

9th International PGM Conference

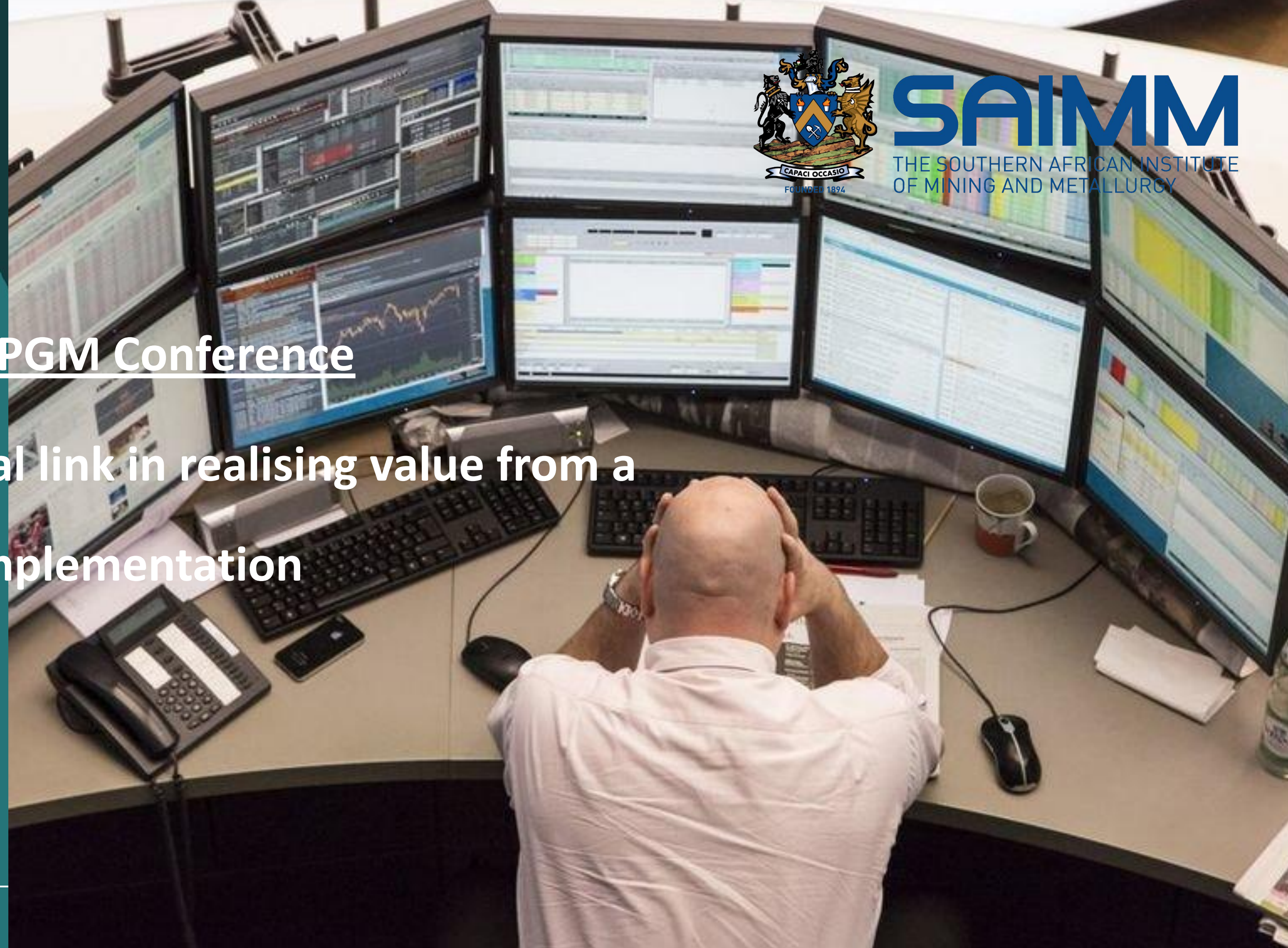
People, the critical link in realising value from a digital solution implementation

Gary Lane

27 October 2025

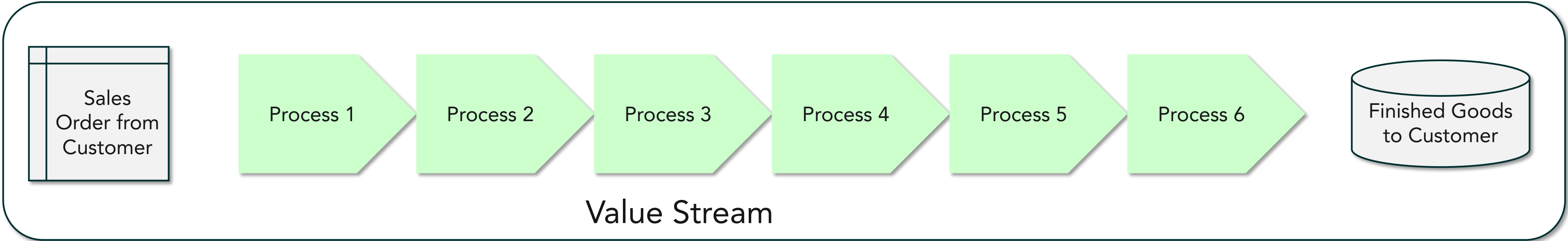
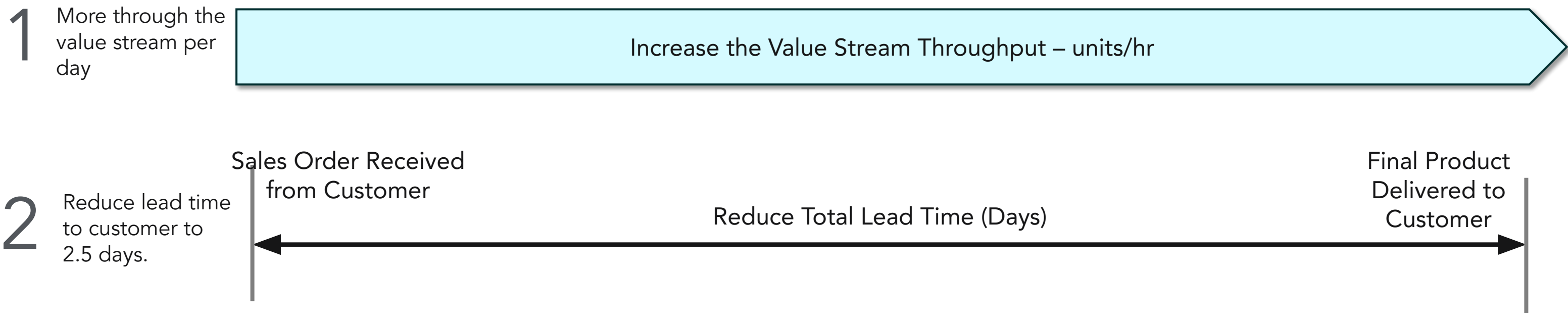


SAIMM
THE SOUTHERN AFRICAN INSTITUTE
OF MINING AND METALLURGY



Objective – Increase Throughput and reduce Lead time to Customer?

We need to increase what is produced per week to meet our customer demand and also need to reduce lead time from receiving the customer order to delivery to our customers.



Solution – Digital Shop Floor and Dashboards

Implementation of a Manufacturing Execution System (MES) for work order routing, performance and production data acquisition and reporting. Development of management dashboard to review performance on a daily basis at the 08h00 standup meeting.

Power BI Reporting

Reporting of all production metrics

Enterprise Resource Planning (ERP)

Sales orders, resource use, work order generation and costs

Manufacturing Execution System (MES)

An MES is a real-time information system that monitors, tracks, documents, and controls the process of manufacturing—from raw material input to finished goods output.

It provides visibility and coordination across all manufacturing operations to ensure that production runs efficiently, consistently, and in compliance with quality and safety standards.



Process 1

Process 2

Process 3

Process 4

Process 5

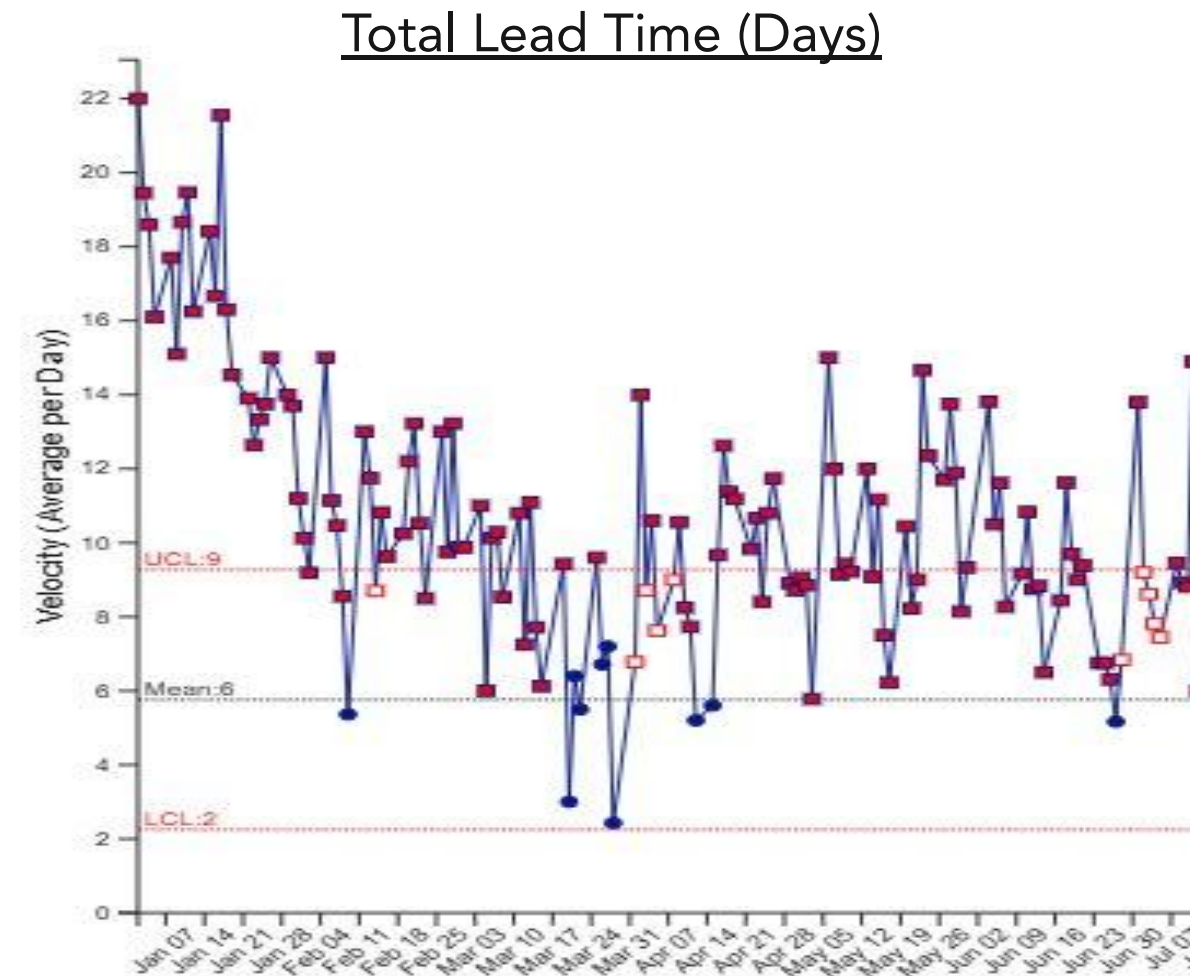
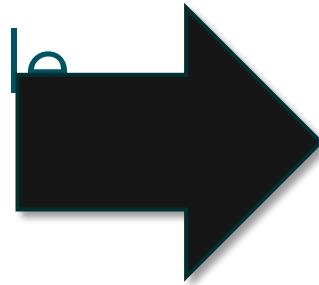
Process 6

Finished Goods
to Customer

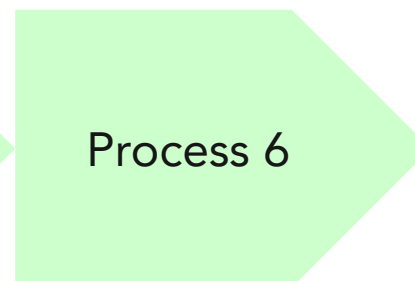
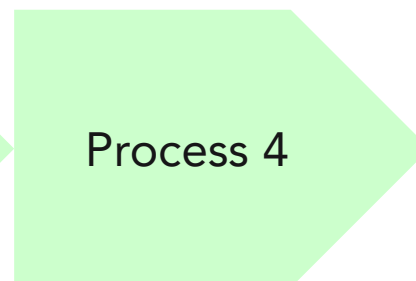
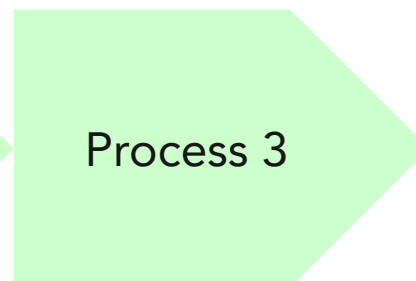
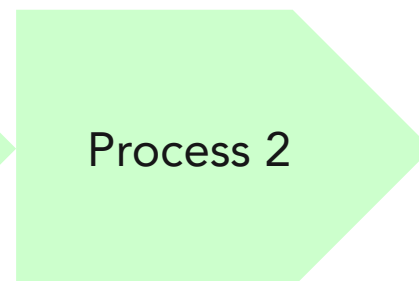
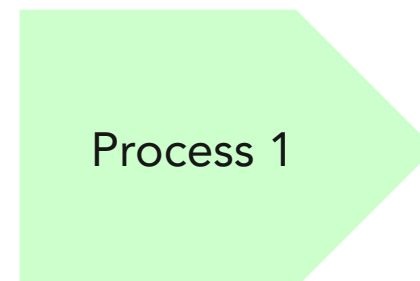
Value Stream

Result – No Improvement in Total Lead Time Performance

Even with multiple Power BI dashboards with lots of performance metrics no measurable improvement was achieved with more data and reporting!!!!



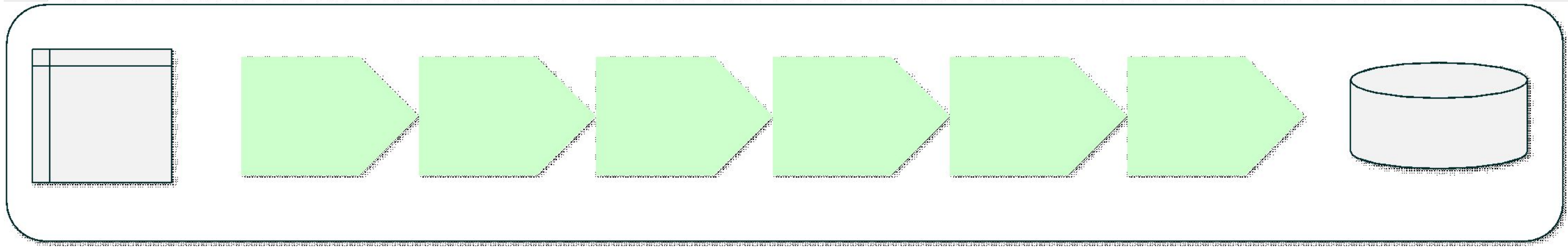
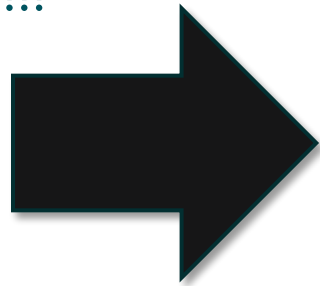
Manufacturing Execution System (MES)



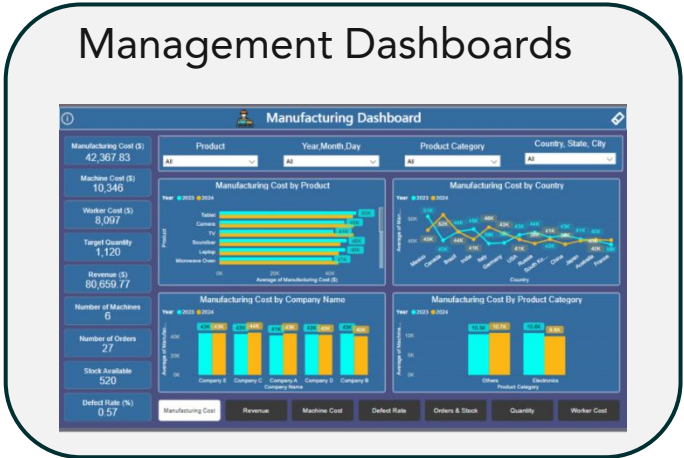
Value Stream

Why – What was the problem that there was no improvement?

1 Supply Chain - Push Sales Orders in as they arrive – More is better!!!!



2 Morning Meeting – Leadership team review performance of the previous shift.



Problem 1 - Reporting focused on the lagging indicators i.e. the results of work done.

What are the leading indicators that impact performance?

Problem 2 – Pushing more into the system does not result in more output and increases WIP that slows down Total Lead Time.

How many workorders can this system do per day and is there an optimal schedule?

Problem 3 – Massive amounts of WIP in the process, daily prioritisation of work orders to accelerate to meet customer deliveries, multiple product change overs impacts efficiency, operators chasing their tails, shift planning is adhoc.

What is the value stream capacity and how to we plan the resourcing per shift?

Are we Lost in “Detail Complexity”

Supply chain ‘shouting’ for delivery commitment dates to be met.

Manually searching for orders to reprioritise through the system.

Increasing WIP levels throughout the production process.

Pushing more and more orders into the system due to customer pressure.



Equipment breakdowns and no time for planned maintenance.

Management view that the operators are not working hard enough.

What shifts do we resource this week due to leave commitments.

Production metrics not improving

People-Centric Approach to Rapid Operational Improvement

Involve the operators, shift leads, team lead and production manager in a structured approach to improve the process – the team know 'stuff'.

They design and implement the improvements required – co-creation drives buy-in and adoption.



Throughput - Structured approach using the tools of Systems Thinking

A top-down structured approach to define the system capacity versus customer demand.

- 1

Base Line

Analyse historical data to understand the problem
- 2

Problem Charter

Alignment on the problem, scope and specification limits required
- 3

Define the System

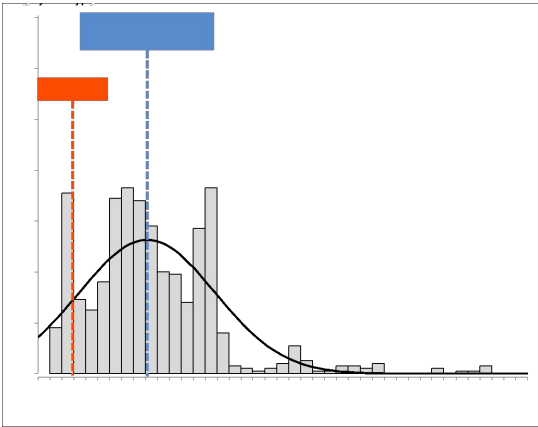
Value Stream mapping to define the process steps, material flow, inventory and cycle times.
- 4

Identify the Constraint

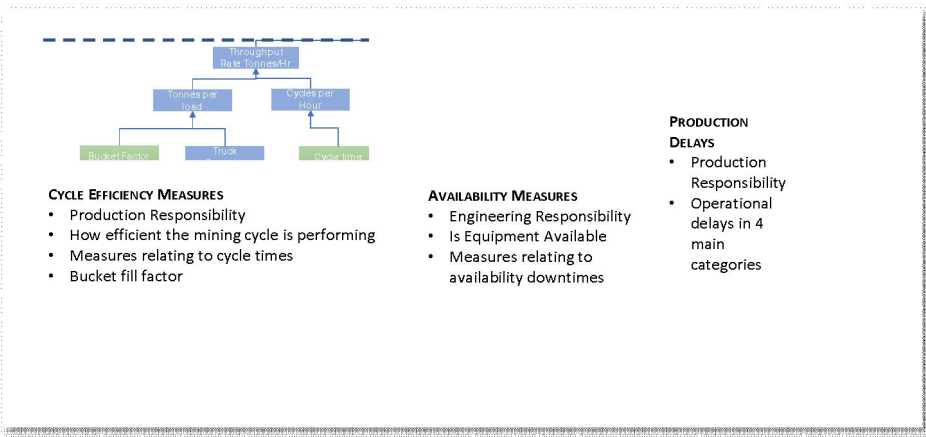
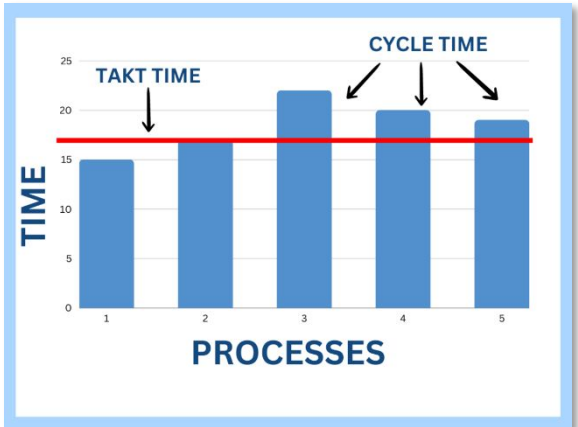
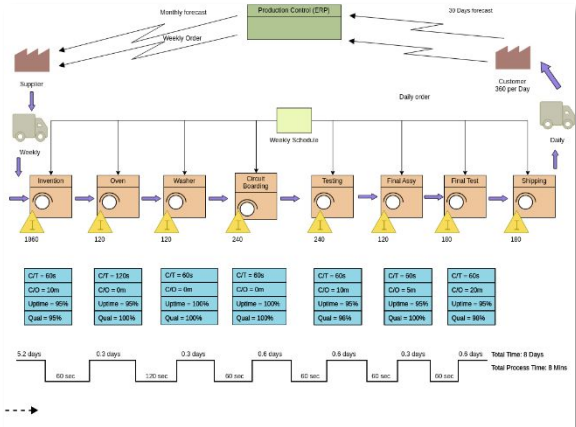
Define the required TAKT (demand from customer) and where the system constraints are.
- 5

Identify the Levers

Use a Value Driver tree of the Constraining process to identify the levers that impacts its capacity.



Project Charter	
Reducing Discarded Plasma Units	Champion: <i>van Gasteren Wingaard</i>
Revised: 02/01/2010	Project Leader: <i>Page Garbitt/Dennis Margulies</i>
Problem Statement A significant number of frozen plasma units are thawed per physician request and then not transfused. After thawing there is a short shelf life and the units are often discarded. The result is fewer units available for patients which compromises patient safety. There is also a financial impact due to the product cost and processing fees.	Project Goal Reduce plasma wastage by a minimum of 1 % by July 2010 across participating hospitals in Maryland
Measurement Methodology Unit = one unit of plasma % Waste = # plasma units wasted Total # of plasma units thawed (Do not include partial units as wasted.)	Scope • 45 hospitals with a functional blood bank in Maryland • Blood suppliers
Participating Organizations • 45 out of 45 hospitals with a functional blood bank in Maryland • Blood suppliers	Benefits • Increased blood inventory available for patient care • Reduction in cost to acquire additional plasma products • Shorter turn around time for product when appropriate ABO group of Thawed Plasma is already available
Phase Define Measure Analyze Improve	Milestones 07/22/09 • The work completed - prior to 07/22/09 • Run on an interim basis - 07/22/09 • Complete all interim - 07/22/09 • Run on 07/22/09 • Collect baseline data and launch interventions - 10/10/09



- 6

Solution Workshops

Workshops with the different functions to identify solution opportunities.
Equipment Availability Levers – Engineering team
Equipment Utilisation Levers – Production team
- 7

Solution Charters

Opportunity, scope, team, Primary metric, milestones and team.
- 8

Implementation

Implementation and weekly reviews of progress



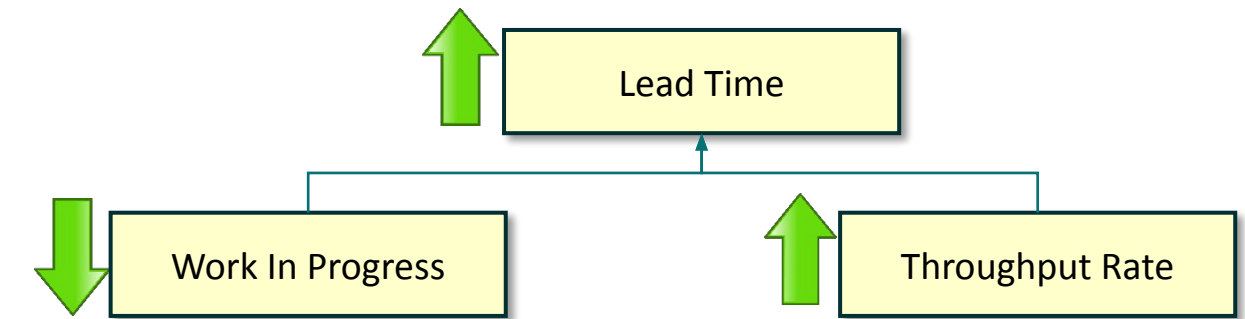
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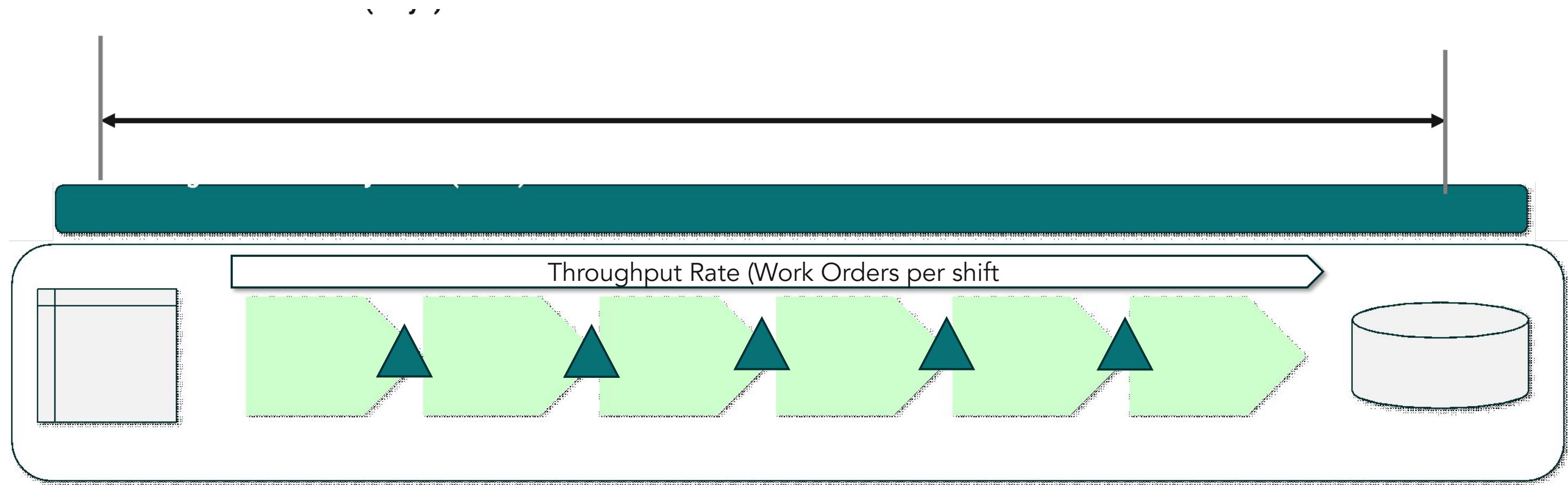
Total Lead Time – How to Effectively Reduce and Manage this?

Total Lead Time is one of the efficiency metrics of Lean.

$$\text{Total Lead Time (shifts)} = \frac{\text{Work in Progress (Total WIP)}}{\text{Throughput Rate (Work Orders/Shift)}}$$



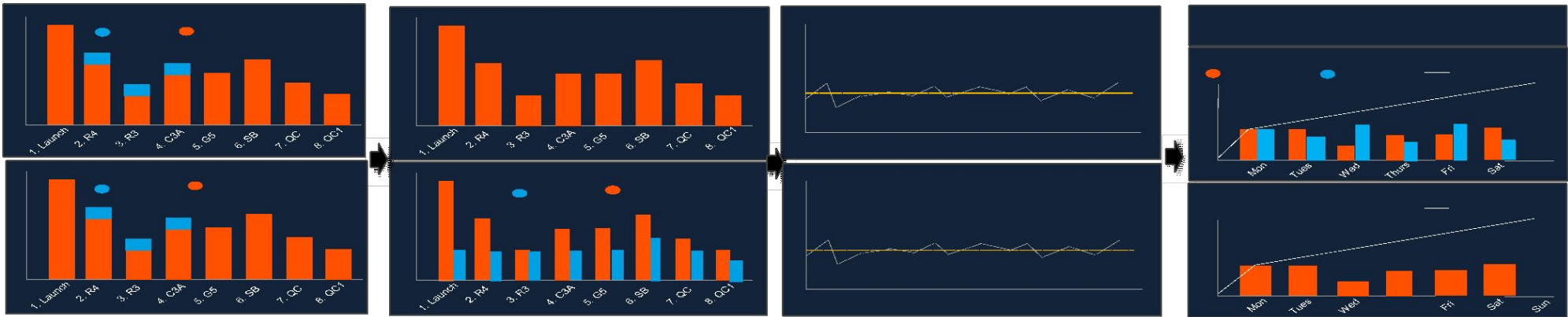
How do we increase our average velocity through production i.e. less days?



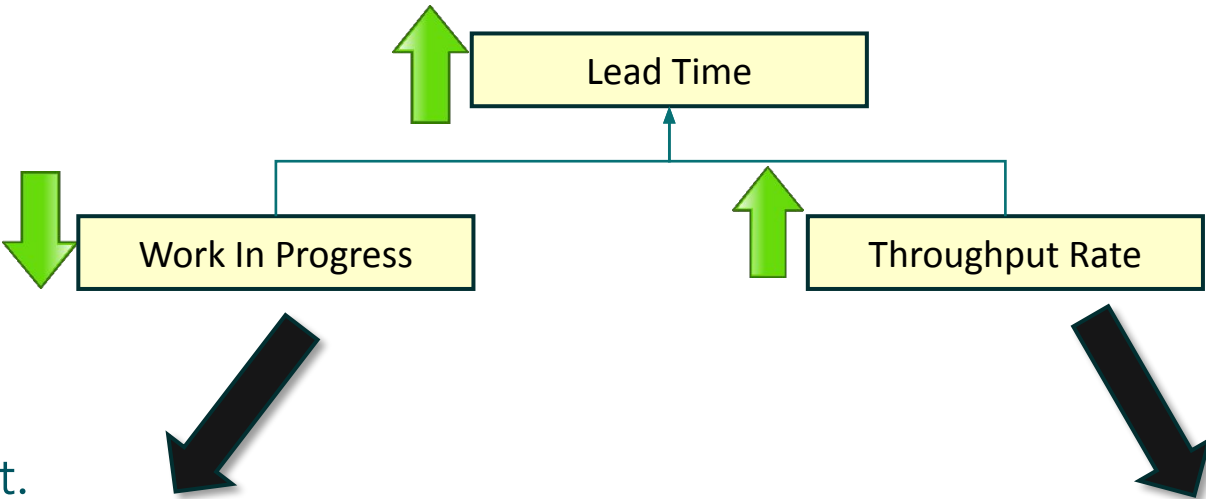
How to Manage these Levers

What do we put in place to manage the levers impacting Total Lead Time.

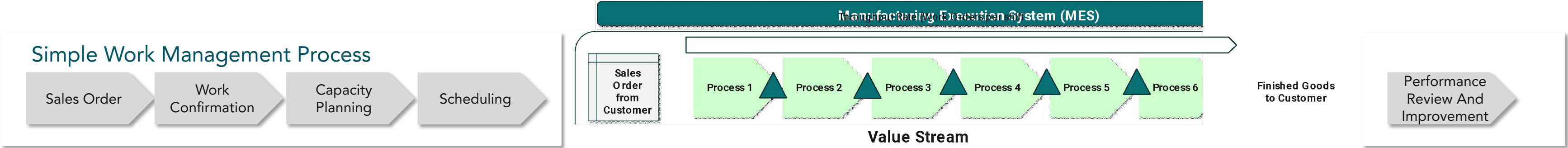
1 Power BI dashboard on the shopfloor where it matters with only the leading indicators that they can manage and impacts performance.



2 Design a simple work management process to launch at the right drumbeat.



Effectively manage the value stream leading indicators.

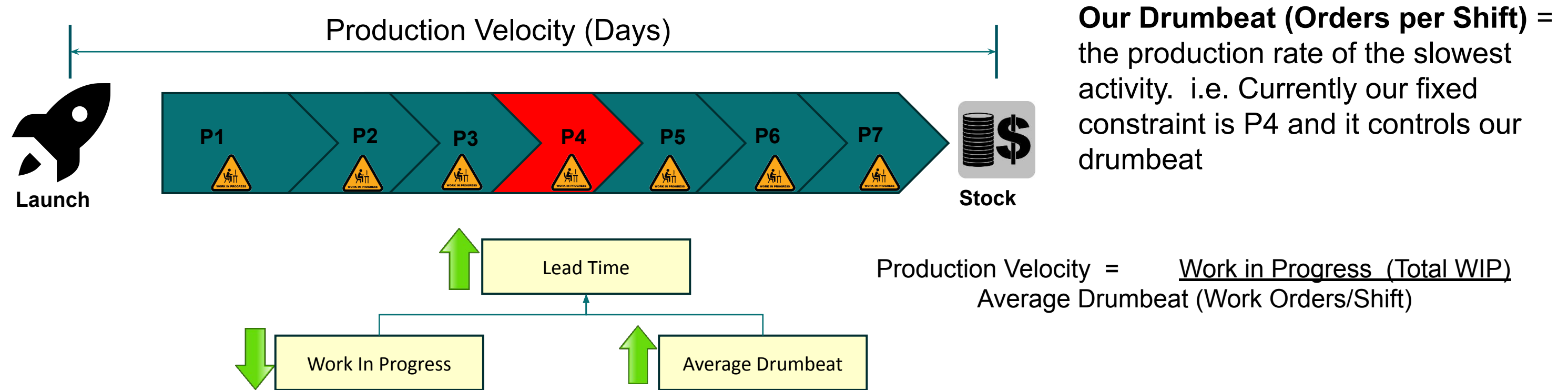


1. Weekly confirmation of capacity taking engineering maintenance and shift resource planning into account.
2. Daily dynamic scheduling as work orders are received. This is due to the target Total lead time required from sales order receipt.
3. Weekly management routine drumbeat with assigned responsibility for capacity planning and scheduling.

1. Weekly review of performance with improvement feedback loop.

Shopfloor – Guide to Controlling our Total Lead Time

Total Lead Time (Days) = Date and Time Work Order went to Stock - Date and Time Work Order was launched



How do we increase our average velocity through production i.e. less days?

1 Launch Drumbeat

- a) Disciplined daily launch drumbeat that matches W6 capacity every week.
- b) Adherence to the launch rules and product mix planned in the capacity calculation.
- c) Schedule to reduce setup times.

2 Address Special Causes

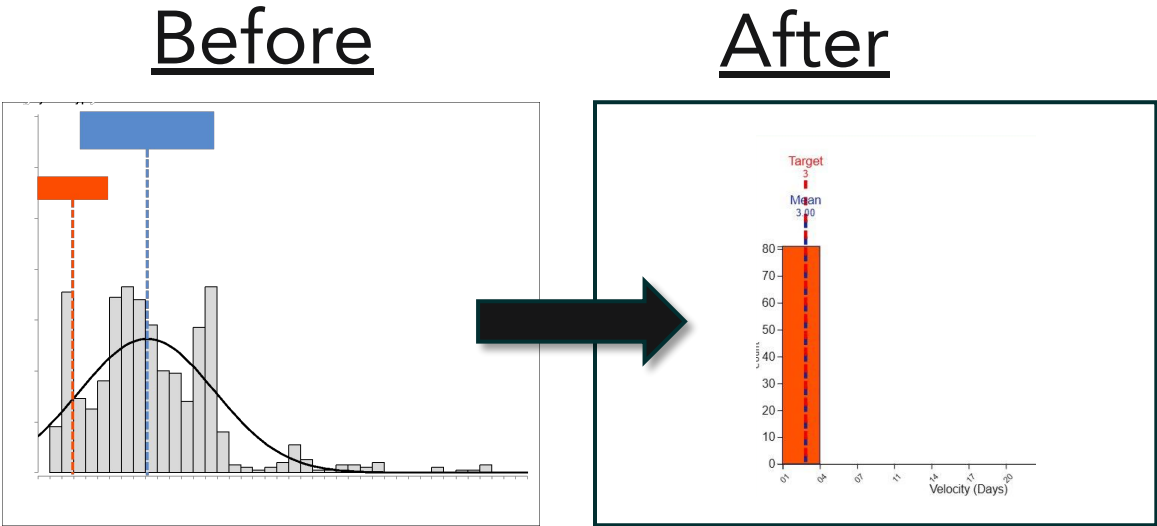
- a) Identify and address stagnant work orders every shift.
- b) Ensure P4 is always working and never waits for work orders.
- c) Monitor our overall WIP level control chart to maintain 30-40 Work Orders and adjust launch if required.
- d) Eliminate breakdowns through focused planned maintenance on P4.

3 P4 Average Throughout Rate

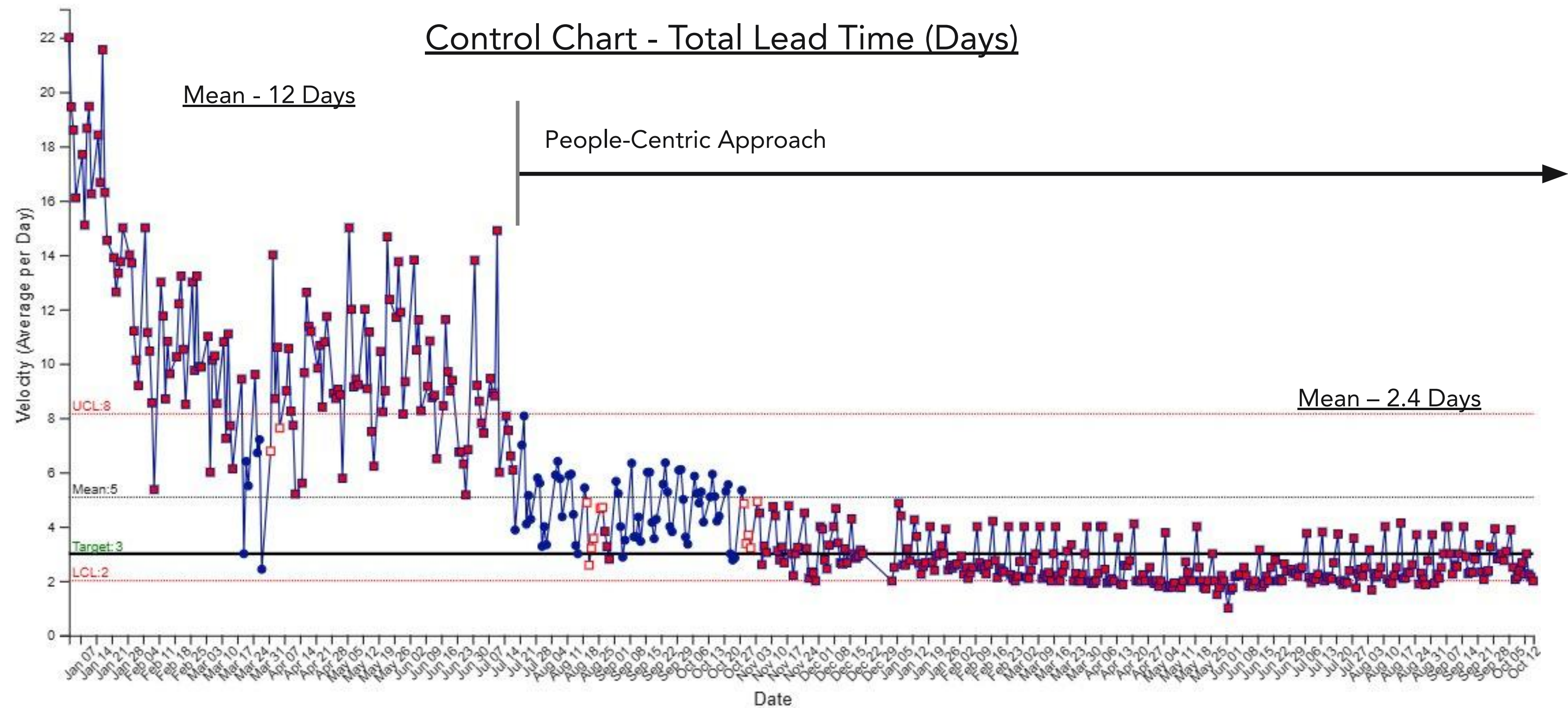
- a) Ensure all P4 shifts for the week are fully resourced and redeploy resources if someone unavailable.
- b) Immediately escalate to shift lead if P4 has no work orders to process.
- c) Reduce P4 non-production time where ever possible i.e. shift change.

And the New Results

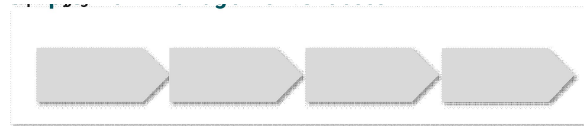
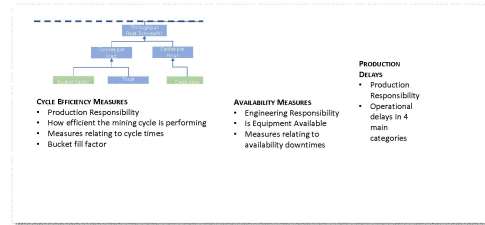
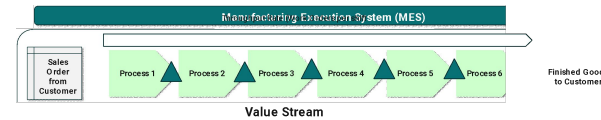
Capability Histogram



Control Chart - Total Lead Time (Days)



In Conclusion



Involve the people doing the work at all levels

Define your system and its constraints

Identify the leading indicators that impact performance

Design the work and management routines to create a repeatable and reliable process

Report the leading indicators to the operators where they can impact performance

This defines the data required for effective decision making

