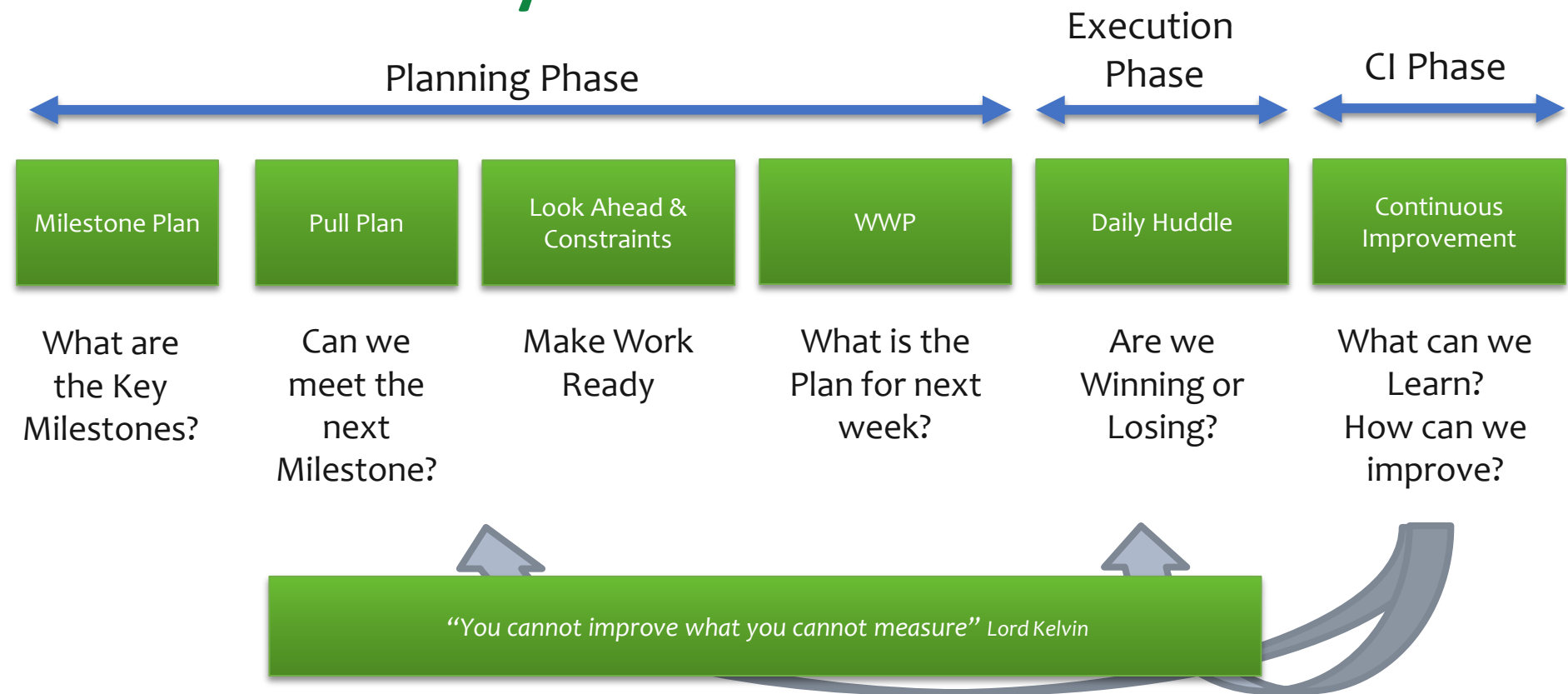


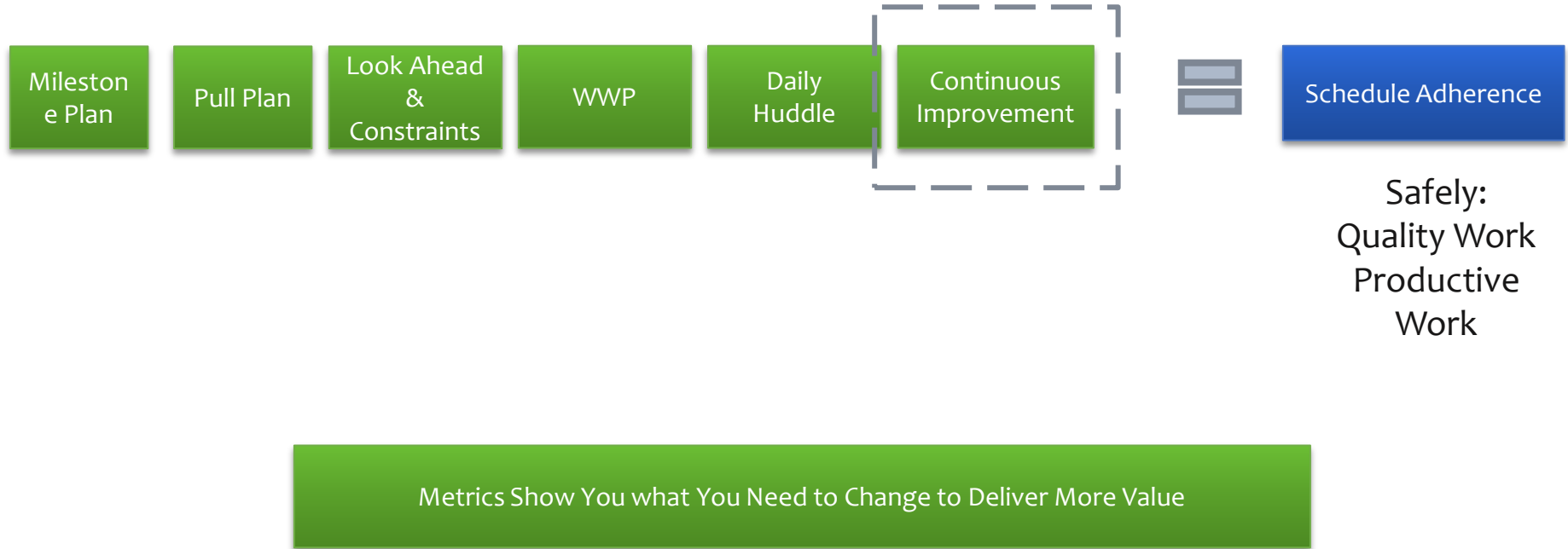


LAST PLANNER® SYSTEM METRICS

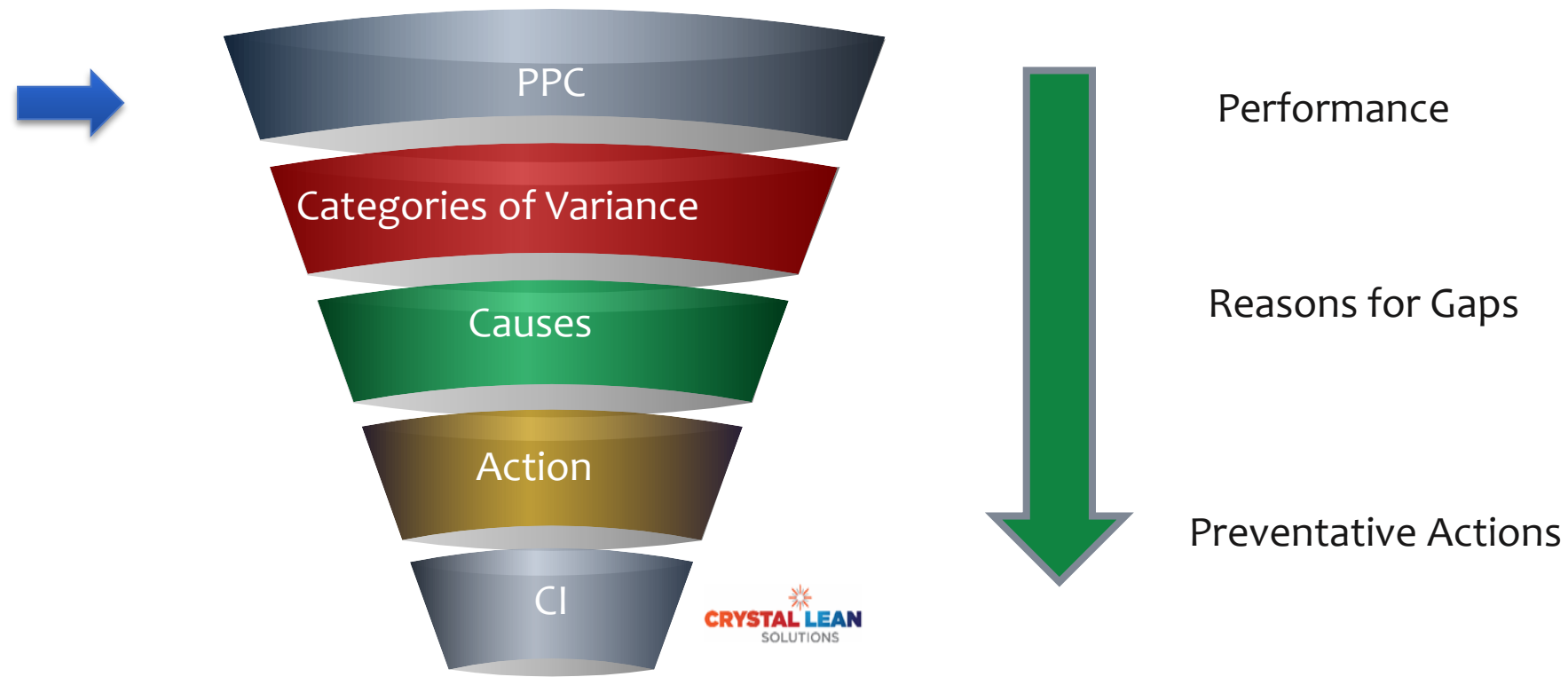
LPS as an Entire System



Value to the Customer



Continuous Improvement Funnel



Weekly Work Plan

Weekly Work Plan

CATEGORY	LEVEL/LOCATION	ROOM REFERENCE	SECTOR #	ASSIGNMENT DESCRIPTION	Target Value	Units	WEEK COMMENCING							05/11/2018			
							Mon	Tue	Wed	Thu	Fri	Sat	Sun				
							364	368	400	401	385	66	0				
							05-Nov	06-Nov	07-Nov	08-Nov	09-Nov	10-Nov	11-Nov				
CR inc Buffer & Asso. Areas	Lower Ground	P220	Sector 6	Cell Culture (South) Ceiling Installation	80	m²	2	2	2	2	2						
CR inc Buffer & Asso. Areas	Lower Ground	P220	Sector 6	Cell culture (south) partitions	60	LM	2	2	2	2	2						
CR inc Buffer & Asso. Areas	Ground Floor	All Areas	Sector 4	Lilly ceiling walkdown and handover						X							
CR inc Buffer & Asso. Areas	Ground Floor	All Areas	Sector 4	Cutting and Marking Small Services in Cleanroom Areas (PA's, Sockets, Data Points etc.)	As Requested		2	2	2	2	2						
CR inc Buffer & Asso. Areas	Ground Floor	G290	Sector 4	Wall Panel and door install		Lm	6	6	6	6	6						



Percent Planned Complete (PPC)

Quality Assignment Description

Level / location	Room Ref	Sector #	Assignment	Target	Mon	Tues	Wed	Thurs	Fri
Ground Floor	G520	Sector 3	Install Coving	150m ²	2	2	2	2	2
Lower Ground	AHU 750	Sector 5	Install HVAC First Fix & Inline Equipment	50m ²		2	2	2	



Level / location	Room Ref	Sector #	Assignment	Target	Mon	Tues	Wed	Thurs	Fri
Ground Floor			Install Coving		2	2	2	2	2
Lower Ground	AHU 750	Sector 5	HVAC	50m ²		2	2	2	



Daily Huddle

Category	Level / location	Room Ref	Sector #	Assignment	Target	Mon	Tues	Wed	Thurs	Fri
Cleanroom	Ground Floor	G520	Sector 3	Install Coving	150m ²	2	2	2	2	2
Cleanroom	Lower Ground	AHU 750	Sector 5	Install HVAC First Fix & Inline Equipment	50m ²		2	2	2	

Percent Planned Complete (PPC)

No of Tasks Completed

No of Tasks Scheduled

$\times 100 = \text{PPC}$

Benchmark = 85%

Example of Concept

No of Tasks Planned = 20

No of Tasks Not Completed = 5

$$\text{PPC} = \frac{(20-5) \times 100}{20} = 75\%$$

20

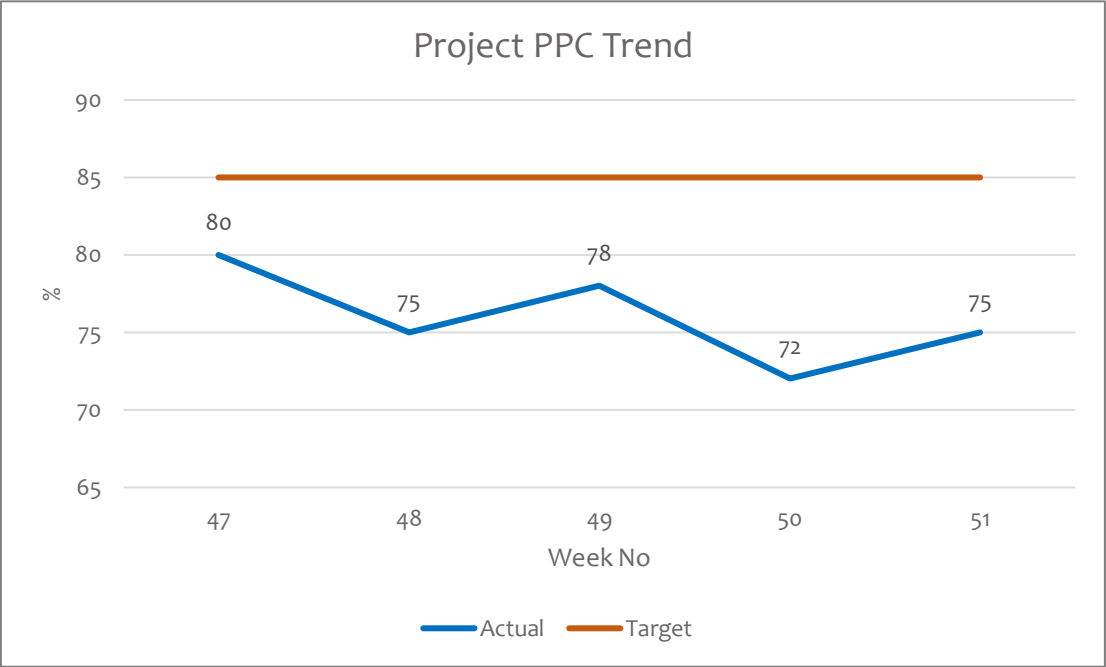
Example – Over to You?

No of Tasks Planned Last Week = 30

No of Tasks not Completed per Plan = 10

$$\text{PPC} = \frac{30 - 10}{30} = 66\%$$

PPC Trend



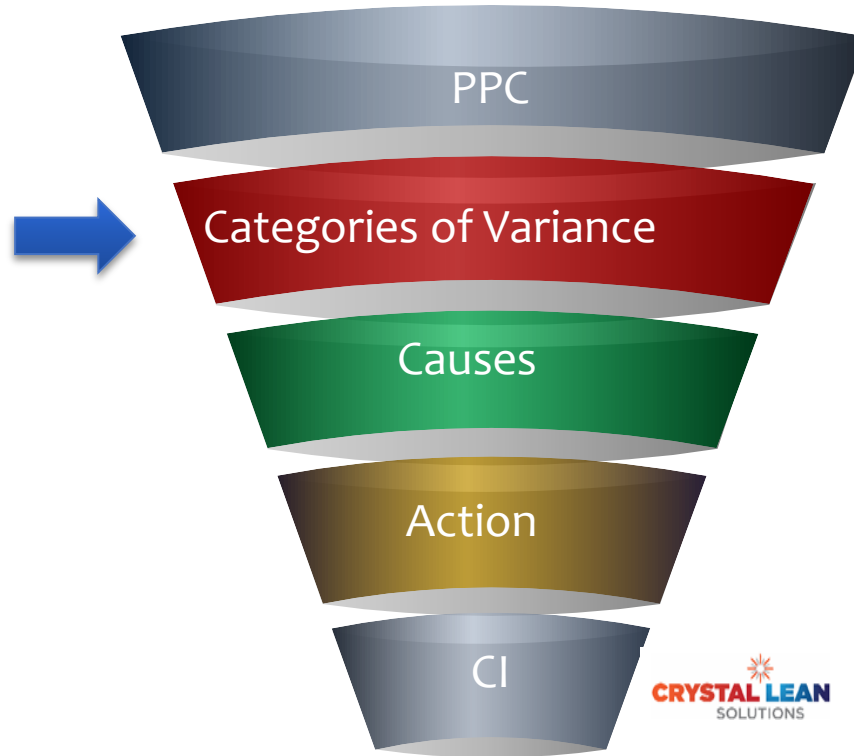
% of Tasks completed per Plan

Drivers of PPC Variability

CRYSTAL LEAN SOLUTIONS								CoPlan			
Weekly Performance Report											
Weekly Project Performance								PPC	Early Finish	Late Finish	Miss
Reference Week: 2018.44								86.52%	0.00%	0.00%	13.48%
Collaborative Partner	WTD PPC							PPC	Early Finish	Late Finish	Miss
Contractor 1	Mon 0%	Tue 87%	Wed 93%	Thu 96%	Fri 95%	Sat 95%	Sun 95%	94.74%	0.00%	0.00%	5.26%
Contractor 2	Mon 0%	Tue 87%	Wed 84%	Thu 86%	Fri 89%	Sat 90%	Sun 90%	90.00%	0.00%	0.00%	10.00%
Contractor 3	Mon 0%	Tue 92%	Wed 88%	Thu 86%	Fri 85%	Sat 85%	Sun 85%	85.11%	0.00%	0.00%	14.89%
Contractor 4	Mon 0%	Tue 80%	Wed 80%	Thu 71%	Fri 67%	Sat 67%	Sun 67%	66.67%	0.00%	0.00%	33.33%
Contractor 5	Mon 0%	Tue 71%	Wed 71%	Thu 71%	Fri 72%	Sat 72%	Sun 72%	72.41%	0.00%	0.00%	27.59%
Contractor 6	Mon 0%	Tue 100%	Wed 100%	Thu 100%	Fri 100%	Sat 100%	Sun 100%	100.00%	0.00%	0.00%	0.00%
Contractor 7	Mon 0%	Tue 67%	Wed 71%	Thu 77%	Fri 79%	Sat 79%	Sun 79%	78.57%	0.00%	0.00%	21.43%

Breaking Down
Types of
Deviation to Plan

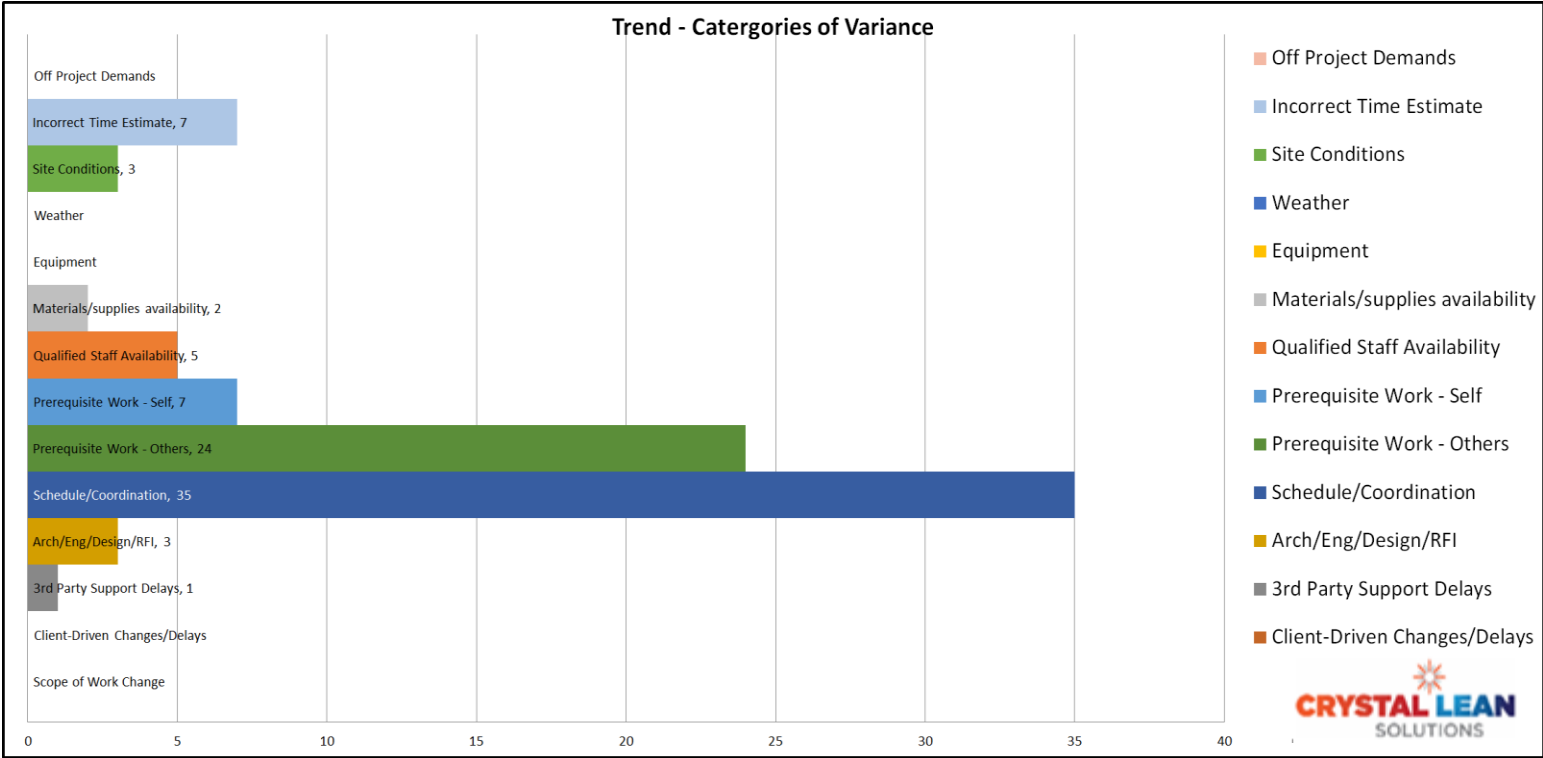
Continuous Improvement Funnel



Reasons for PPC Gap - Categories of Variance

CATEGORIES OF VARIANCE			
1	Scope of Work Change	8	Qualified Staff Availability
2	Client-Driven Changes/Delays	9	Materials/supplies availability
3	3rd Party Support Delays	10	Equipment
4	Arch/Eng/Design/RFI	11	Weather
5	Schedule/Coordination	12	Site Conditions
6	Prerequisite Work - Others	13	Incorrect Time Estimate
7	Prerequisite Work - Self	14	Off Project Demands

Categorises of Variance



Pareto Highlights Key Focus Areas

deliver projects better, faster, together

Quality of Comments Critical



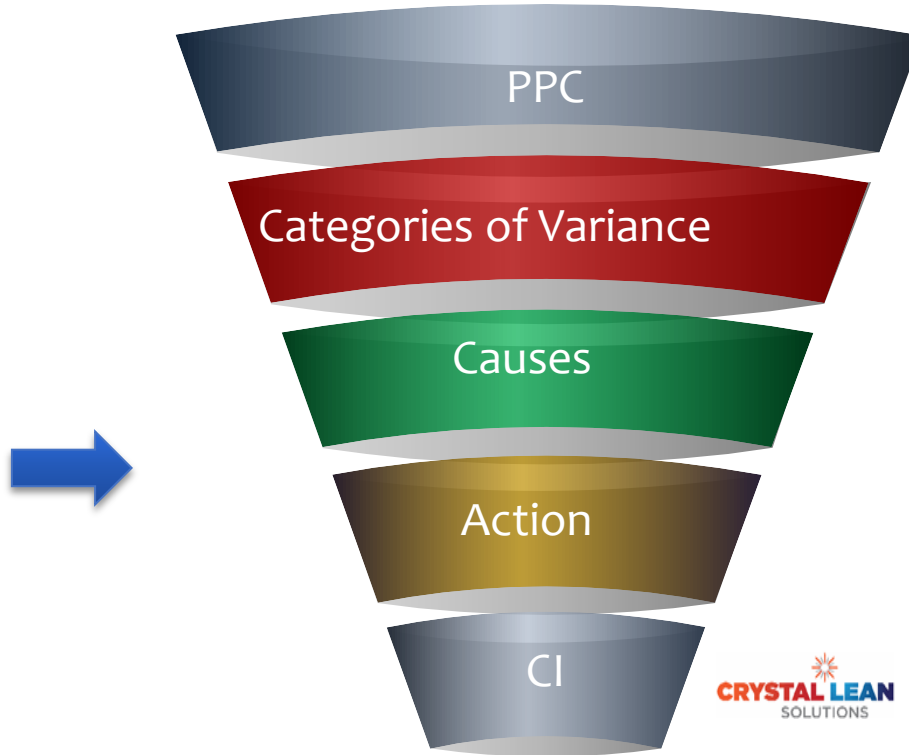
Assignment Description	Category	Comments
Installation of Drum Lifter – Snagging	Schedule/Coordination	Week 45
Installation of Drum Lifter – Snagging	Schedule/Coordination	
Installation of NYBERG Hoist – Snagging	Schedule/Coordination	Week 45
Touch-up painting Under Services	Schedule/Coordination	Rescheduled
Framing window walls at lower buffer.	Schedule/Coordination	

Quality of Comments Critical



Assignment Description	Category	Comments
Touch-up painting Under Services	Schedule/Coordination	Painting to occur after overhead pipework install. Paint could be damaged again by subsequent works.
Primary Containment Tie Ins to east corridor	Prerequisite Work - Others	Scaffold should have been removed post client walk down
Install Second Fix HVAC / AHU	Prerequisite Work - Others	Adjustments required to step over boxes
Install 12 Supports	Incorrect Time Estimate	Completed Supports early by 1 day

Continuous Improvement Funnel



Root Cause Analysis

Problem	Trend of late material deliveries
Why?	Material frequently ordered too late
Why?	Procurement schedule is out of date
Why?	Procurement does not attend Pull planning sessions
Why?	
Why?	



Types of Actions

Root Cause:

Procurement does not attend Pull planning sessions



1. **Corrective Action**

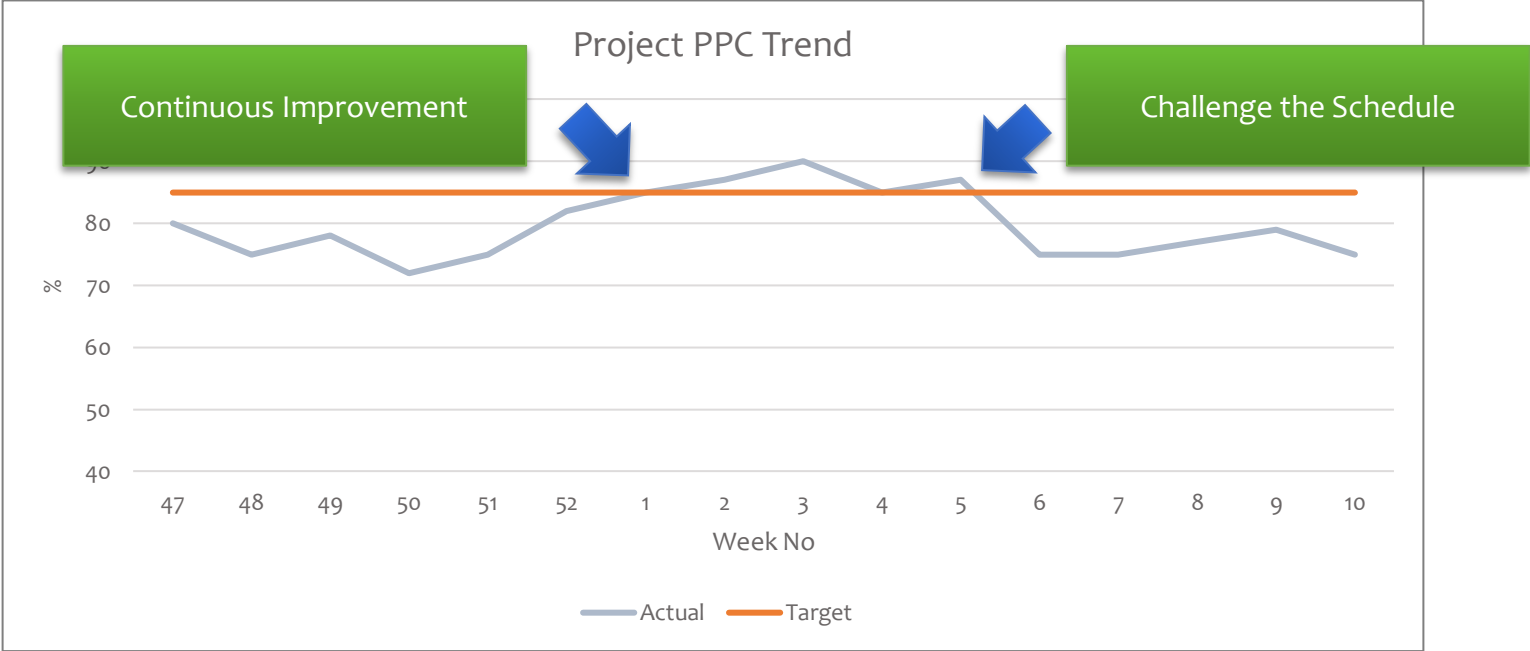
Invite Procurement to the next Look Ahead Plan



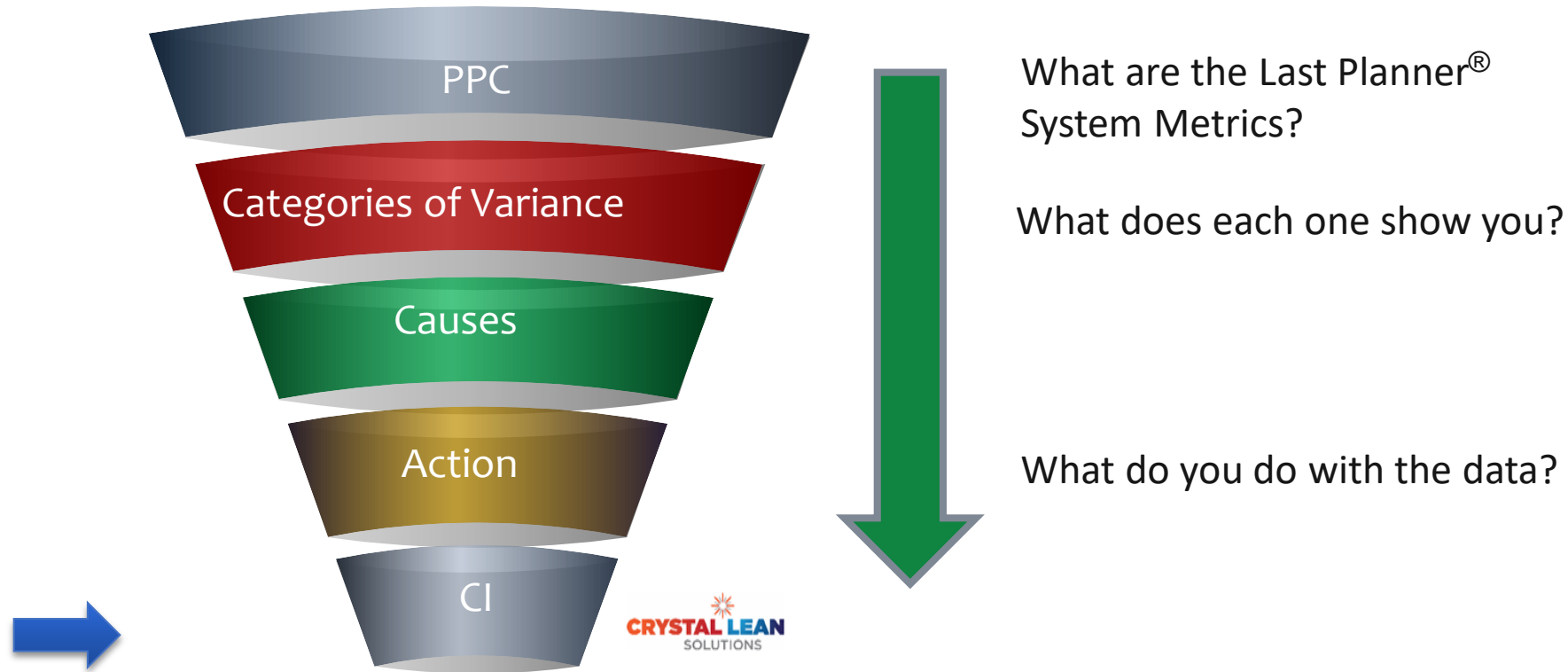
2. **Preventative Action**

- a) Design checklist to ensure that the relevant personnel are invited and attend the Look Ahead Planning Sessions
- b) Create Agenda Template, with Attendees present per requirement part of the planning process

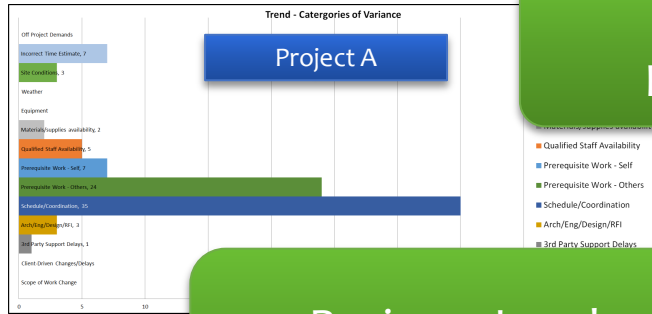
Goal – Continuous Improvement



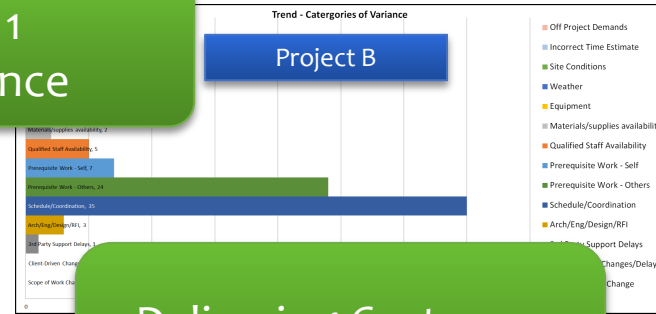
Continuous Improvement Funnel



Systematically Reducing Variance Across the Business

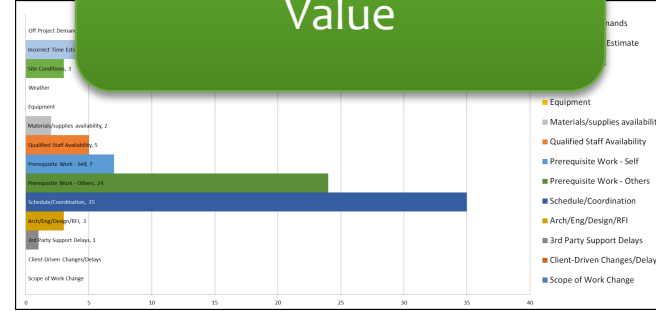
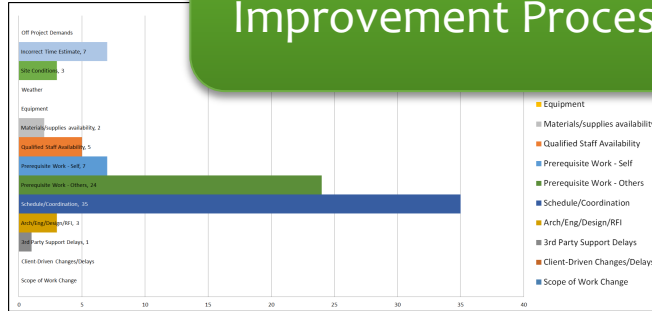


Prevent 1
Reoccurrence

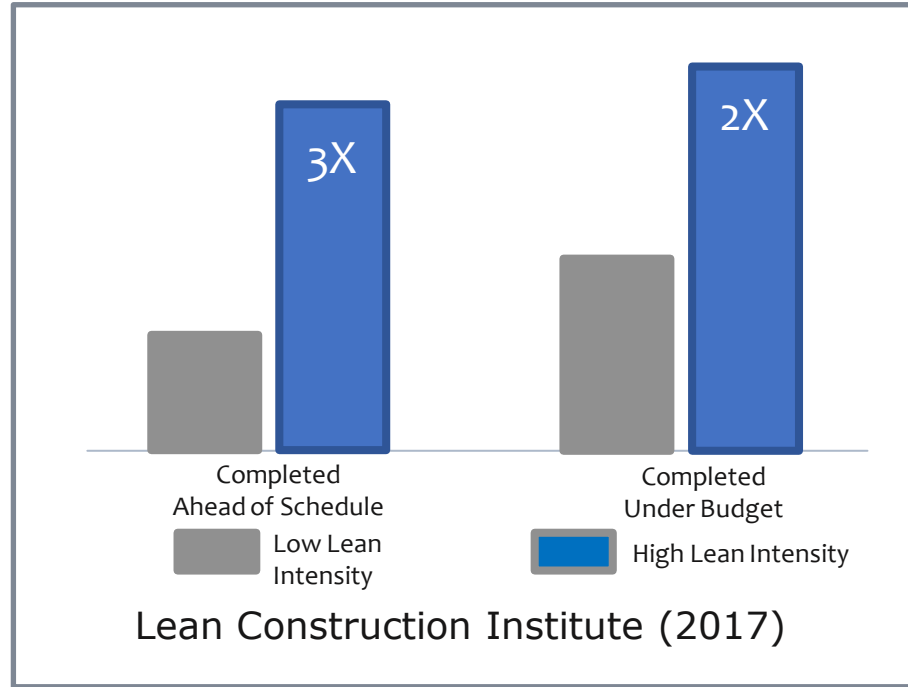


Business Level
Improvement Process

Delivering Customer
Value



Systemic Breakthrough Improvements



Projects with high Lean intensity are

- three times more likely to complete *ahead of schedule*
- two times more likely to complete *under budget*

Overview of Lean Construction Ireland

About LCI

WHO WE ARE...

Lean Construction Ireland is an all-island, independent, and not-for-profit association whose members passionately believe that Lean Thinking & Practices can enable and sustain enhanced effectiveness, efficiency, productivity, and profitability for the Irish Construction Sector, Clients, and Supply Chain.

WHAT WE DO...

Lean Construction Ireland leads a community of learning and practice that promotes the application of Lean Thinking & Practices throughout the Irish Architecture, Engineering, Construction (AEC) sector so as to realise value-add for all stakeholders in the value chain. It supports the open exchange of knowledge, information, and experiences around good practices and case studies. It also supports ongoing research into Lean practices nationally and globally, their application to AEC, and their sharing with the wider Lean Construction Ireland Community. It is aligned to LCI USA.

CORE VALUES...

Collaboration. Leadership. Teamwork. Commitment. Knowledge. Innovation. Integrity.

VISION...

Deliver Projects Better, Faster, Together

STAKEHOLDERS...

- Public & Private Capital Project Clients & Owners.
- AEC Supply Chain.
- AEC Representative Bodies & Agencies.
- AEC Professional Bodies.
- AEC Academics.
- Lean Construction Trainers & Consultants.
- Lean Business Ireland.
- Ireland Inc.

OBJECTIVES...

To achieve this Vision Lean Construction Ireland will:

- Promote the application of Lean Thinking & Practices in the Irish AEC sector.
- Develop a national network of members committed to the application of Lean Thinking & Practices.
- Challenge the status quo of current project thinking and delivery methods.
- Advance amongst all stakeholders the business case for Lean Construction knowledge and skills.

Contact LCI



WWW.LEANCONSTRUCTIONIRELAND.IE



WWW.LINKEDIN.COM/GROUPS/4332330



WWW.FACEBOOK.COM/LEANCONSTRUCTIONIRELAND



TWITTER.COM/LCI_IRELAND



INFO@LEANCONSTRUCTIONIRELAND.IE