



---

# LEAN SIX SIGMA YELLOW BELT & CHANGE MANAGEMENT PROGRAMME



TOOLKIT FOR PRACTITIONERS

**Continuous Improvement** Projects Ltd.

---



Lean Six Sigma Yellow Belt  
& Change Management  
Programme

**Toolkit for Practitioners**

---

# LEAN SIX SIGMA YELLOW BELT & CHANGE MANAGEMENT PROGRAMME

## TABLE OF CONTENTS

SECTION 1	OVERVIEW	PAGE 4
-----------	----------	--------

SECTION 2	DEFINE PHASE	PAGE 8
-----------	--------------	--------

SECTION 3	MEASURE PHASE	PAGE 12
-----------	---------------	---------

SECTION 4	ANALYSE PHASE	PAGE 14
-----------	---------------	---------

SECTION 5	IMPROVE PHASE	PAGE 18
-----------	---------------	---------

SECTION 6	CONTROL PHASE	PAGE 22
-----------	---------------	---------



# Sec. 1

**OVERVIEW**

---

## DEFINITIONS

---

There are numerous definitions for Lean, Six Sigma and Change Management. Below are some simple definitions that are useful for conveying to others.

### LEAN

Creating more value for customers with fewer resources.

### SIX SIGMA

A set of data-driven techniques and tools for process improvement.

### CHANGE MANAGEMENT

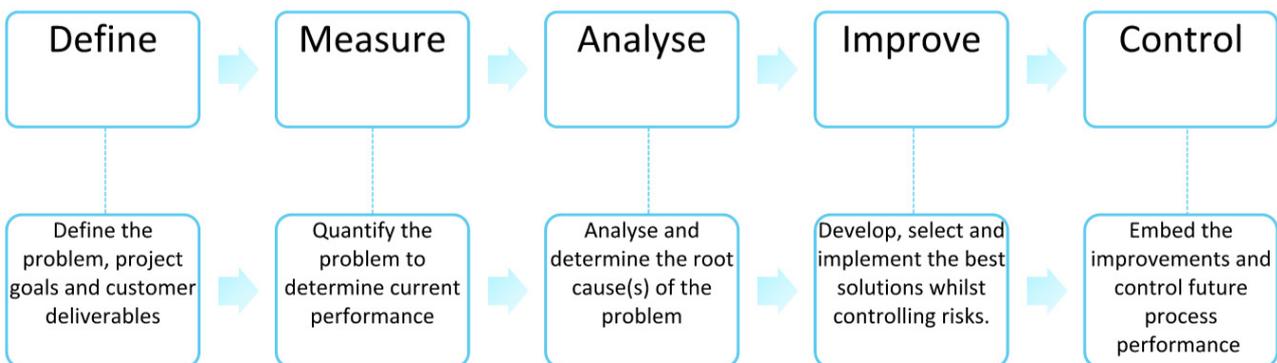
Application of a structured process for leading the people side of change to achieve a desired outcome.

## DMAIC

---

The Six Sigma DMAIC (Define, Measure, Analyse, Improve, Control) methodology is a roadmap for problem solving and implementing improvements.

---



## THE FIVE LAWS OF LEAN

The Five Laws of Lean summarise the Lean approach and provide key principles for improvements.

### #1 The Law of the Market

This acts as the base law and is the starting point for all other laws to follow. The law states that the customer is critical to quality, and that they should be our highest priority for defining value and making improvements. Return on investments and market growth are reliant on our focus on the customer.

### #2 The Law of Flexibility

The second law states that the speed of any process is linked to the process' flexibility and elasticity. The more receptive and flexible the process, the quicker it will be to adapt to changes and progress through implementation.

### #3 The Law of Focus

This law suggests that 80% of the issues in a process will be caused by just 20% of the activities. You should focus on these areas to create a leaner process.

### #4 The Law of Velocity

The fourth law states that the more WIP (work in progress) there is in a process, the longer the lead time will be. High WIP leads to more queues and more waiting.

### #5 The Law of Complexity and Cost

This law states that the more complex a service or product is, the more it will cost to deliver.

---



# Sec. 2

## DEFINE PHASE

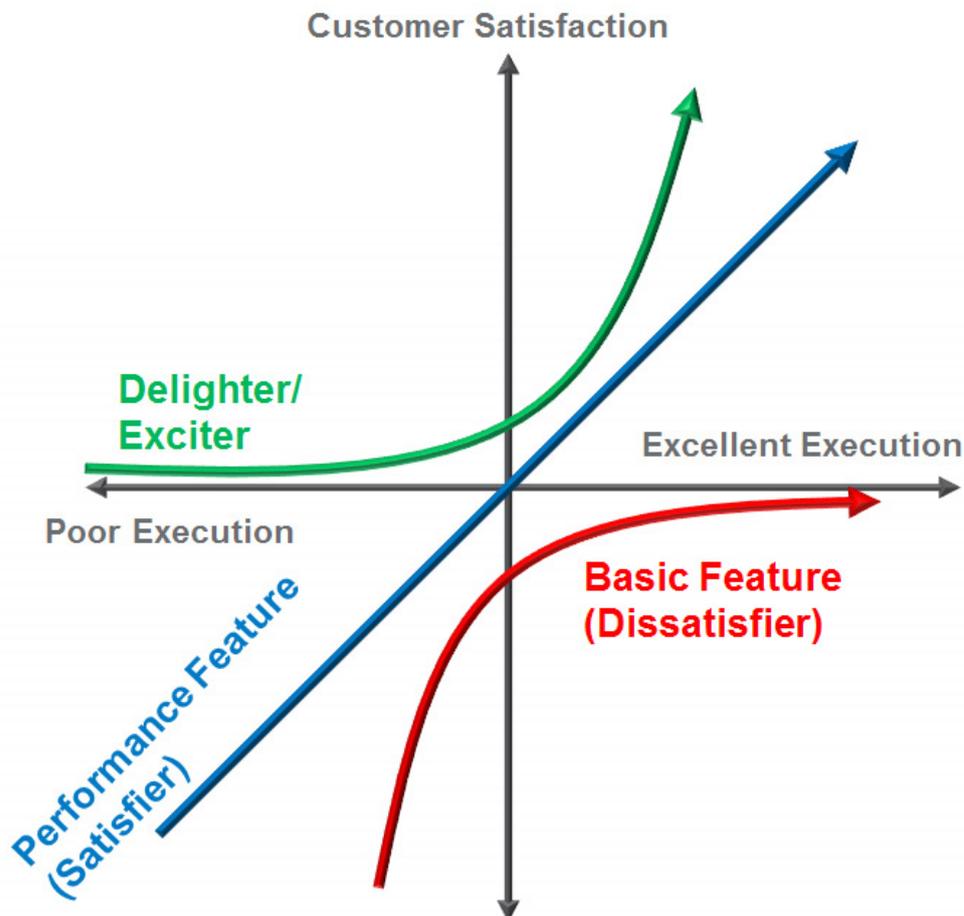
---

### PROBLEM STATEMENTS

---

Problem Statements are a clear and brief description of what the problem is, how often it occurs and what the impact is when it does occur. Make it SMART (specific, measurable, achievable, relevant and time bound).

## VOICE OF THE CUSTOMER (VOC) – KANO ANALYSIS



The 'Voice of the Customer' (VOC) is a process used to capture the customer's requirements. This can be done through a number of methods, including assessment of customer complaints, interviews, focus groups, surveys, market research and competitor analysis, or even becoming a customer yourself and testing the process.

Customers can provide a wide array of feedback. The Kano Analysis Model is used to categorise and prioritise the different performance features.

'**Must Bes**' fulfil a basic requirement that the customer assumes will be present.

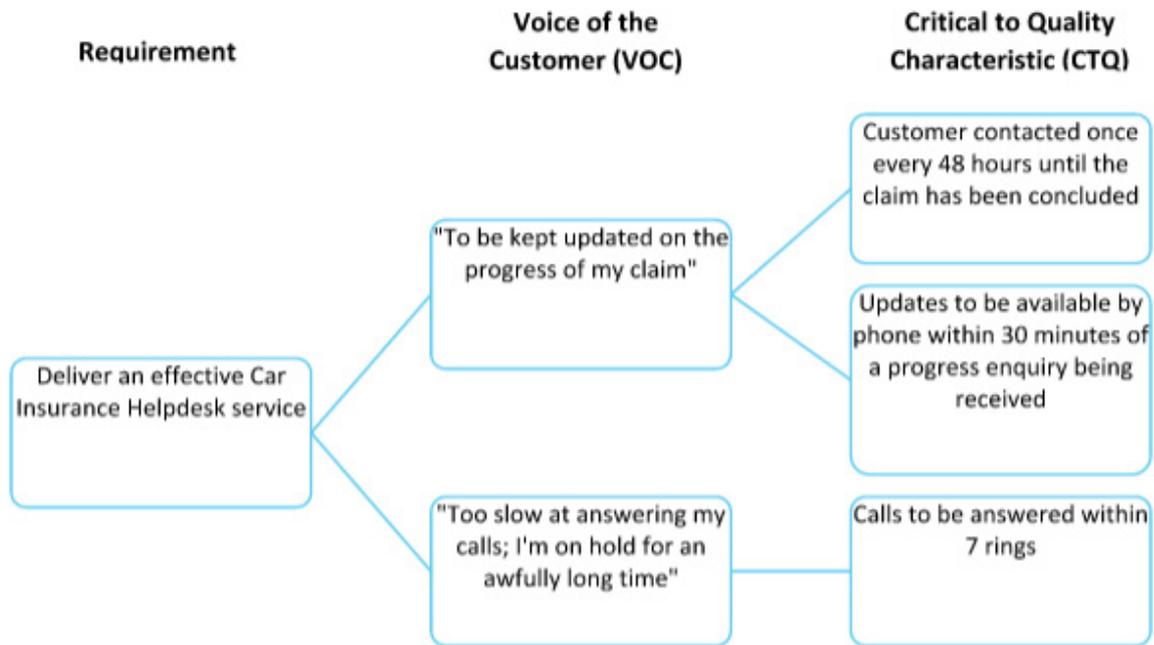
'**Satisfiers**' fulfil a performance requirement and satisfy the customer.

'**Delighters**' go over-and-above the performance requirements, create excitement and provide the 'wow' factor for the customer.

You can use the Kano Analysis Model in many ways, including categorising and structuring customer feedback, and mapping 'Critical to Quality' (CTQs) characteristics onto the model to prioritise areas for focus.

## CRITICAL TO QUALITY (CTQ) TREES

CTQ Trees can be used to breakdown the VOC into clear 'Critical to Quality' (CTQ) characteristics. An example has been provided below.



## SIPOC MAP

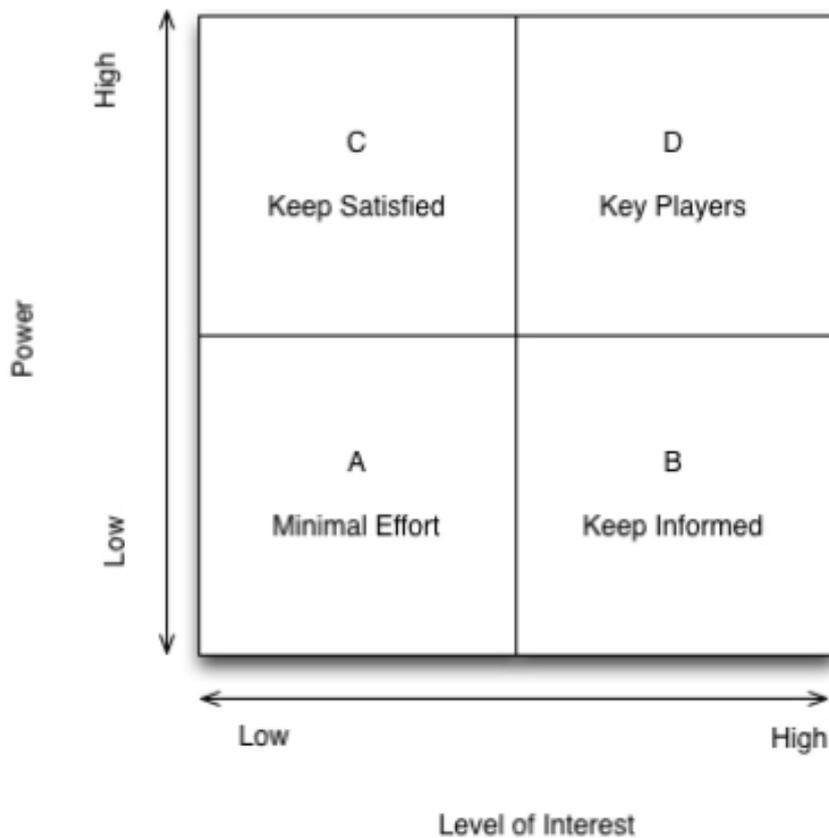
It is too early to map a detailed process. The SIPOC (Suppliers, Inputs, Process, Outputs, Customers) Map enables a simple process definition at a high level so that everyone understands the basic process.

Suppliers	Inputs	Process	Outputs	Customers

## STAKEHOLDER ANALYSIS MATRIX

You need to consider those people that will be involved or affected by the project, and those that have some control over the project and process. The two key criteria that need to be assessed are

the stakeholders' influence and interest. Below is a useful matrix that can be used to plot your Stakeholders on, as it will help you to develop a change management strategy.



## STAKEHOLDER CHANGE READINESS

you can start to predict your areas of anticipated resistance to change by colour coding an organisational structure. Your organisational structure should include all departments that will be impacted by the change and the associated

key stakeholders (i.e. Supervisors, Managers and Directors). Colour code each box within your organisational structure according to their willingness to change and their capability to advocate the change.



# Sec. 3

## MEASURE PHASE

---

### KEY PERFORMANCE INDICATORS (KPIs)

---

Following the development of a CTQ tree, you should translate the CTQs into KPIs and include them on the next level of the tree. As an example, if the CTQ states “calls to be answered within 7 rings”, the KPI should be “% calls answered within 7 rings”.

The KPIs you select for your project should include measures of process efficiency and effectiveness. These KPIs should be used to quantify the problem and determine current performance.

---

Below is a list of statistics that can be used to reflect performance position.

**Mean (average)** – This is a simple metric that works well when the data is reasonably symmetrical and does not include any anomalies.

**Median** – The median is the middle value of the data. This is not significantly impacted by anomalies in data.

**Range** – This is the difference between the lowest and highest data points. This statistic can be significantly impacted by anomalies in the data.

**Standard Deviation** – Lean Six Sigma is in favour of this statistic as it is a more robust measure of variation.

Standard Deviation measures the spread of data and tells you how tightly all the data points are clustered around the mean.

---

## OPERATIONAL DEFINITIONS

---

Operational Definitions are clear and unambiguous descriptions of each KPI. Without these definitions, data can be unreliable if collected in different ways and with different standards. An Operational Definition should include the following information:

- **KPI Name**
- **What the KPI represents**
- **Process diagram or picture**
- **Detailed definition**
- **Scope of measurement**

Operational Definitions will help to ensure that the data you use during the Measure Phase of your project is relevant and useful, and that the measure system is repeatable.

---

## DATA COLLECTION PLANS

---

A Data Collection Plan should be created to define:

- **What will be measured**
- **How the data will be recorded**
- **Sample size**
- **Frequency of measurement**

The way in which the data will be recorded will depend on whether the data is continuous, count or attribute.

---



# Sec. 4

## ANALYSIS PHASE

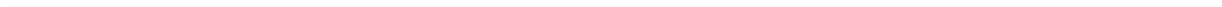
---

### 'AS IS' STATE PROCESS MAPPING

---

Standard process maps illustrating the 'as is' (current) state should be developed as a starting point so that analysis can begin.

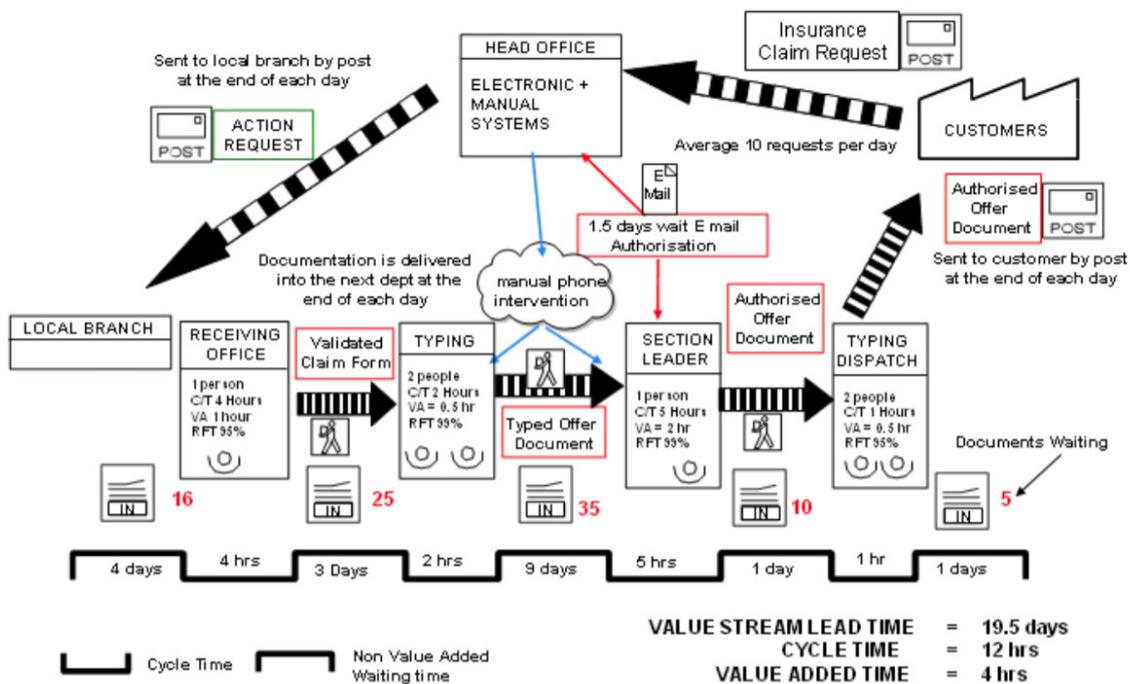
Basic process mapping symbols:



# OPERATIONAL DEFINITIONS

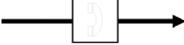
Value Stream Mapping (VSM) is an advanced form of process mapping, which focuses on the principles of Lean and illustrates waste in a process. The end objective of a VSM exercise is to produce a prioritised improvement implementation plan.

Below is an example of a Value Stream Map.

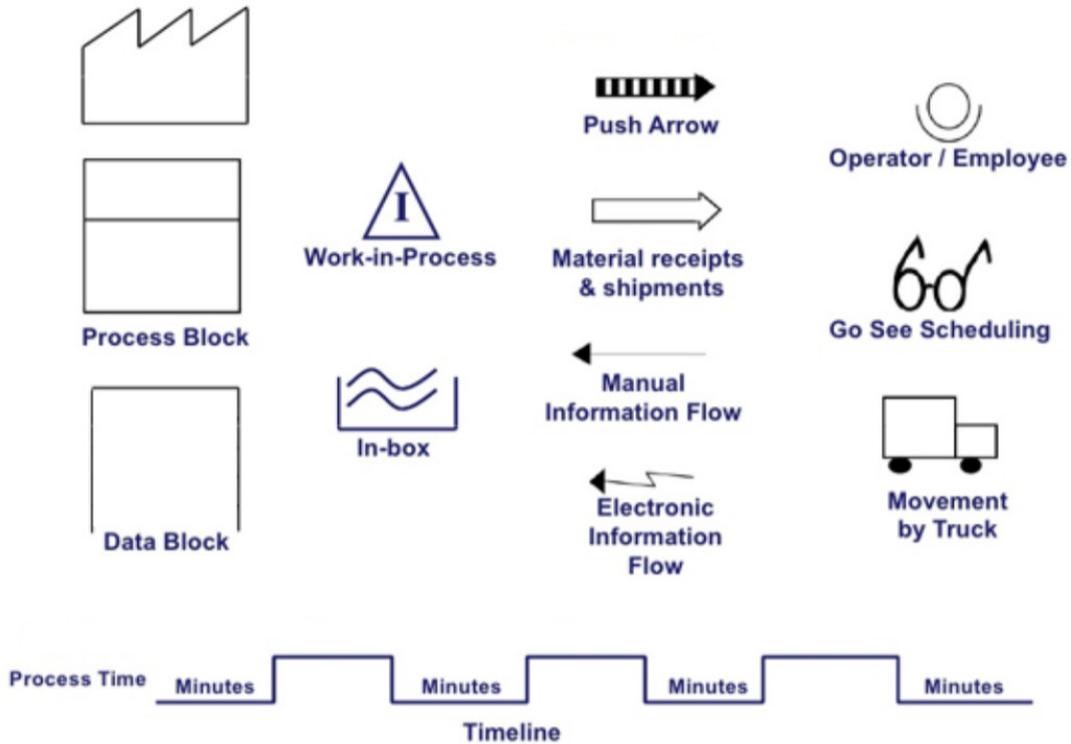


To create a VSM, you must follow these steps:

1. Start with the Customer 
2. Capture the core process steps 
3. Capture the process data 

No. of Persons	
Cycle Time	
RFT	
VA (secs)	
Batch size	
4. Count Inventory 
5. Capture secondary process steps 
6. Determine what activities are 'Value Adding', 'Non-Value Adding' or 'Necessary Non-Value Adding'. These can be abbreviated as VA, NVA and NNVA.

Useful VSM symbols:



Once you have devised your VSM, there are some useful calculations that can be used to summarise performance. Below is an example of some simple calculations that can be utilised.

Total Cycle Time = Sum of all Process Times

Value Added % = Value Added Time / Total Cycle Time

## THE SEVEN WASTES

The seven wastes of Lean are what we are aiming to remove from our processes. These wastes are listed below.

**Overproduction** – Making more products than the customer requires.

**Waiting** – Waiting time results in an increased process lead time and is non-value adding.

**Transporting** – Unnecessary movement of items is non-value adding and results in delays and costs.

**Over Processing** – Processing something more than is required by the customer.

**Motion** – Unnecessary motion impacts the overall efficiency of the process.

**Defects** – Defects and mistakes require fixing.  
**Inventory** – Build-up of items increases lead times.





# Sec. 5

## IMPROVE PHASE

---

### ERROR PROOFING (POKA-YOKE)

---

Poka-Yoke is a Japanese term that means “mistake proofing”. When designing your solution, you should look to see whether you can either:

- Prevent or reduce the risk of a failure occurring;

Or

- Detect a failure soon after it has occurred.
-

## SCAMPER

---

SCAMPER is a useful technique for generating ideas. The SCAMPER checklist can be used to help improve upon an existing design.

**S**ubstitute  
**C**ombine  
**A**dapt  
**M**odify  
**P**ut to another use  
**E**liminate  
**R**everse

---

## PAIRED COMPARISON ANALYSIS

---

A Paired Comparison Analysis helps you to work out the relative importance of different options.

Comparison Matrix	Solution A	Solution B	Solution C	Solution D
Solution A				
Solution B				
Solution C				
Solution D				

Once you have compared each option against another, you can rank the solutions based on which solution was selected the most. You can then give it a weighting with the following calculation:

Weighting = number of solution 'x' / total number of options

---

## SOLUTIONS MATRIX

The Solutions Matrix is an easy way to prioritise all your solutions based on the amount of effort they will take to implement and the level of impact they will have. The solutions that take a low effort but will have a high impact should be prioritised first.

IMPACT	HIGH		
	LOW		
		LOW	HIGH
		EFFORT	

## CHANGE MANAGEMENT

---

The people side of change must be managed effectively to ensure that any new processes and practices are implemented successfully. Some key areas for focus are:

- **Communication – Communicating the upcoming changes so that the awareness is raised.**
  - **WIIFM (what’s in it for me?) – WIIFM is intrinsic and will differ for each individual. You need to understand this so that communication can be tailored accordingly. This should be incorporated within your change management strategy.**
  - **Understanding – Once a solution has been developed, you need to make sure that individuals have a robust understanding of how the change will affect them and what the new way of working will be. Training is a common way of achieving this.**
  - **Capability – Even after training, some individuals will struggle to adopt the new way of working. They require additional support at this stage to help put what they have been taught into action. If there is still a problem with adoption, capability and skill sets should be assessed.**
  - **Monitoring – Even after adopting a new way of working, it is common for people to fall back into their old habits. Monitoring will help to detect these behaviours and allow you to take appropriate action. Resistance management techniques may be needed in some cases, as resistance should be expected in change projects.**
-



# Sec. 6

**CONTROL PHASE**

---

## CONTROL PLANS

---

Below is a list of fields that you may wish to include in your Control Plan.  
Process step

- Measures – Inputs and Outputs
- Characteristics
- Measurement – Method
- Measurement – Sample Size
- Measurement – Frequency
- Response/ Outputs

Performance data should continue to be measured against benchmark data to ascertain whether the benefits are on track to be realised and whether the new ways of working have been adopted effectively.

---



---

## **CONTACT**

[training@ciprojectsltd.co.uk](mailto:training@ciprojectsltd.co.uk)

## **WEBSITE**

<http://www.ciprojectsltd.co.uk>

---