

# SEMBIT3-23 - SQA Unit Code F9HW 04

## Applying Six Sigma metrics to a project



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### Overview

This unit covers the competences required for applying Six Sigma metrics to products and processes. It involves consulting with appropriate personnel and gathering all the necessary data to produce a metric graph. You will need to apply Six Sigma metrics to monitor the process and justify improvements, applying both primary and secondary metrics for the Six Sigma project. You will be expected to use the data collected and the graph produced to identify where improvements can be made, and to prepare an action plan that will bring about the improvements.

Your responsibilities will require you to comply with organisational policy and procedures for the activities undertaken, and to report any problems with the activities that you cannot solve, or that are outside your responsibility, to the relevant authority. You must ensure that all the necessary documentation/visual representation is completed accurately and legibly. You will be expected to take full responsibility for your own actions within the activity, and for the quality and accuracy of the work that you produce.

Your underpinning knowledge will provide a good understanding of the production of Six Sigma metrics, and will provide an informed approach to the techniques and procedures used. You will need to understand the principles and application of Six Sigma metrics, in adequate depth to provide a sound basis for carrying out the activities to the required criteria.

Applying safe working practices will be a key issue throughout.

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### Performance criteria

- You must be able to:*
- P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines
  - P2 consult with appropriate personnel and gather the necessary data to produce a metric graph
  - P3 for the selected activity, apply Six Sigma metrics to monitor the process and justify improvements
  - P4 apply both primary and secondary metrics for the Six Sigma project
  - P5 where appropriate, transform variable data to attribute data
  - P6 use the data collected to complete a primary metric graph
  - P7 use the graph produced to identify where improvements to metrics can be made
  - P8 prepare an action plan that will bring about the improvements

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### Knowledge and understanding

*You need to know and understand:*

- K1 the health and safety requirements of the area in which you are conducting the Six Sigma metrics activity
- K2 the main features and benefits of carrying out a Six Sigma metrics activity
- K3 the importance of using metrics to drive a Six Sigma project
- K4 how to calculate defects per million opportunities, defects per unit and rolled throughput yield
- K5 how to utilise Z tables to calculate the sigma score
- K6 the time period necessary to calculate a meaningful baseline
- K7 how to set realistic objectives and targets for the Six Sigma metrics activity
- K8 how to gather the data required for inclusion in a metric chart
- K9 how to construct a Six Sigma metric chart
- K10 the relationship between 'parts per million', 'defects per million opportunities',  $Y_{rt}$  and the sigma score
- K11 the difference between variable and attribute data
- K12 why it is advantageous to transform attribute data into variable data
- K13 how to transform attribute data into variable data
- K14 the significance of the 1.5S shift, and how it can be utilised to infer long-term metric values
- K15 the extent of your own authority within the project, and to whom you should report in the event of problems that you cannot resolve

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### Additional Information

#### Scope/range related to performance criteria

You must be able to:

1. carry out Six Sigma metrics activities on **both**:
  - 1.1. products
  - 1.2. processes
2. calculate, for each of the activities covered:
  - 2.1. defects per million opportunities
  - 2.2. defects per unit
  - 2.3. rolled through put yield ( $Y_{rt}$ )
  - 2.4. the sigma score
3. calculate metrics, which are:
  - 3.1. long-term
  - 3.2. short-term
  - 3.3. variable or attribute

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