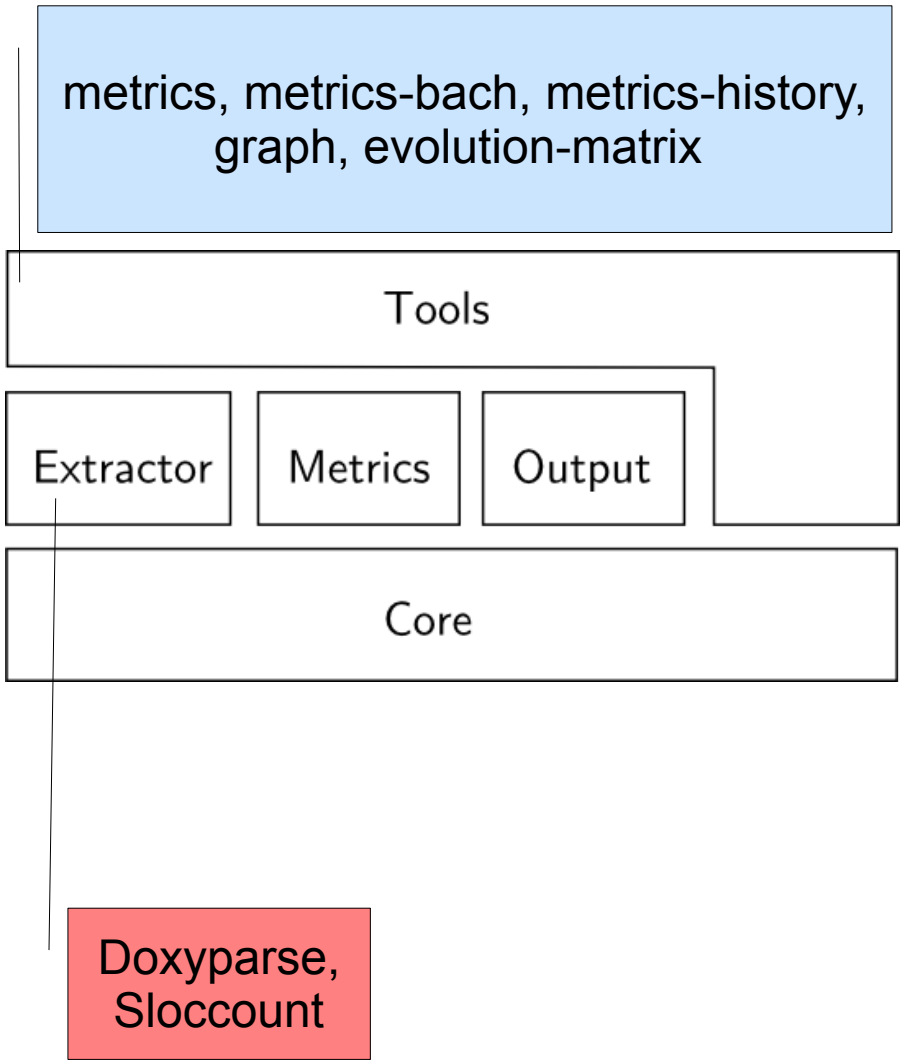
Analizo Toolkit



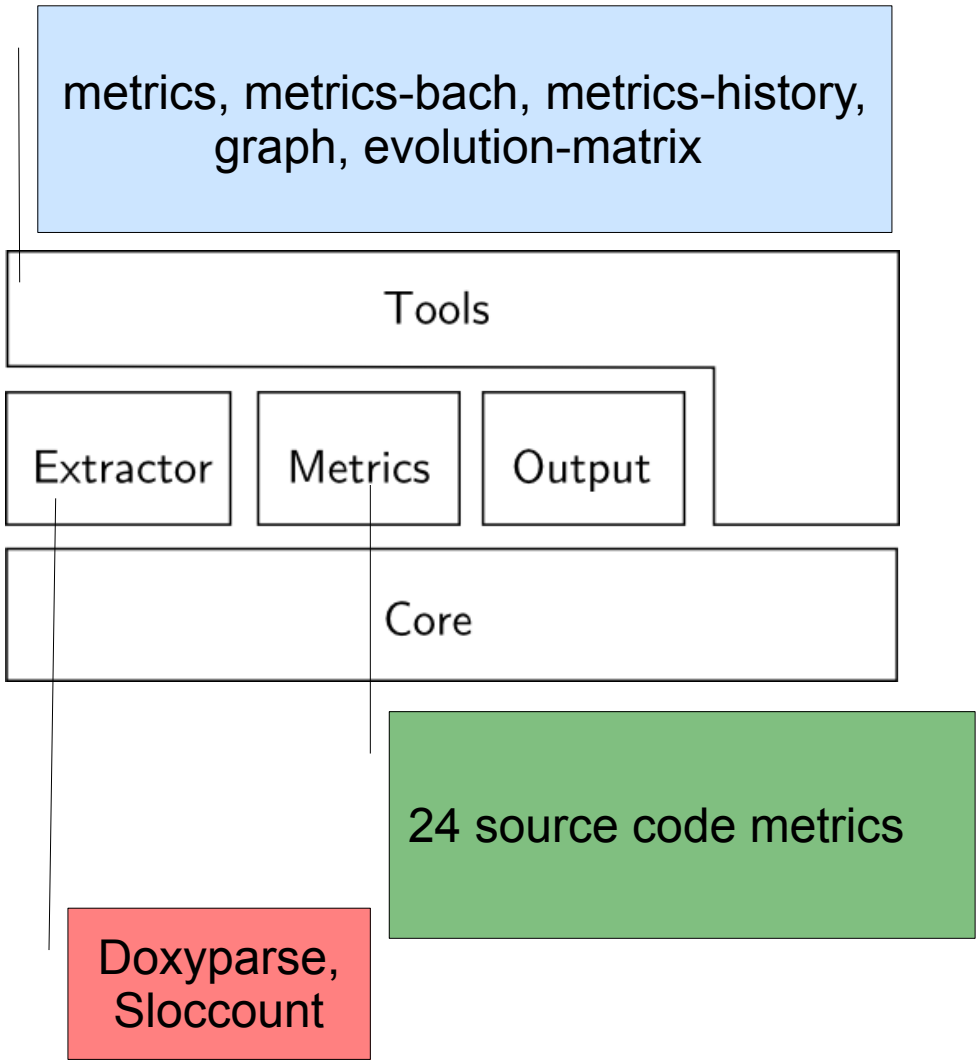
Analizo Toolkit



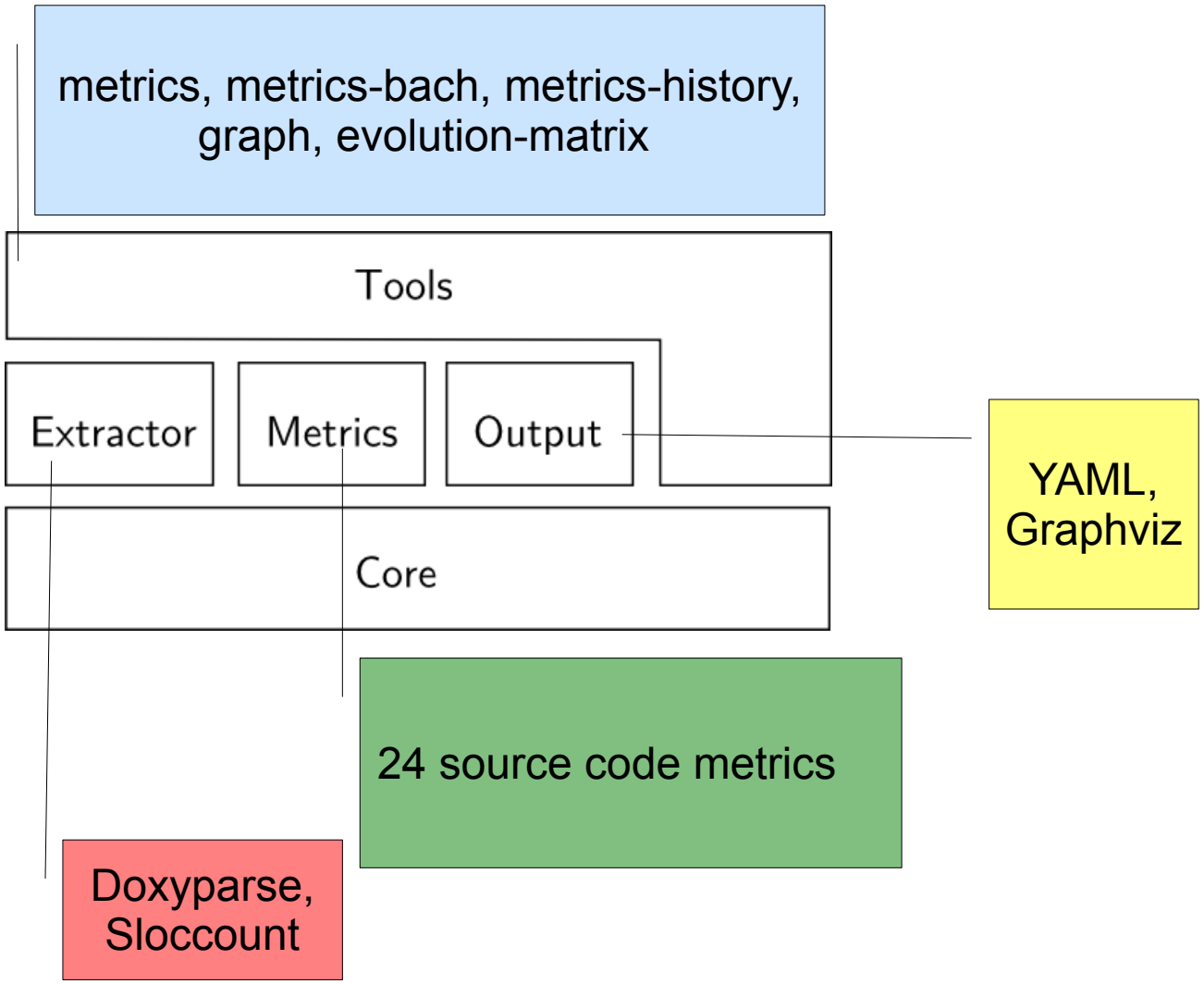
Analizo Toolkit

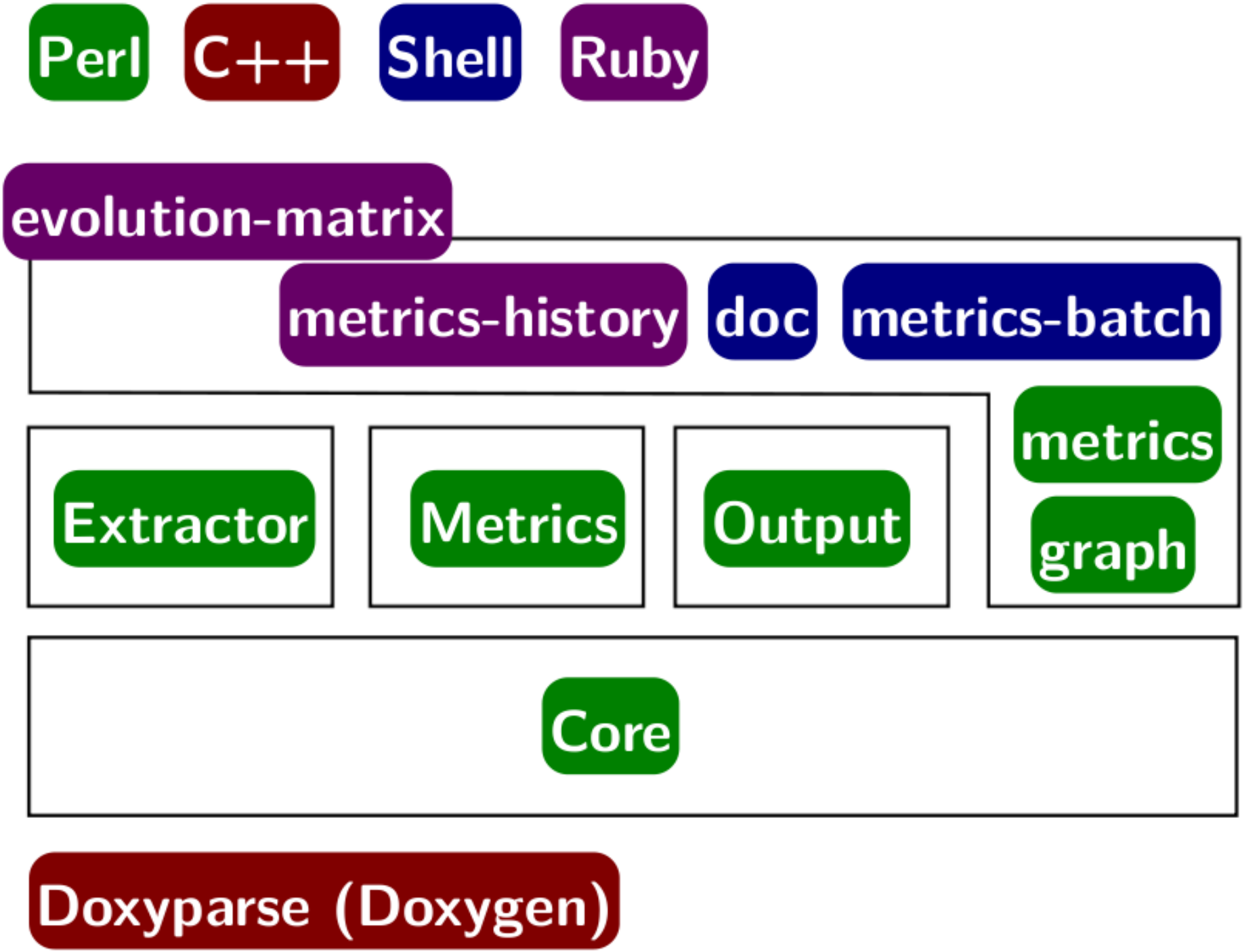


Analizo Toolkit



Analizo Toolkit




Perl
C++
Shell
Ruby
evolution-matrix
metrics-history
doc
metrics-batch
metrics
Extractor
Metrics
Output
graph
Core
Doxyparse (Doxygen)

Kalibro Metrics

Kalibro Metrics

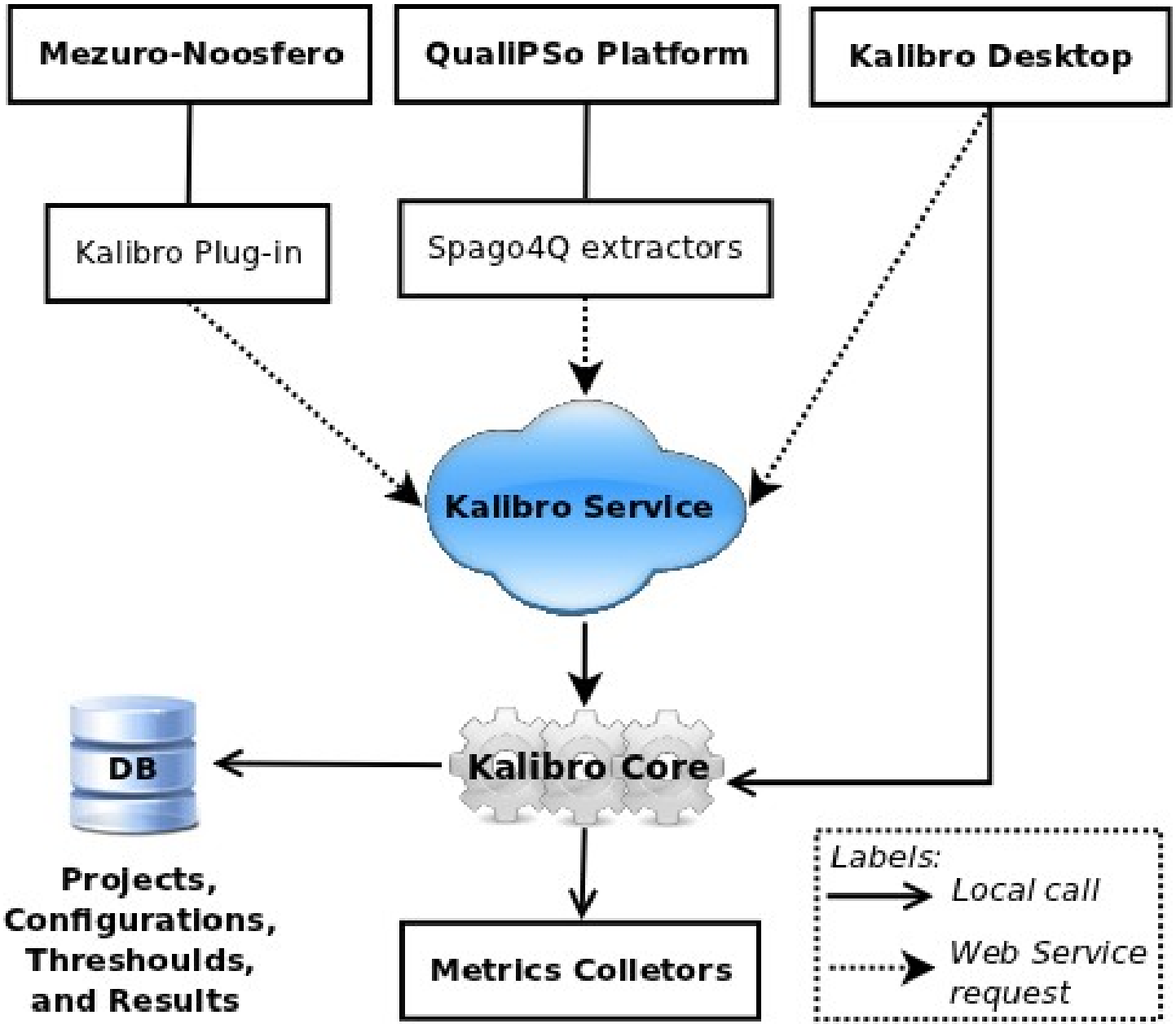
- Download source code from SVN, Git, or Mercurial repositories
- Download source code from local and remote zip and tarball files
- Creation of quality evaluation configurations

Kalibro Metrics

- Creation of ranges
- Creation of new metrics
- Computation of statistical results

Kalibro Metrics

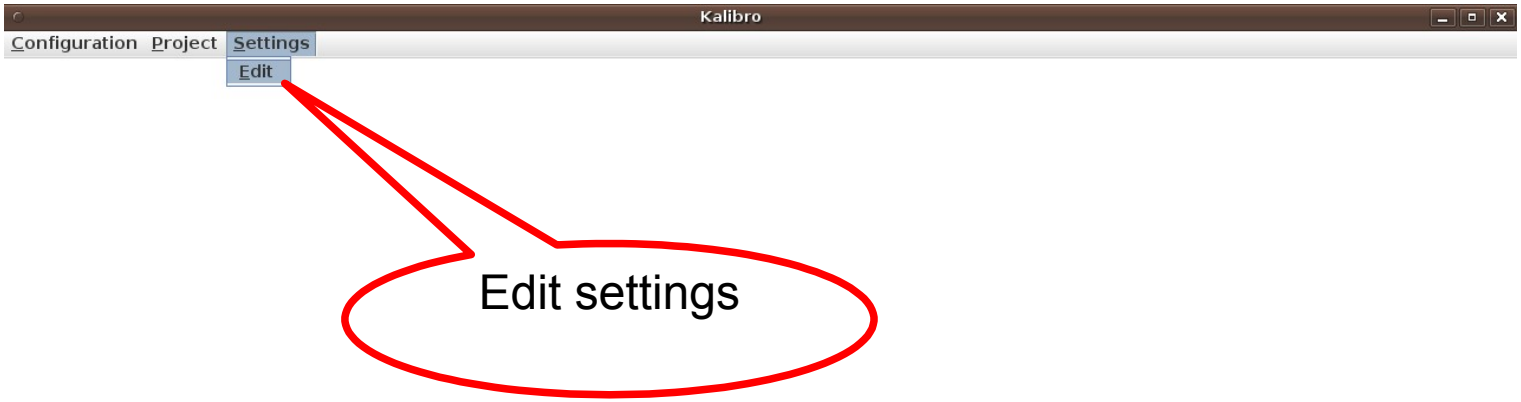
- Exports results to a CSV file
- Cross-project comparisons
  - grades are given for each project based on a configurable combination of metrics
- User-friendly visualization by associating colors with ranges


Mezuro-Noosfero
QualiPSo Platform
Kalibro Desktop
Kalibro Plug-in
Spago4Q extractors
Kalibro Service
DB
Kalibro Core
Projects, Configurations, Threshoulds, and Results
Metrics Colletors
Labels:
Local call
Web Service request

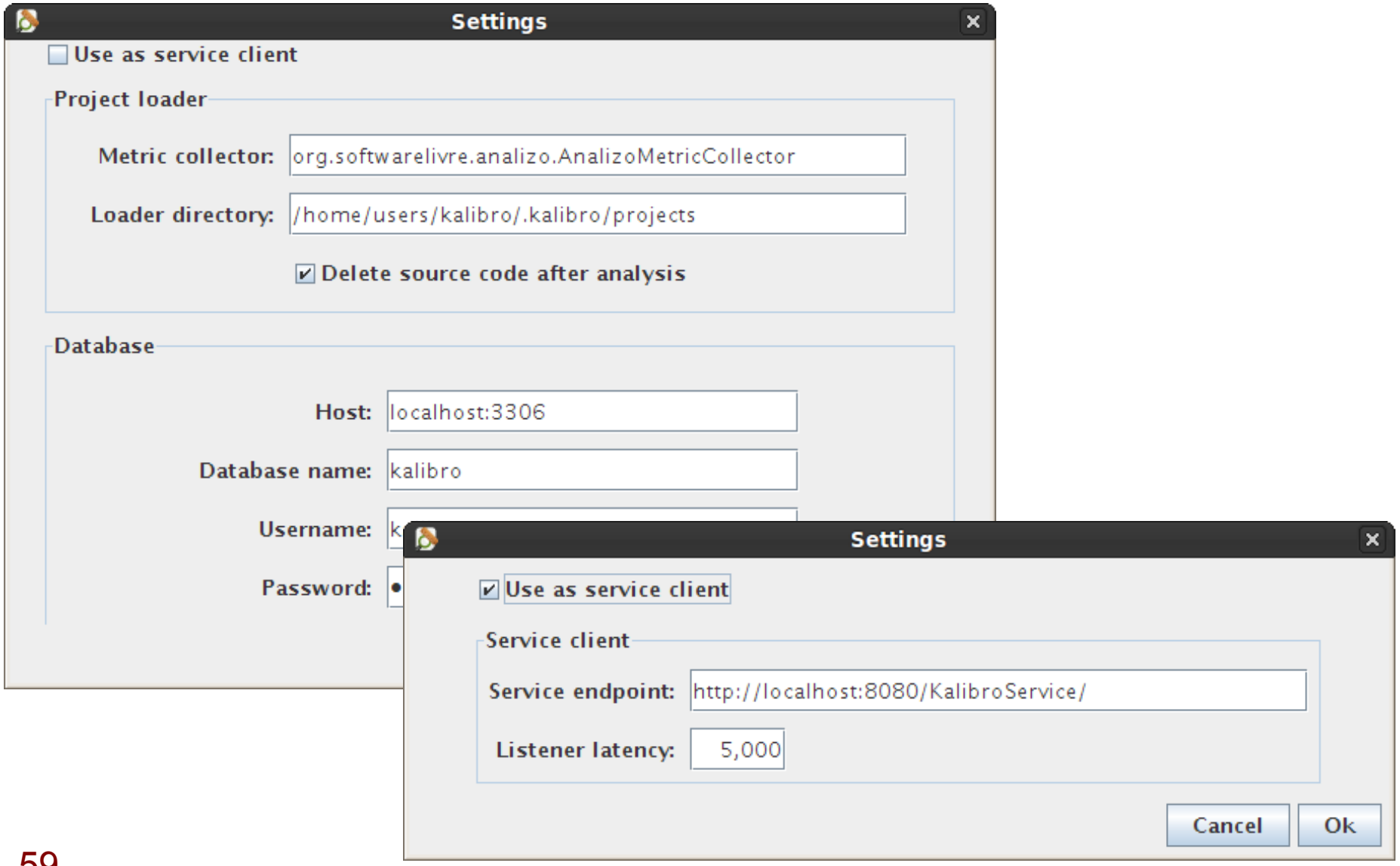
Kalibro Desktop

Main window

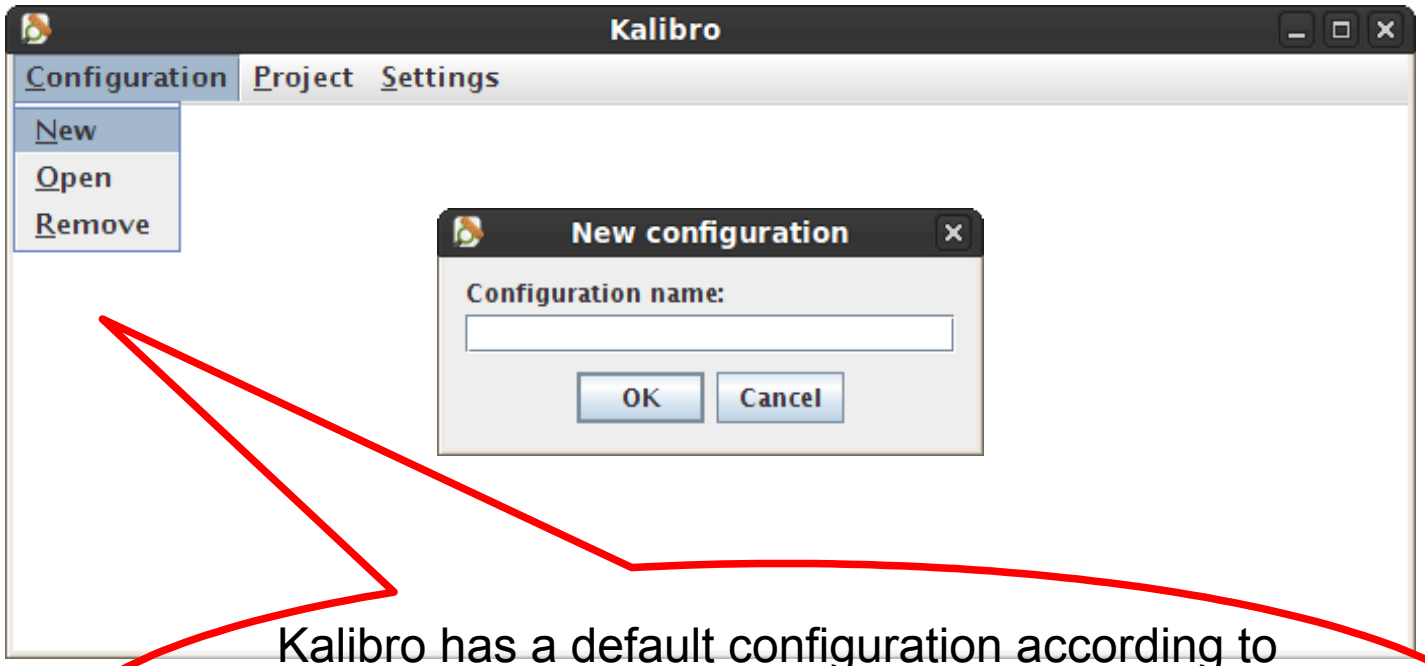
Settings


Kalibro
Configuration
Project
Settings
Edit
Edit settings

Settings options

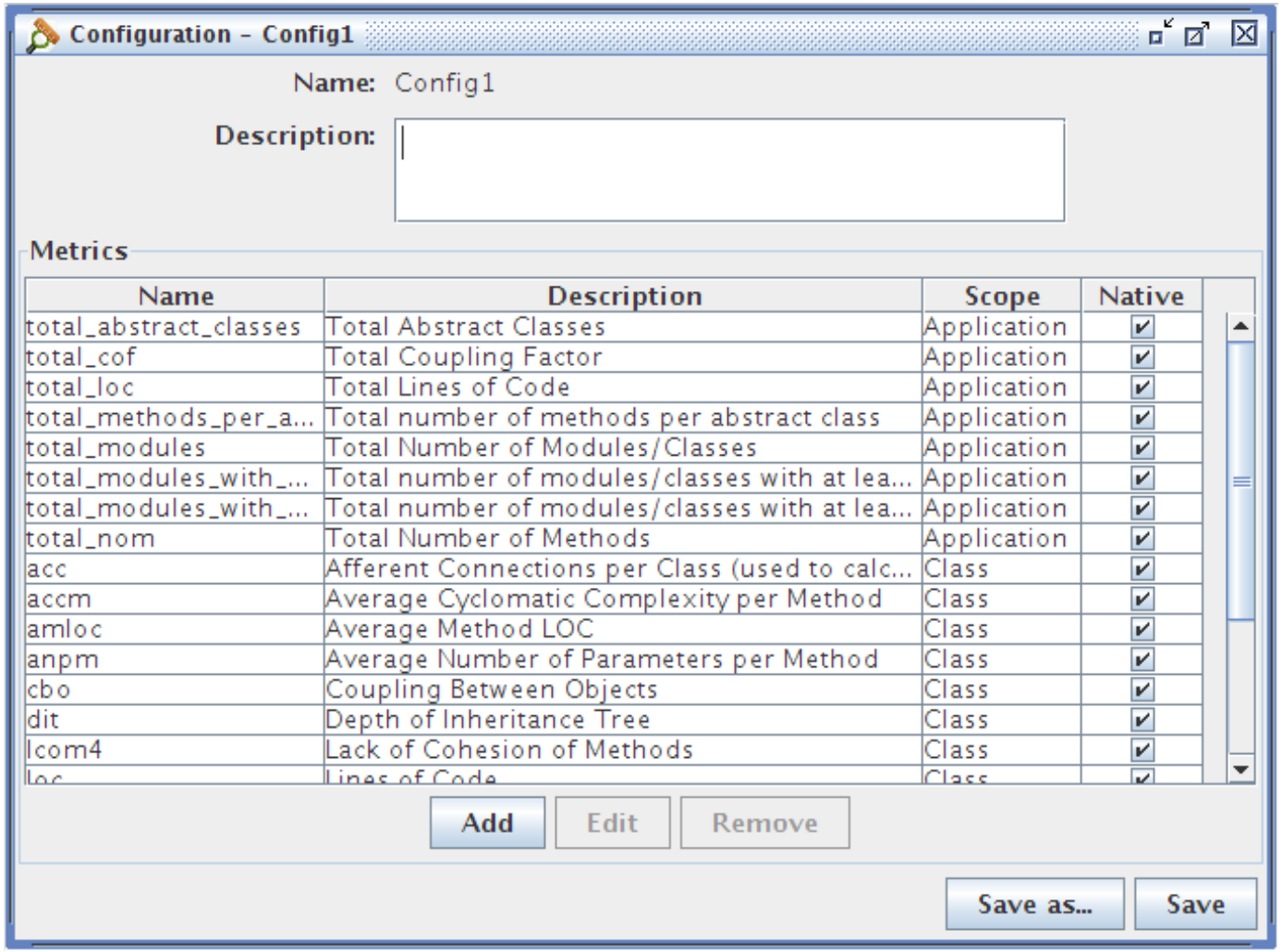


Metrics configuration

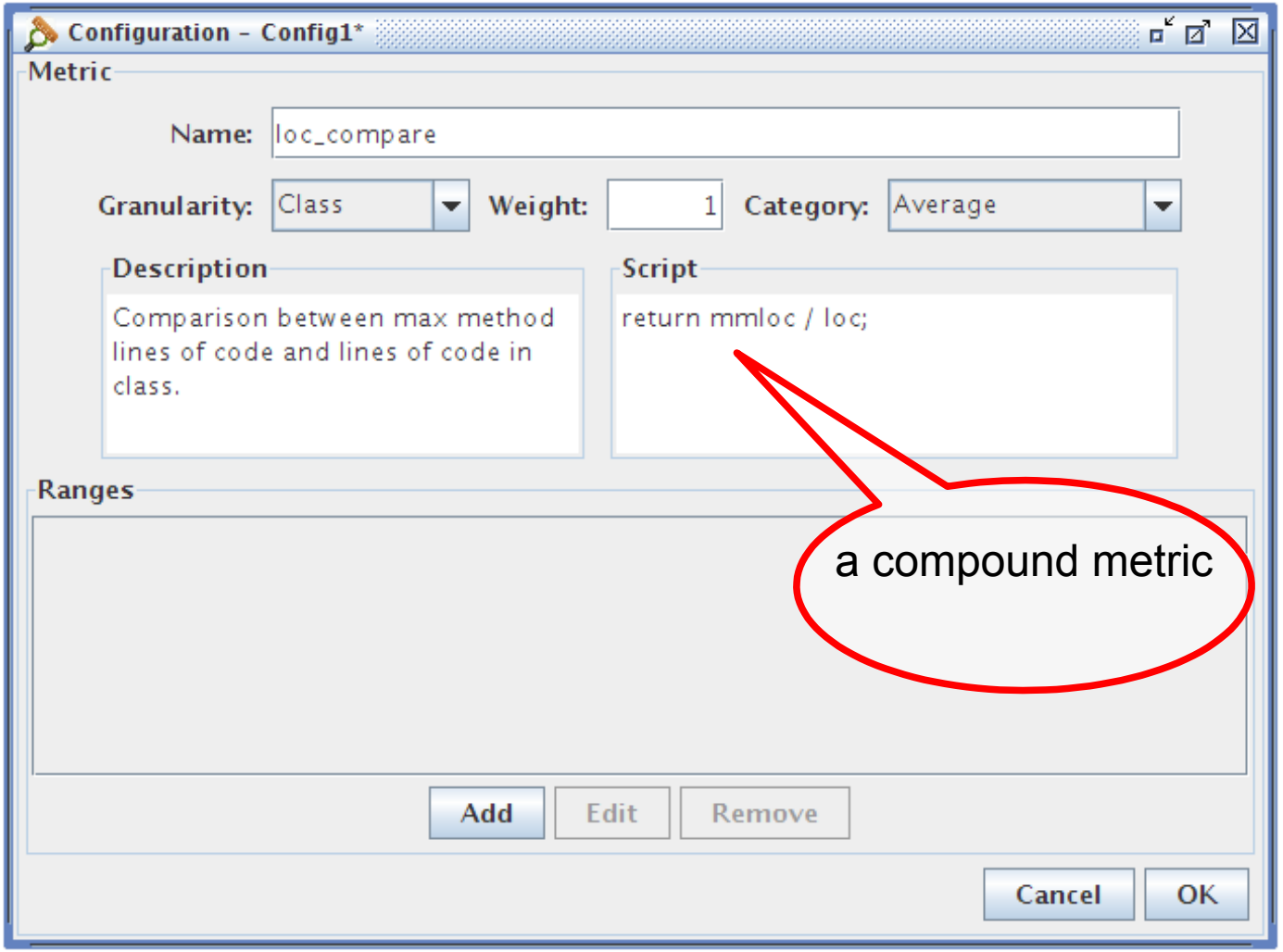


Kalibro has a default configuration according to thresholds defined in the Qualipso project, but you can create a new set of thresholds or create compound metrics

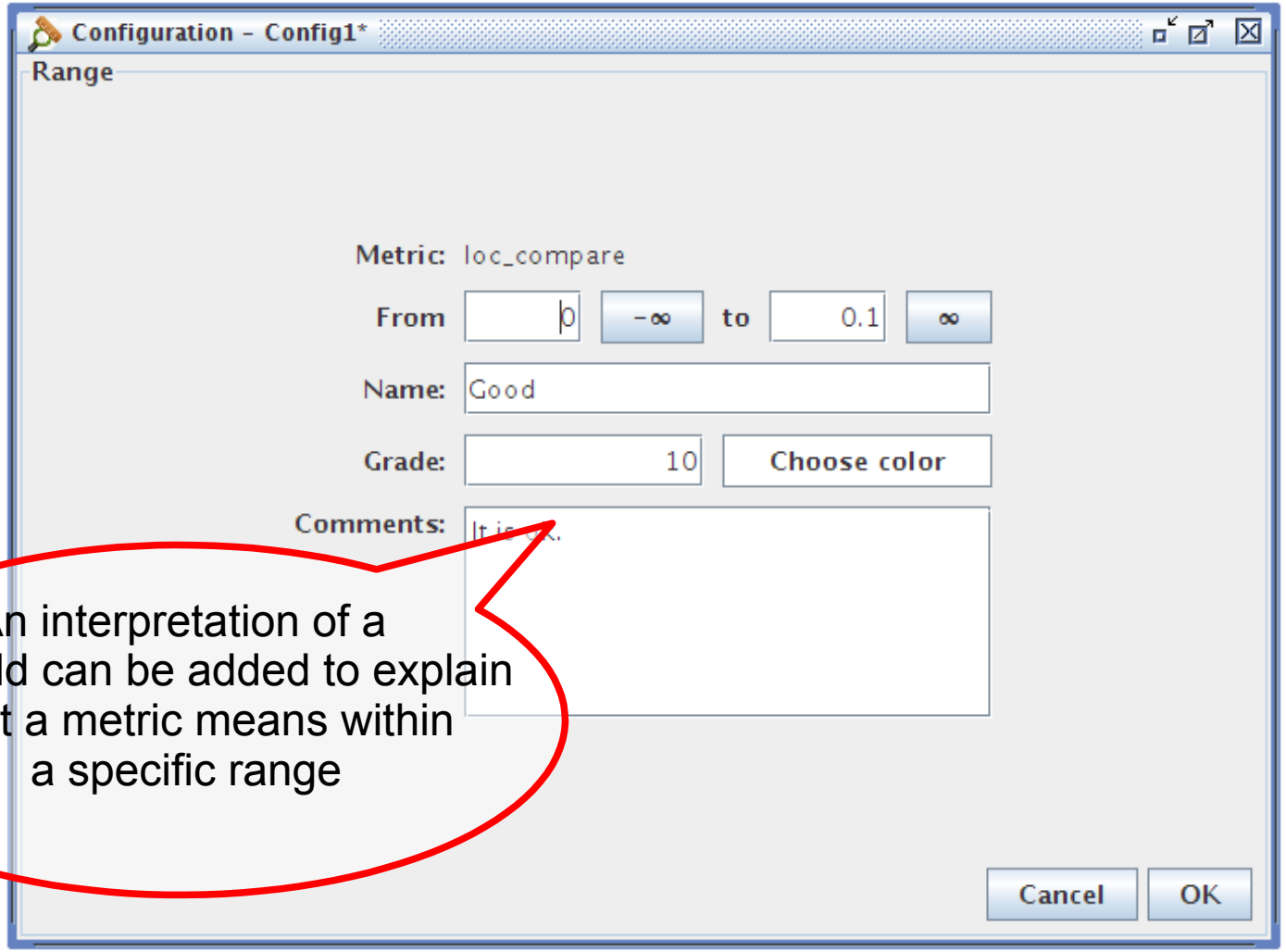
Configuration description



Adding a new metric

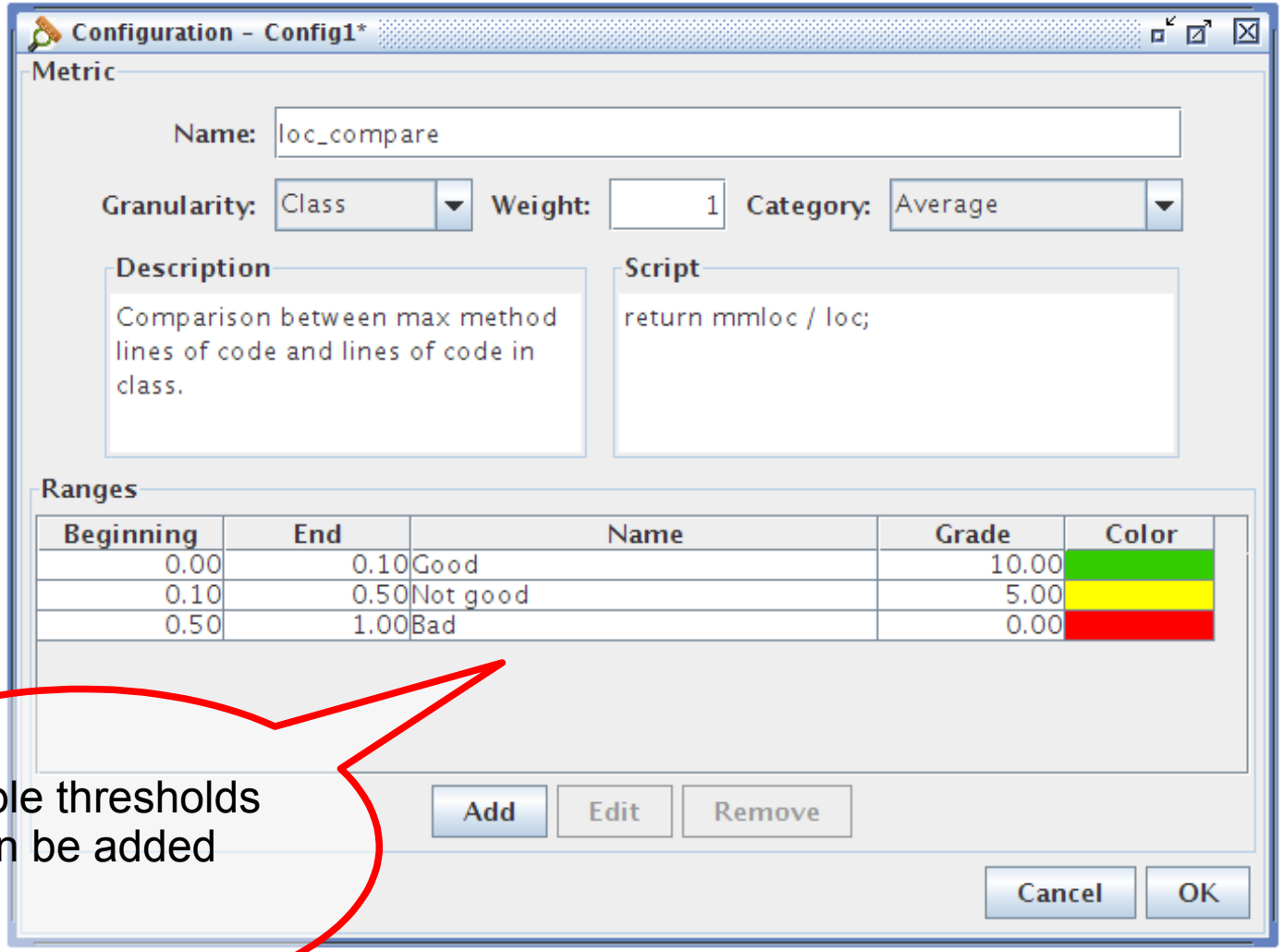


Defining thresholds

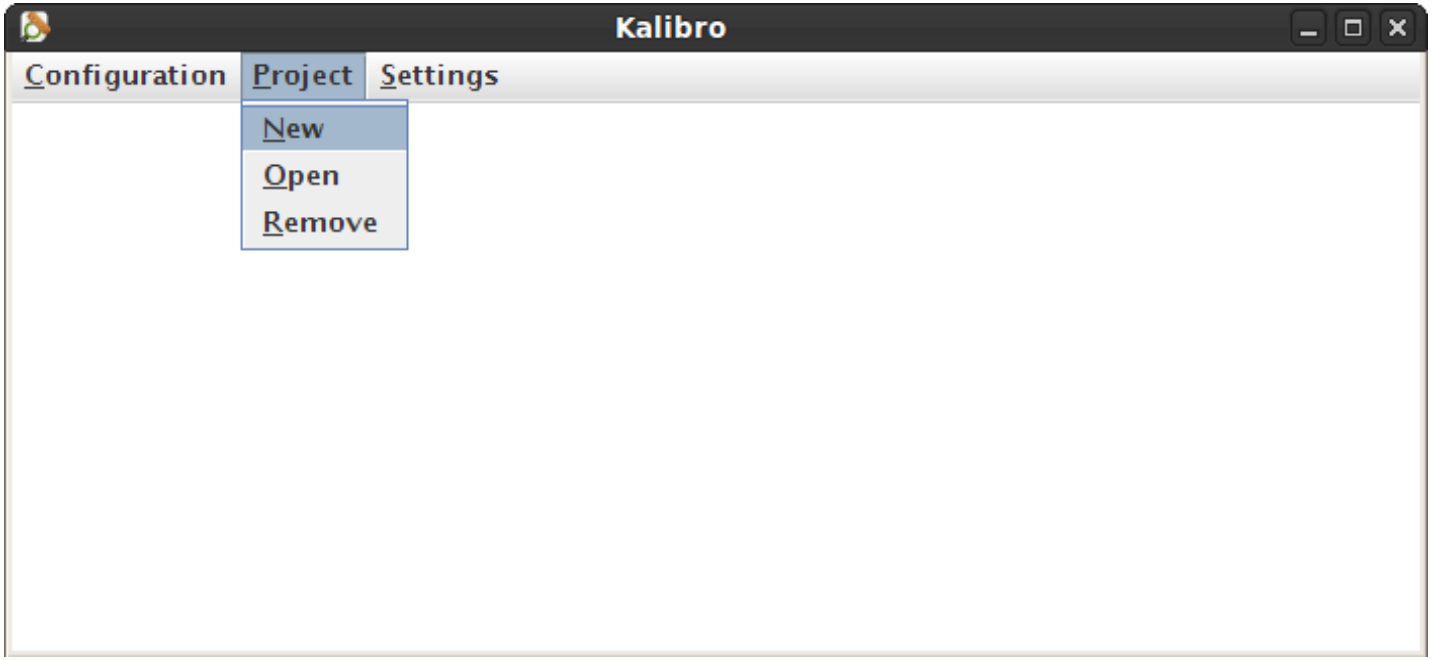


An interpretation of a threshold can be added to explain what a metric means within a specific range

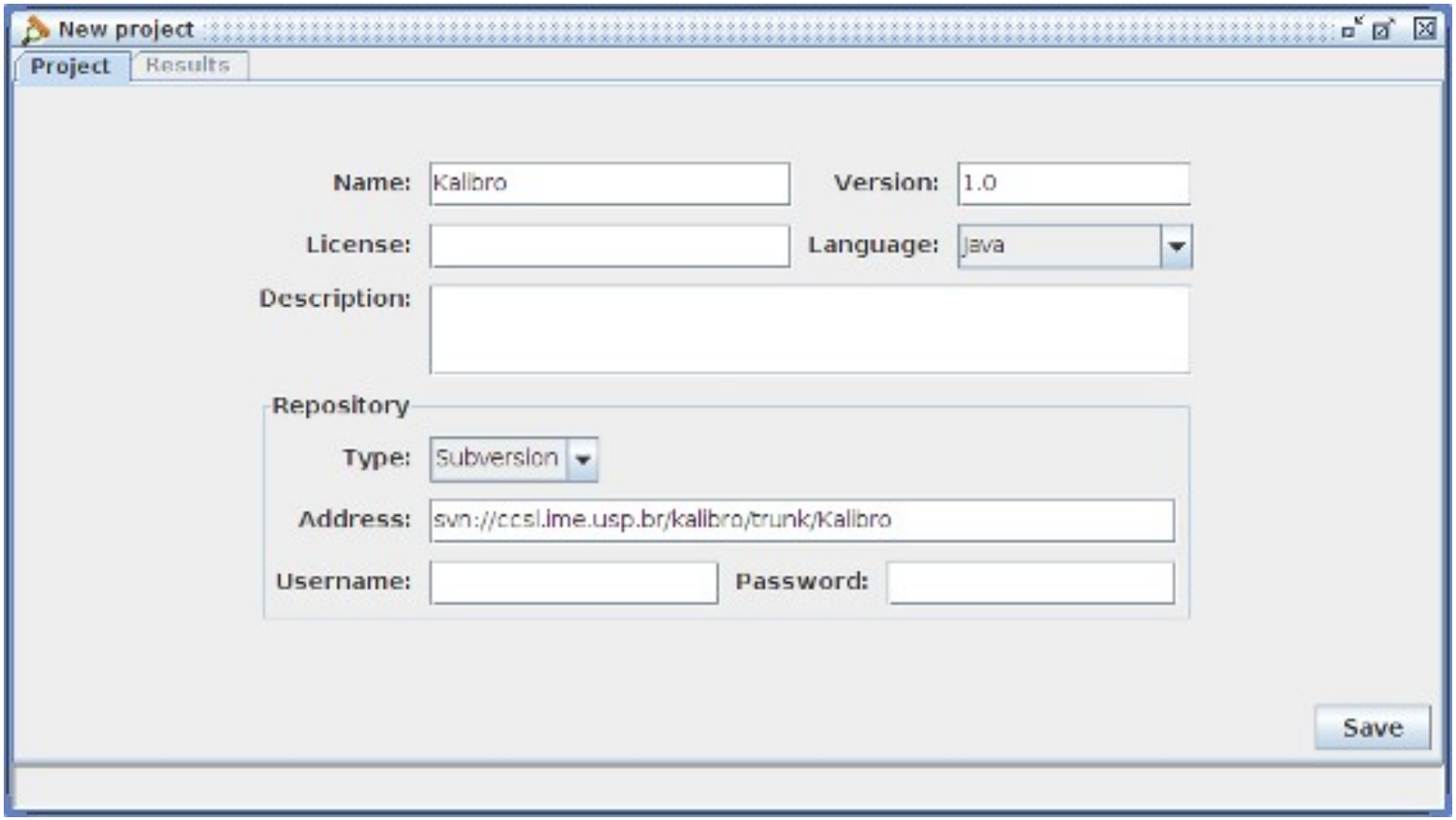
Thresholds added



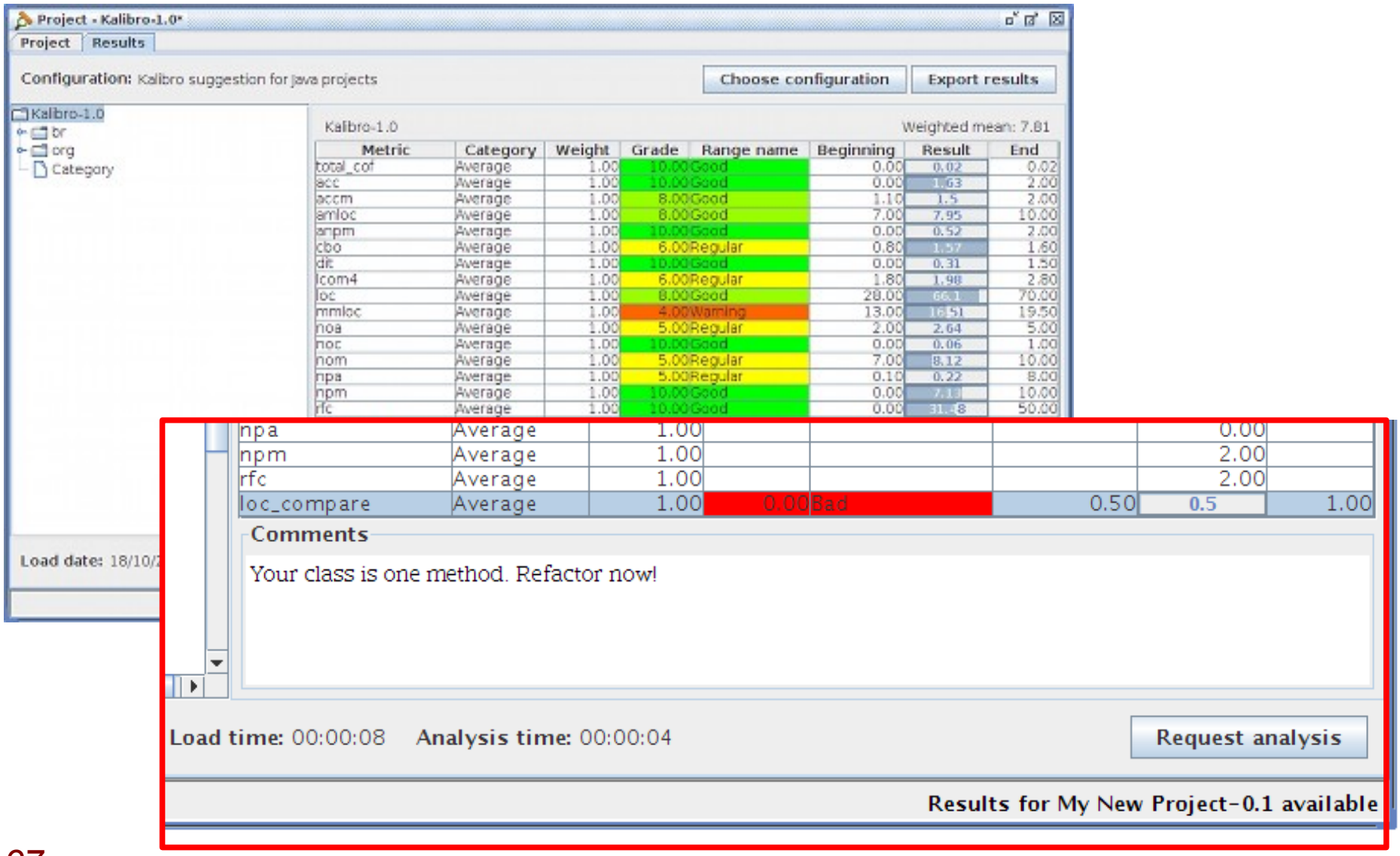
Creating a Kalibro project

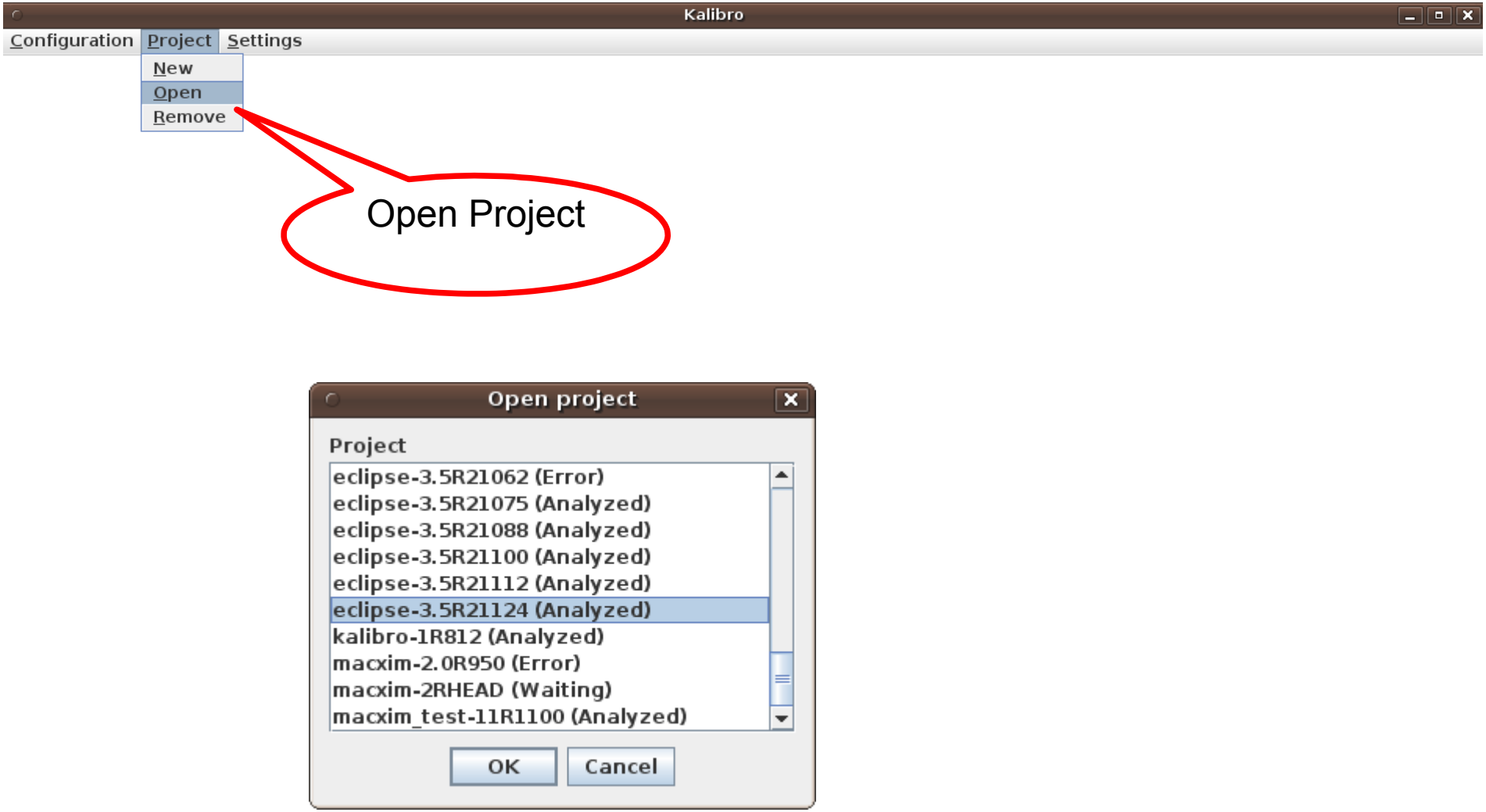


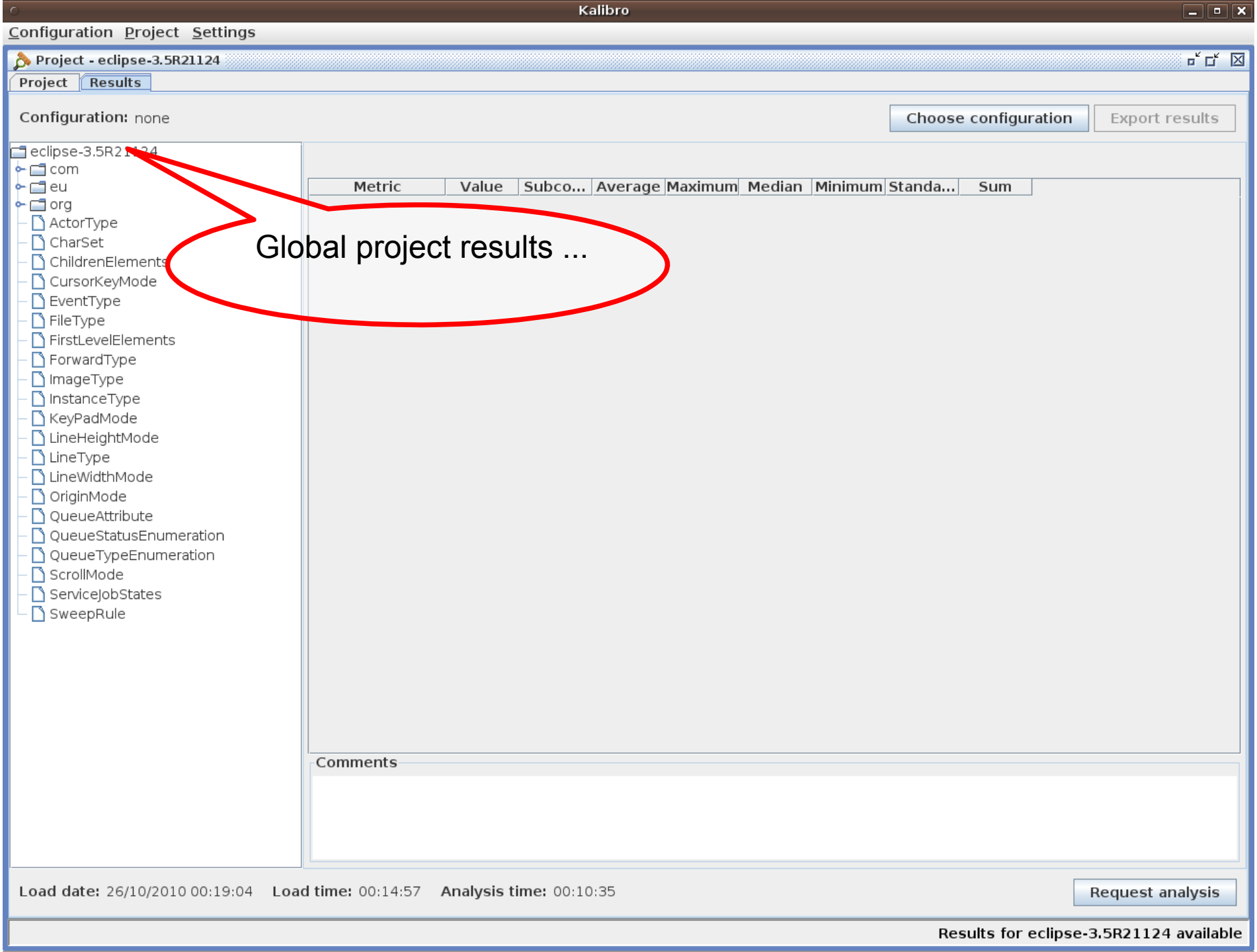
Defining a Kalibro project

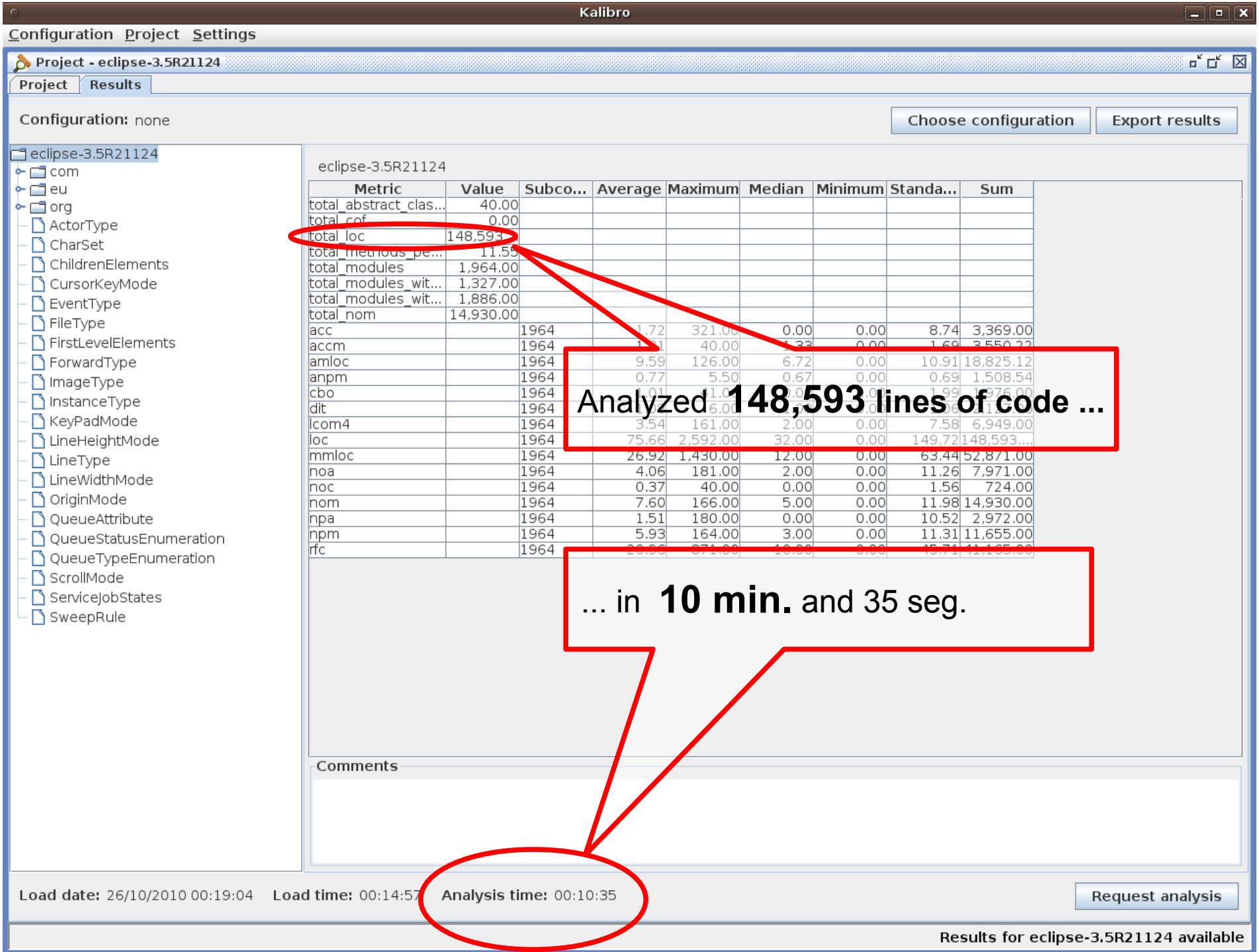


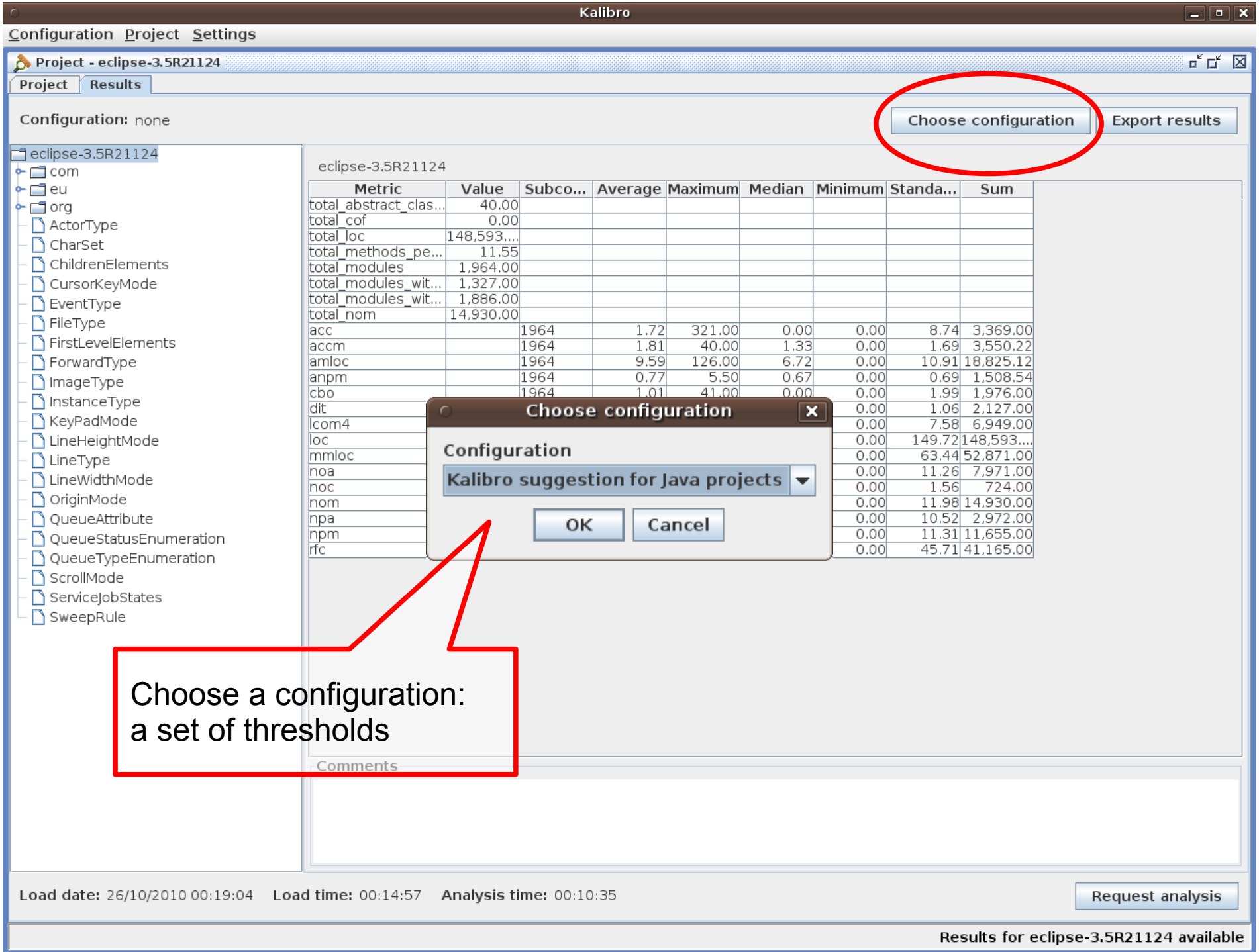
Analyzing source code




Kalibro
Configuration
Project
Settings
New
Open
Remove
Open Project
Open project
Project
eclipse-3.5R21062 (Error)
eclipse-3.5R21075 (Analyzed)
eclipse-3.5R21088 (Analyzed)
eclipse-3.5R21100 (Analyzed)
eclipse-3.5R21112 (Analyzed)
eclipse-3.5R21124 (Analyzed)
kalibro-1R812 (Analyzed)
macxim-2.0R950 (Error)
macxim-2RHEAD (Waiting)
macxim_test-11R1100 (Analyzed)
OK
Cancel


Kalibro
Configuration Project Settings
Project - eclipse-3.5R21124
Project Results
Configuration: none
Choose configuration
Export results
eclipse-3.5R21124
com
eu
org
ActorType
CharSet
ChildrenElements
CursorKeyMode
EventType
FileType
FirstLevelElements
ForwardType
ImageType
InstanceType
KeyPadMode
LineHeightMode
LineType
LineWidthMode
OriginMode
QueueAttribute
QueueStatusEnumeration
QueueTypeEnumeration
ScrollMode
ServiceJobStates
SweepRule
Metric
Value
Subco...
Average
Maximum
Median
Minimum
Standa...
Sum
Global project results ...
Comments
Load date: 26/10/2010 00:19:04
Load time: 00:14:57
Analysis time: 00:10:35
Request analysis
Results for eclipse-3.5R21124 available


Kalibro
Configuration Project Settings
Project - eclipse-3.5R21124
Project Results
Configuration: none
Choose configuration
Export results
eclipse-3.5R21124
com
eu
org
ActorType
CharSet
ChildrenElements
CursorKeyMode
EventType
FileType
FirstLevelElements
ForwardType
ImageType
InstanceType
KeyPadMode
LineHeightMode
LineType
LineWidthMode
OriginMode
QueueAttribute
QueueStatusEnumeration
QueueTypeEnumeration
ScrollMode
ServiceJobStates
SweepRule
eclipse-3.5R21124
Metric | Value | Subco... | Average | Maximum | Median | Minimum | Standa... | Sum
total_abstract_clas... | 40.00
total_cof | 0.00
total_loc | 148,593
total_methods_pe... | 11.55
total_modules | 1,964.00
total_modules_wit... | 1,327.00
total_modules_wit... | 1,886.00
total_nom | 14,930.00
acc | 1964 | 1.72 | 321.00 | 0.00 | 0.00 | 8.74 | 3,369.00
accm | 1964 | 40.00 | 1.33 | 0.00 | 1.69 | 3,550.22
amloc | 1964 | 9.59 | 126.00 | 6.72 | 0.00 | 10.91 | 18,825.12
anpm | 0.77 | 5.50 | 0.67 | 0.00 | 0.69 | 1,508.54
cbo | 1964 | 1.01 | 41.00 | 0.00 | 0.00 | 1.99 | 1,976.00
dit | 1964 | 1.00 | 6.00 | 0.00 | 0.00 | 1.12
lcom4 | 1964 | 3.54 | 161.00 | 2.00 | 0.00 | 7.58 | 6,949.00
loc | 1964 | 75.66 | 2,592.00 | 32.00 | 0.00 | 149.72 | 148,593....
mmloc | 1964 | 26.92 | 1,430.00 | 12.00 | 0.00 | 63.44 | 52,871.00
noa | 1964 | 4.06 | 181.00 | 2.00 | 0.00 | 11.26 | 7,971.00
noc | 1964 | 0.37 | 40.00 | 0.00 | 0.00 | 1.56 | 724.00
nom | 1964 | 7.60 | 166.00 | 5.00 | 0.00 | 11.98 | 14,930.00
npa | 1964 | 1.51 | 180.00 | 0.00 | 0.00 | 10.52 | 2,972.00
npm | 1964 | 5.93 | 164.00 | 3.00 | 0.00 | 11.31 | 11,655.00
rfc | 1964 | 26.86 | 871.00 | 18.00 | 0.00 | 45.71 | 41,185.00
Analyzed 148,593 lines of code ...
... in 10 min. and 35 seg.
Comments
Load date: 26/10/2010 00:19:04
Load time: 00:14:57
Analysis time: 00:10:35
Request analysis
Results for eclipse-3.5R21124 available


Kalibro
Configuration Project Settings
Project - eclipse-3.5R21124
Project Results
Configuration: none
Choose configuration
Export results
eclipse-3.5R21124
com
eu
org
ActorType
CharSet
ChildrenElements
CursorKeyMode
EventType
FileType
FirstLevelElements
ForwardType
ImageType
InstanceType
KeyPadMode
LineHeightMode
LineType
LineWidthMode
OriginMode
QueueAttribute
QueueStatusEnumeration
QueueTypeEnumeration
ScrollMode
ServiceJobStates
SweepRule
eclipse-3.5R21124
Metric | Value | Subco... | Average | Maximum | Median | Minimum | Standa... | Sum
total_abstract_clas... | 40.00
total_cof | 0.00
total_loc | 148,593....
total_methods_pe... | 11.55
total_modules | 1,964.00
total_modules_wit... | 1,327.00
total_modules_wit... | 1,886.00
total_nom | 14,930.00
acc | 1964 | 1.72 | 321.00 | 0.00 | 0.00 | 8.74 | 3,369.00
accm | 1964 | 1.81 | 40.00 | 1.33 | 0.00 | 1.69 | 3,550.22
amloc | 1964 | 9.59 | 126.00 | 6.72 | 0.00 | 10.91 | 18,825.12
anpm | 1964 | 0.77 | 5.50 | 0.67 | 0.00 | 0.69 | 1,508.54
cbo | 1964 | 1.01 | 41.00 | 0.00 | 0.00 | 1.99 | 1,976.00
dit | 0.00 | 1.06 | 2,127.00
lcom4 | 0.00 | 7.58 | 6,949.00
loc | 0.00 | 149.72 | 148,593....
mmloc | 0.00 | 63.44 | 52,871.00
noa | 0.00 | 11.26 | 7,971.00
noc | 0.00 | 1.56 | 724.00
nom | 0.00 | 11.98 | 14,930.00
npa | 0.00 | 10.52 | 2,972.00
npm | 0.00 | 11.31 | 11,655.00
rfc | 0.00 | 45.71 | 41,165.00
Choose configuration
Configuration
Kalibro suggestion for Java projects
OK
Cancel
Choose a configuration:
a set of thresholds
Comments
Load date: 26/10/2010 00:19:04
Load time: 00:14:57
Analysis time: 00:10:35
Request analysis
Results for eclipse-3.5R21124 available

Kalibro

Configuration Project Settings

Project - eclipse-3.5R21124

Project Results

Configuration: Kalibro suggestion for Java projects

Choose configuration | Export results

- eclipse-3.5R21124
  - com
  - eu
  - org
    - ActorType
    - CharSet
    - ChildrenElements
    - CursorKeyMode
    - EventType
    - FileType
    - FirstLevelElements
    - ForwardType
    - ImageType
    - InstanceType
    - KeyPadMode
    - LineHeightMode
    - LineType
    - LineWidthMode
    - OriginMode
    - QueueAttribute
    - QueueStatusEnumeration
    - QueueTypeEnumeration
    - ScrollMode
    - ServiceJobStates
    - SweepRule

eclipse-3.5R21124 — Weighted mean: 7.25

Metric	Category	Weight	Grade	Range name	Beginning	Result	End
total_cof	Average	1.00	10.00	Good	0.00	0	0.02
acc	Average	1.00	10.00	Good	0.00	1.72	2.00
accm	Average	1.00	8.00	Good	1.10	1.81	2.00
amloc	Average	1.00	8.00	Good	7.00	9.59	10.00
anpm	Average	1.00	10.00	Good	0.00	0.77	2.00
cbo	Average	1.00	6.00	Regular	0.80	1.01	1.60
dit	Average	1.00	10.00	Good	0.00	1.08	1.50
lcom4	Average	1.00	4.00	Warning	2.80	3.54	4.60
loc	Average	1.00	5.00	Regular	70.00	75.66	130.00
mmloc	Average	1.00	0.00	Bad	19.50	26.92	∞
noa	Average	1.00	5.00	Regular	2.00	4.06	5.00
noc	Average	1.00	10.00	Good	0.00	0.37	1.00
nom	Average	1.00	5.00	Regular	7.00	7.6	10.00
npa	Average	1.00	5.00	Regular	0.10	1.51	8.00
npm	Average	1.00	10.00	Good	0.00	5.93	10.00
rfc	Average	1.00	10.00	Good	0.00	20.96	50.00

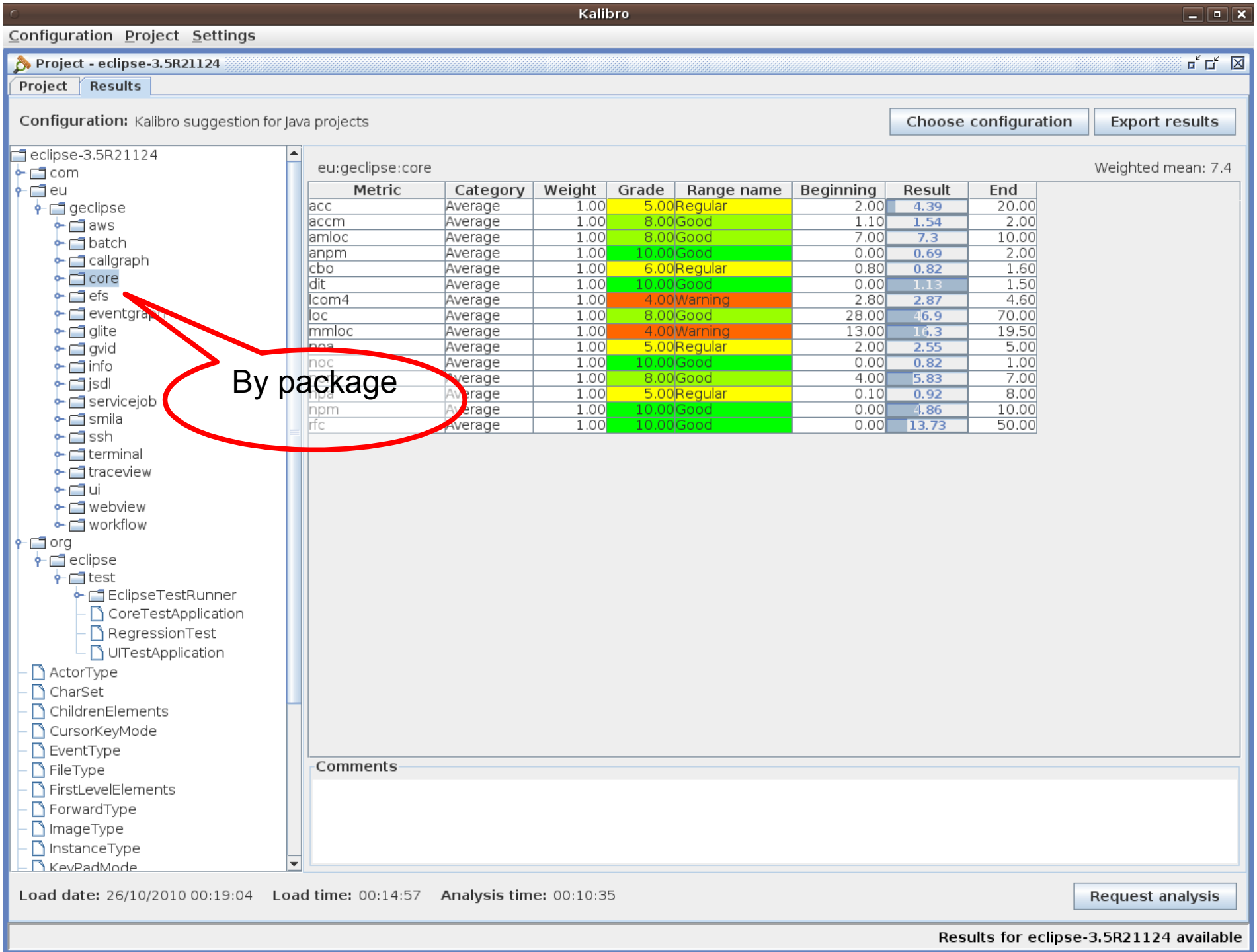
Comments

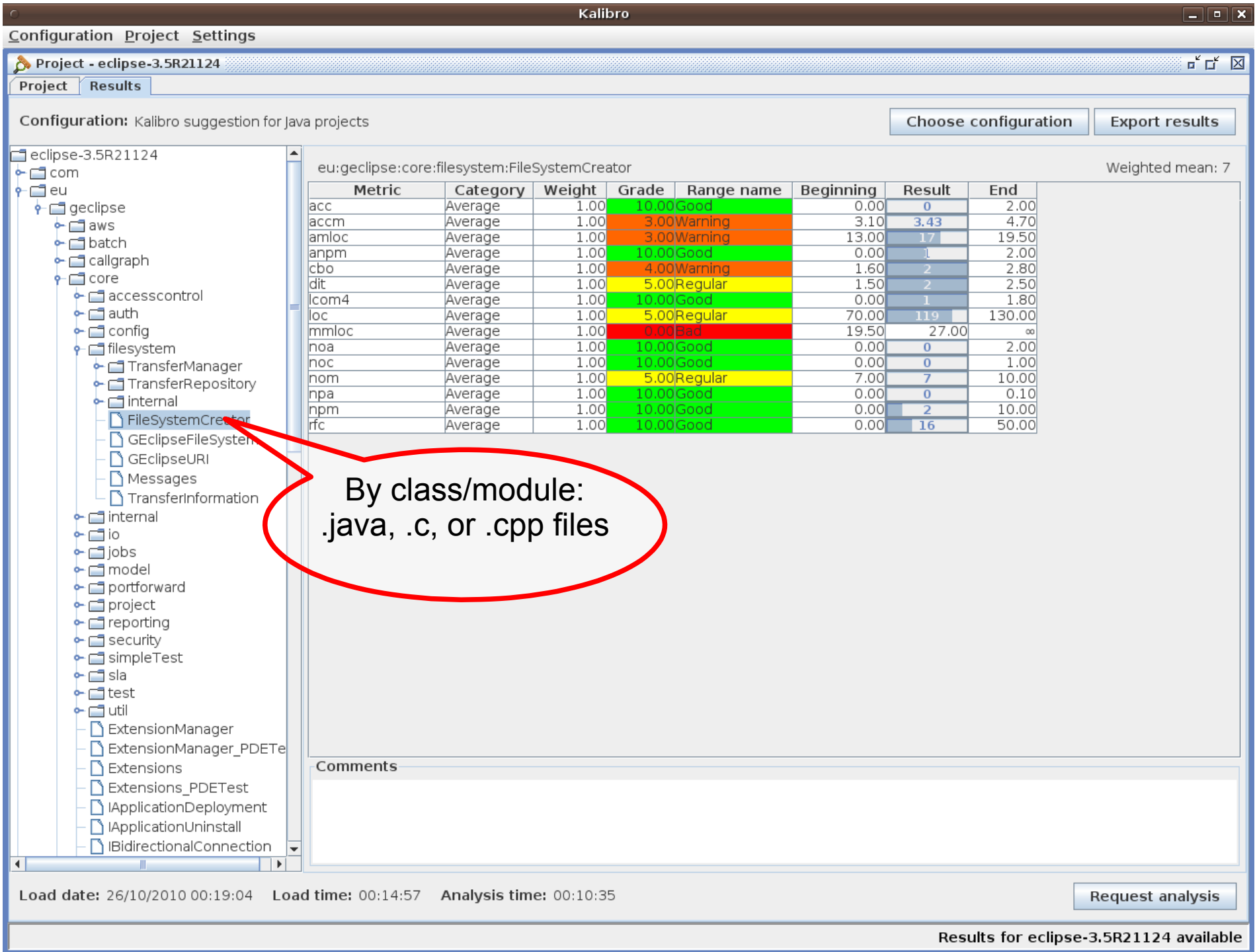
Average Number of Parameters per Method

Load date: 26/10/2010 00:19:04 **Load time:** 00:14:57 **Analysis time:** 00:10:35

Request analysis

Results for eclipse-3.5R21124 available

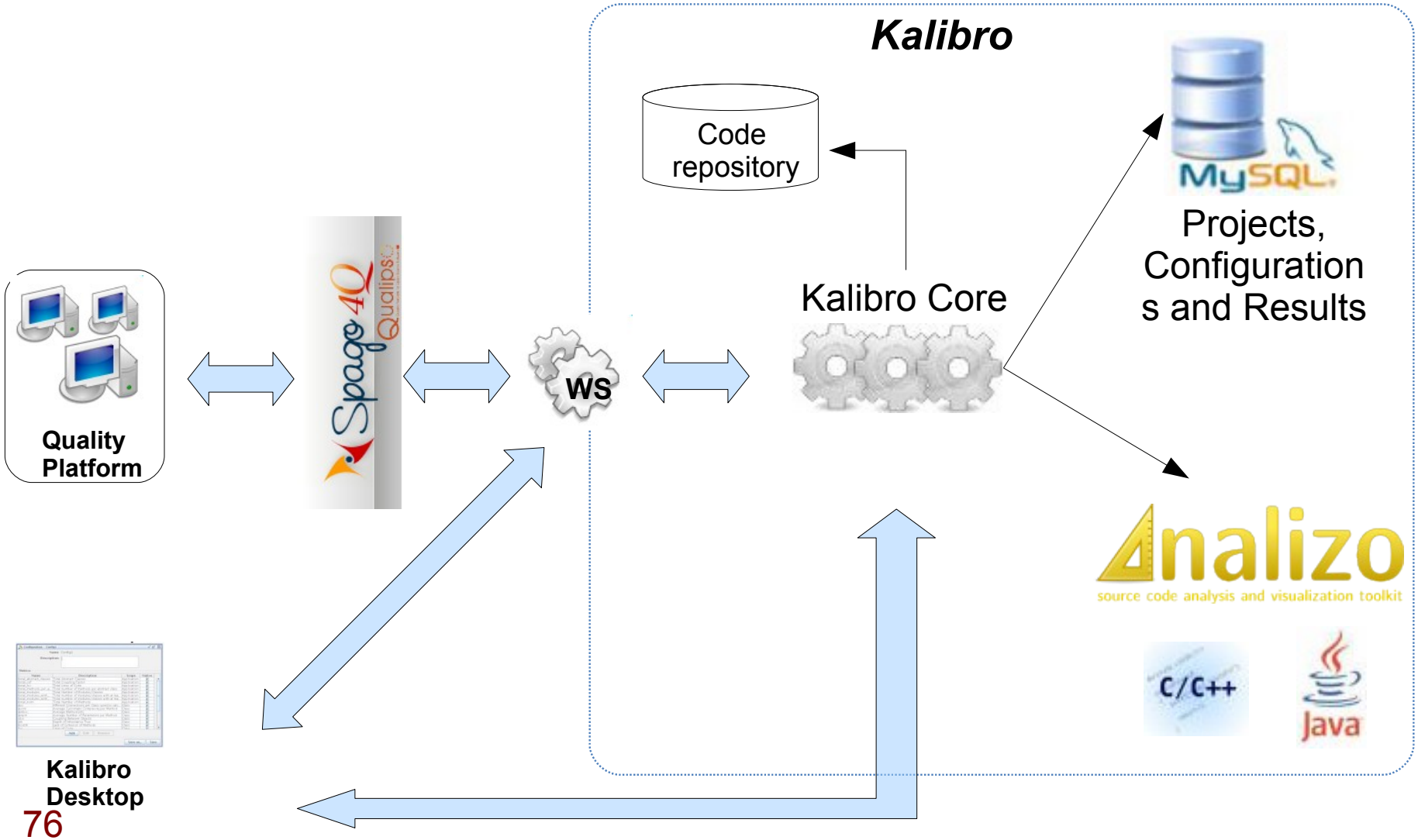

Kalibro
Configuration Project Settings
Project - eclipse-3.5R21124
Project Results
Configuration: Kalibro suggestion for Java projects
Choose configuration
Export results
eclipse-3.5R21124
com
eu
geclipse
aws
batch
callgraph
core
efs
eventgraph
glite
gvid
info
jsdl
servicejob
smila
ssh
terminal
traceview
ui
webview
workflow
org
eclipse
test
EclipseTestRunner
CoreTestApplication
RegressionTest
UITestApplication
ActorType
CharSet
ChildrenElements
CursorKeyMode
EventType
FileType
FirstLevelElements
ForwardType
ImageType
InstanceType
KeyPadMode
By package
eu:geclipse:core
Weighted mean: 7.4
Metric Category Weight Grade Range name Beginning Result End
acc Average 1.00 5.00 Regular 2.00 4.39 20.00
accm Average 1.00 8.00 Good 1.10 1.54 2.00
amloc Average 1.00 8.00 Good 7.00 7.3 10.00
anpm Average 1.00 10.00 Good 0.00 0.69 2.00
cbo Average 1.00 6.00 Regular 0.80 0.82 1.60
dit Average 1.00 10.00 Good 0.00 1.13 1.50
lcom4 Average 1.00 4.00 Warning 2.80 2.87 4.60
loc Average 1.00 8.00 Good 28.00 46.9 70.00
mmloc Average 1.00 4.00 Warning 13.00 16.3 19.50
noa Average 1.00 5.00 Regular 2.00 2.55 5.00
noc Average 1.00 10.00 Good 0.00 0.82 1.00
Average 1.00 8.00 Good 4.00 5.83 7.00
Average 1.00 5.00 Regular 0.10 0.92 8.00
npm Average 1.00 10.00 Good 0.00 4.86 10.00
rfc Average 1.00 10.00 Good 0.00 13.73 50.00
Comments
Load date: 26/10/2010 00:19:04 Load time: 00:14:57 Analysis time: 00:10:35
Request analysis
Results for eclipse-3.5R21124 available

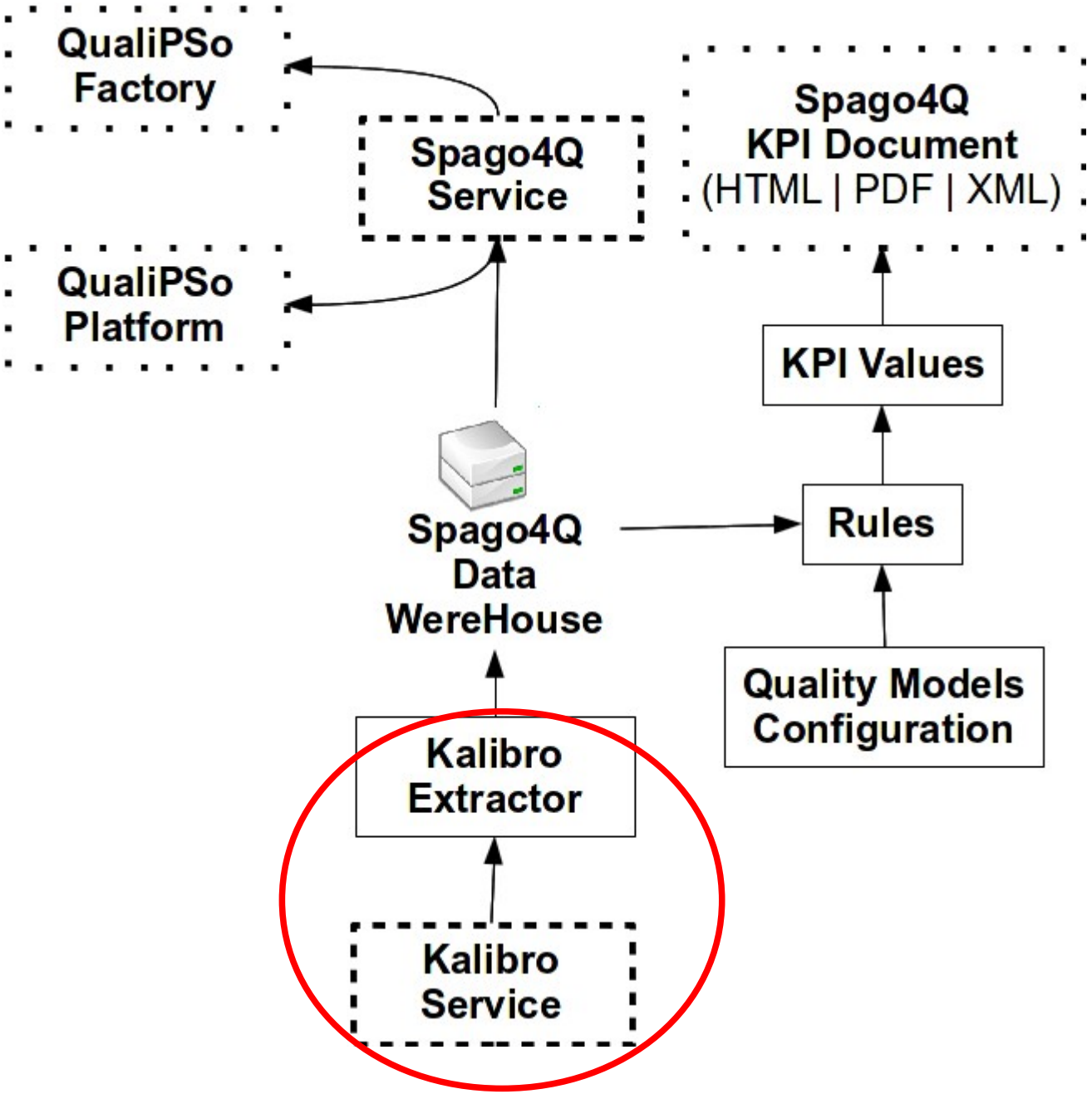

Kalibro
Configuration Project Settings
Project - eclipse-3.5R21124
Project Results
Configuration: Kalibro suggestion for Java projects
Choose configuration
Export results
eclipse-3.5R21124
com
eu
geclipse
aws
batch
callgraph
core
accesscontrol
auth
config
filesystem
TransferManager
TransferRepository
internal
FileSystemCreator
GEclipseFileSystem
GEclipseURI
Messages
TransferInformation
internal
io
jobs
model
portforward
project
reporting
security
simpleTest
sla
test
util
ExtensionManager
ExtensionManager_PDETe
Extensions
Extensions_PDETest
IApplicationDeployment
IApplicationUninstall
IBidirectionalConnection
eu:geclipse:core:filesystem:FileSystemCreator
Weighted mean: 7
Metric | Category | Weight | Grade | Range name | Beginning | Result | End
acc | Average | 1.00 | 10.00 | Good | 0.00 | 0 | 2.00
accm | Average | 1.00 | 3.00 | Warning | 3.10 | 3.43 | 4.70
amloc | Average | 1.00 | 3.00 | Warning | 13.00 | 17 | 19.50
anpm | Average | 1.00 | 10.00 | Good | 0.00 | 1 | 2.00
cbo | Average | 1.00 | 4.00 | Warning | 1.60 | 2 | 2.80
dit | Average | 1.00 | 5.00 | Regular | 1.50 | 2 | 2.50
lcom4 | Average | 1.00 | 10.00 | Good | 0.00 | 1 | 1.80
loc | Average | 1.00 | 5.00 | Regular | 70.00 | 119 | 130.00
mmloc | Average | 1.00 | 0.00 | Bad | 19.50 | 27.00 | ∞
noa | Average | 1.00 | 10.00 | Good | 0.00 | 0 | 2.00
noc | Average | 1.00 | 10.00 | Good | 0.00 | 0 | 1.00
nom | Average | 1.00 | 5.00 | Regular | 7.00 | 7 | 10.00
npa | Average | 1.00 | 10.00 | Good | 0.00 | 0 | 0.10
npm | Average | 1.00 | 10.00 | Good | 0.00 | 2 | 10.00
rfc | Average | 1.00 | 10.00 | Good | 0.00 | 16 | 50.00
By class/module:
.java, .c, or .cpp files
Comments
Load date: 26/10/2010 00:19:04
Load time: 00:14:57
Analysis time: 00:10:35
Request analysis
Results for eclipse-3.5R21124 available

Kalibro for QualiPSO

Kalibo Service → Spago4Q

Qualipso Platform Integration




QualiPSo
Factory
Spago4Q
Service
Spago4Q
KPI Document
(HTML | PDF | XML)
QualiPSo
Platform
KPI Values
Spago4Q
Data
WereHouse
Rules
Quality Models
Configuration
Kalibro
Extractor
Kalibro
Service

Kalibro Kpi Document

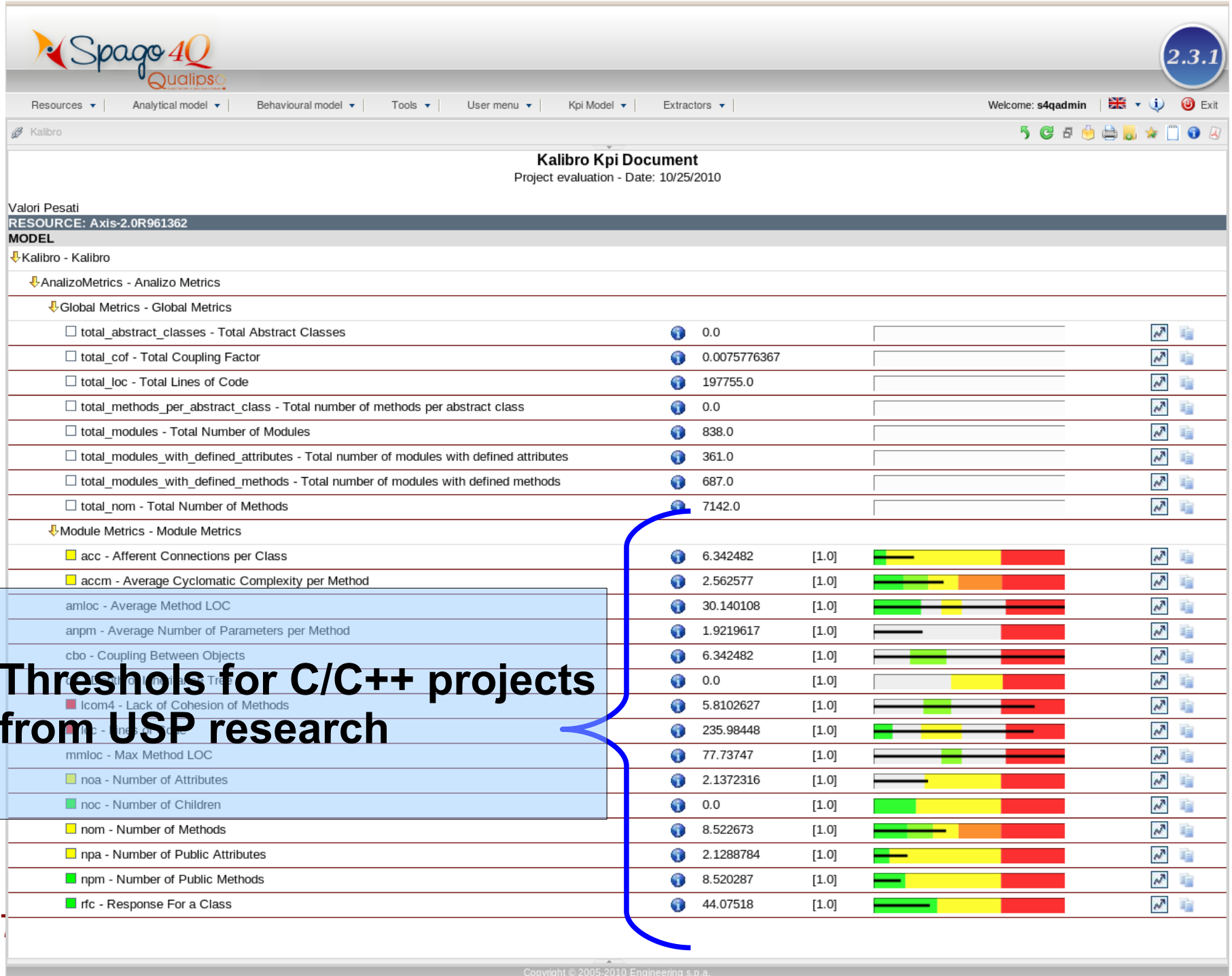
Project evaluation - Date: 10/25/2010

Valori Pesati

RESOURCE: Axis-2.0R961362

MODEL

Kalibro - Kalibro			
AnalizoMetrics - Analizo Metrics			
Global Metrics - Global Metrics			
total_abstract_classes - Total Abstract Classes	0.0		
total_cof - Total Coupling Factor	0.0075776367		
total_loc - Total Lines of Code	197755.0		
total_methods_per_abstract_class - Total number of methods per abstract class	0.0		
total_modules - Total Number of Modules	838.0		
total_modules_with_defined_attributes - Total number of modules with defined attributes	361.0		
total_modules_with_defined_methods - Total number of modules with defined methods	687.0		
total_nom - Total Number of Methods	7142.0		
Module Metrics - Module Metrics			
acc - Afferent Connections per Class	6.342482	[1.0]	
accm - Average Cyclomatic Complexity per Method	2.562577	[1.0]	
amloc - Average Method LOC	30.140108	[1.0]	
anpm - Average Number of Parameters per Method	1.9219617	[1.0]	
cbo - Coupling Between Objects	6.342482	[1.0]	
dit - Depth of Inheritance Tree	0.0	[1.0]	
lcom4 - Lack of Cohesion of Methods	5.8102627	[1.0]	
loc - Lines of Code	235.98448	[1.0]	
mmloc - Max Method LOC	77.73747	[1.0]	
noa - Number of Attributes	2.1372316	[1.0]	
noc - Number of Children	0.0	[1.0]	
nom - Number of Methods	8.522673	[1.0]	
npa - Number of Public Attributes	2.1288784	[1.0]	
npm - Number of Public Methods	8.520287	[1.0]	
rfc - Response For a Class	44.07518	[1.0]	

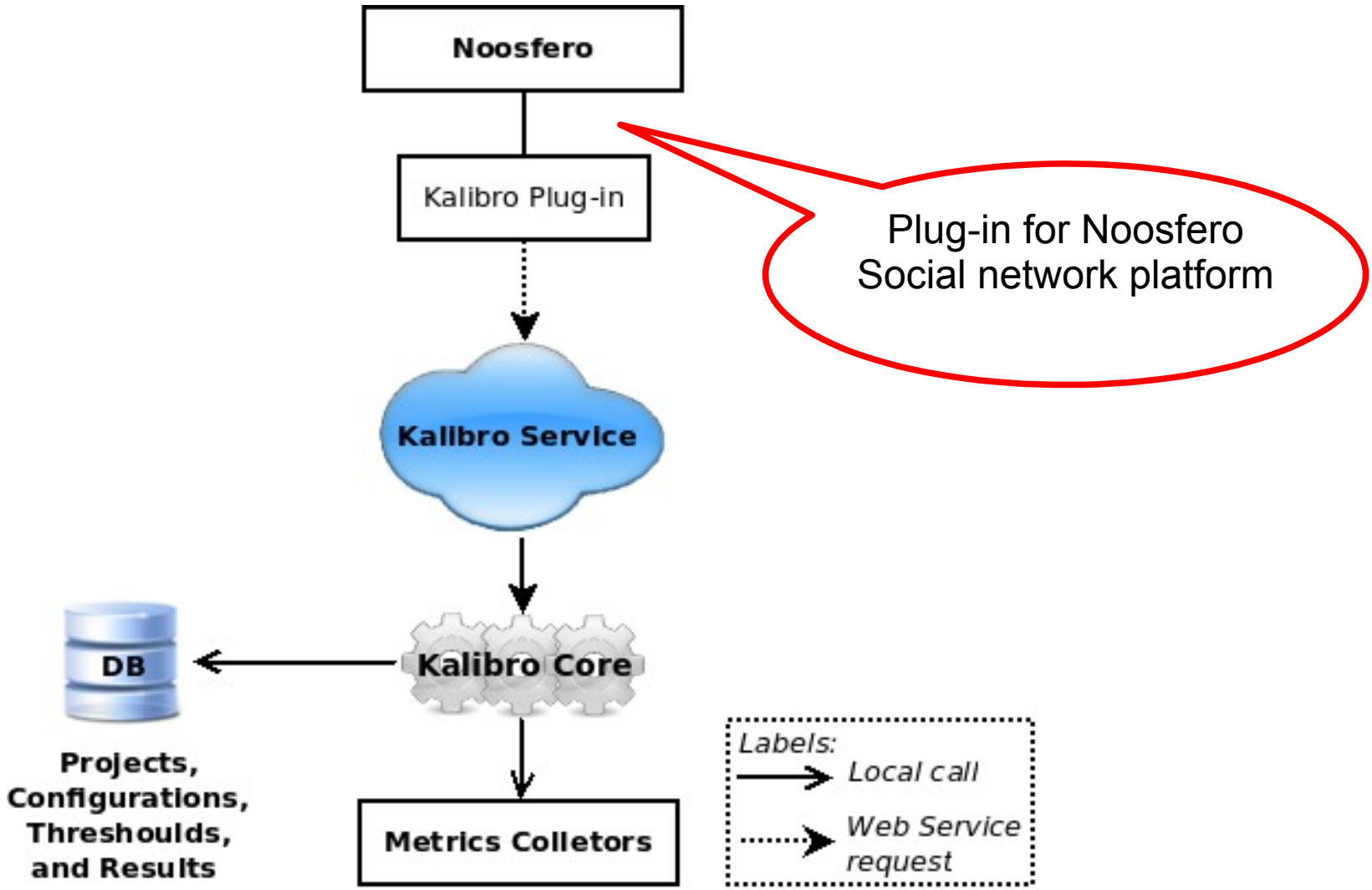


Threshols for C/C++ projects from USP research

our current work...

Mezuro

source code
tracking network


Noosfero
Kalibro Plug-in
Plug-in for Noosfero
Social network platform
Kalibro Service
DB
Kalibro Core
Projects,
Configurations,
Threshoulds,
and Results
Metrics Colletors
Labels:
Local call
Web Service
request

Login or Register Search...

Mezuro software metrics made easy

People Communities Events

PROJECTS View all ▶

QT-Calculat FreeFlash AA Project

Kalibro Doxygen JMeter

LOGIN

Username

Password

Log in New user

I forgot my password!

PEOPLE View all ▶

Paulo RMM Joenio Costa Rafael Martins

terceiro Rodrigo Souto

STATISTICS FOR MEZURO

» 5 users

» 6 communities

Mezuro software metrics made easy

Kalibro

Homepage

View profile

Control panel

- -

Leave

Send an e-mail

RECENT CONTENT

All content

NEW PROJECT

The highlighted (*) fields are mandatory.

Name (*)

Kalibro

Repository url (*)

git://gitorious.org/kalibro/kalibro.git

Identifier (*)

kalibro

With tab

☑

Description

Kalibro Metrics aims to improve the use of source code metrics. It is designed for easy integration with a

Register project | Cancel

Get Involved

Community:

softwarelivre.org/mezuro

community.qualipso.org/kalibro

Mailling list:

mezuro@listas.softwarelivre.org

Network:

http://mezuro.org (2012)

Our tools are Free Software

SF-Downloads

Source code (LGPL):

gitorious.org/sf-explorer/sf-downloads

analizo.org

Source code (GPL V3):

gitorious.org/analizo

Our tools are Free Software

kalibro.org

Source code (LGPL):

gitorious.org/kalibro

mezuro.org

Source code (AGPL V3):

gitorious.org/+mezuro/noosfero/mezuro-noosfero

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