We used COdeMR and designite tools for the code metrics

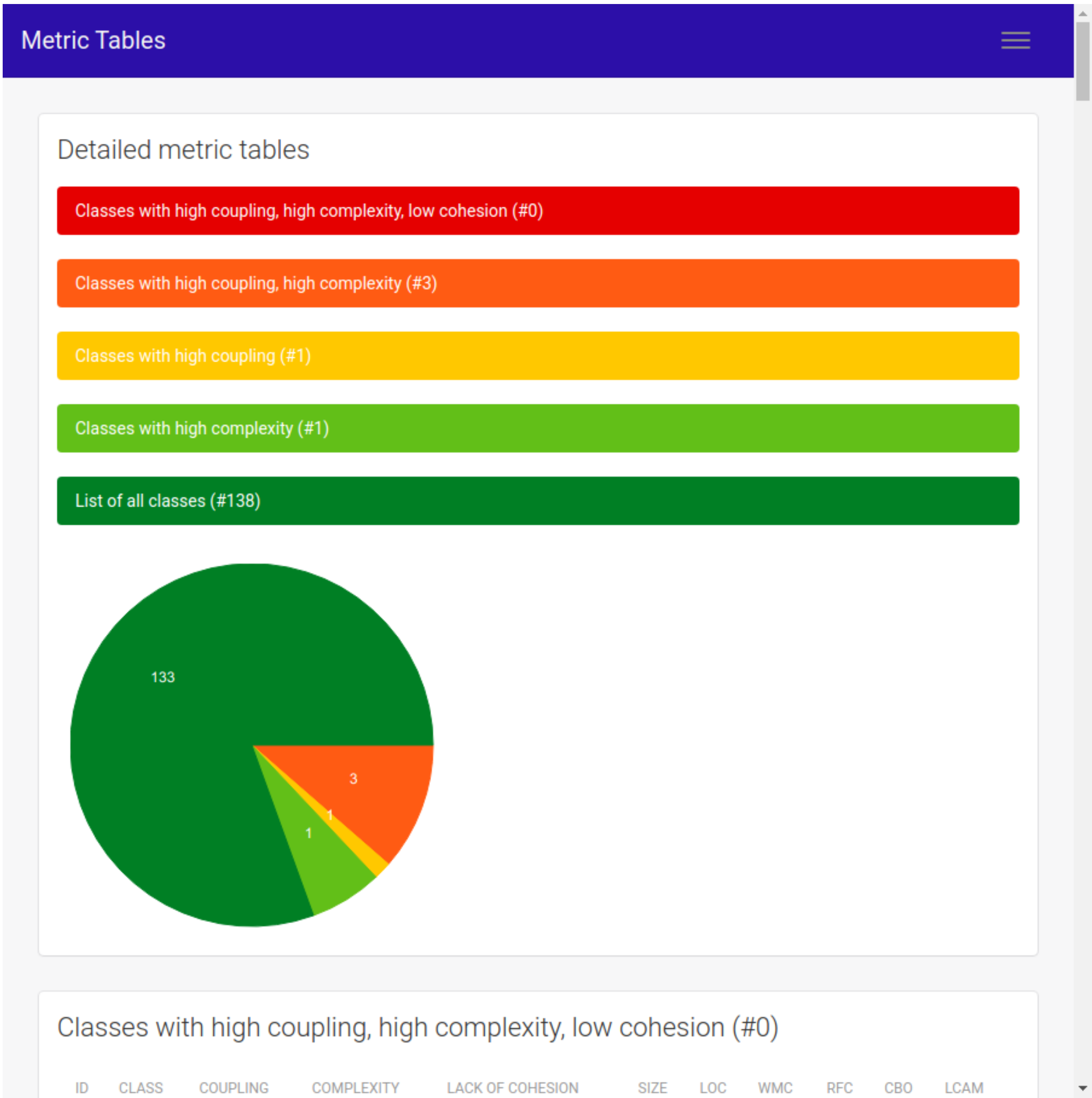
Information

This project contains

- 5537 lines of code
- 138 classes
- 28 packages

Analysis

PROF

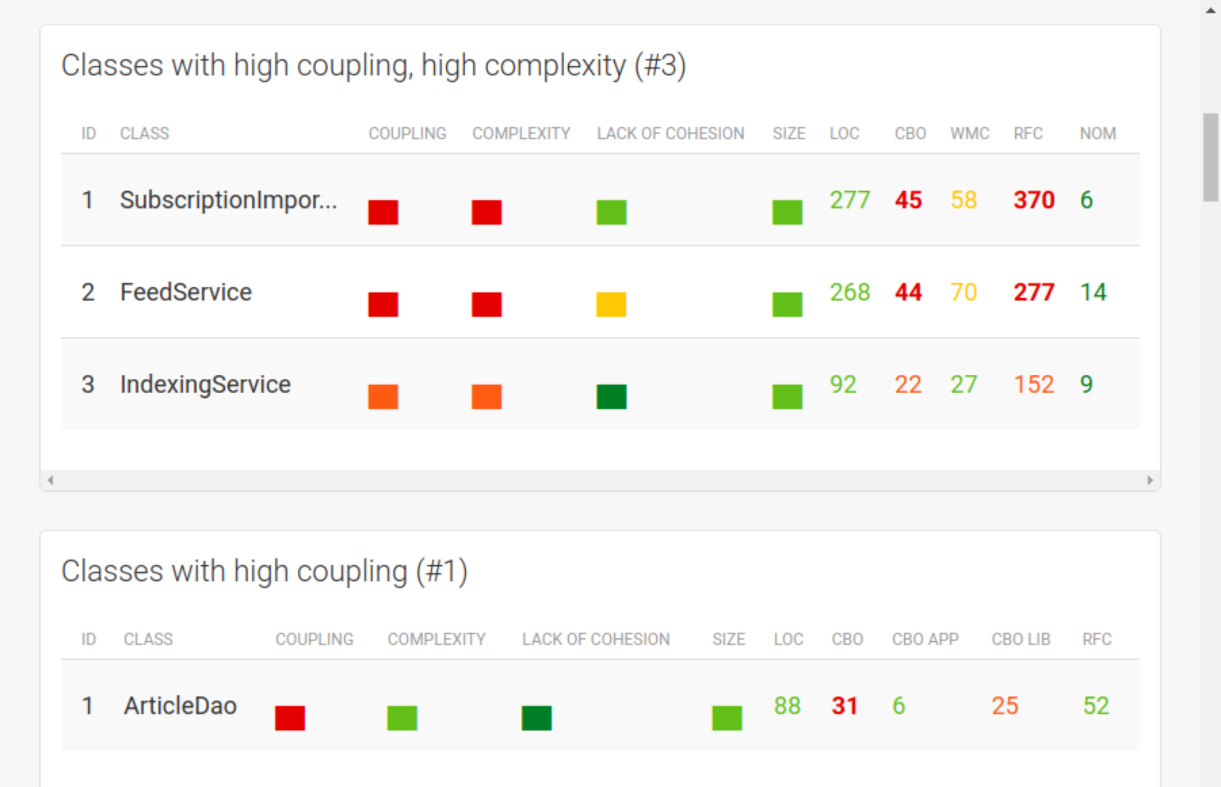


Detailed metric tables

- Classes with high coupling, high complexity, low cohesion (#0)
- Classes with high coupling, high complexity (#3)
- Classes with high coupling (#1)
- Classes with high complexity (#1)
- List of all classes (#138)

Classes with high coupling, high complexity, low cohesion (#0)

ID	CLASS	COUPLING	COMPLEXITY	LACK OF COHESION	SIZE	LOC	WMC	RFC	CBO	LCAM



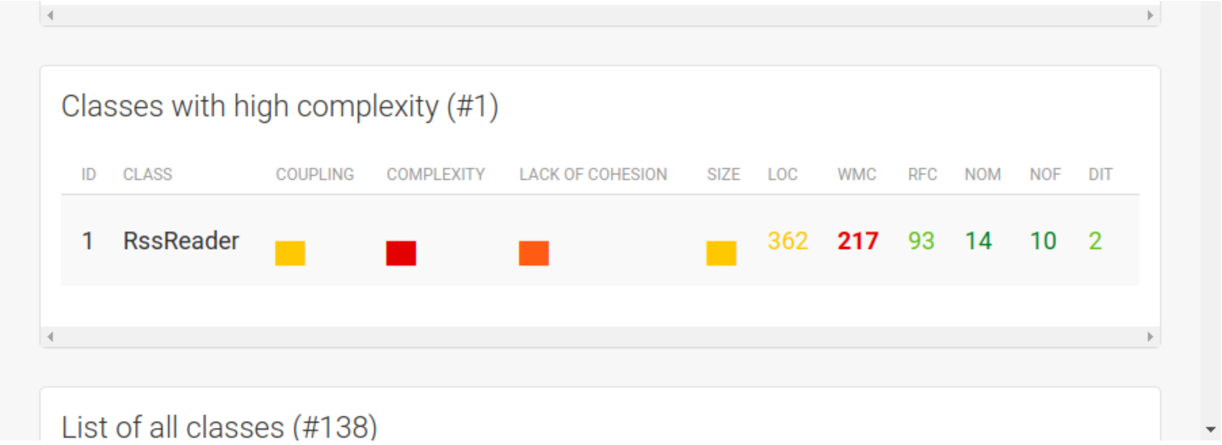
Classes with high coupling, high complexity (#3)

ID	CLASS	COUPLING	COMPLEXITY	LACK OF COHESION	SIZE	LOC	CBO	WMC	RFC	NOM
1	SubscriptionImpor...	🟥	🟥	🟩	🟩	277	45	58	370	6
2	FeedService	🟥	🟥	🟨	🟩	268	44	70	277	14
3	IndexingService	🟧	🟧	🟩	🟩	92	22	27	152	9

Classes with high coupling (#1)

ID	CLASS	COUPLING	COMPLEXITY	LACK OF COHESION	SIZE	LOC	CBO	CBO APP	CBO LIB	RFC
1	ArticleDao	🟥	🟩	🟩	🟩	88	31	6	25	52

PROF



Classes with high complexity (#1)

ID	CLASS	COUPLING	COMPLEXITY	LACK OF COHESION	SIZE	LOC	WMC	RFC	NOM	NOF	DIT
1	RssReader	🟨	🟥	🟧	🟨	362	217	93	14	10	2

List of all classes (#138)

Package-wise analysis

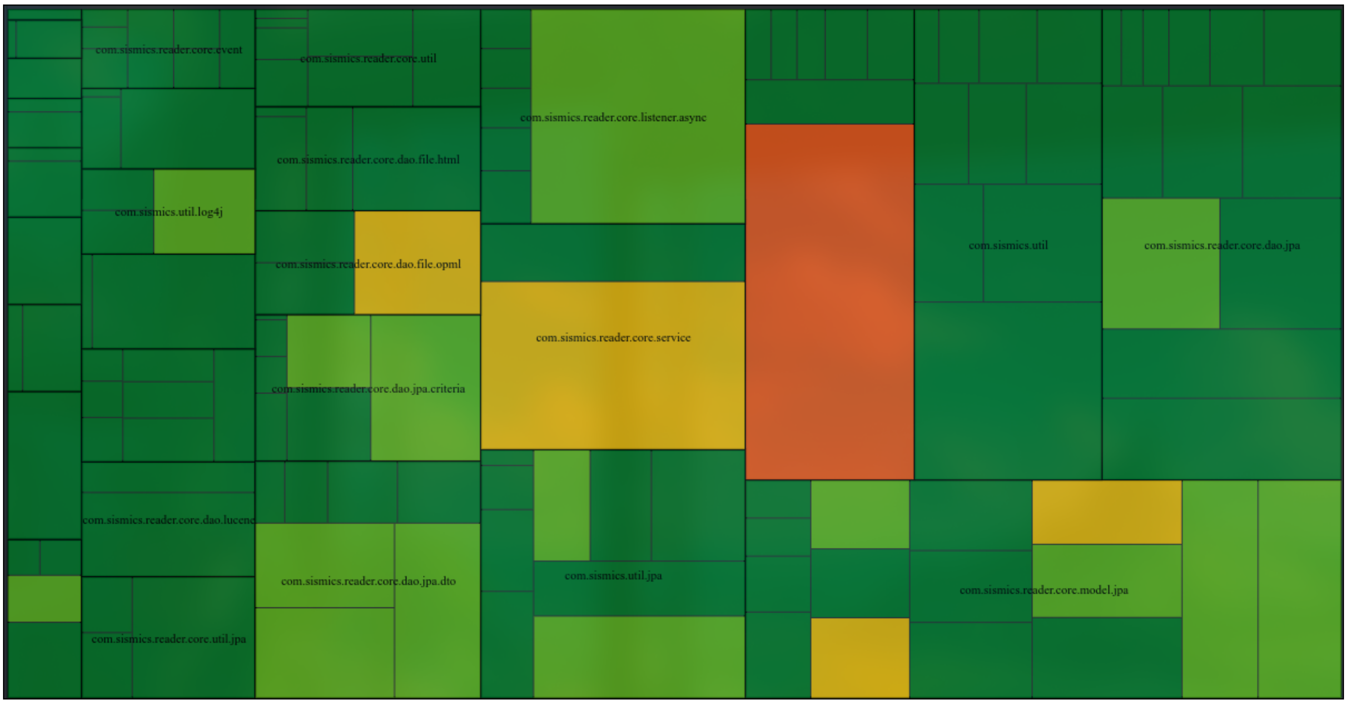
Name	Complexity	Coupling	Size	Lack of Cohesion
com.sismics.reader.core.dao.file.rss	low-medium	low	low-medium	low
com.sismics.reader.core.dao.jpa	low	medium-high	medium-high	low
com.sismics.reader.core.dao.jpa.mapper	low	low-medium	low-medium	low
com.sismics.reader.core.event	low	low-medium	low-medium	low
com.sismics.reader.core.listener.async	low	low-medium	low-medium	low
com.sismics.reader.core.model.jpa	low-medium	medium-high	medium-high	low
com.sismics.reader.core.service	low	low	low-medium	low
com.sismics.reader.core.util	low	low-medium	low-medium	low
com.sismics.util	low	low-medium	low-medium	low
com.sismics.util.jpa	low	low-medium	low-medium	low

> Both the jpa packages have high coupling with the other packages

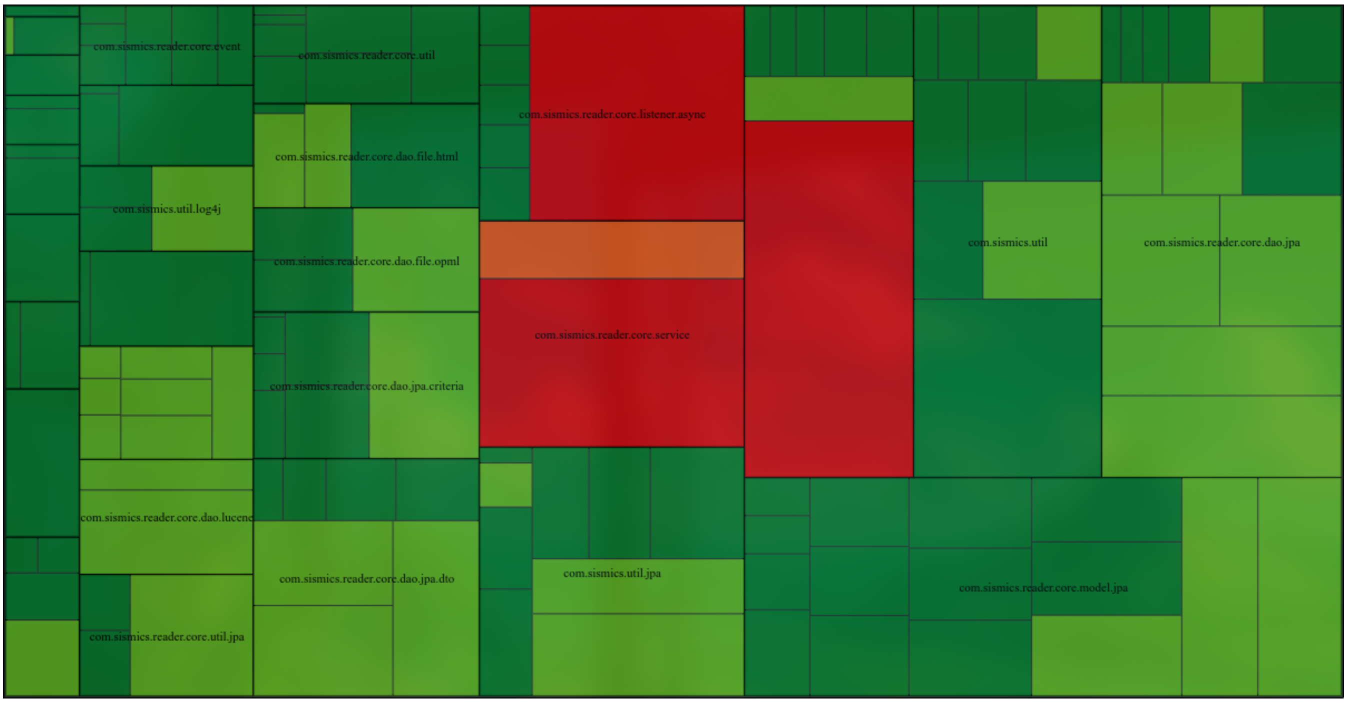
Treemaps

Cohesion

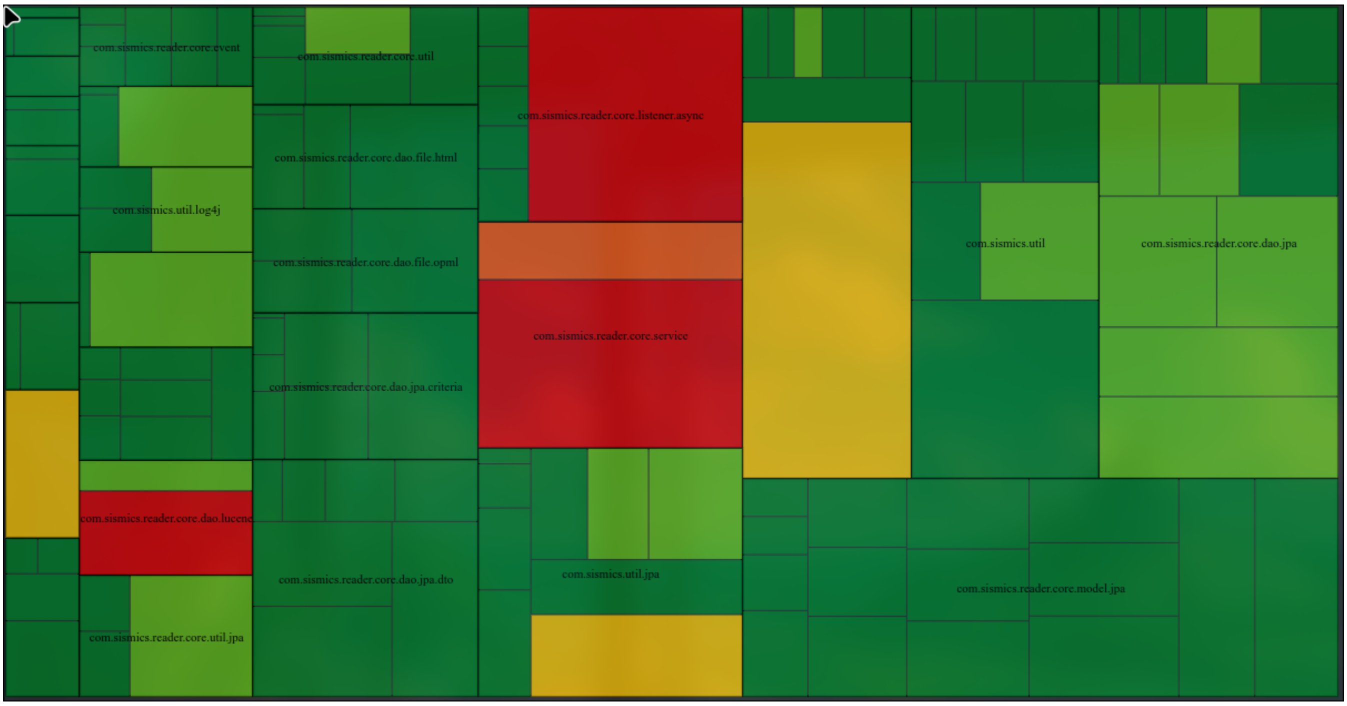
PROF



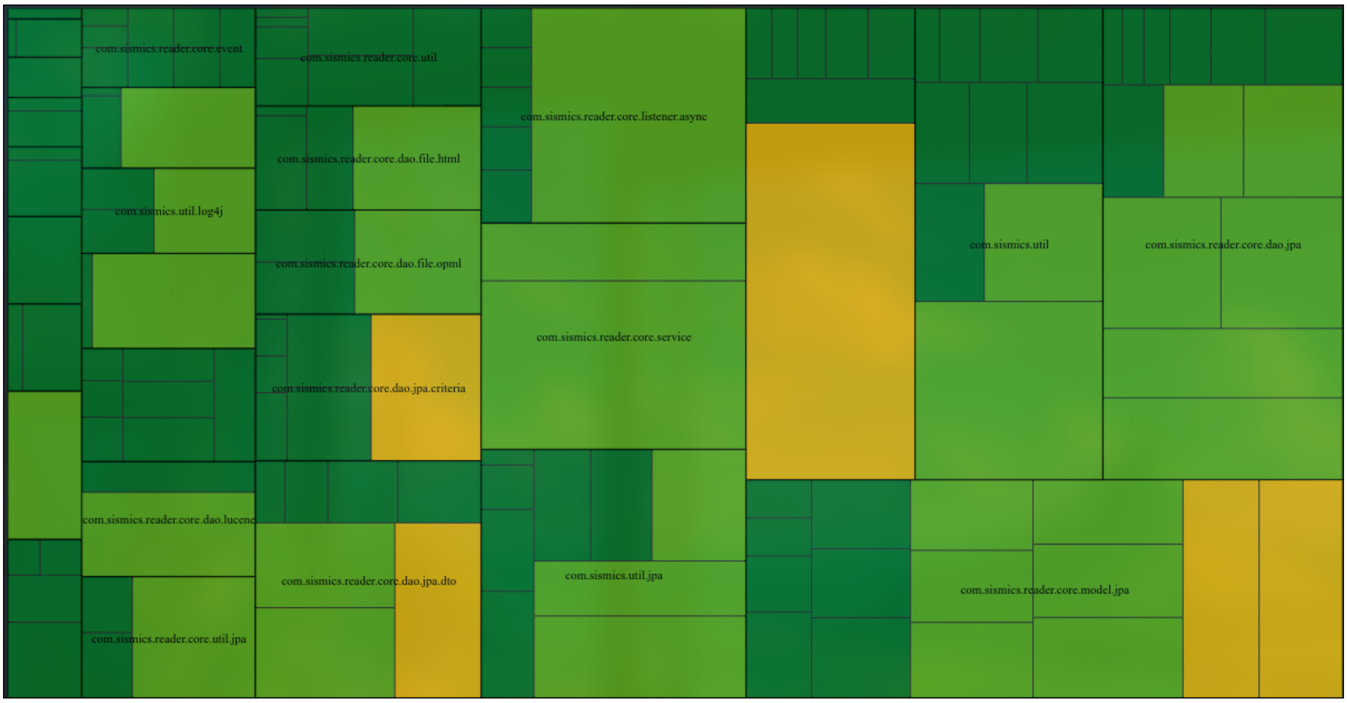
Complexity



Coupling



Size



Classes with high coupling, high complexity (#3)

com.sismics.reader.core.listener.async.SubscriptionImportAsyncListener \
com.sismics.reader.core.service.FeedService \
com.sismics.reader.core.service.IndexingService

Classes with high coupling (#1)

com.sismics.reader.core.dao.lucene.ArticleDao

Classes with high complexity (#1)

com.sismics.reader.core.dao.file.rss.RssReader

CodeMR on these files

Name	Name	DIT	NOC	WMC	LOC	NOM	LCOM
com.sismics.reader.core.dao.file.rss.RssReader	RssReader	2	0	217	362	14	0.906
com.sismics.reader.core.dao.lucene.ArticleDao	ArticleDao	1	0	13	88	6	0.0
com.sismics.reader.core.listener.async.SubscriptionImportAsyncListener	SubscriptionImportAsyncListener	1	0	58	277	6	0.5
com.sismics.reader.core.model.context.AppContext	AppContext	1	0	17	66	10	0.9
com.sismics.reader.core.service.FeedService	FeedService	2	0	70	268	14	0.0

PROF

Codalyze analysis on these files

RssReader

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)	Lines of Code (Threshold: 50)	Parameter Count (Threshold : 4)
RssReader::RssReader	197	199	1	3	0
RssReader::readRssFeed	206	243	6	30	1
RssReader::startElement	246	412	***133***	***160***	4
RssReader::endElement	415	485	***58***	***68***	3
RssReader::initFeed	490	494	1	5	0
RssReader::pushElement	501	509	3	9	1
RssReader::popElement	515	524	3	10	0
RssReader::validateFeed	530	534	2	5	0

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)	Lines of Code (Threshold: 50)	Parameter Count (Threshold : 4)
RssReader::fixGuid	539	545	3	7	0
RssReader::characters	548	555	2	8	3
RssReader::fatalError	558	564	2	7	1
RssReader::getContent	571	575	1	5	0
RssReader::getFeed	582	584	1	3	0
RssReader::getArticleList	591	593	1	3	0

> startElement and endElement have a lot of lines of code and are also very complex.
> They have a lot of conditional statements.

ArticleDao

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)	Lines of Code (Threshold: 50)	Parameter Count (Threshold : 4)
ArticleDao::rebuildIndex	44	55	2	9	1
ArticleDao::create	63	71	2	8	1
ArticleDao::update	78	86	2	8	1
ArticleDao::delete	93	100	2	7	1
ArticleDao::search	109	182	7	***60***	2
ArticleDao::getDocumentFromArticle	190	204	1	11	1

> search is too long.

IndexingService

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)	Lines of Code (Threshold: 50)	Parameter Count (Threshold : 4)
IndexingService::IndexingService	59	61	1	3	1
IndexingService::startUp	64	78	5	14	0
IndexingService::shutDown	81	96	5	16	0
IndexingService::runOneIteration	99	103	1	4	0
IndexingService::scheduler	106	108	1	3	0
IndexingService::searchArticles	119	163	6	37	4
IndexingService::rebuildIndex	169	172	1	4	0
IndexingService::getDirectory	179	181	1	3	0
IndexingService::getDirectoryReader	190	213	6	24	0

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> No major issue found

FeedService

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)	Lines of Code (Threshold: 50)	Parameter Count (Threshold : 4)
FeedService::startUp	62	63	1	2	0
FeedService::shutDown	66	67	1	2	0
FeedService::runOneIteration	70	77	2	7	0
FeedService::scheduler	80	83	1	3	0
FeedService::synchronizeAllFeeds	88	131	7	38	0
FeedService::synchronize	138	316	***23***	***137***	1
FeedService::completeArticleList	323	330	4	8	1
FeedService::getArticleToRemove	337	372	7	27	1

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)	Lines of Code (Threshold: 50)	Parameter Count (Threshold : 4)
FeedService::getNewerArticleList	374	382	3	9	2
FeedService::getOldestArticle	384	392	4	9	1
FeedService::isFaviconUpdated	400	405	3	6	1
FeedService::parseFeedOrPage	414	456	8	40	2
FeedService::logParsingError	458	468	5	11	2
FeedService::createInitialUserArticle	477	500	4	22	2

> synchronize is very complex and is very lengthy.
> It has a lot of conditional statements and loops.

SubscriptionImportAsyncListener

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)	Lines of Code (Threshold: 50)	Parameter Count (Threshold : 4)
SubscriptionImportAsyncListener::onSubscriptionImport	73	87	3	13	1
SubscriptionImportAsyncListener::createJob	97	175	9	***62***	2
SubscriptionImportAsyncListener::getFeedCount	183	194	2	8	1
SubscriptionImportAsyncListener::processImportFile	203	295	***16***	***79***	3
SubscriptionImportAsyncListener::importOutline	304	422	***15***	***95***	3
SubscriptionImportAsyncListener::importFeedFromStarred	431	510	***13***	***67***	3

> a lot of functions have lot of lines of code and are very complex

What do these metrics mean?

CBO (Coupling Between Object Classes):
CBO measures the number of classes a given class is coupled to by counting those it uses and those that use it (excluding inheritance). A high CBO indicates strong interdependencies, which can make maintenance more challenging and reduce reusability, as changes in one class may ripple through others. This increased coupling also requires more rigorous testing to ensure system stability.

NOF (Number Of Fields):
NOF counts the total instance variables within a class, reflecting the amount of state it manages. A high NOF may suggest that the class is taking on too many responsibilities (potentially becoming a "God Class"), thereby increasing complexity and making the code harder to maintain. Conversely, an extremely low NOF in a data-centric class might indicate underutilization, though its direct impact on performance is minimal compared to its effect on clarity and design focus.

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NOPF (Number Of Public Fields):
NOPF quantifies the fields that are publicly accessible, serving as a direct measure of a class's encapsulation. High NOPF often signals poor encapsulation and tight coupling, as external components can directly modify internal state, leading to fragile designs and increased maintenance risk. A low NOPF promotes better data protection and a more robust, modular design.

NOM (Number Of Methods):
NOM is the total count of methods (both public and private) defined in a class, indicating the breadth of its functionality. A high NOM can either reflect a well-decomposed class that breaks complex tasks into manageable methods or a class with too many responsibilities, potentially increasing cognitive load and maintenance effort. The direct performance impact is minimal, but excessive methods can complicate understanding and reusability.

NOPM (Number Of Public Methods):
NOPM measures the number of methods exposed in a class's public interface. An excessive number of public methods can lead to a bloated interface that is harder to manage, prone to misuse, and challenging to evolve without breaking dependencies. Keeping NOPM low promotes a clear, focused interface that supports better encapsulation and maintainability.

LOC (Lines Of Code):
LOC represents the total number of lines in a class or module, serving as a rough gauge of its size and complexity. High LOC often correlates with increased complexity and can indicate a class that is doing too much, making it harder to test and maintain. While LOC itself does not directly affect runtime performance, larger codebases may lead to longer compile times and an increased likelihood of bugs.

WMC (Weighted Methods per Class):
WMC aggregates the complexity of all methods within a class—often using cyclomatic complexity as a basis. A high WMC suggests that the class contains many complex methods, which can lead to higher defect rates, increased testing efforts, and greater maintenance challenges. Conversely, a low WMC indicates simpler, more understandable methods that are easier to optimize and maintain.

NC (Number of Constructors):
NC counts the number of constructors in a class, indicating the flexibility available for object instantiation. While multiple constructors can offer useful initialization options, an excessive number can complicate object creation and lead to inconsistent states, thereby increasing maintenance challenges. Typically, NC has minimal direct performance impact unless initialization logic is overly complex.

DIT (Depth of Inheritance Tree):
DIT measures the length of the inheritance chain from a class to the root, showing how deeply embedded a class is in the hierarchy. A deep DIT can promote code reuse and polymorphism but also increases the complexity and cognitive load required to understand class behavior, as changes in superclasses can affect subclasses in unforeseen ways. The impact on runtime performance is generally minor, but maintainability may suffer.

NOC (Number of Children):
NOC counts the direct subclasses of a class, reflecting how extensively a class is reused via inheritance. A high NOC implies that a class is central to the architecture, placing a greater burden on its maintainers to ensure stability, as modifications can have wide-reaching effects. This metric highlights potential maintenance challenges and the need for careful regression testing.

LCOM (Lack of Cohesion of Methods):
LCOM quantifies how closely related the methods in a class are, with lower values indicating higher cohesion. High LCOM is a warning sign that a class may be handling multiple unrelated responsibilities, undermining its maintainability, testability, and clarity. Low LCOM suggests that methods are well-aligned with the class's purpose, thereby supporting reliability and easier maintenance without a significant direct impact on performance.

FANIN (Fan-in):
FANIN measures the number of external classes that depend on or call a given class, indicating its centrality and reusability. A high FANIN suggests that the class is widely used and critical to the system, meaning any changes can have widespread implications and require thorough testing. While a high FANIN is a sign of good reusability, it also increases the risk associated with modifying the class.

FANOUT (Fan-out):
FANOUT counts the number of external classes that a class interacts with, reflecting its level of coupling. A high FANOUT indicates that the class depends on many external modules, potentially leading to a brittle design where changes in dependencies can cascade and complicate maintenance. Lower FANOUT is preferred for a modular, loosely coupled system that is easier to understand and modify.