Van Lang University

Software Measurement and Analysis course

Defect Data Report

**Version number:** 1.0

**Author:** K14T01 – Team 01

Table of Contents

[**1.** **INTRODUCTION** 1](#_Toc276627438)

[**2.** **DEFECT LIFECYCLE** 2](#_Toc276627439)

[**3.** **MEASURE FUNCTION AND METRIC** 3](#_Toc276627440)

[**4.** **DECISION CRITERIA :** 4](#_Toc276627441)

[4.1 Rule 1 : We approach ship date , The Defect Detection Rate should have a deceasing trend for each severity type. 4](#_Toc276627442)

[4.2 Rule 2 : Decision criteria for non-closed defects in quality product – At Ready to Ship : 4](#_Toc276627443)

[4.3 Rule 3 : Decision Criteria of phase times in process defect life cycle at each Severity: 4](#_Toc276627444)

[4.4 Rule 4 : Decision Criteria for average of one defect in process defect life cycle : 4](#_Toc276627445)

[4.5 Rule 5 : 4](#_Toc276627446)

[**5.** **REPORT OF DEFECT CYCLE IN VIKING’S PROJECT :** 4](#_Toc276627447)

[***6.*** **GLOSSARY** 7](#_Toc276627448)

1. **INTRODUCTION**

The purpose of this document is to *specify the method to be measured the quality for Viking project in aspects of process quality and product quality*.

The document will *draw a Viking product* *defect lifecycle* that is used to develop a set of metric which analyze the provided Viking product defect data and *draw graph supporting our assertions* regarding Viking product quality in Team Assignment#10.

The document will also *evaluate the quality of Viking project and offer our recommendations* to ensure that quality is not an accident for the Viking project based on defect data.

The Defect Data in this assignment will be collected from *“Viking\_Product\_Defect\_Data-TA10.xls”.*

1. **DEFECT LIFECYCLE**

Our team offers a Change Request Model that connecting to Defect Lifecycle Model. Why we do it? Because tester have to report it to the project team, when they find out the defect to fixing it. Tester has to use Change Request Form.

The following is the figure which to show the defect lifecycle :

*Figure\_1. Change Request Status Model Diagram*

The following is a table which to specify defect status in weekly defect lifecycle.

|  |  |
| --- | --- |
| **Status** | **Status Meaning** |
| Open | New, not yet assigned |
| Reopen | A defect that was previously Closed, Pending or Rejected has been Reopened. Typically this means that the Customer or QA has been able to reproduce the defect. |
| Rejected | From the evaluation it has been determined that this is either not a defect or it can’t/won’t be resolved. |
| Further Analysis | From the evaluation it has been determined that additional analysis is required |
| Pending | Additional information has been requested from the person who submitted the defect |
| Approved | The defect has been approved for resolution |
| Assigned | The defect has been assigned to a software engineer who will work on the defect |
| Resolved | The software engineer responsible for fixing the defect believes that the defect is fixed. Typically this means that the updated product passes all unit and integration tests. |
| Not Resolved | The defect will consider resolved by the QA team, but not passed . Must be Resole again. |
| Tested | The defect is considered resolved by the QA team |
| Closed | The updated product is available for release. Sometimes the original defect submitter is responsible for closing defects, but often this isn’t possible. |

*Table\_1. Defect Status table*

1. **MEASURE FUNCTION AND METRIC**

The following is a table which to specify metrics using for quality measurement.

|  |  |  |
| --- | --- | --- |
| **ID** | **Required Data** | **Metric & Chart & Objectives** |
| 1 | * Total number of defect weekly * Number of critical defect * Number of high defect * Number of medium defect * Number of low defect * Defect Severity Score | |  | | --- | | * An index representing the average of the severity of the defects. * Provides a direct measurement of the quality of the product. * Defect Severity Index = (Number of critical defect \* 1 + Number of high defect \* 2 + Number of medium defect \* 3 + Number of low defect \* 4) / Total number of defect weekly | |
| 2 | * Number of closed defect in current weekly * Number of opened defect in current weekly | |  | | --- | | * The number of defects that are removed per week. * Indicates the efficiency of defect removal methods, as well as indirect measurement of the quality of the product. * Defect Closure Efficiency(DCE) = Number of closed defect in current weekly / Number of opened in current weekly | |
| 3 | * Total days to fix defect of severity # * Total number defect of severity # | Compare and evaluate Average days to fix defect of severity with standard of process.  Total day to fix defect of severity # / Total number defect of severity # |
| 4 | * Average days to fix defect of severity # | Compare and evaluate Average days to fix defect of severity with standard of process. |

1. **DECISION CRITERIA :**
   1. Rule 1 : We approach ship date , The Defect Detection Rate should have a deceasing trend for each severity type.
   2. Rule 2 : Decision criteria for non-closed defects in quality product – At Ready to Ship :

* Zero non-closed critical defects
* Than 10 non-closed major defects all with customer approved work-around
* Less than 25 non-closed low defect
* Less than 15 non-closed medium defects
  1. Rule 3 : Decision Criteria of phase times in process defect life cycle at each Severity:

|  |  |  |  |
| --- | --- | --- | --- |
| Severity | Standard limited open  to closed status (days) | If ( > standard) | If( < standard) |
| 1 | 12 | Behind time standard, it’s very bad | Complete ahead times standard , it’s very good |
| 2 | 8 |
| 3 | 6 |
| 4 | 4 |

* 1. Rule 4 : Decision Criteria for average of one defect in process defect life cycle :
* Average time / 1 defect = 8.8 ≈ 9 days . If average are bigger than Limited, it’s so bad. Must review and evaluate why happens ? concernedly, it’s so good.
  1. Rule 5 : Decision Criteria for DCE ≥ 85%

1. **REPORT OF DEFECT CYCLE IN VIKING’S PROJECT :**

To start, we have Table of Defect Severity Index:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Defect** **Severity Index** | | | | | | | |
| **Defect Severity (Score)** | **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** |
| Critical (4) | 5 | 4 | 4 | 3 | 4 | 2 | 13 |
| High (3) | 8 | 6 | 4 | 11 | 2 | 5 | 5 |
| Medium (2) | 2 | 8 | 1 | 5 | 1 | 2 | 3 |
| Low (1) | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| **Severity Index** | 3.2 | 2.6 | 3.3 | 2.9 | 3.4 | 3 | 3.5 |

*Table\_1.* *Defect Severity Index Table*

The following table, we have chart status of defect in each week :

With this chart, we can see number of defect belong severity “Critical” fewer and fewer increasing, Highest at week 7 with 13 defect. Similar, with others defect with severity “Medium, High”, it isn’t decreasing. Base on Rule 1: We can conclusion Product not ready to ship.

The following is line chart which to show the Defect Severity Index that is collected weekly.

*Figure\_1. Defect Severity Index Line Chart*

If You see That Line chart defect severity index, we can see that it’s sloping up at the week 7. This indicates an increasingly unfavorable trend. As the test cycle progresses (from week 1 to week 7), the severity index is sloping up which suggests decreasing quality of the product (number of critical and high severity defects are being reported too much).

Next, We have Table Until Week 7 :

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Status | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 |
| Opened | 15 | 35 | 44 | 63 | 70 | 79 | 100 |
| Closed | 0 | 7 | 33 | 43 | 64 | 70 | 70 |
| Resolved | 0 | 8 | 35 | 44 | 65 | 71 | 71 |
| Tested | 0 | 7 | 34 | 43 | 64 | 70 | 70 |

Table 2 : Defect until week 7

Base on the this Table, we have Line chart about total defect until Week 7

Here, At Week 7, We have total about 100 defect Opened. And we closed about 70 defect. So, DCE = 70/100 = 70%. We can see, the defect fix are not good if we compare with standard. But, if you see line Resolved and tested, they’re the near same, so this make us think that the Resolved of fix defect are very Good, almost are pass. So, to see clearly effecting of process defect life cycle. We evaluate base on Times spent for each defect severity. The Last, this is table of time spent in each severity defect.

|  |  |
| --- | --- |
| Severity | Average from Opened to Closed(day/1 defect) |
| 1 | 9.8 |
| 2 | 10.2 |
| 3 | 8.9 |
| 4 | 10 |

Table 3: Average time form Opened to Closed status each severity

Base on Rule 3,we can see clearly in under table

|  |  |  |  |
| --- | --- | --- | --- |
| Severity | Average from Opened to Closed | Standard limited | Conclusion |
| 1 | 9.8 | 12 | Good |
| 2 | 10.2 | 8 | Bad |
| 3 | 8.9 | 6 | Bad |
| 4 | 10 | 4 | Bad |

Table 4: Compare and Evaluate between Average and Standard

Base on Rule 4 and Metric Average days to fix defect of severity # :

We have : ADS =  ( day/1 defect)

If We compare with standard ( 9,75 VS 9 ), we can conclusion , process are not good.

***In Summary***, Base on Standard to evaluate product and process. Viking’s Product and Process to fix defect are not good. And Product are not really to ship at week 7.

1. **GLOSSARY**