**Measurement plan**

Admission system

# **List of table**

[**Revision** 10](#_Toc373882447)

[**1.** **Introduction** 11](#_Toc373882448)

[2.1. Purpose 11](#_Toc373882449)

[2.2. Scope 11](#_Toc373882450)

[2.3. Definitions, Acronyms, and Abbreviation 11](#_Toc373882451)

[**2.** **Overview** 12](#_Toc373882452)

[**3.** **Tracking progress of project/sprint** 13](#_Toc373882453)

[3.1 Goal-Question-Metric 13](#_Toc373882454)

[3.2 Metric description 13](#_Toc373882455)

[3.3 Data collection 14](#_Toc373882456)

[3.4 Measuring performance 14](#_Toc373882457)

[3.5 Implementation flow chart 15](#_Toc373882458)

[**4.** **Estimate time complete of project** 16](#_Toc373882459)

[4.1 Goal-Question-Metric 16](#_Toc373882460)

[4.2 Metric description 16](#_Toc373882461)

[4.3 Data collection 17](#_Toc373882462)

[4.4 Implementation flow chart 18](#_Toc373882463)

[**5.** **Satisfaction of customer** 19](#_Toc373882464)

[5.1 Goal-Question-Metric 19](#_Toc373882465)

[5.2 Metric description 19](#_Toc373882466)

[5.3 Data collection 19](#_Toc373882467)

[5.4 Measuring performance 20](#_Toc373882468)

[5.5 Implementation flow chart 21](#_Toc373882469)

[**6. Quality of product** 22](#_Toc373882470)

[6.1 Goal-Question-Metric 22](#_Toc373882471)

[6.2 Metric description 22](#_Toc373882472)

[6.3 Data collection 22](#_Toc373882473)

[6.4 Measuring performance 22](#_Toc373882474)

[6.4 Implementation flow chart 23](#_Toc373882475)

[**7** **Tool** 24](#_Toc373882476)

# **List of figure**

[Figure 1: GQM - Check progress of Project/Sprint 16](#_Toc373882659)

[Figure 2: Burn-down chart 17](#_Toc373882660)

[Figure 4: Goal-Question-Metric- Estimated completion time project 19](#_Toc373882662)

[Figure 5: Process of implement estimate time complete of project 21](#_Toc373882663)

[Figure 7: Process of implement metrics of satisfaction of customer 24](#_Toc373882665)

[Figure 8: Goal-question-metrics: Quality of product 25](#_Toc373882666)

[Figure 9: Process of implement measure quality of product 26](#_Toc373882667)

# **List of table**

[Table 1: Revision history 12](#_Toc373882706)

[Table 2: Definitions, Acronyms and Abbreviation 14](#_Toc373882707)

[Table 3: Burn down-chart description 16](#_Toc373882708)

[Table 4: Burn down-chart- Measuring Performance 16](#_Toc373882709)

[Table 5: Evaluation Question: 22](#_Toc373882710)

[Table 6: Description metrics of quality of product 24](#_Toc373882711)

# **Revision**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Version** | **Update date** | **Author** | **Content** |
| 1 | 0.1 | 11/11/2013 | Khang Huynh | Create document |
| 2 | 0.2 | 16/11/2013 | Chau Le | Update template |
| 3 | 0.3 | 26/11/2013 | Khang Huynh | Update orientation for GQM technical |
| 4 | 0.4 | 4/12/2013 | Khang Huynh | Update measurement plan |

Table 1: Revision history

# **Introduction**

The primary purpose of measurement is to provide insight into software processes and products so that AS is better able to make decisions and manage the achievement of goals. This report proposes some plan that can help AS integrate a measurement process with their overall software process

## Purpose

Measurement is often equated with collecting and reporting data and focuses on presenting the numbers. The primary purpose of this report is to focus measurement more on setting goals, analyzing data with respect to software issues and manage project, and using the data to make decisions.

The objectives of this report are to:

* Provide some guidelines that can be used to improve our team (AS)
* Ties measurement to AS goals and objectives;
* Defines measurement consistently, clearly, and accurately;
* Collects and analyzes data to measure progress towards goals`
* Evolves and improves as the process matures.

## Scope

This plan addresses all the activities for software development projects including planning, requirement analysis, project tracking, quality assurance, configuration management, design, and coding related procedures. The result of these measurements will be reported every week to team and mentor. Team will apply Goal-Question-Metric method to identify metrics of:

* Tracking progress of project/sprint
* Estimate time complete of project
* Quality of product
* Customer satisfaction

## Definitions, Acronyms, and Abbreviation

|  |  |
| --- | --- |
| **Acronyms** | **Description** |
| AS | Admission system, which is name of team |
| GQM | Goal Question Metric |
| Measurement | The size or extent of something, especially in comparison with a known standard. |
| Metric | A calculated or composite indicator based on two or more measures.  A quantified measure of the degree to which a system, component or process possesses given attributes. |

Table 2: Definitions, Acronyms and Abbreviation

# **Overview**

This is software measurement plan contains following information:

* **Measurement Goals**: The goals of the measurement program relative to the project in term of achievement, improvement and quality.
* **Metrics** : the metrics that are to be synthesized at regulated intervals on the project to support the goals
* **Measurement process:** provide the step by step to team to act for exactly and easy to implement collect and validate history data as well as improve process
* **Time and role**: this is table provide role to each members responsible for the metric to collect weekly, monthly or each release

# **Tracking progress of project/sprint**

## 3.1 Goal-Question-Metric



Figure 1: GQM - Check progress of Project/Sprint

## 3.2 Metric description



Figure 2: Burn-down chart

A burn down chart for a completed iteration is shown above and can be read by knowing the following.

|  |  |
| --- | --- |
| **X-Axis** | **Project/Sprint timeline** |
| Y-Axis | The work that needs to be completed for the Project/Sprint. The time estimates for the work remaining will be represented by this axis. |
| Project start Point | This is the farthest point to the left of the chart and occurs at day 0 of the iteration. |
| Project End Point | This is the point that is farthest to the right of the chart and occurs on the predicted last day of the project/iteration |
| Ideal Work Remaining Line | This is a straight line that connects the start point to the end point. At the start point, the ideal line shows the sum of the estimates for all the tasks (work) that needs to be completed. At the end point, the ideal line intercepts the x-axis showing that there is no work left to be completed.  The goal of a burn down chart is to display the progress toward completion and give an estimate on the likelihood of timely completion. |
| Actual Work Remaining Line | This shows the actual work remaining. At the start point, the actual work remaining is the same as the ideal work remaining but as time progresses; the actual work line fluctuates above and below the ideal line depending on how effective the team is. In general, a new point is added to this line each day of the project. Each day, the sum of the time estimates for work that was recently completed is subtracted from the last point in the line to determine the next point. |

Table 3: Burn down-chart description

## 3.3 Data collection

Amount of work completed of every member (Collect in daily meeting)

## Measuring performance

|  |  |
| --- | --- |
| **Conditional** | **Description** |
| Actual Work Line is above the Ideal Work Line | If the actual work line is above the ideal work line, it means that there is more work left than originally predicted and the project is behind schedule.  **Orientation:**   * Spend more time to next point to catch up progressing |
| Actual Work Line is below the Ideal Work Line | If the actual work line is below the ideal work line, it means that there is less work left than originally predicted and the project is ahead of schedule.  **Orientation:**   * Continues to develop next point |

Table 4: Burn down-chart- Measuring Performance

## 3.5 Implementation flow chart

Figure 3: Implement metrics of tracking progress of project/sprint

# **Estimate time complete of project**

## 4.1 Goal-Question-Metric



Figure 4: Goal-Question-Metric- Estimated completion time project

## 4.2 Metric description

In Scrum, velocity is how much product backlog effort a team can handle in one sprint. This can be estimated by viewing previous sprints, assuming the team composition and sprint duration are kept constant. It can also be established on a sprint-by-sprint basis, using commitment-based planning.

Once established, velocity can be used to plan projects and forecast release and product completion dates.

How can velocity computations be meaningful when backlog item estimates are intentionally rough? The law of large numbers tends to average out the roughness of the estimates.

In Deadline team, Velocity is a running average of estimation points per Scrum team, calculated by adding all estimated PBIs completed by team and then dividing by the number of sprints completed thus far. Velocity can be used to plan projects and forecast release and product completion dates. Velocity of the team in a Scrum has been calculated as follows:

Description: Formula to calculate Velocity of team in Scrum agile methodology

**Velocity = Total of completed story points / Number of completed sprint**

* *Total of completed story points: Total completed story points of project that team has burned*
* *Number of completed sprint: number of sprint that team has ran*

## 4.3 Data collection

* Total of completed story points
* Number of completed sprint
* Velocity

It is collected when we finished a sprint.

## 4.4 Implementation flow chart



Figure 5: Process of implement estimate time complete of project

# **Satisfaction of customer**

## 5.1 Goal-Question-Metric

Figure 6: Goal-question-metrics:- Satisfaction of customer

## 5.2 Metric description

|  |  |
| --- | --- |
| **Item Index** | **Formula** |
| Quality functional Index (QFI) | Quality functional Index = (function Score + function Score + …) / (MAX function Score + MAX function Score+…) |
| Quality non-functional Index(QNFI) | Quality non-functional Index = (non-function Score + non-function Score + …) / (MAX non-function Score + MAX non-function Score+…) |
| Customer Satisfaction Index (CSI) | CSI = (30\* Quality functional Index + 70\* Quality non-functional Index)/100 |

## 5.3 Data collection

It is collected when we finished a sprint.

Data collection wills income by template survey

Each Functional and non-functional will use score of table 5 to evaluation:

|  |  |
| --- | --- |
| Score | Scale |
| 5 | Very Satisfied |
| 4 | Somewhat Satisfied |
| 3 | Neither Satisfied nor Unsatisfied |
| 2 | Somewhat Unsatisfied |
| 1 | Very Unsatisfied |

Table5:Evaluation Question:

## Measuring performance

|  |  |
| --- | --- |
| **Item Index** | **Objective** |
| Quality Functional Index (QFI) | - Assess customer satisfaction on product quality.  QFI > 80% - high customer satisfaction  60%< QFI <80%- Accept  50%< QFI <60%- Acceptable  QFI <50%-Don’t Acceptable |
| Quality non-functional Index(QNFI) | - Assess customer satisfaction on product quality.  QNFI > 80% - high customer satisfaction  60%< QNFI <80%- Accept  50%< QNFI <60%- Acceptable  QNFI <50%-Don’t Acceptable |
| Total Customer Satisfaction Index (CSI) | - Assess customer satisfaction on Project.  CSI > 80% - high customer satisfaction  60%<CSI <80%- Accept  50%<CSI<60%- Acceptable  CSI<50%- Don’t Acceptable |

**Orientation:**

\* High customer satisfaction: Prevent risks and maintain current ability

\* Accept: Prevents risks and maintain current ability

\* Acceptable: make better ways become good criteria in next stage.

\* Don’t Acceptable: find root cause and propose solutions to improve current state.

## 5.5 Implementation flow chart



Figure 7: Process of implement metrics of satisfaction of customer

# **6. Quality of product**

## 6.1 Goal-Question-Metric



Figure 8: Goal-question-metrics: Quality of product

## 6.2 Metric description

|  |  |
| --- | --- |
| **Item Index** | **Formula** |
| %Percent test case pass | * Total Test case pass/ Total test case |

Table 6: Description metrics of quality of product

## Data collection

Defect Severity Index (DSI):

* Total test case pass
* Total test case

It is collected when we finished a sprint.

## 6.4 Measuring performance

%Percent test case pass > 95%: VERY GOOD

%Percent test case pass > 95% and <90%: GOOD

%Percent test case pass <80%: NORMAL

**Orientation:**

\* Very good: prevent risks and maintain current ability

\* Good: prevents risk and maintain current ability

\* Normal: make better ways become good criteria in next stage.

## Implementation flow chart



Figure 9: Process of implement measure quality of product

# **Tool**

|  |  |  |
| --- | --- | --- |
| **NO** | **NAME** | **DESCRIPTION** |
| 1 | Microsoft office | Using to store data and make report |
| 2 | TFS | Using to collect data. |