



Action

Plan

Report

Application: MapCore

Analysis label: No label

Analysis date: 2016/03/11 18:37

Report date: 2016/03/11 18:47

OVERVIEW

This action plan is the result of a What If exercise calculated in order to get better in quality spending the less as possible. In this section Kiuwan provides the main numbers as they are now and as they are going to be if all suggested correction wil be done.

Effort to spend
44.45 Hours

	As is	To be
Risk index	100.00	0.00
Global indicator	23.52	89.06
Effort to target	42 h	0 h

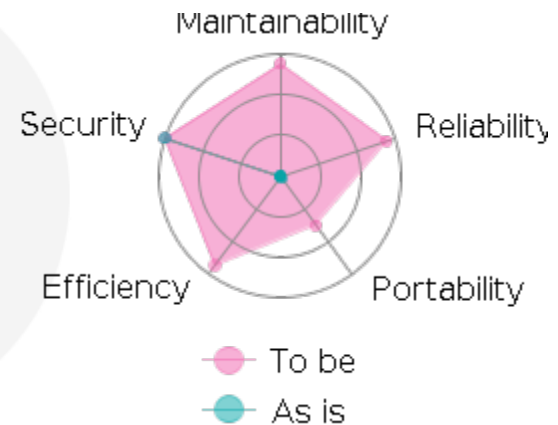
INDICATOR VALUES

You have the model indicators in the current analysis and the ones that you are going to get if you executes this Action Plan.

	As is	To be
Maintainability	0	92.5
Reliability	0	92.29
Portability	2.26	50.57
Efficiency	0	91.12
Security	100	100
Global indicator	23.52	89.06

Global indicator

89.06



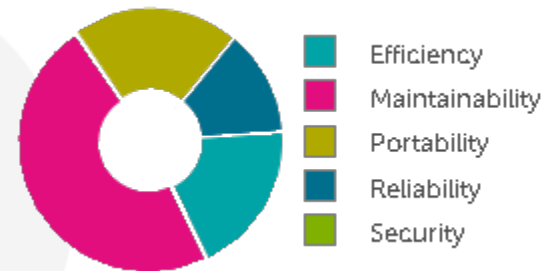
EFFORT TO SPEND

In this chapter you have a detailed budget of this action plan.
You get a breakdown according to the software characteristics defined in CQM model.

Effort to spend

44.45 Hours

Effort to spend	
Efficiency	8.4 Hours
Maintainability	21.2 Hours
Portability	9.1 Hours
Reliability	5.75 Hours
Security	0 Hours
Total	44.45 Hours



DETAILED ACTION PLAN

This chapter contains the technical information of the Action Plan. You have a different section for each broken rule.

About each rule you have the number of defects that you have to correct and the number of files that you need to change. In addition you get the software characteristic, the language, the priority (importance) and the difficulty (represents the time you need to apply the change).

Then you can read (in bold) each file that contains defects, and at the end the line number and the text line where you can find the defect.

4 Defect(s)		Maintainability	Priority 2
4 File(s)	Avoid unused imports	java	Effort 3m
	CMPUT402W16T1-master/osmimporter/src/main/java/com/cmput402w2016/t1/osmimporter/App.java		
	17 import java.util.Iterator;		
	CMPUT402W16T1-master/simulator/src/main/java/com/cmput402w2016/t1/data/Traffic.java		
	3 import org.apache.commons.lang.math.NumberUtils;		
	CMPUT402W16T1-master/webapp/src/main/java/com/cmput402w2016/t1/webapp/Location.java		
	8 import java.util.Arrays;		
	CMPUT402W16T1-master/webapp/src/main/java/com/cmput402w2016/t1/webapp/handler/TrafficHandler.java		
	15 import java.util.concurrent.ExecutorService;		

1 Defect(s)	Do not use labels.	Maintainability	Priority 1
1 File(s)		java	Effort 30m

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmput402w2016/t1/osmimporter/App.java

62 label;

5 Defect(s)	Do not instantiate temporal Objects in loops bodies.	Efficiency	Priority 2
3 File(s)		java	Effort 6m

CMPUT402W16T1-master/simulator/src/main/java/com/cmput402w2016/t1/data/Data.java

62 DateTime time = new DateTime(timestamp, DateTimeZone.UTC);

CMPUT402W16T1-master/simulator/src/main/java/com/cmput402w2016/t1/simulator/App.java

23 FileReader reader = new FileReader(file);

59 Traffic traffic = new Traffic();

CMPUT402W16T1-master/webapp/src/main/java/com/cmput402w2016/t1/webapp/Location.java

53 Scan scan = new Scan();

59 return new String(result.getRow());

21 Defect(s)	Do not use the printStackTrace method.	Efficiency	Priority 2
8 File(s)		java	Effort 6m

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmput402w2016/t1/osmimporter/App.java

48 e.printStackTrace();

50 e.printStackTrace();

```
146 e.printStackTrace();
156 e.printStackTrace();
180 e.printStackTrace();
190 e.printStackTrace();
204 e.printStackTrace();
233 e.printStackTrace();
241 e.printStackTrace();
```

```
CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/HBaseController.java
```

```
22 e.printStackTrace();
```

```
CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/RestController.java
```

```
33 e.printStackTrace();
35 e.printStackTrace();
37 e.printStackTrace();
```

```
CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/simulator/App.java
```

```
27 e.printStackTrace();
53 e.printStackTrace();
```

```
CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/App.java
```

```
62 e.printStackTrace();
87 e.printStackTrace();
```

```
CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/Helper.java
```

```
41 e.printStackTrace();
```

```
51 e.printStackTrace();
```

```
CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/Location.java
```

```
62 e.printStackTrace();
```

```
CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/  
TrafficHandler.java
```

```
41 e.printStackTrace();
```

1 Defect(s)	Avoid usage of break/continue sentences with a	Maintainability	Priority 1
1 File(s)	label.	java	Effort 30m

```
CMPUT402W16T1-master/osmimporter/src/main/java/com/cmp402w2016/t1/osmimporter/App.java
```

```
109 break label;
```

4 Defect(s)	Provide Javadoc comments for public fields.	Maintainability	Priority 2
4 File(s)		java	Effort 6m

```
CMPUT402W16T1-master/osmimporter/src/main/java/com/cmp402w2016/t1/osmimporter/App.java
```

```
24 public static final boolean ADD_NODES = true;
```

```
CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/Data.java
```

```
20 public Map<String, Integer> traffic;
```

```
CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/RestController.java
```

```
13 public static final String TRAFFIC_URI = "http://199.116.235.225:8000/traffic";
```


CMPUT402W16T1-master/webapp/src/main/java/com/cmput402w2016/t1/webapp/App.java

16 public static Table node_table = null;

5 Defect(s)

Do not call System.exit().

Reliability

Priority 1

2 File(s)

java

Effort 6m

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmput402w2016/t1/osmimporter/App.java

54 System.exit(1);

160 System.exit(1);

208 System.exit(1);

CMPUT402W16T1-master/webapp/src/main/java/com/cmput402w2016/t1/webapp/App.java

63 System.exit(1);

68 System.exit(1);

3 Defect(s)

Cyclomatic complexity.

Maintainability

Priority 1

3 File(s)

java

Effort 4h

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmput402w2016/t1/osmimporter/App.java

33 public static void main(String[] args) {

CMPUT402W16T1-master/webapp/src/main/java/com/cmput402w2016/t1/webapp/App.java

20 public static void main(String[] args) {

CMPUT402W16T1-master/webapp/src/main/java/com/cmput402w2016/t1/webapp/handler/
TrafficHandler.java

24 public void handle(HttpExchange httpExchange) {

1 Defect(s)	Avoid using the concatenation operator of strings	Efficiency	Priority 2
1 File(s)	+=. in the loops	java	Effort 6m

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/
TrafficHandler.java

36 rawContent += line;

27 Defect(s)	Use specialized library instead of System.out or	Efficiency	Priority 2
5 File(s)	System.err for logging	java	Effort 6m

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmp402w2016/t1/osmimporter/App.java

```

34 System.out.println("Starting...");
38 System.out.println(hbconf);
53 System.out.println("Document failed to load. Exiting...");
108 System.out.println("Turns out we needed it, lololol");
143 System.out.println("How many nodes did I read? This many, yo: " + nodes.size());
144 System.out.println("How many ways did I read? This many, yo: " + ways.size());
159 System.out.println("Node HBase table failed to load. Exiting...");
175 System.out.println("Batch " + counter + " / " + nodes.size());
179 System.out.println("Node put failed");
184 System.out.println("Created all node puts");
189 System.out.println("Node put failed");
192 System.out.println("Added all nodes");

```

```
196 System.out.println("Adding ways");
207 System.out.println("Way HBase table failed to load. Exiting...");
228 System.out.println("Batch " + counter + " / " + ways.size());
232 System.out.println("Way put failed");
240 System.out.println("Way put failed");
243 System.out.println("Added all ways");
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/Data.java

```
58 System.out.println("Key: " + key);
88 System.out.println("Made a distribution for hour " + hour + "!");
90 System.out.println("( No distribution made for hour " + hour);
```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/App.java

```
67 System.err.println("One or more required tables does not exist!");
85 System.out.println("Server has started.");
```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/
NodeHandler.java

```
21 System.out.println(query); // DEBUG
24 System.out.println("Key: " + key + ", Value: " + stringStringMap.get(key));
```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/
TrafficHandler.java

```
29 System.out.println(requestMethod);
38 System.out.println(rawContent);
```

1 Defect(s)	Do not write IP address in source code.	Portability	Priority 2
1 File(s)		java	Effort 6m

CMPUT402W16T1-master/simulator/src/main/java/com/cmput402w2016/t1/data/RestController.java

```
13 public static final String TRAFFIC_URI = "http://199.116.235.225:8000/traffic";
```

18 Defect(s)	Do not use Runtime and System classes.	Portability	Priority 2
4 File(s)		java	Effort 30m

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmput402w2016/t1/osmimporter/App.java

```
34 System.out.println("Starting...");
38 System.out.println(hbconf);
53 System.out.println("Document failed to load. Exiting...");
54 System.exit(1);
108 System.out.println("Turns out we needed it, lololol");
143 System.out.println("How many nodes did I read? This many, yo: " + nodes.size());
144 System.out.println("How many ways did I read? This many, yo: " + ways.size());
159 System.out.println("Node HBase table failed to load. Exiting...");
160 System.exit(1);
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmput402w2016/t1/data/Data.java

```
58 System.out.println("Key: " + key);
88 System.out.println("Made a distribution for hour " + hour + "!");
90 System.out.println(":( No distribution made for hour " + hour);
```

CMPUT402W16T1-master/webapp/src/main/java/com/cmput402w2016/t1/webapp/App.java

```

63 System.exit(1);
67 System.err.println("One or more required tables does not exist!");
68 System.exit(1);
85 System.out.println("Server has started.");

```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/
TrafficHandler.java

```

29 System.out.println(requestMethod);
38 System.out.println(rawContent);

```

2 Defect(s)	Avoid usage of * in import statements.	Maintainability	Priority 3
2 File(s)		java	Effort 3m

CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/simulator/App.java

```

3 import com.cmp402w2016.t1.data.*;

```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/App.java

```

10 import org.apache.hadoop.hbase.client.*;

```

1 Defect(s)	Provide the @throws tag in Javadoc comments for	Maintainability	Priority 3
1 File(s)	public and protected methods.	java	Effort 3m

CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/Data.java

```

98 public int generateSampleCarsPerHour(long timestamp) throws Exception {

```

1 Defect(s)	Avoid nested IF sentences with too many levels.	Maintainability	Priority 2
1 File(s)		java	Effort 30m

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmp402w2016/t1/osmimporter/App.java

```
134 } else if (s.equals("way")) {
```

19 Defect(s)	Avoid local variables with similar names.	Maintainability	Priority 3
4 File(s)		java	Effort 3m

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmp402w2016/t1/osmimporter/App.java

```
59 com.cmp402w2016.t1.osmimporter.Node node = null;
60 Way way = null;
74 for (int i = 0; i < xmlr.getAttributeCount(); i++) {
75 String value = xmlr.getAttributeValue(i);
76 String s = xmlr.getAttributeLocalName(i);
97 for (int i = 0; i < xmlr.getAttributeCount(); i++) {
98 String value = xmlr.getAttributeValue(i);
99 String s = xmlr.getAttributeLocalName(i);
114 String s = xmlr.getAttributeLocalName(i);
162 List<Put> puts = new ArrayList<>();
163 int counter = 0;
164 int batch = 500;
166 Node node = pair.getValue();
167 Put p = new Put(Bytes.toBytes(node.computeGeohash()));
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmput402w2016/t1/data/Data.java

```
63 int hour = time.getHourOfDay();
65 SummaryStatistics stats;
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmput402w2016/t1/simulator/App.java

```
24 Data data = gson.fromJson(reader, Data.class);
```

CMPUT402W16T1-master/webapp/src/main/java/com/cmput402w2016/t1/webapp/App.java

```
41 for (TableName tableName : tableNames) {
42 Table table;
```

12 Defect(s)	Provide Javadoc comments for public classes and	Maintainability	Priority 2
12 File(s)	interfaces.	java	Effort 30m

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmput402w2016/t1/osmimporter/Node.java

```
6 public class Node {
```

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmput402w2016/t1/osmimporter/Way.java

```
5 public class Way {
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmput402w2016/t1/data/Data.java

```
11 public class Data {
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmput402w2016/t1/data/Location.java

```
6 public class Location {
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmput402w2016/t1/data/RestController.java

```
12 public class RESTController implements DatabaseController {
```

```
CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/Traffic.java
```

```
5 public class Traffic {
```

```
CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/simulator/App.java
```

```
12 public class App
```

```
CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/App.java
```

```
15 public class App {
```

```
CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/Helper.java
```

```
10 public class Helper {
```

```
CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/Location.java
```

```
10 public class Location {
```

```
CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/data/TrafficData.java
```

```
6 public class TrafficData {
```

```
CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/  
TrafficHandler.java
```

```
17 public class TrafficHandler implements HttpHandler {
```

6 Defect(s)

2 File(s)

Avoid calling `varString.equals('literal')` or
`varString.equalsIgnoreCase('literal')`.

Reliability
java

Priority 3
Effort 3m

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmp402w2016/t1/osmimporter/App.java

```
100 if (s.equals("id")) { //System.out.println("Setting id: " + value);
115 if (s.equals("ref")) {
130 if (s.equals("node") && node != null) { // Add to map
134 } else if (s.equals("way")) {
```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/TrafficHandler.java

```
30 if (requestMethod.equalsIgnoreCase("POST")) {
47 if (rawContent.equals("")) {
```

9 Defect(s)
5 File(s)

Avoid TODO comments in production code.

Reliability
java

Priority 3
Effort 3m

CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/Data.java

```
19 // TODO: Temporary public for testing.
115 // TODO: See if we have the previous hour and the next hour.
117 // TODO: A better exception.
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/HBaseController.java

```
35 // // TODO: Cache? Try again?
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/simulator/App.java

```
58 // TODO: This is painful, we should have a constructor...
```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/NodeHandler.java

```

28 // TODO: Query by OSM Id
32 // TODO: Query by Geohash
36 // TODO: Query by latitude and longitude

```

```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/
TrafficHandler.java

```

```

76 // TODO: This should return the key instead of the lat/lon?

```

3 Defect(s)	Initialize all static fields.	Reliability	Priority 2
1 File(s)		java	Effort 30m

```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/App.java

```

```

16 public static Table node_table = null;
17 public static Table segment_table = null;
18 public static Table traffic_table = null;

```

1 Defect(s)	Avoid catch blocks with empty bodies.	Reliability	Priority 2
1 File(s)		java	Effort 30m

```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/
TrafficHandler.java

```

```

57 } catch (Exception ignored) {

```

6 Defect(s)	Avoid using try statements in loops.	Efficiency	Priority 2
4 File(s)		java	Effort 30m

CMPUT402W16T1-master/osmimporter/src/main/java/com/cmp402w2016/t1/osmimporter/App.java

```
174 try {
227 try {
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/Data.java

```
85 try {
```

CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/simulator/App.java

```
22 try {
49 try {
```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/Location.java

```
55 try {
```

5 Defect(s)

2 File(s)

Avoid unused local variables.

Reliability
java

Priority 2
Effort 30m

CMPUT402W16T1-master/simulator/src/main/java/com/cmp402w2016/t1/data/HBaseController.java

```
29 Put p = new Put(Bytes.toBytes(key));
```

CMPUT402W16T1-master/webapp/src/main/java/com/cmp402w2016/t1/webapp/handler/NodeHandler.java

```
29 Double osmId = Double.parseDouble(stringStringMap.get("id"));
33 String geohash = stringStringMap.get("geohash");
37 String latitude = stringStringMap.get("lat");
38 String longitude = stringStringMap.get("lon");
```



ABOUT OPTIMYTH

Optimyth is an independent software company specialized in solutions to support large companies with their rationalization, quality and productivity management initiatives whilst improving the overall maintainability of the software estate. Our solutions raise the quality and increase the performance of business systems. They improve the efficiency, cost control and productivity within an organization, thus achieving maximum IT value.

These solutions are based on our state of the art checking products: an Integrated Application Quality Management Portal which aggregates information from all the stages of a development life cycle into one "single pane of glass". And, an Application Inventory Management system that allows companies to untangle the complexity of their application through automatic discovery of software components, and the relationships between them at different levels, enabling rationalization initiatives and impact analysis capabilities to reduce maintenance costs.

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