Introduction to Lean Six Sigma

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Segla International?

- A key goal of Segla is to provide our clients with complete:

  "Business Efficiency Solutions".

- At Segla we seek to work with you to identify and tailor the best solutions package to your specific requirements.
- We are innovative thinkers and demonstrate a willingness to work with our clients to ensure they are best able to gain the benefits they seek at all times.
- The methodologies and systems used by Segla provide a consistent platform to any learning and have been proven to achieve results.

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Segla International: Key Strengths

- Segla International delivers business efficiency solutions utilising Six Sigma, Lean Manufacturing and Process Control Methodologies.
- We offer tailored training and consulting services in the following areas:
  - Green and Black Belt Certification;
  - Lean & Lean Six Sigma Training Programs;
  - Business process analysis utilising the following types of methodologies utilising: - Value Stream Mapping (VSM), Kaizen Blitz & 5S, Statistical Process Control (SPC), Design of Experiments (DOE);
  - Project management planning and support;
  - Cultural change programs;
  - Complete supply chain optimisation solutions, AND;
  - Project Planning implementation and support.

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What is Lean Six Sigma

What it is…

- Lean Six Sigma is a continuous improvement methodology that focuses upon the elimination of waste and the reduction of variation found within processes, whether they are manufacturing or transactional in nature.

Lean

- Pioneered by Toyota, Lean is a methodology which aims to reduce non-valued added activities that will lead to the goal of reduced cycle times.

Six Sigma

- Developed by Motorola and made famous by GE, Six Sigma is a methodology to identify and reduce variability and thus improve overall quality.

The combination of these two powerful process improvement methodologies allows an organisation to build upon its existing capabilities, to become ***Safer***, ***Faster*** and ***Better*** able to operate with ***Reduced*** costs, yet in ways which are sustainable.

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How does Lean Six Sigma compare to other quality & statistical efforts?

Differences

- Enables closer alignment with business objectives
- Highly focused upon delivering business results
- Easily tailored to suit specific workgroups
- Provides further tools to key staff – DOE, hypothesis testing, FMEA, Kanbans, PokaYoke

Similarities

- Uses some tools already familiar to people – fishbone, process flow, SPC, brainstorming
- Uses a logical problem solving approach that will not be new to many
- Aligns with other quality and reliability efforts – TQM, Baldrige, Deming

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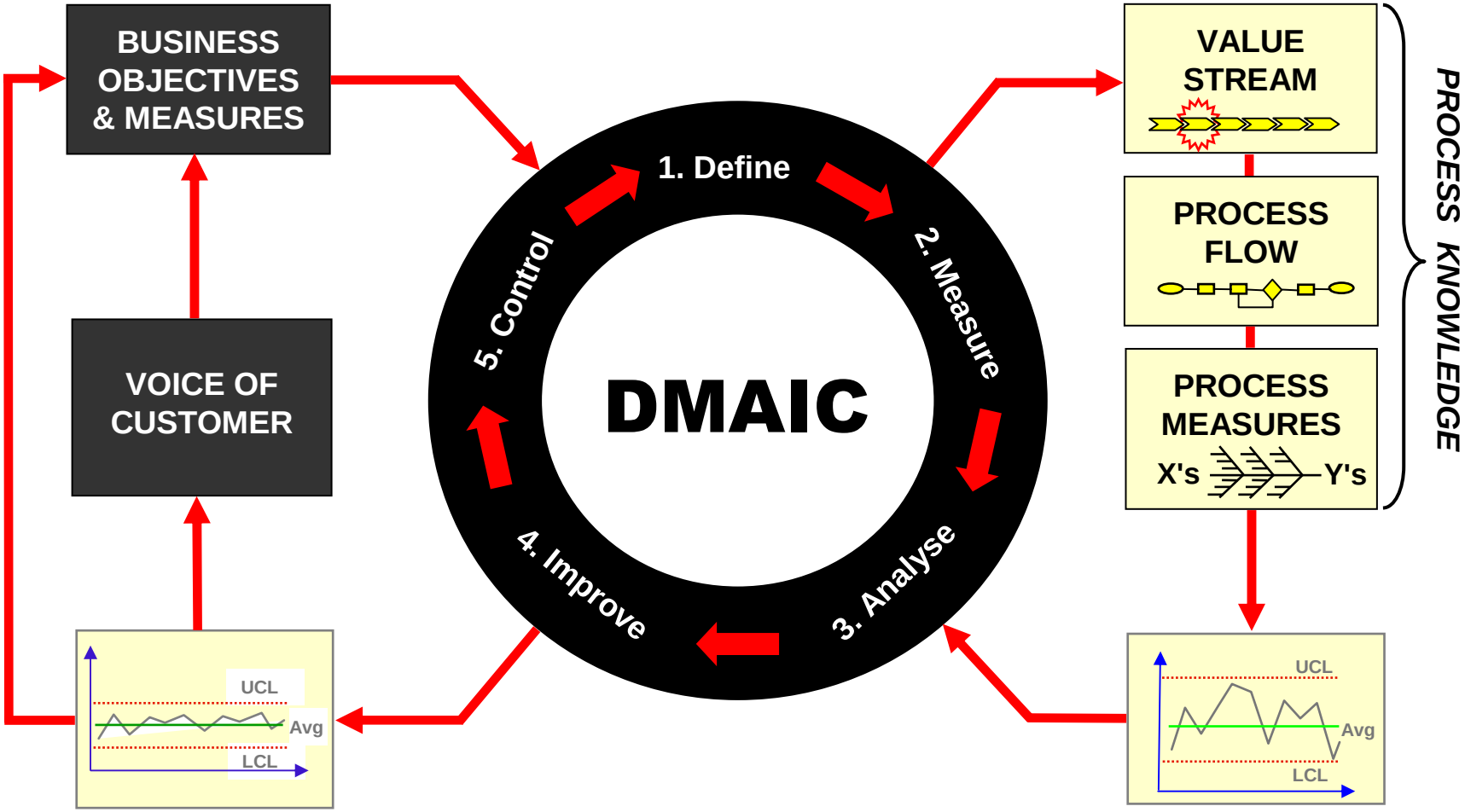
Lean Six Sigma Process Improvement Cycle



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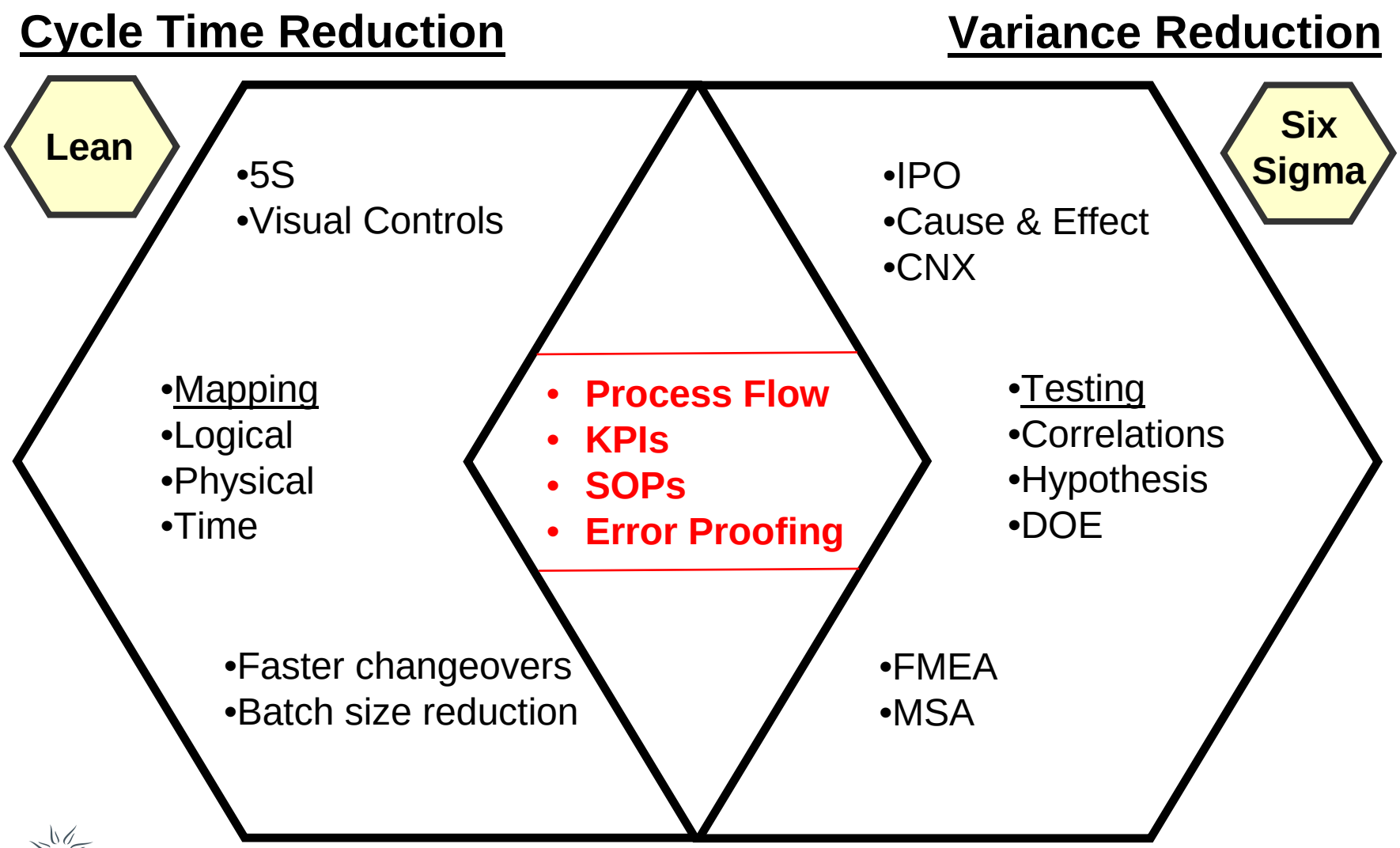
Synergy of Lean & Six Sigma



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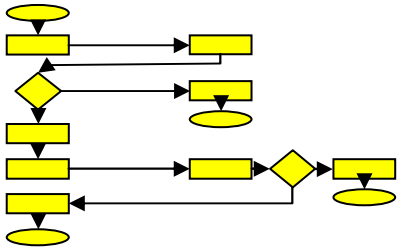
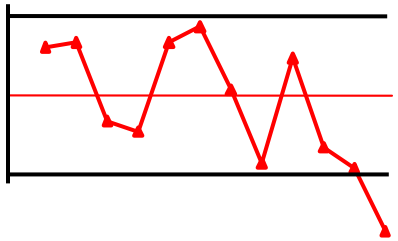
Lean Six Sigma: A Set of Tools





Measurement System Analysis
Product Inspection Test

Item	Operator 1		Operator 2		Operator 3	
	Test 1	Test 2	Test 1	Test 2	Test 1	Test 2
1						
2						
3						
4						

1) Map the process to determine where defects are being created

2) Use control charts to understand and identify common and special causes

3) Verify assessment and measurement systems

4) Document failure modes for products and processes to identify defects' root cause

5) Designed experiments to make processes robust to variation

Run	A	B	AB	y_1 y_2 y_3 . . .	$\bar{y}$	s
1	-	-	+			
2	-	+	-			
3	+	-	-			

$$s = s + \frac{\sigma_A}{2} A + \frac{\sigma_B}{2} B + \frac{\sigma_{AB}}{2} A \bullet B$$

RISK PRIORITY NUMBER (RPN) =
SEVERITY X 0CCURRENCEX ESCAPED DETECTION

Category	5	4	3	2	1
Severity	Severe	High	Moderate	Minor	Negligible
Occurrence (OCC)	Very High	High	Moderate	Low	Very Low
Esc Low Dete (DE					

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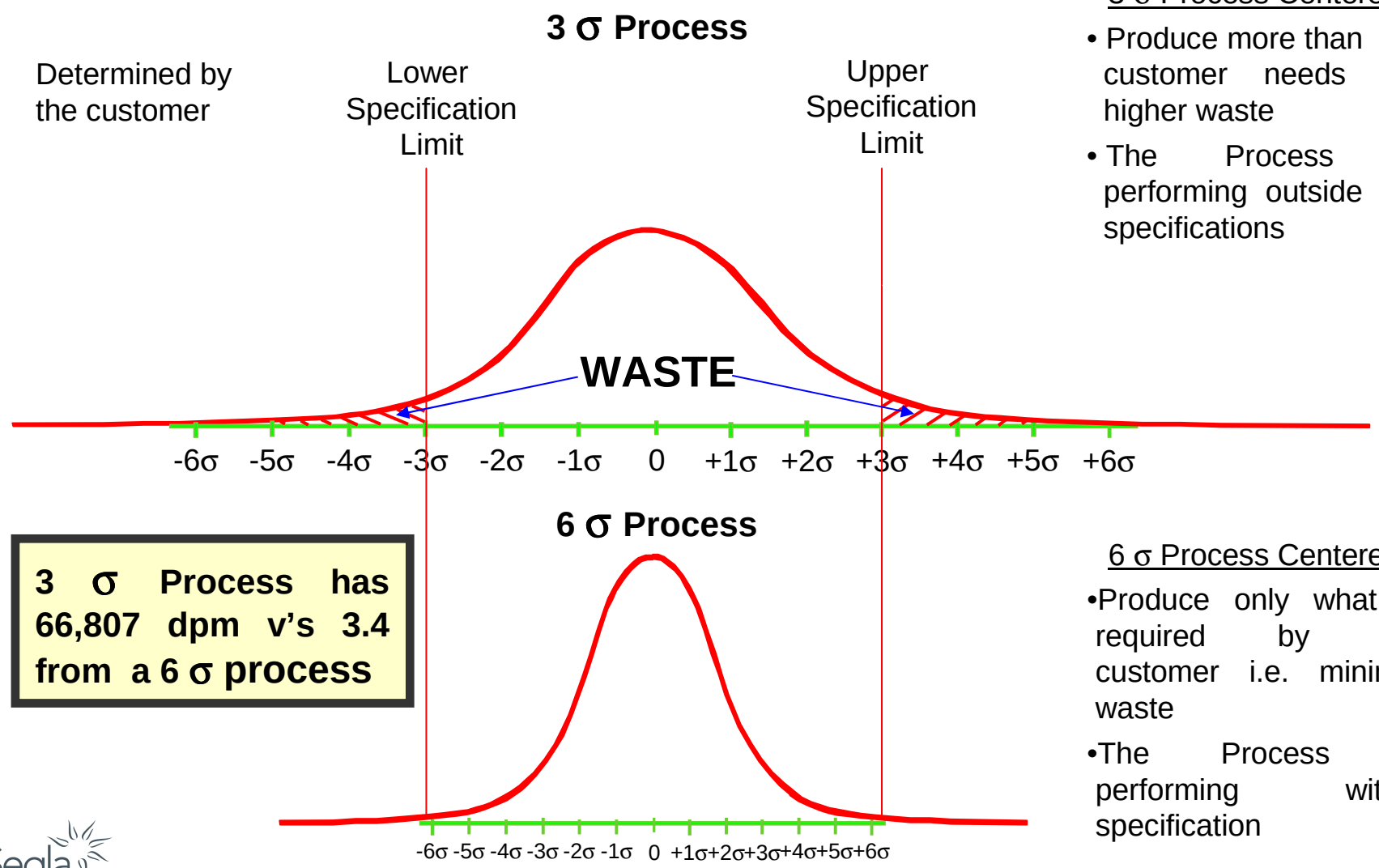
How does Six Sigma deliver results?



3 σ Process has 66,807 dpm v's 3.4 from a 6 σ process

3 σ Process Centered

- Produce more than the customer needs i.e. higher waste
- The Process is performing outside the specifications

6 σ Process Centered

- Produce only what is required by the customer i.e. minimal waste
- The Process is performing within specification

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Combining Lean & Six Sigma Maximises the Potential Benefits

Overall Yield as a Function of Sigma Level & Process Steps				
	Sigma Level			
No. of Parts or Process Steps	+/- 3	+/- 4	+/- 5	+/- 6
1	93.32%	99.379%	99.9767%	99.99966%
5	70.8%	96.9%	99.884%	99.998%
10	50.1%	94.0%	99.767%	99.997%
50	3.2%	73.2%	98.84%	99.983%
100	0.1%	53.6%	97.70%	99.966%
500	0.0%	4.4%	89.0%	99.8%
1,000		0.2%	79.2%	99.7%
5,000		0.0%	31.2%	98.3%
10,000			9.7%	96.7%
50,000			0.0%	84.4%
100,000				71.2%
500,000				18.3%
1,000,000				3.4%

Lean Only – Removes Steps

Six Sigma Only – Improves Quality

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How is our approach different?

- We use the World-renowned KISS, (Keep It Simple Statistically) philosophy which focuses upon obtaining the maximum benefits (i.e. knowledge, ROI etc.) without getting bogged down in statistical complexity.
- Utilise a knowledge-based approach to pull the use of the statistical tools, not push them.
- Take a hands-on approach to training, using tools like the Statapult and SPC-XL Software.
- We provide support and follow up mentoring initiatives using our proprietary Black Knight™ approach which we believe ensures that you will see sustainable bottom line financial benefits.

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Lean Six Sigma: The Benefits

- Expanded knowledge of products and processes through characterisation and optimisation.
- Decrease of defects and cycle times through improved processes.
- Improved customer satisfaction due to improved quality & service.
- Aids business growth and improves profitability.
- Improves communication and teamwork through sharing of ideas, problems, successes, and failures.
- Develops a common set of tools and techniques with a methodology that can be applied by anyone in the organisation.
- Becomes the language of the business, ***"The way we work"***.

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Lean Six Sigma: Typical Structure

Leadership Team	
Champions	• 1 for Every 5 Black Belts
Master Black Belts	• 1 for Every 5 Black Belts
Black Belts	• 2% of # Employees (Fulltime BB)
Green Belts	• 5 for Every 1 Black Belt

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Lean Six Sigma: Common Concerns?

It's just another program!
Lean Six Sigma is not just another initiative, it is a way of integrating and improving current practices to achieve sustainable results.

How soon will we see the results?
Results can be achieved quickly if that is a requirement of the business however experience has proven that an approach based upon subtle integration over time, gives the most sustainable results.

Is the training expensive?
Segla International has an advantage in that we have developed our own training materials and as we do not pay royalties we are able to pass on these savings.

On-site training is another way to minimise training costs and allows us to tailor our training to suit your specific requirements.

Lean Six Sigma: Next Steps?

- Arrange with us to meet you and/or your team to discuss your company's specific needs.
- Develop an Implementation Plan, (Covert v's Overt approach) and link to current improvement initiatives.
- Choose potential Black Belt & Green Belt candidates.
- Conduct class room training.
- Identify and commence improvement projects.
- Implement project monitoring and mentoring process, (Black Knight™).
- Develop procedures to identify gaps and other issues that may arise.

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Lean Six Sigma & Segla International

"We believe that through the adoption of a continuous improvement and learning ethos and the application of these methodologies that organisations can achieve world class quality, service and cost control, thus sustaining a leading position in their chosen marketplace."

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