

Lean & 6Sigma Workshops

Street Lighting Fault Repairs

Highways Surface Defects

Principles of 2 Methodologies

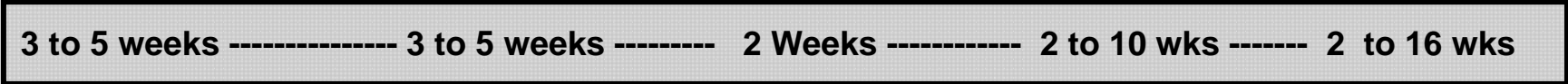
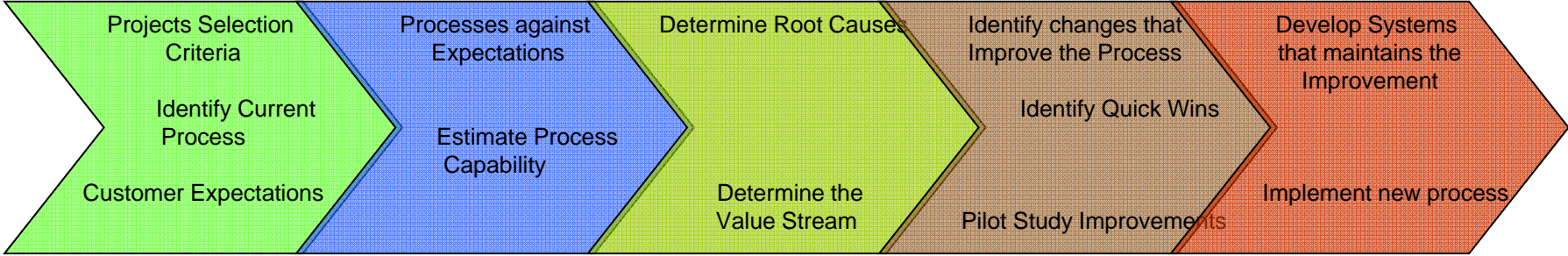
6SIGMA

- Facts Based – Data Driven
 - Demand Profiles
 - Variance
 - CTQ - Measurable
-
- Resolve Root Causes
 - Remove Variance
 - Focus of delivering what the customer defines as Quality

LEAN

- Awareness based
 - Demand Types
 - Non Value Added activity
 - Customer Values
 - Time
-
- Removal of Non Value Added Activity
 - Improve Flow
 - Focus on reducing Time and Improving Flow

LEAN 6SIGMA IMPROVEMENT OF EXISTING PROCESSES



KEY DELIVERABLES

Voice of the Customer Demand Profiles End to End Process	Baseline Performance Value Chain	Critical Areas for Improvement	Demonstrated Improvement Initiatives Process Design Options	Control Plan Improvement Embedded
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SOME KEY TOOLS

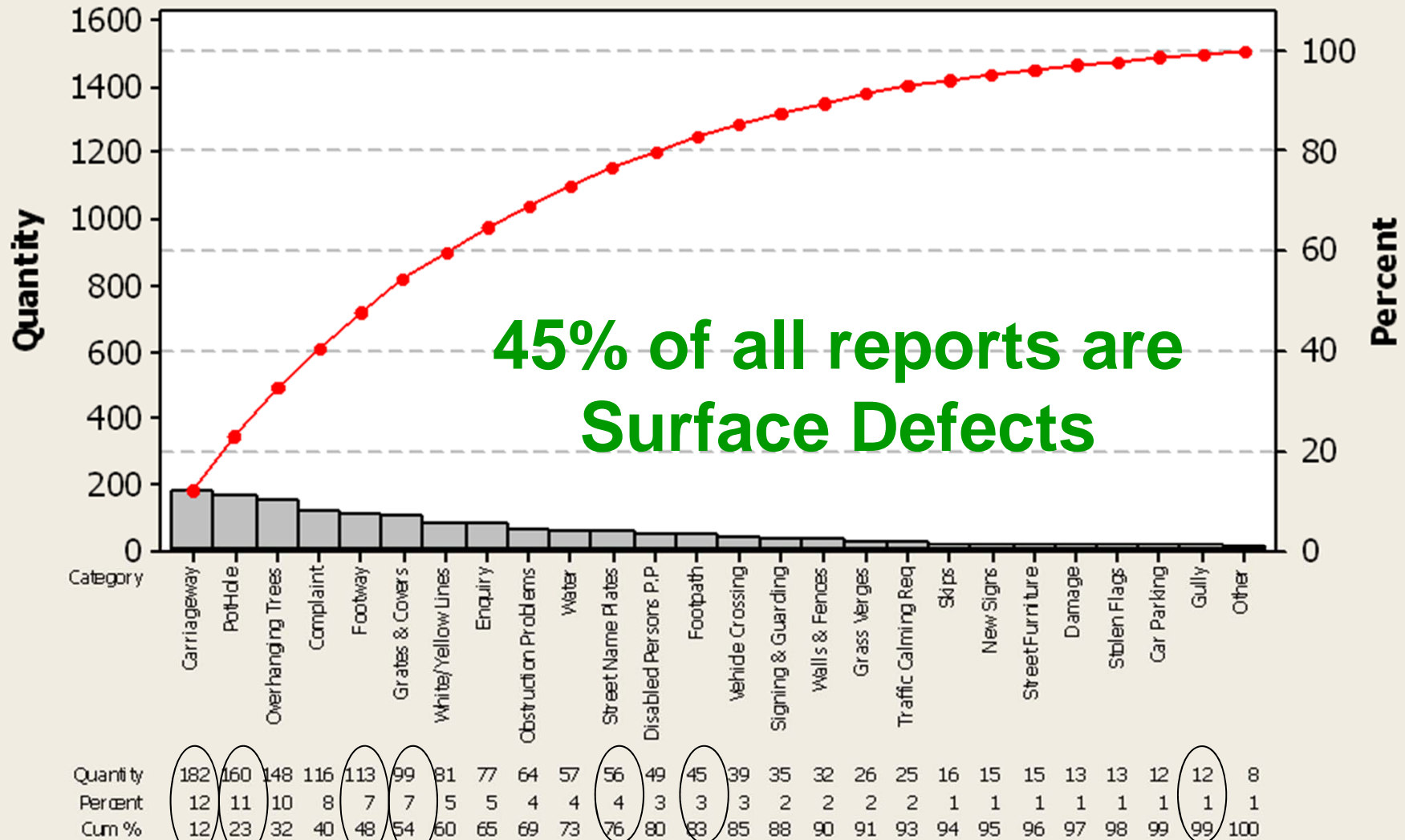
Projects Selection Matrix	VSM & Time Value	C&E	Resource Balancing	Control Charts
SIPOC	FLOW Map	FMEA	SCAMPER	Change Control
QFD	Pareto	MSA	FMEA	Cpk
CTQ Tree	Cpk KPI	Correlation & Regression	DOE	
	Avg&R	7 Wastes		

Lean 6 Sigma Workshop

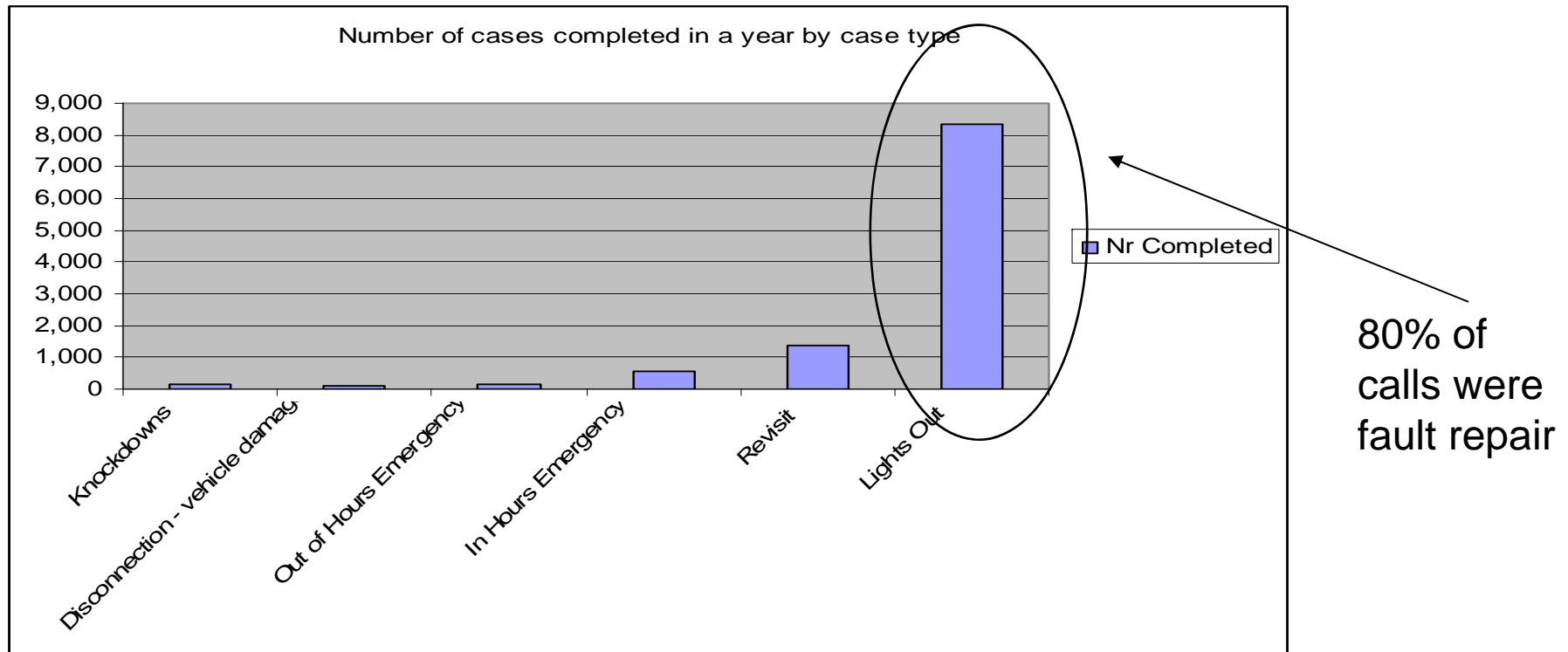
DEFINE

Highways Demand Types and Volumes

Pareto Chart of Category



Street Lighting Demand Types & Volume



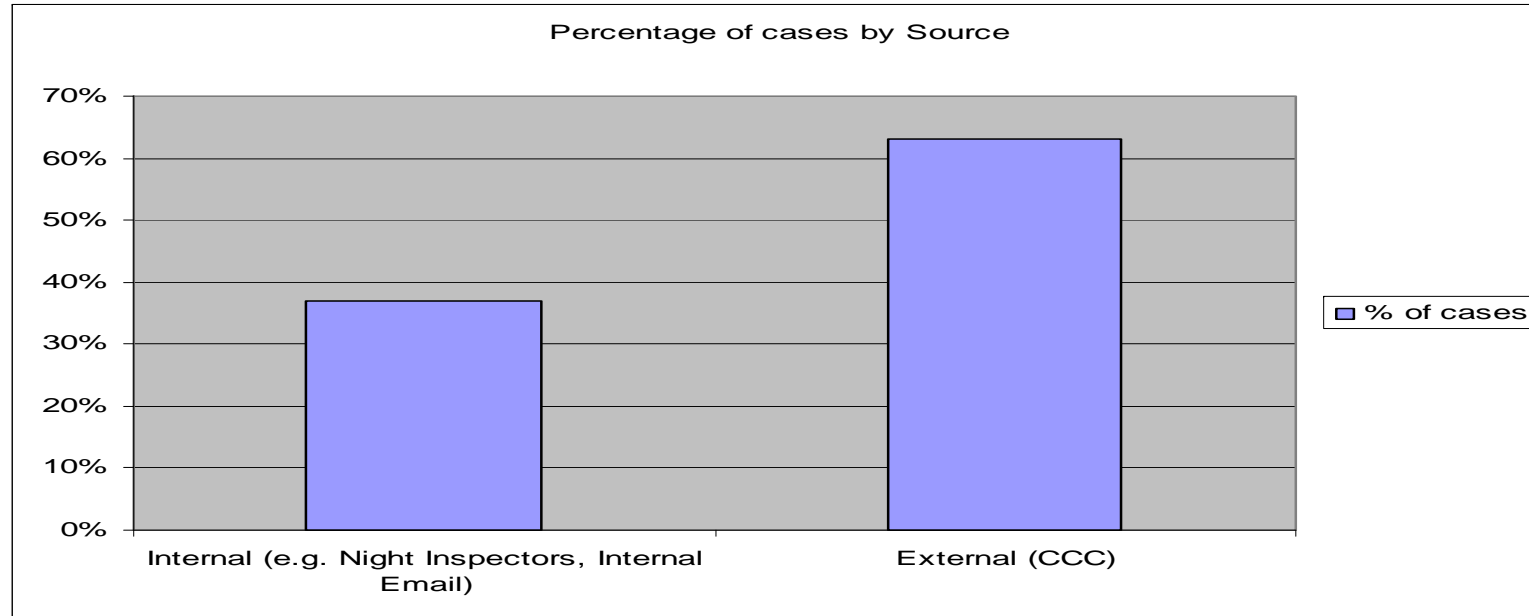
The largest proportion of cases are generated through LAGAN

7,898 cases were forwarded from LAGAN to the Insight Customer Service Module)

86% of these cases were acted upon, 14% cases (1,174) were closed immediately

Street Lighting Source of Demand

Period 1/9/2010 to 31/8/2011



Number of Cases Internally & Externally reported

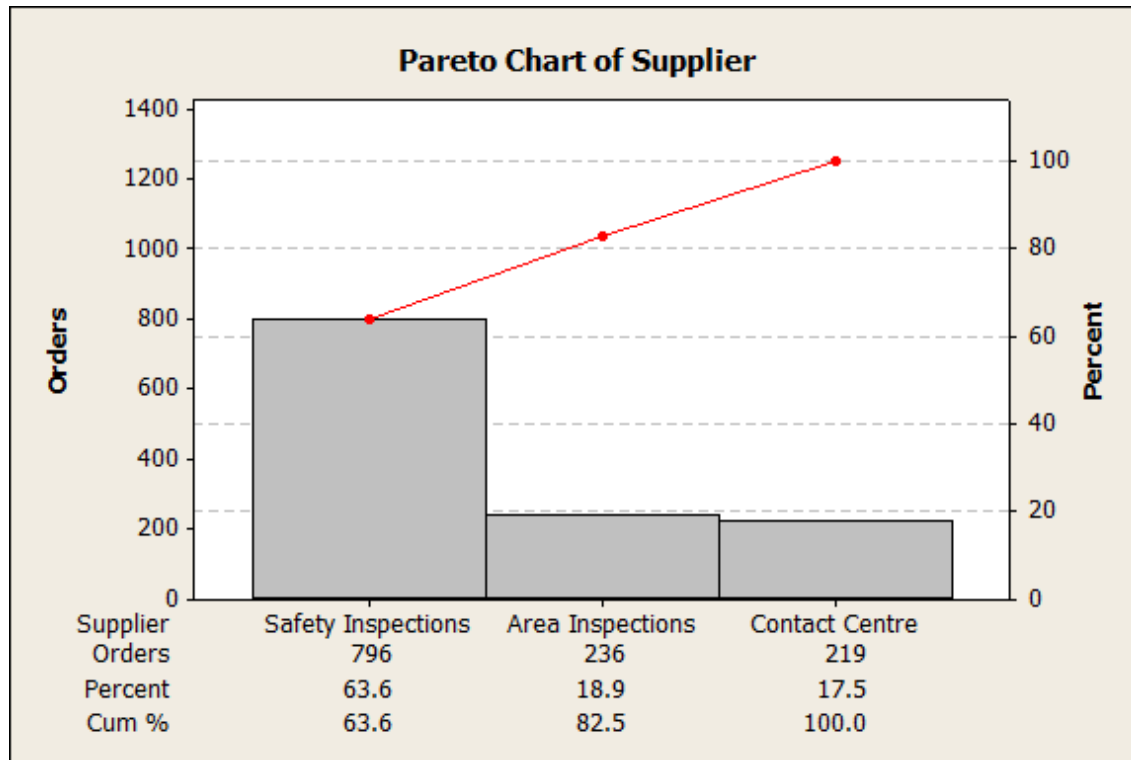
8,241 cases were entered/forwarded on to the Insight General Maintenance Module

63% of these cases (5,166) originated from LAGAN;

37% of cases (3,075) came from internal sources
e.g. Night Inspectors, internal phone calls & email

Highways Surface Defects - Where Orders are Generated from

81% of orders supplied by Safety Inspections and the Public



Safety Inspections supply 64% of orders

Street Lighting

Understanding Of the High Level Process

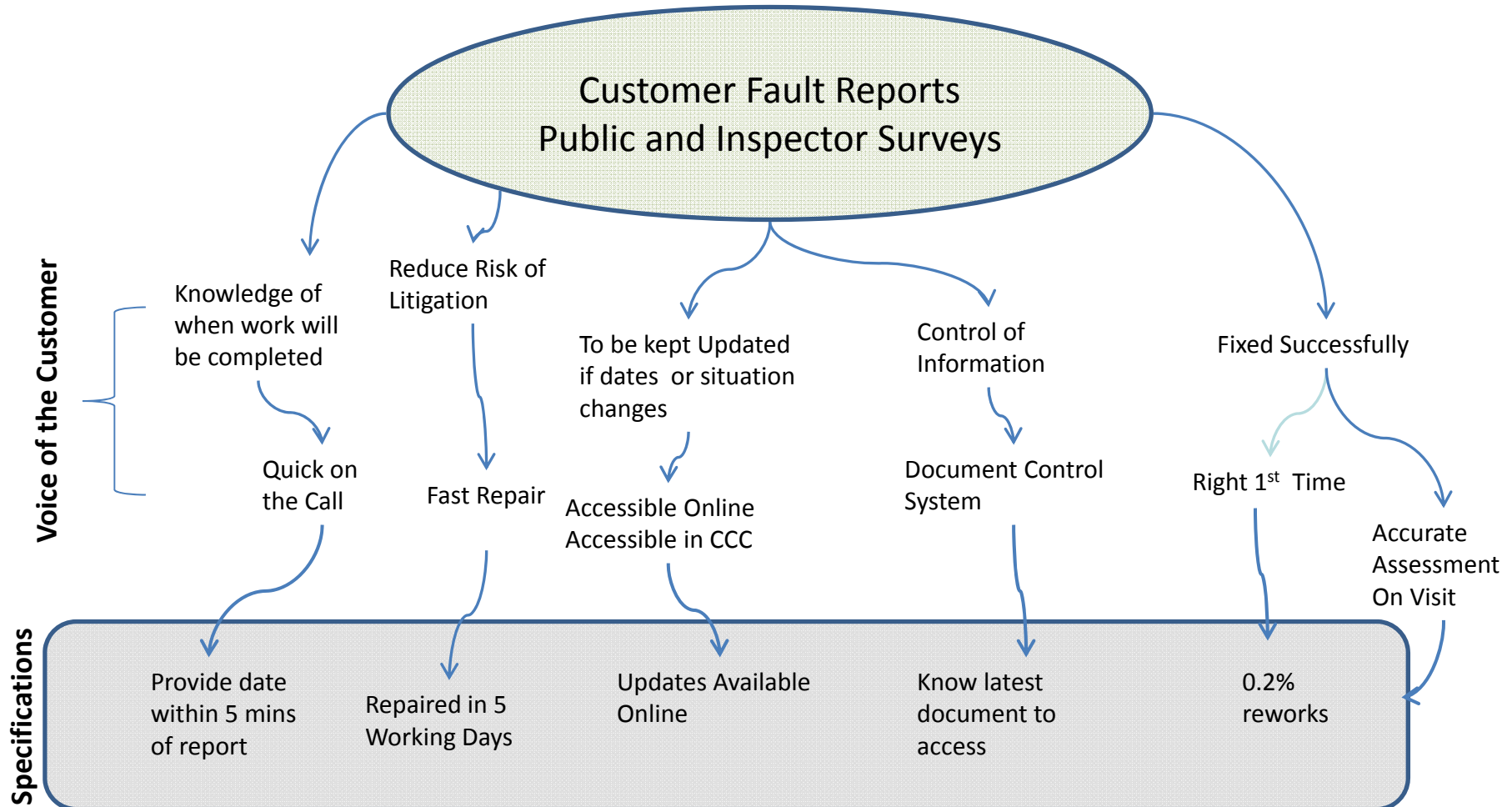
SIPOC

SUPPLIER	INPUT	HIGH LEVEL PROCESS	OUTPUT	CUSTOMER
General Public Police Councillors MPs	Telephone Call, email, letter, text	Customer Contact Centre	Check LAGAN	General Public Councillors/MPs
Night Inspectors Customer Contact Centre Central Management System Councillors/MPs General Public	Fax Customer Service Module Insight Auto Email from CMS Letters/emails/phone calls Letters/emails/phone calls/face to face	Street Lighting Admin	Collate orders into zones Generate Order on Insight General Maintenance Feedback into LAGAN	General Public Councillors/MPs Customer Contact Centre
Street Lighting Admin Councillors Stores (raw materials) CEX Office	Works Order (general maintenance) email components	Street Scene Admin	Pre repair - group orders for repair teams Post repair - Update general maintenance Complete order Order components	Street Lighting Admin Councillor/MPs CEX Office
Street Scene Admin Stores General Public	Works Order Components Verbal	Street Scene Repair Team	Sort out route collect components from stores travel to site repair fault complete paper work report further work	street scene admin general public

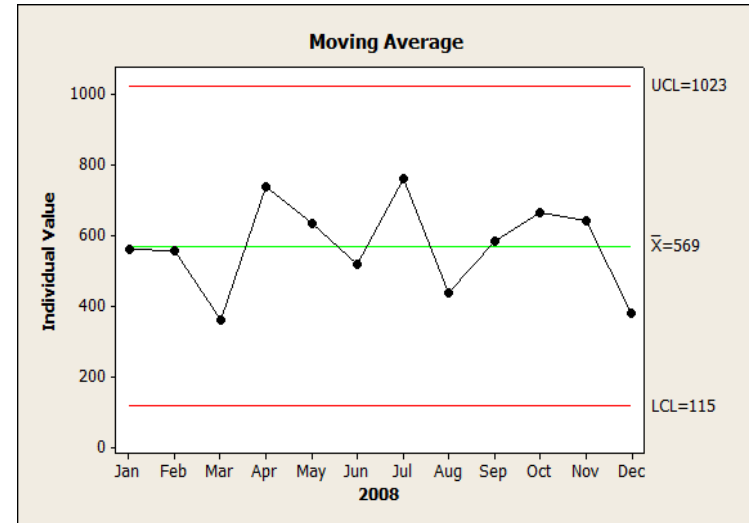
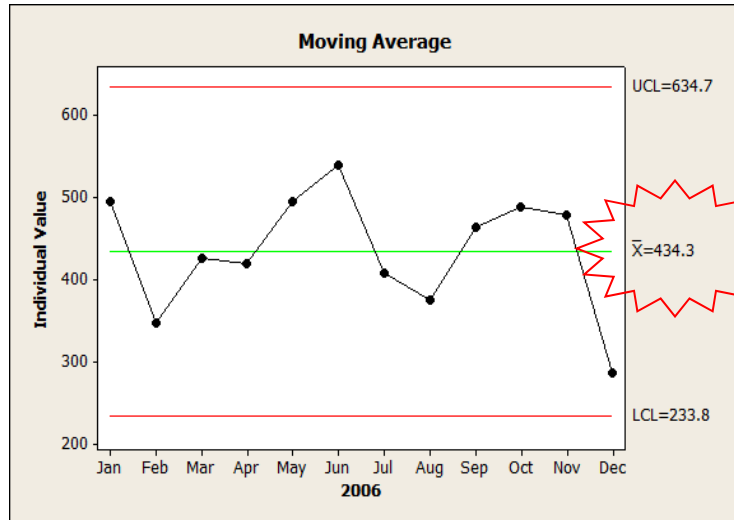
Customer requests appear at all levels of the process, and bypass the Customer Contact Centre

Critical To Quality Tree – CTQ & Value

Defines Customer VALUES and SPECIFICATION

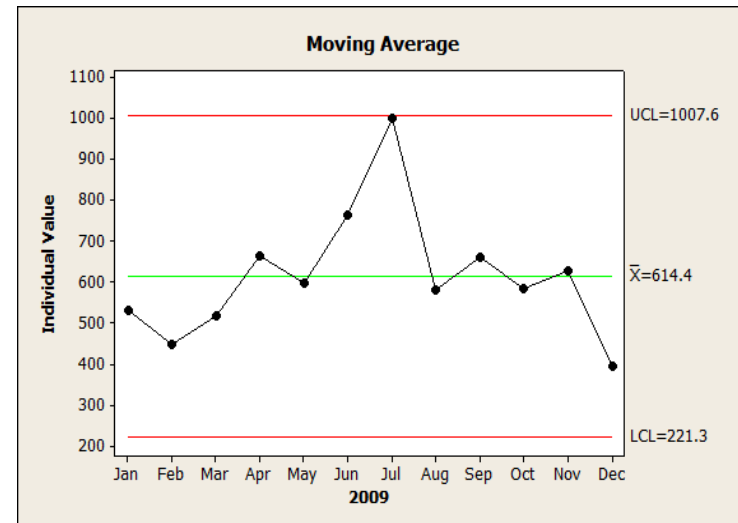
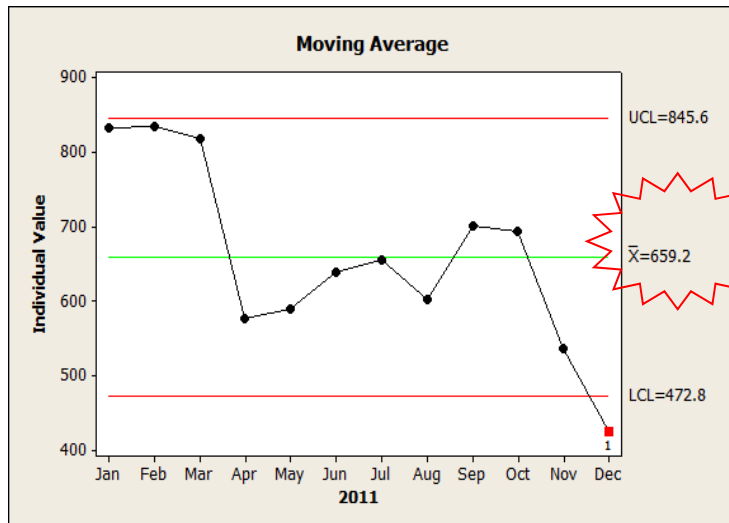


Demand and the way Orders are Received



50% Growth in patching over 5 years

Variable difficult to plan resources efficiently

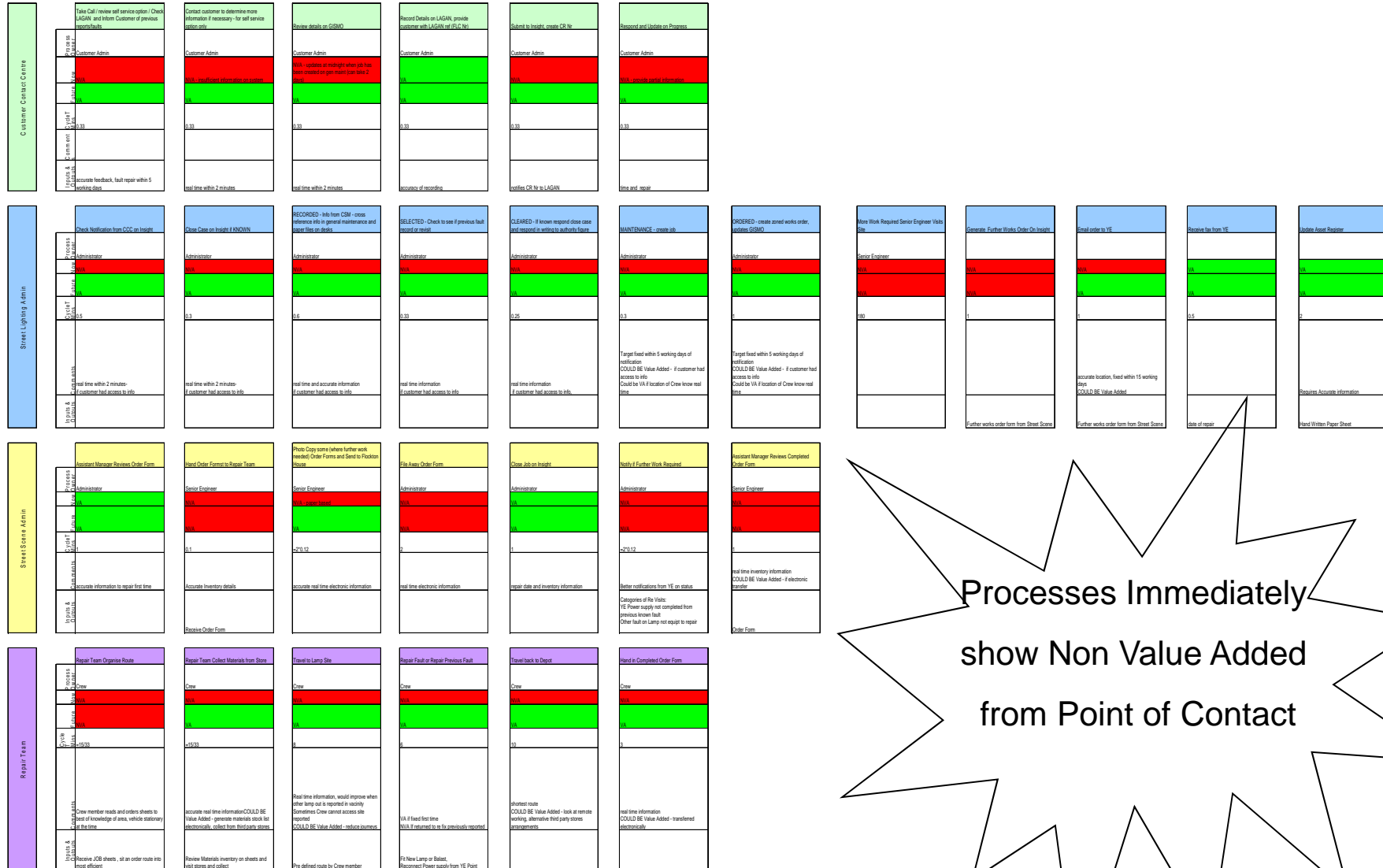


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Measure

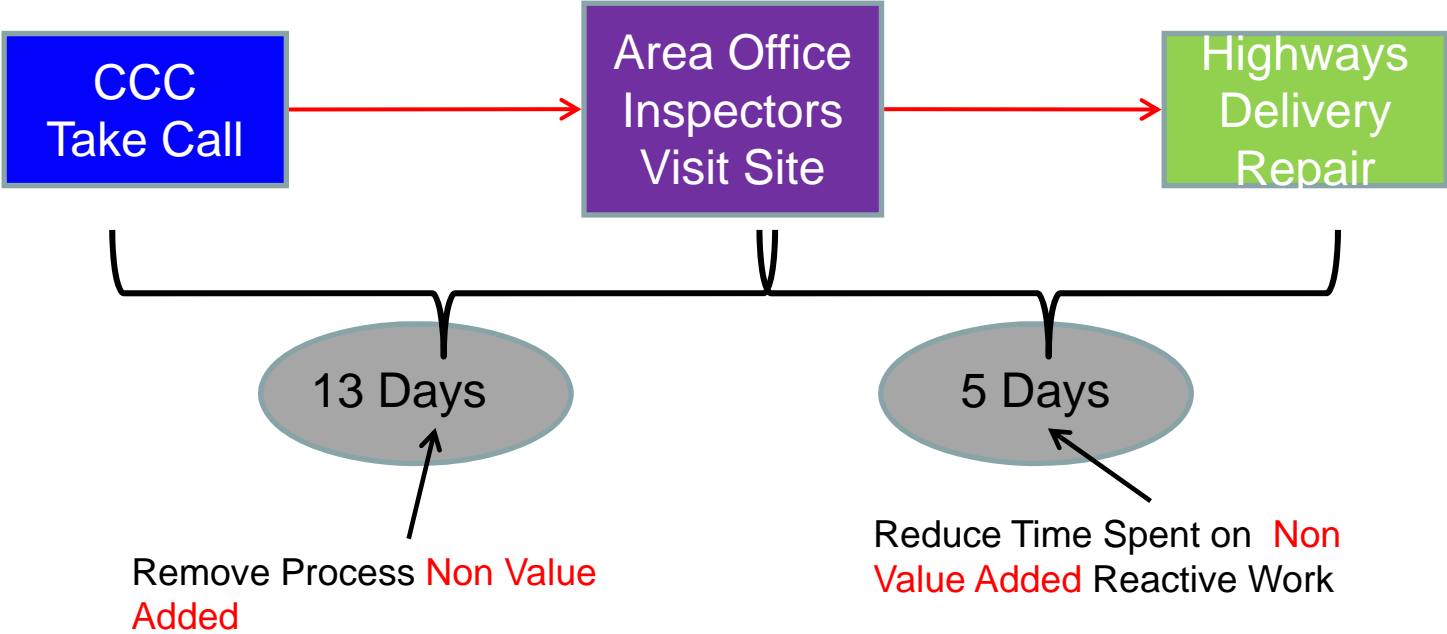
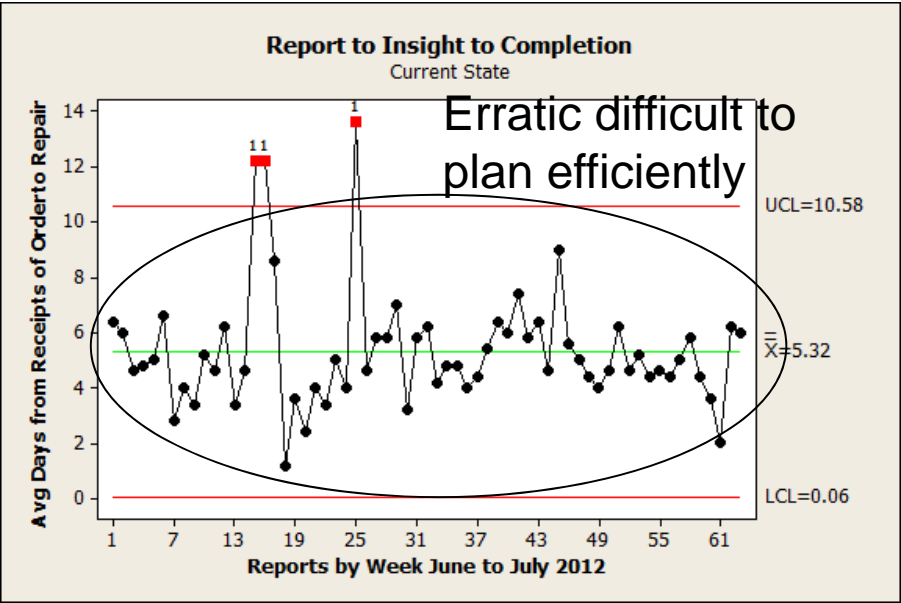
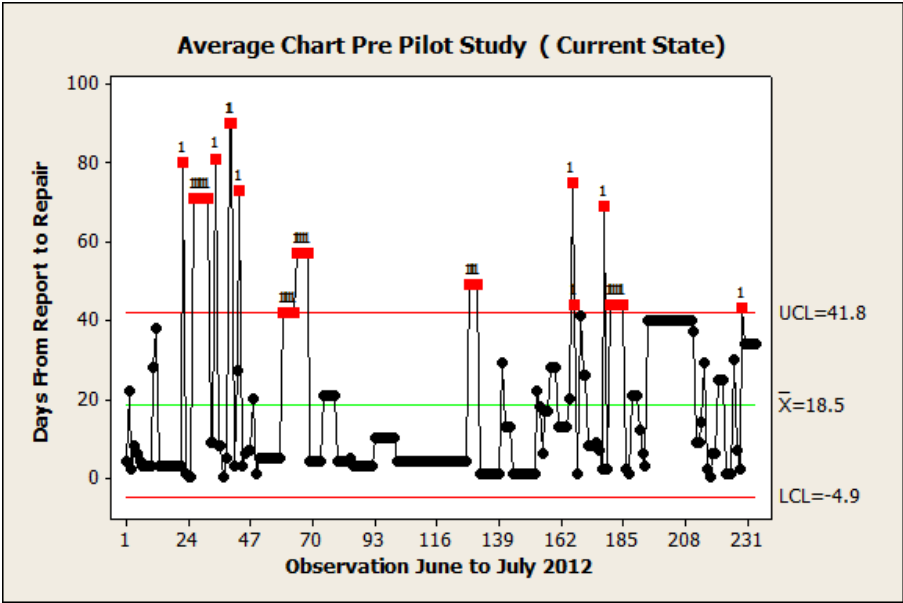
Current State Value Stream Map

How does the Process today perform against CTQ'S and Values



Processes Immediately show Non Value Added from Point of Contact

The way orders are managed in the Current State

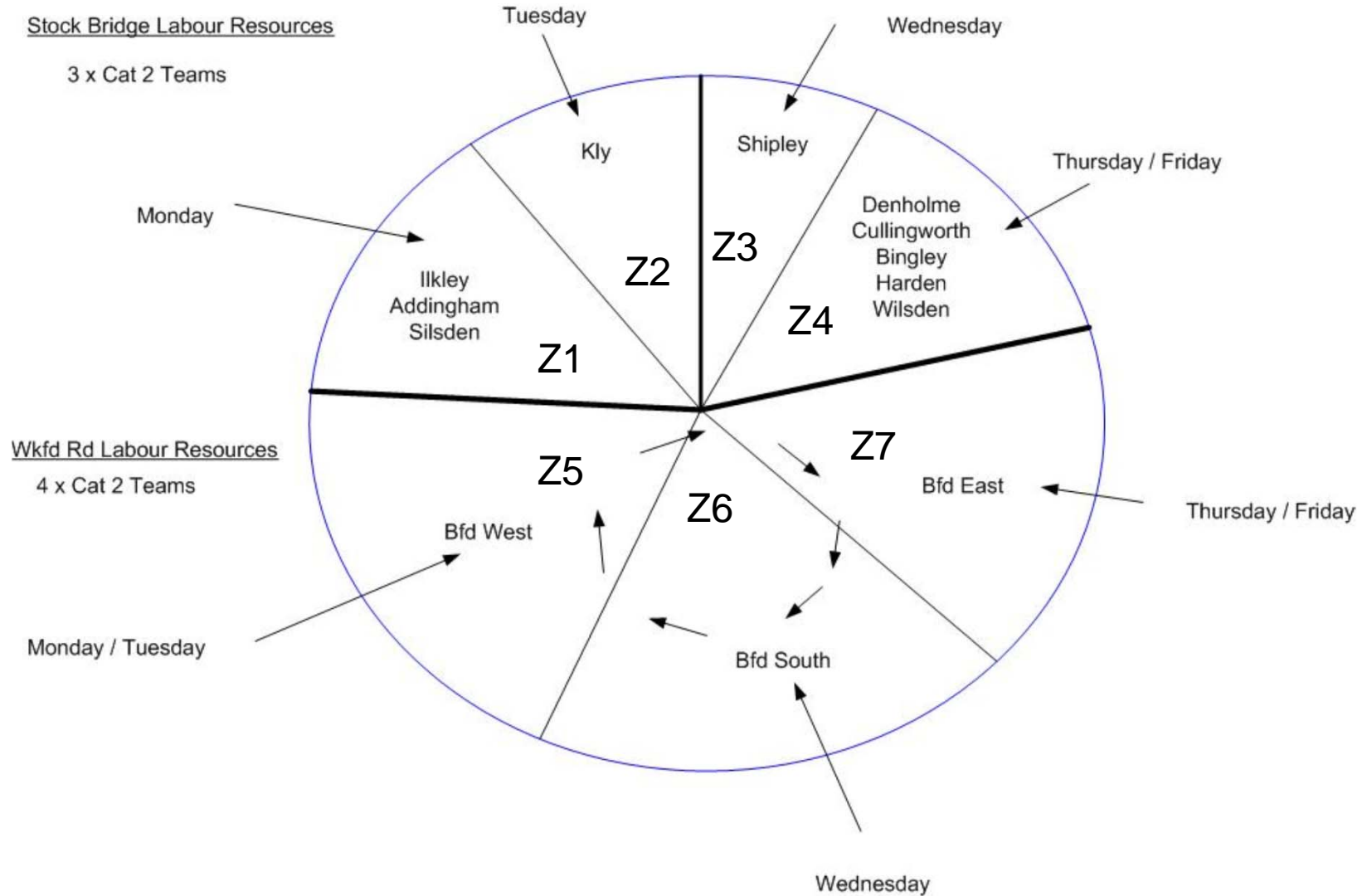


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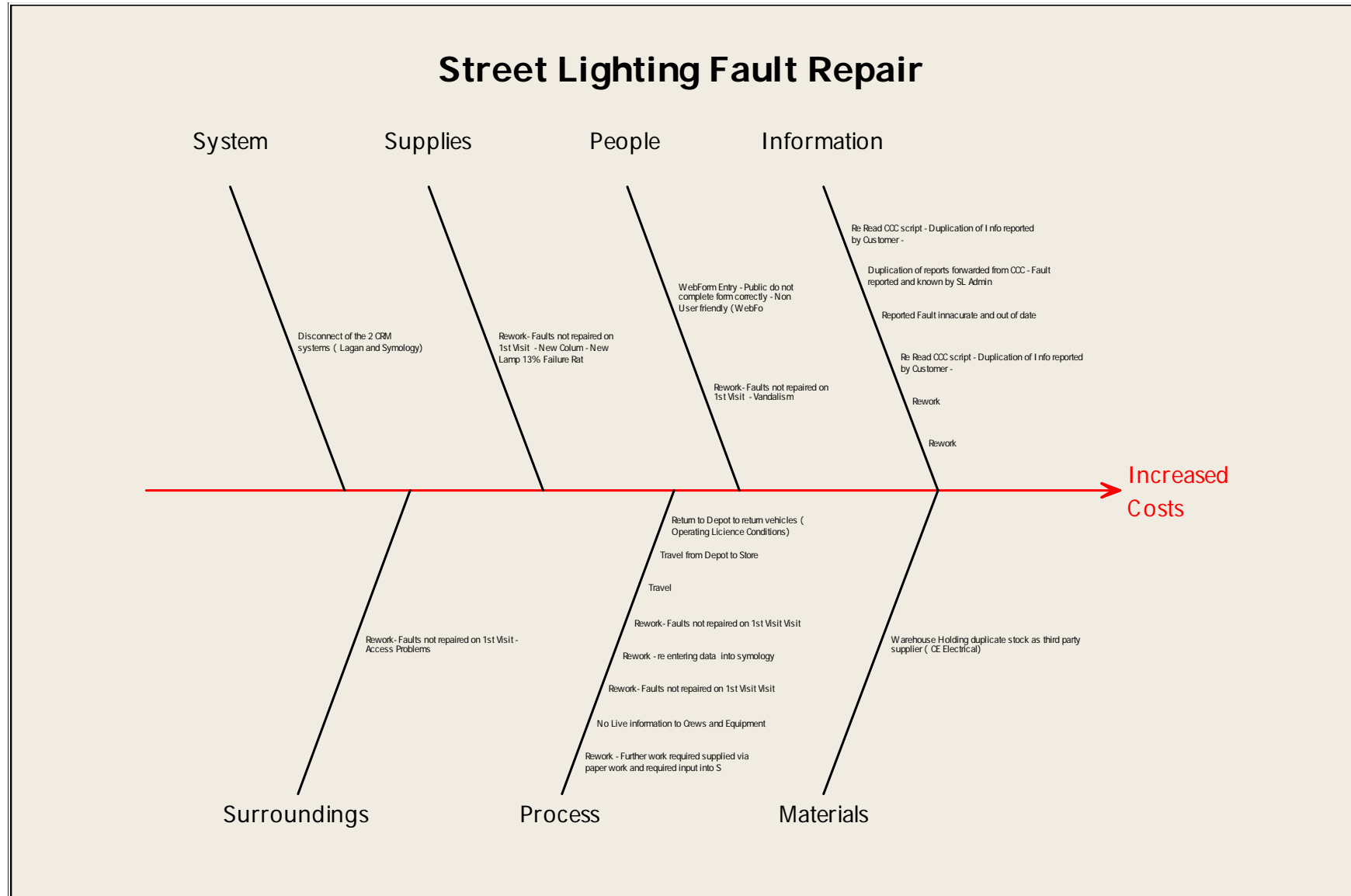
Analyse

7 Defined Zones of Measurement

Proposed New Ways Of Working Highways Cat 2's



Root Causes and Effects Analysis



Safety Inspection Example

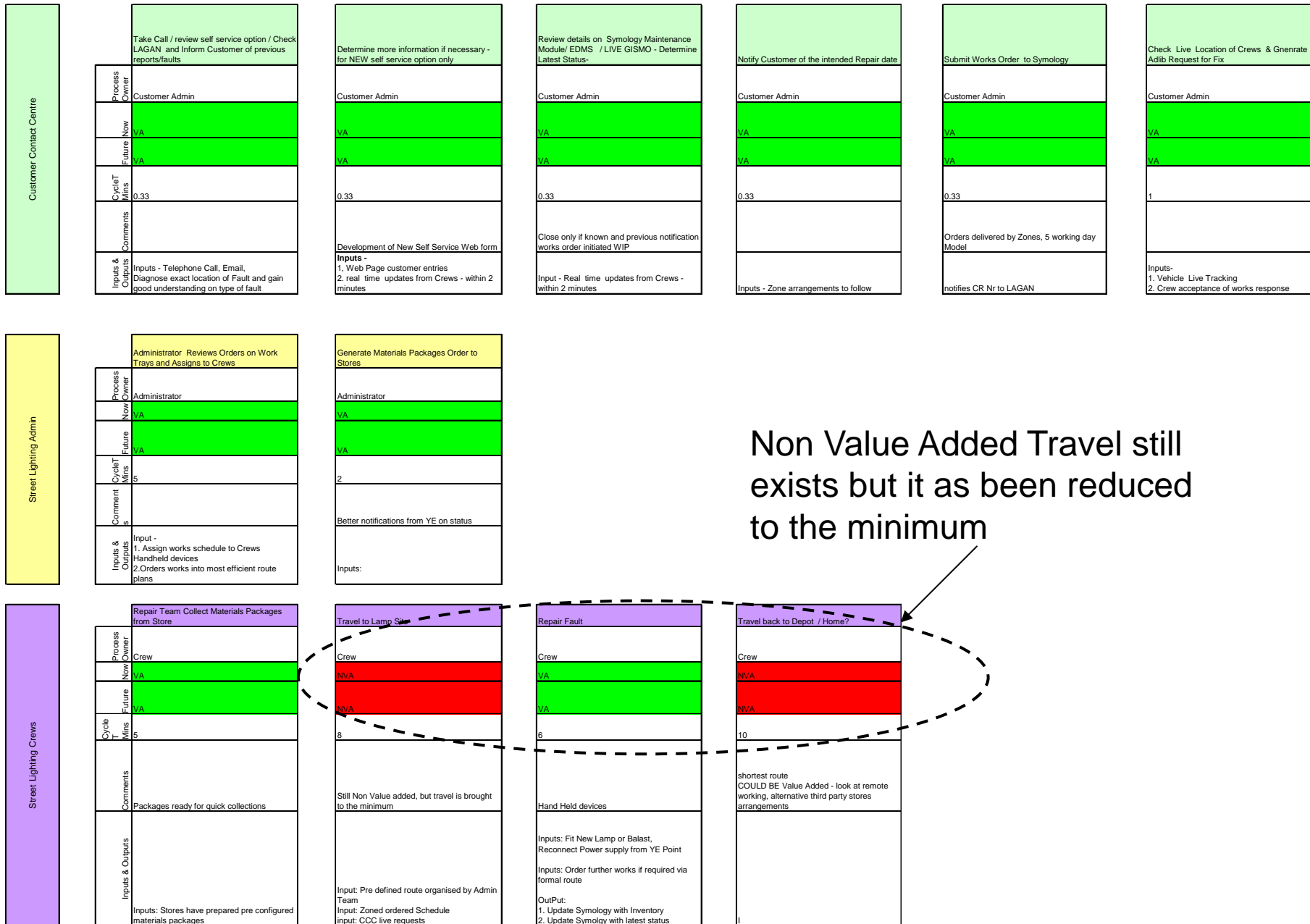
Partial reports incur repeat visits and fragmented reports



Lean 6 Sigma Workshop

Improve

Street Lighting Fault Repair - Future State Map

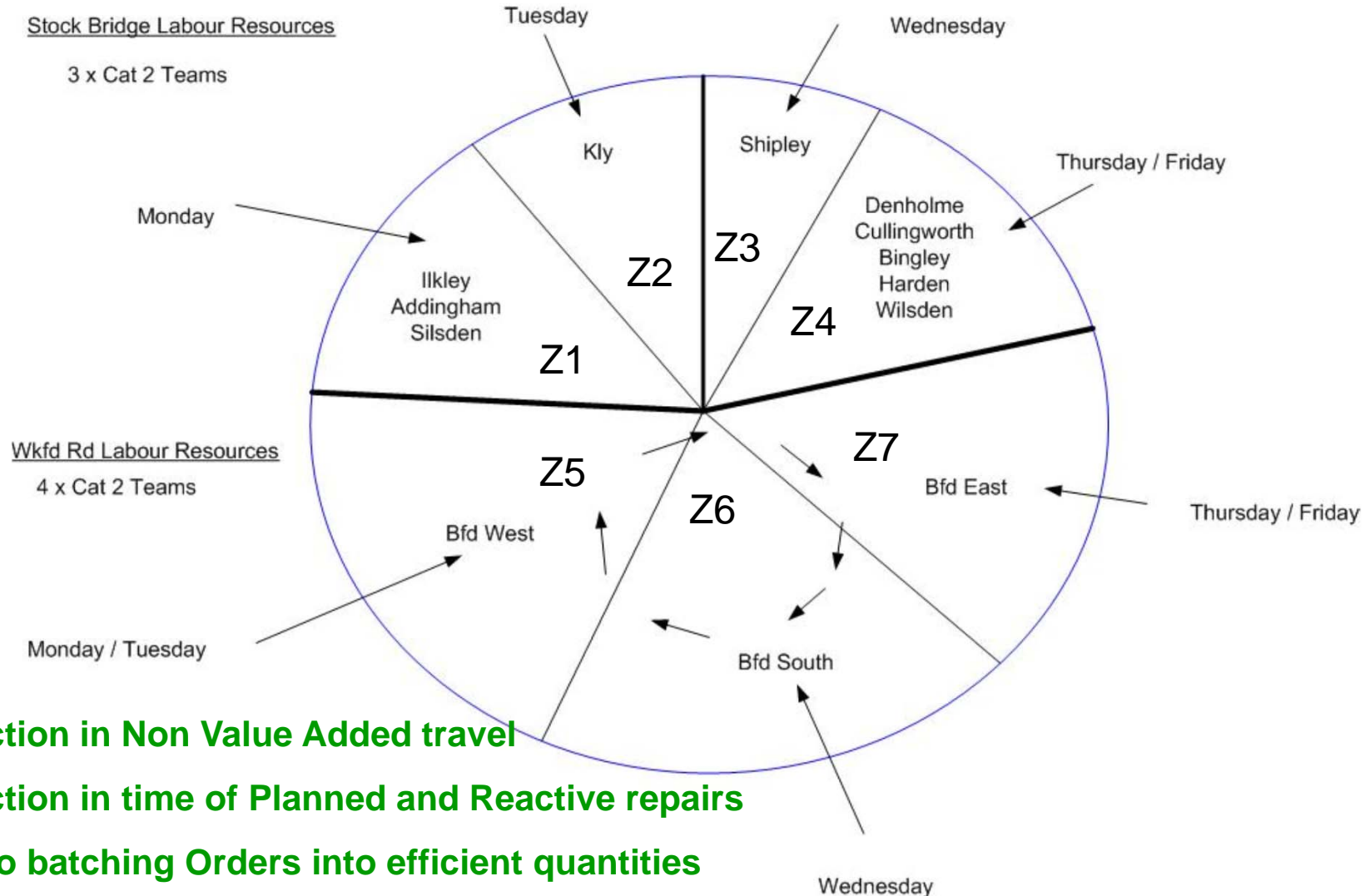


Non Value Added Travel still exists but it as been reduced to the minimum

Resources assigned to the 7 Defined Zones

Inspections aligned to the zones 1 to 2 day ahead of crews

Proposed New Ways Of Working Highways Cat 2's



Reduction in Non Value Added travel

Reduction in time of Planned and Reactive repairs

Able to batching Orders into efficient quantities

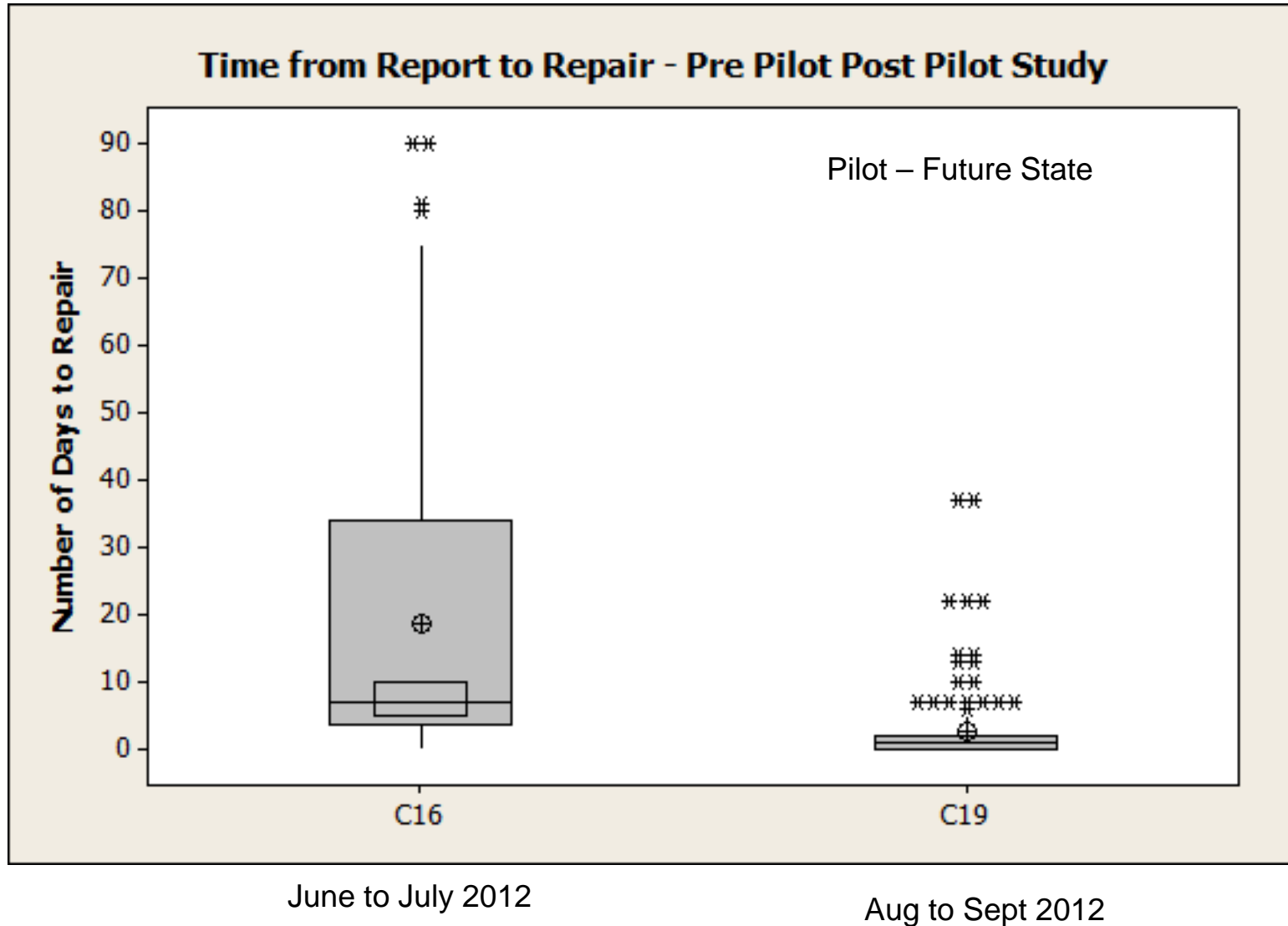
Tell Customers the day Jobs when repair crews will arrive

Real Results
Highways Surface Defects

Post Pilot Study Analysis
August 1st to Sept 26th

Real evidence in Improvement in quicker response for
Calls received from the Public using less processes –

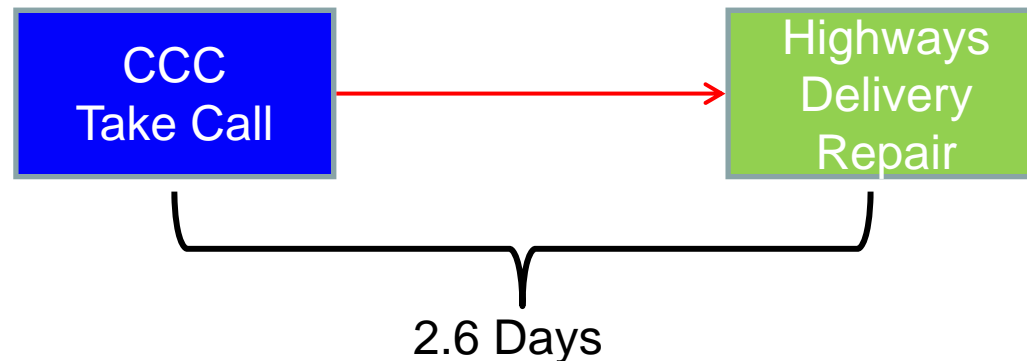
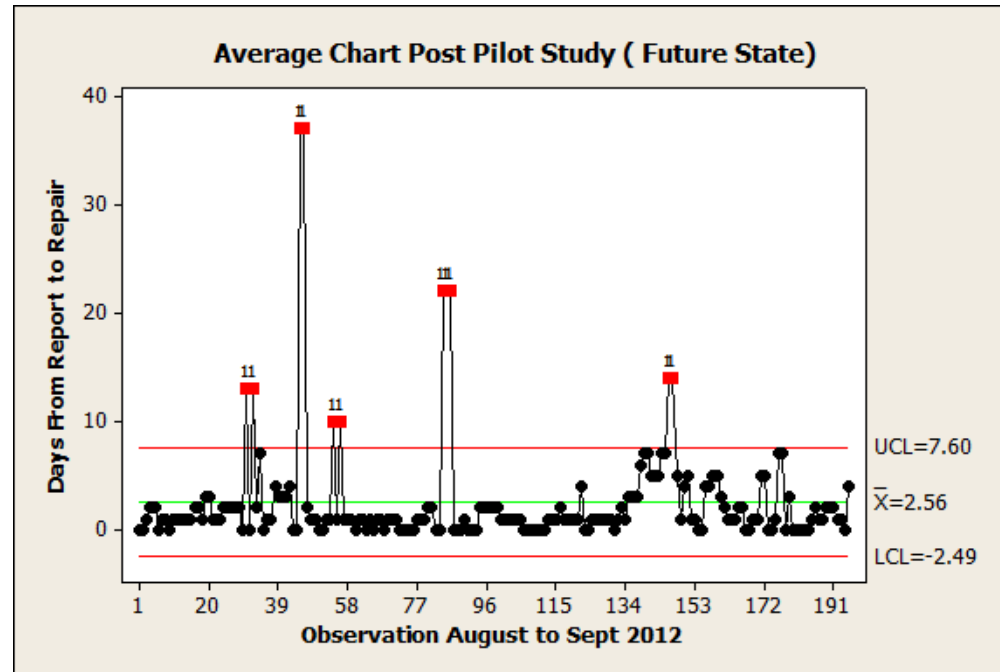
Reduction in Risk and Happy Customers



Highways Surface Defects

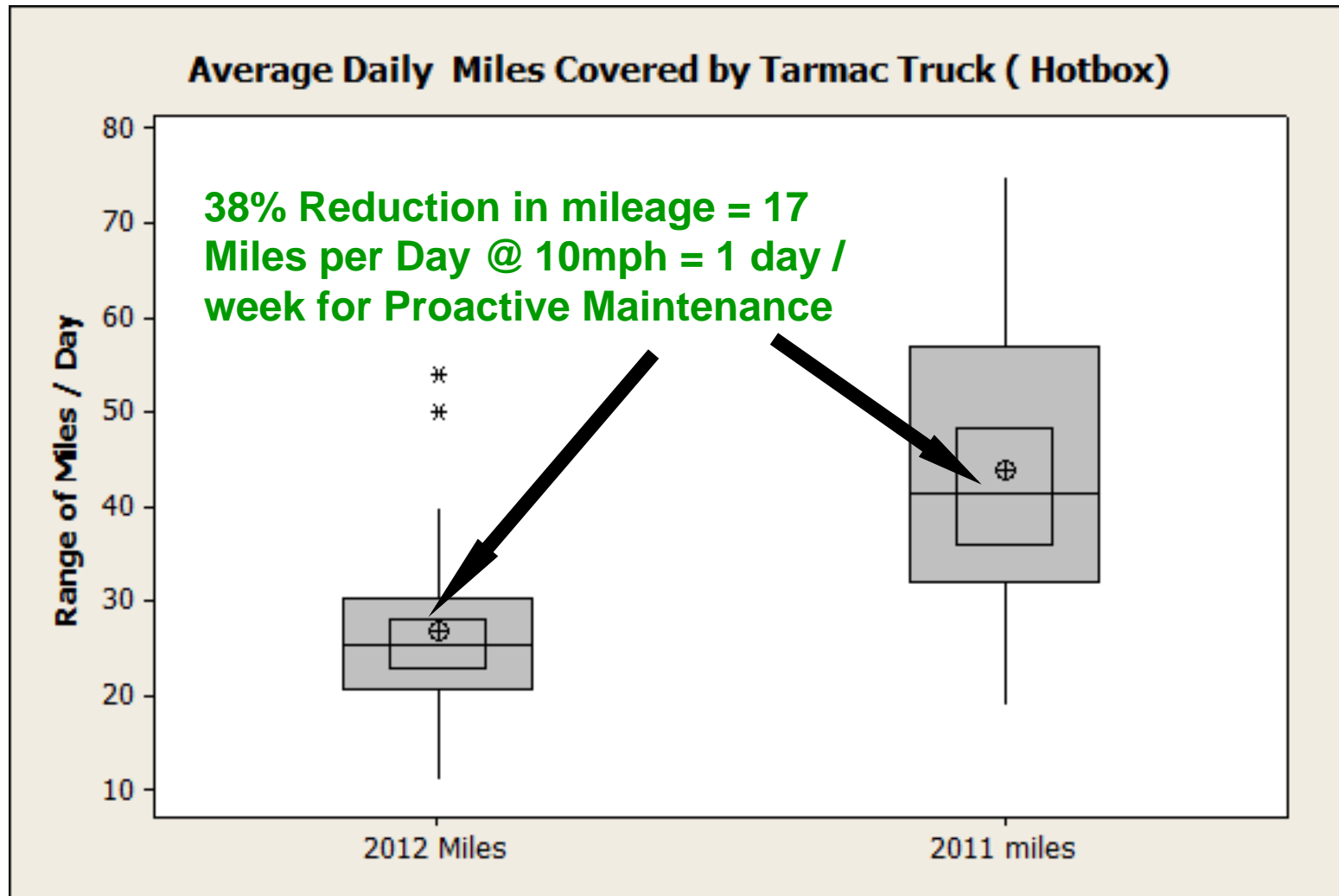
The Way Orders are Managed in the Future State – Reports Go Directly to Highways Delivery

Reduction of 16 days in time to repair

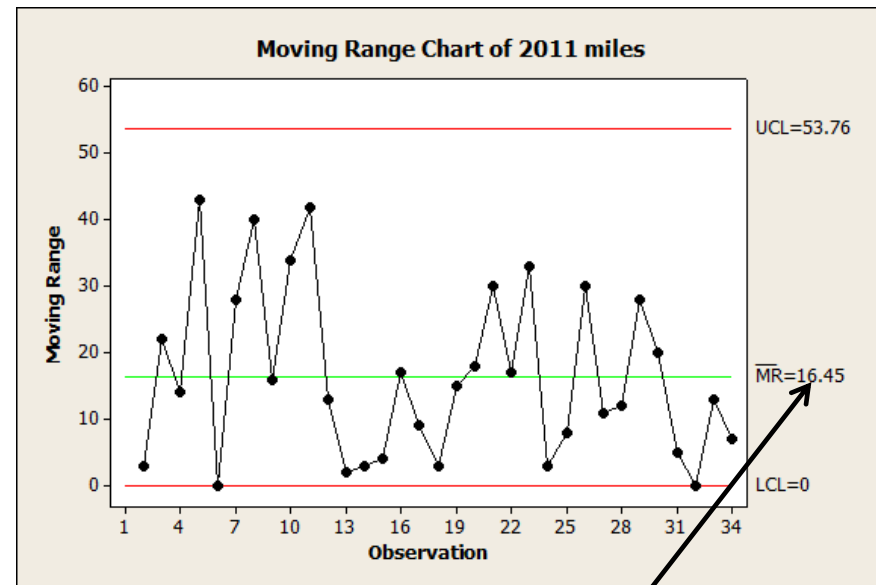
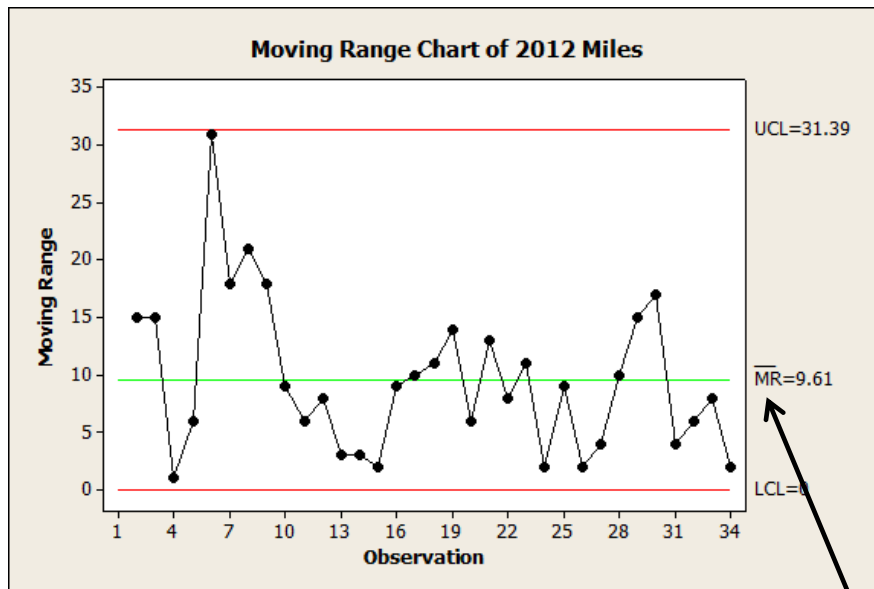


Tarmac Truck – Mileage Covered

Sample Taken August to Sept - same periods



Tarmac Truck – Range of Miles Covered during Trial

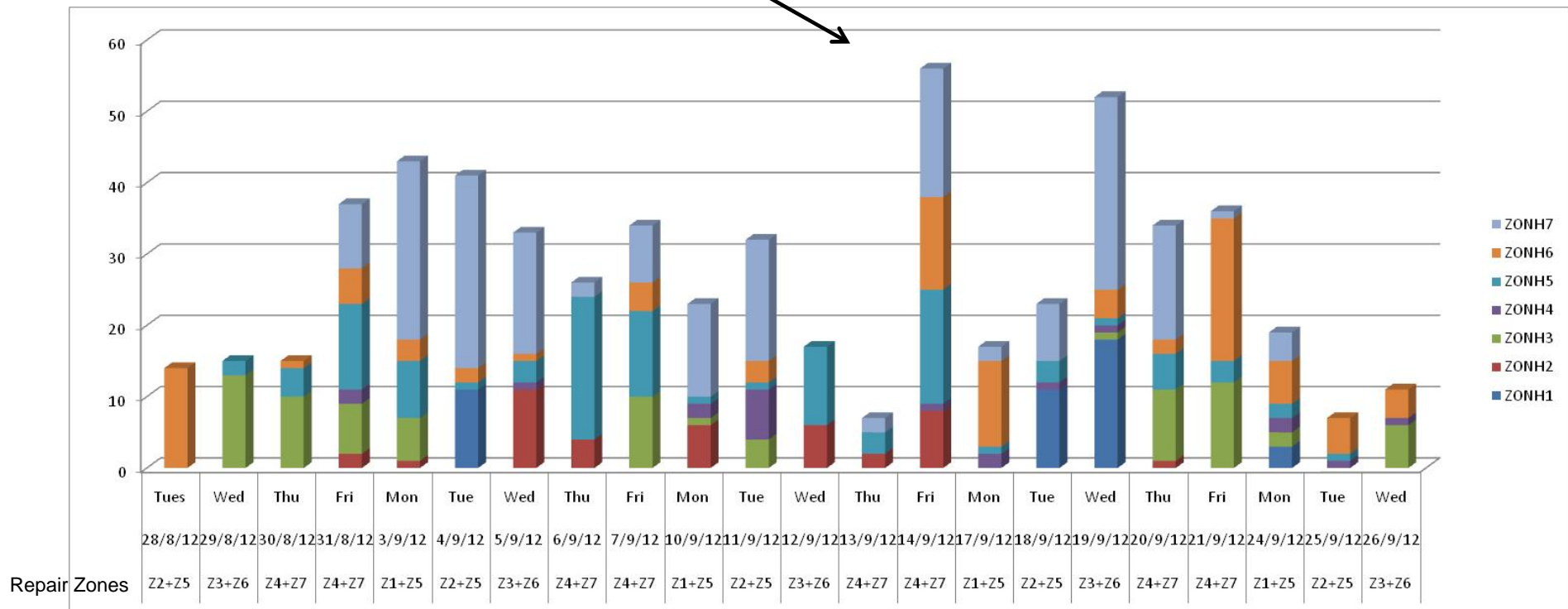


Range of Daily Miles being driven in the Tarmac Truck **reduced by 42% = Gets to repair in less time**

Combined Inspections are essential to better scheduling of work and Reduction in Travel

Combined inspections are essential for 1 visit 1 report on the surface – will enable better proactive planning of works

Orders are still Geographically scattered and have little reflection to Zoned Repairs



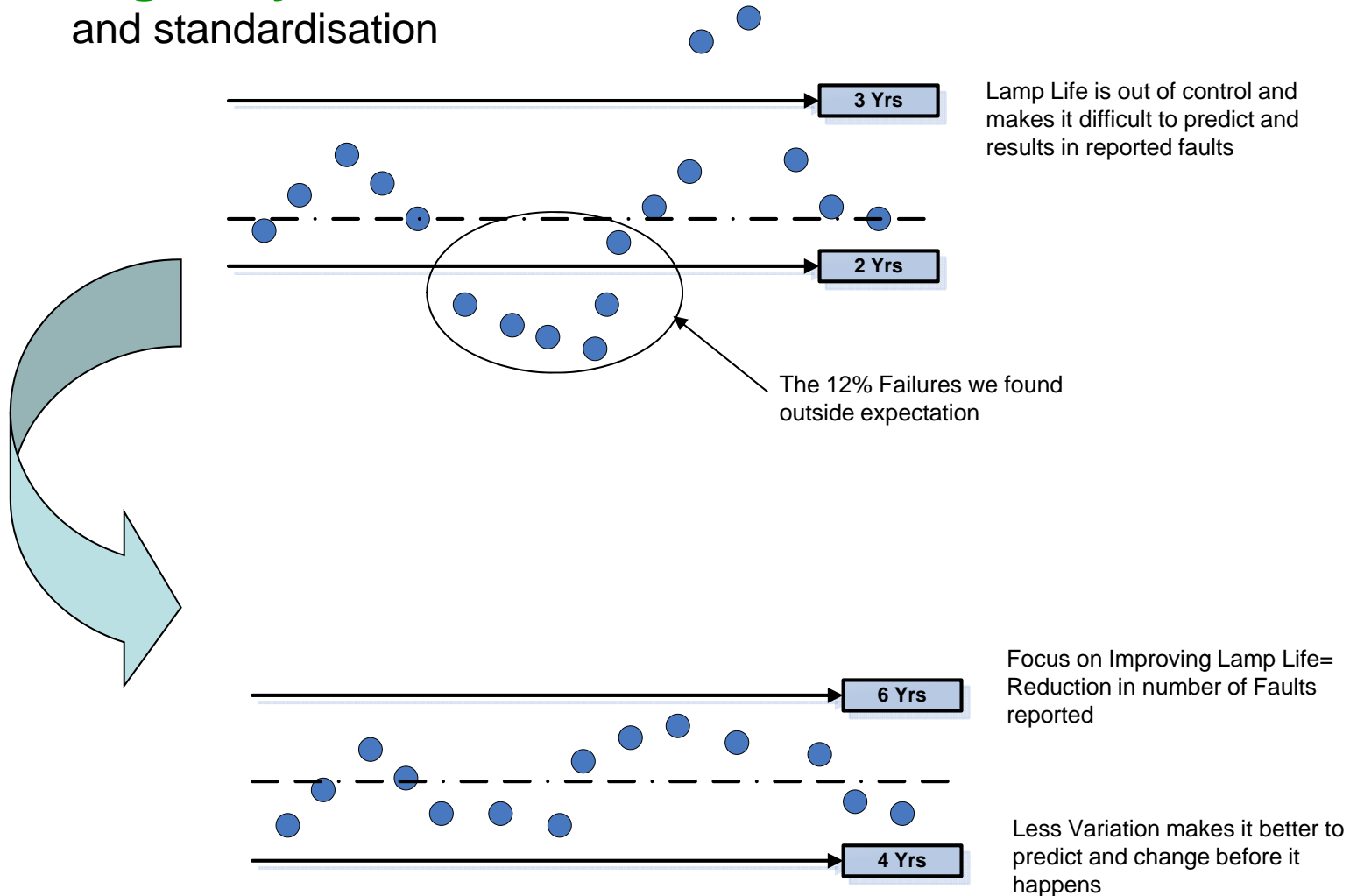
Lean 6 Sigma Workshop

Control

Proactive 6Sigma Process Controls – **Street Lighting**

Innovation in Lamp Technology or Monitoring Required

Highways could follow a similar model in Road Surface technology and standardisation



What's Been achieved so Far

- Less processes involved in responding to public requests
- Closer communication with Customers in diagnosing problem
- Customer Contact Centre will be provided with access to systems for accurate up to date information on fault repairs
- The Creation of efficient working zones
- Reduction in the overall time in repairing faults from 18 to 2.6 days from receipt of report from the public
- Reduction of 38% in mileage covered by the tarmac vehicle and its crew (17 miles per day)
- Avg of 10 Miles per Hour = 1.7 Hrs Value Added Time gained = 25% of a Working day
- Change of Lamp to a better quality supplier as already reduce reworks significantly

What's Remains Open from The Workshop

- Progress the Combined Inspection Regime & Combine Client & Contractor functions
- Progress required on the alignment of Inspections / Surveys aligning with order of repairs
- Progress the reduction of Mileage travelled by the Highways Inspection regime inline with changes from workshop
- Progress the opportunities from balancing delivery resources directly to works orders requested by the Inspection surveys and the public