



Management Consultant

Six Sigma
Training course
synopsis & Outline

6σ *the way to believe*

Presented by
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Welcome to EFR Training

With a warm welcomes, it is our pleasure to share the knowledge with you.

EFR offers a wide selection of comprehensive courses and training solutions to support continual improvement in productivity and quality that impact on business performance included customized course to suit your esteem organization needs. EFR also work closely with local universities, National Productivity Corporation and other major education and training provider to enhance the knowledge provide to you. Courses are designed to be stimulating and enjoyable, and we hope that this course meets with your expectations.

EFR was founded by renowned consultant Mr. Edly Ferdin Ramly which conducted various high impact, quality, productivity, occupational health and safety and environmental training and consultation for various organization. *EFR management consultant* offers expert resources for quality & productivity improvement through training, consultancy, publication and audio video production. Currently, the focus of EFR in consultancy and training while the research for publications and audio video productions are still ongoing.

For consultancy, EFR provide the most efficient way to certify to various management system certification i.e. ISO9001, ISO14001, OHSAS. EFR also work as associate for many other organizations and EFR also work closely with major certification body.

In Malaysia EFR shared best practice and EFR understand the local culture very well and all the EFR services are adaptable to local customer needs, cultures and customs. EFR look forward to share the world class best practice with you.

If you have any enquiries regarding us, please contact us via email enquiries@efrmanagement.com, website www.efrmanagement.com or fax to 07-5980594. Alternatively, you can directly contact me on 012-7748331. Enjoyed and Excel with us.

Thank you

Edly Ferdin Ramly

Principal Trainer and Consultant

● Excellence ● Forward ● Resourceful ●

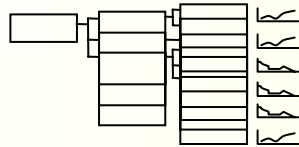
6σ Roadmap

the way to believe



Recognize

Create Master Improvement Plan



Focus



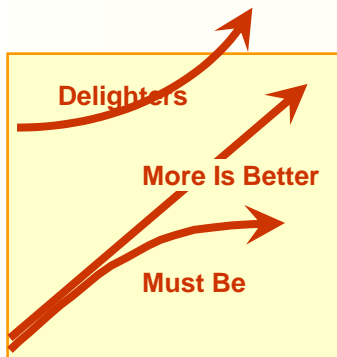
Project Selection & Project agreement



SIPOC

VOC

CTQ



Define



Measure

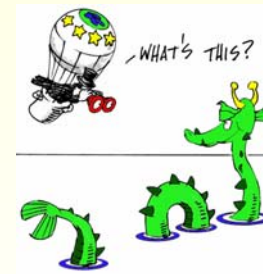


Data Measure

Data Collection Plan

Data Verification

Data Verification & Process Capabilities



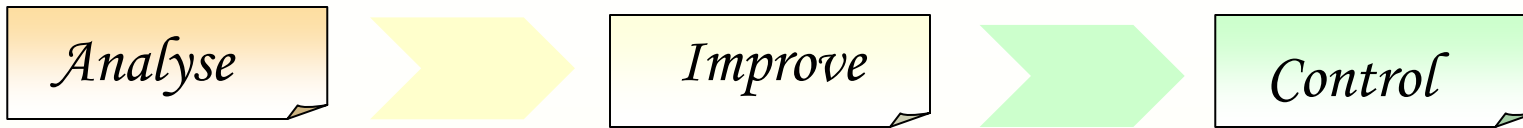
Process Physical Measure

Value Stream Map

Process Map

Value Analysis Matrix

Result Display



Recognize causes



Cause and Effect



Causes validation

**Breakthrough
Benchmark
Re- Engineer**



**Cost Benefit
analysis**



Risk Assessment

**Process Change
Management**



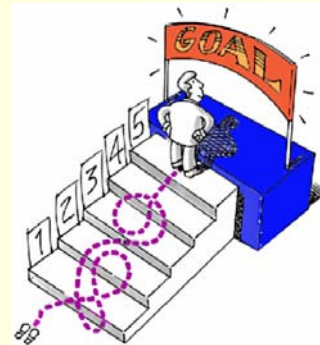
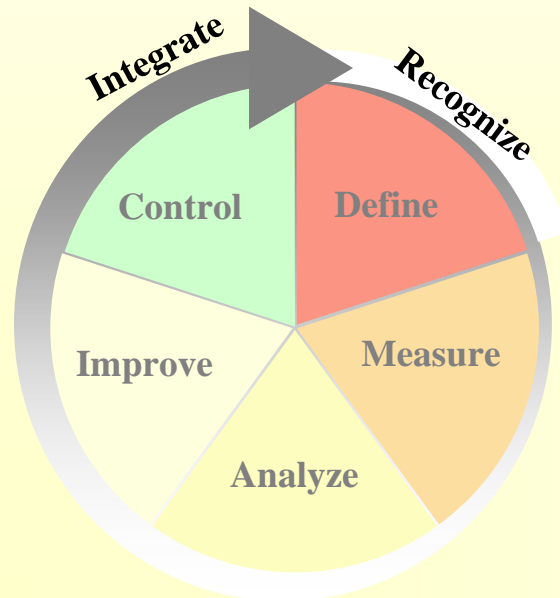
Documentation



Multiply Gains



Future Plan & Recommendation



Tools in Six Sigma



Tool name	*2-days course	Process Improvement					Product Development	
		Define	Measure	Analyze	Improve	Control	Core development process	Core application Process
Affinity Diagram	/	/		/			/	/
Agreement/ Charter		/		/	/		/	/
APQP								/
Brainstorming		/		/	/		/	/
Business Case	/	/						
Cause & Effect diagram	/	/		/			/	/
Consensus	/				/			
Control Plan			/	/	/	/		/
Control Chart								
I-chart	/		/	/	/	/		
X bar R			/	/	/	/		
p, np			/	/	/	/		
c, u			/	/	/	/		
Cost-benefit analysis					/		/	/
CTQ (Critical to Quality)	/	/					/	/
Data collection			/	/	/	/		
Design of Experiment				/	/			
Full Factorial				/	/			
Reduced Fraction				/	/			
Screening				/	/			
More than two level				/	/			
Response Surface Methodology				/	/			
Flow diagram	/	/	/	/	/	/		/
Frequency Plot			/	/	/			
FMEA			/		/			
DFMEA							/	/
PFMEA			/		/			
Gage R&R			/					
Hyphothesis test				/			/	/
t-test				/			/	/
Paired t-test				/			/	/
ANOVA				/			/	/
Chi Square				/			/	/
Kano Model	/	/					/	/
Modelling							/	/
Multi-generation Product plan							/	
Planning tools					/		/	/
Pareto	/	/	/	/	/			

Tool name	*2-days course	Process Improvement					Product Development	
		Define	Measure	Analyze	Improve	Control	Core development process	Core application Process
Prioritization matrix			/		/		/	/
Process Capability	/	/	/			/		/
Process Mapping	/		/	/	/			/
Process Sigma	/	/	/		/			
DPMO	/	/	/		/	/		
Pugh selection Method							/	/
QFD (Quality Function Deployment)		/	/				/	/
Quality Control Process Chart						/		
Regression				/				
Reliability testing & analysis (Weibull)							/	/
Rolled Throughput Yield	/	/	/		/	/		/
Sampling			/	/	/	/		
Scatter plots				/				
Simulation							/	/
SIPOC	/	/						
Stakeholder analysis		/			/			
Standardization	/					/		
Stratification			/	/	/	/		
Stratified Frequency Plots				/				
Time series Plot			/					
Triz							/	
Tolerance stack analysis							/	/
Value Analysis Matrix	/		/					
Value Stream Map			/					
VOC		/						

* 2 days six sigma introduction/ champion training focus on the relationship of the tools in DMAIC. Theory and application in tools are focus in SSGB or SSBB course.

Green Belt & Black Belt Week 1

Week 1 Day 1

Introduction 01_Agenda

Why Six Sigma 02_Why Six Sigma-19

DMAIC Overview 03_DMAICOV-10

Break

Define Overview 04_BusCase-21

Define: Charter 04_BusCase-21

1. Case study (Read & develop Charter)

Lunch

Define: SIPOC 05_SIPOC-13

Define: VOC and CTQ 06_VOC-20

2. VOC + SIPOC + CTQs using Case Study

Break

Define Review 06_VOC-20

Measure Overview 07a_DataColl-39

Data Collection (Intro, Id Meas.) 07a_DatColl-39

3. Case Study (Cause & Effect Diagram)

Presentations

Plus and Delta

Week 1 Day 2

Introduction, Plus and Delta Review

Data Collection: Basic Stats 07a_DatColl-39

Minitab 07b_Minitab-12

4. Case Study - Basic Stats

Break

Data Collection: Stratification 07c_DatColl-13

Data Collection: Operational Definition 07c_DatColl-13

Sampling 08_Sampling-21

Lunch

MSA (Continuous measures) 09_MSValidation-32

MSA(Cont. measures;Rubber band exer.) 09_MSValidation-32

Break

Measurement System Val. (Att measures) 09_MSValidation-32

MSA (Attribute measures - M&M exercise) 09_MSValidation-32

5. Case Study - MSA

Presentations

Plus and Delta

Week 1 Day 3

Introduction, Plus and Delta Review

Patterns in data (Time plots/Control Charts) 10a_PatDat-60

Patterns in data (Freq. Plots, Pareto Charts) 10b_PatDat-43

Break

6. Case Study - Data display

Process Capability - Normality, Probabilities, Sigma Method 1&2, Cp/CpK 11_ProcCap-68

Lunch

7. Case Study - Process Capability

Measure Review 11_ProcCap-68

Analyze Overview 12_ProcDataDoor-26

Break

Process Door vs. Data Door 12_ProcDataDoor-26

8. Case Study - Fishbone,

Organizing causes 13_Organize Causes-12

Presentations

DMAIC Review 14_DMAICForward-5

Project Documentation 15_ProjDoc-13

Green Belt & Black Belt Week 2

Week2 Day 1

Introduction

Week 1 Review

Break

Hypothesis Testing (Overview, t-test)

Break

9. Case Study - F-test and T-test

Lunch

Hypothesis Testing (ANOVA)

10. Case Study - ANOVA

Break

Hypothesis Testing (Chi-Sq)

11. Case Study - Chi-square

Hypothesis Testing (Review)

Presentations

Plus and Delta

Week2 Day2

Introduction, Plus and Delta Review

Regression Analysis 05_Regression

Break

12. Case Study - Regression Analysis

Break

Design of Experiments (intro) 06ab_DOE

Lunch

Presentations

Break

Analyze Review 07_RevAnalyze

Presentations

Plus and Delta

Improve Overview 08_ImproveOV

Generate, Evaluate, Select Solutions 09_GenEvalSelectSol

13. Case Study - G/E/S Solutions

Plus Delta

Week2 Day3

Introduction, Plus and Delta Review

Managing Risk

Implement Solutions

Improve Review

Break

Control Overview

Process Management and Change Control

Standardization and Documentation

Standardization Exercise w/ airplane

Lunch

Monitoring (Intro, Individuals Charts)

Break

Monitoring (X-bar, R Charts; Overview discrete Control charts) (w/case study)

14. Case Study - Monitor Results

Evaluate Results

Key Learning Points

Control Review

15. DMAIC Review - Case Study Evaluate Results

Deliverables

DFSS

Plus and Delta/Wrap-up/eval's

DFSS

Break

DMAIC Review

Black Belt Week 3

Week3 Day1

Expectations, Introductions and Agenda
Bridge to Black Belt
Review Define
Review Measure
Lunch
Presentation Skills
Gage R&R and Linearity
Wrap-up, Plus/Delta

Week3 Day2

Introduction
Review Analyze
Multi-Vari Studies
Normal Theory
Lunch
Testing For Normality
Transforming Data
Wrap-up, Plus/Delta

Week3 Day3

Introduction
Review Hypothesis Testing
Hypothesis Testing
ANOVA
Lunch
Hypothesis Testing (cont'd)
Power Analysis
Wrap-up, Plus/Delta

Week 3 Day 4

Introduction
Review Regression
Regression
Lunch
Regression
Wrap-up, Plus/Delta

Black Belt Week 4

Week 4 Day 1

Introductions
Review Week 1 and Bridge to Black Belt
Review DoE
Lunch
DoE
Wrap-up, Plus/Delta

Week 4 Day 2

Introduction
Response Surface Methodology (RSM)
Lunch
RSM
Review Innovative Improvement
Review Control
Wrap-up, Plus/Delta

Week 4 Day 3

Introduction
Control Charts
Lunch
Control Charts
Reliability
Wrap-up, Plus/Delta

Week 4 Day 4

Introduction
Reliability
DMAIC Case Study
Lunch
DMAIC Case Study
Wrap-up, Plus/Delta

Week 4 Day 5

Introduction
DMAIC Case Study
Exam
Wrap- Up, Graduation, Evaluation