

Eight Step Practical Problem Solving

An Overview to using A3 methodology

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Learning Objectives

- ✿ What is a problem?
- ✿ Why use Practical Problem Solving
- ✿ 8 Step Problem Solving (A3 Methodology) including a NI Company case study

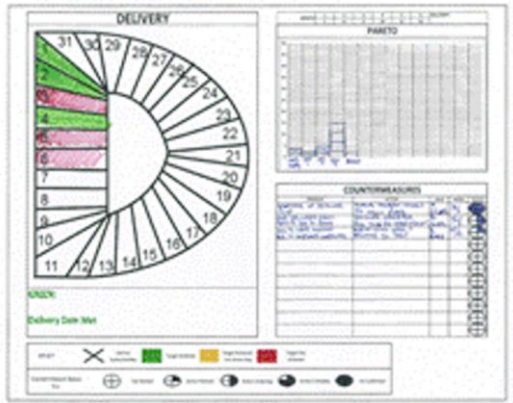


What is a Problem?

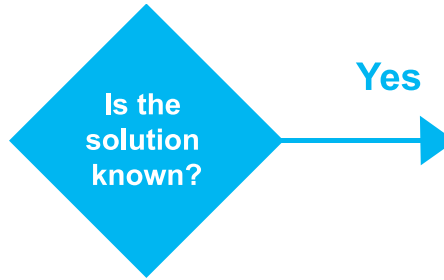
- ✿ A gap between actual and desired conditions
- ✿ Unfulfilled customer needs
- ✿ New level of performance/ service required
- ✿ Variation



Problem Complexity v Problem Solving Tool



Off target
Improvement idea

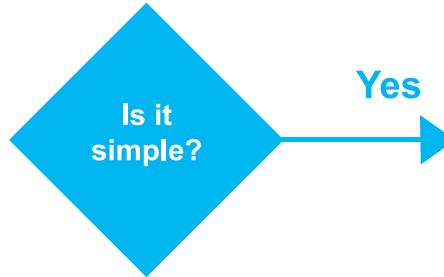


JUST DO ITS

	SAVED	INPROGRESS	ESCALATION	COMPLETED
DEPARTMENT				
DEPARTMENT				

JUST DO ITS

No

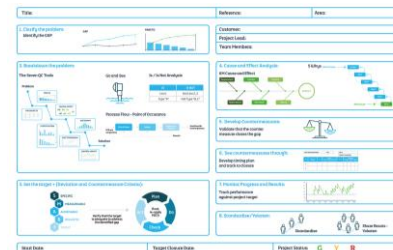


3 C's

Department / Area	Costs	Customer Satisfaction	Quality	Speed

3 C's

No



A3 Practical Problem Solving

Why use Practical Problem Solving?

- ✿ Common understanding of a problem
- ✿ Remove time lost in debate
- ✿ Identify weak points in processes
- ✿ Explain with reasons why an incident occurred
- ✿ Gives a factual representation of the incident
- ✿ Ensures problems don't reoccur

PDCA Cycle



Plan

Create a process improvement plan



Do

Execute a process improvement plan



Check

Inspect feedback and adjust plan accordingly



Act

Integrate a process improvement plan into the system

PDCA Cycle

Typical quick planning



Longer time
to resolve

PDCA Cycle

Typical quick planning



Longer time to resolve

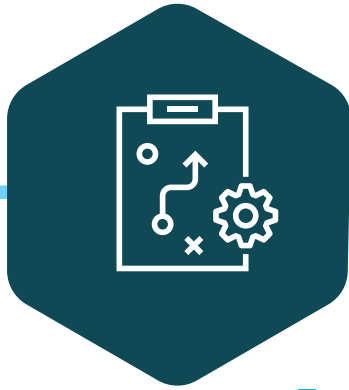
Thorough planning



Rapid problem resolution

Practical Problem Solving A3

- ✿ What is PPS?
- ✿ What PPS is not
- ✿ What can be addressed?
- ✿ The key points on problem solving



Plan



50–80%
of the time

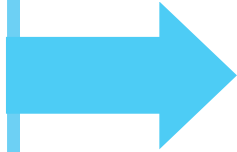
Create a process
improvement plan

1. Clarify the problem/opportunity
2. Break down the problem/opportunity
3. Set targets/objectives for improvement



Vital for
success

4. Identify root causes
5. Develop solutions



Do

Execute a process
improvement plan

6. Implement
solutions



Check

Inspect feedback
and adjust plan
accordingly

7. Monitor Results
& Process



Act

Integrate a process
improvement plan
into the system

8. Share learning.
 - Standardise process
 - Learn from and adjust failures
 - Continue to check and adjust

Beds R Us

Background

- ✿ Initially supplied furniture to the wholesale & retail trade
- ✿ Identified gap in the market place for the supply of beds & mattresses to the trade
- ✿ Customers range from NI, ROI, UK, Europe and beyond
- ✿ This project focus is within the mattress manufacturing unit
- ✿ **Business requirement:**
Asked to deliver more volume to our customers!

Step 1

Clarify the Problem

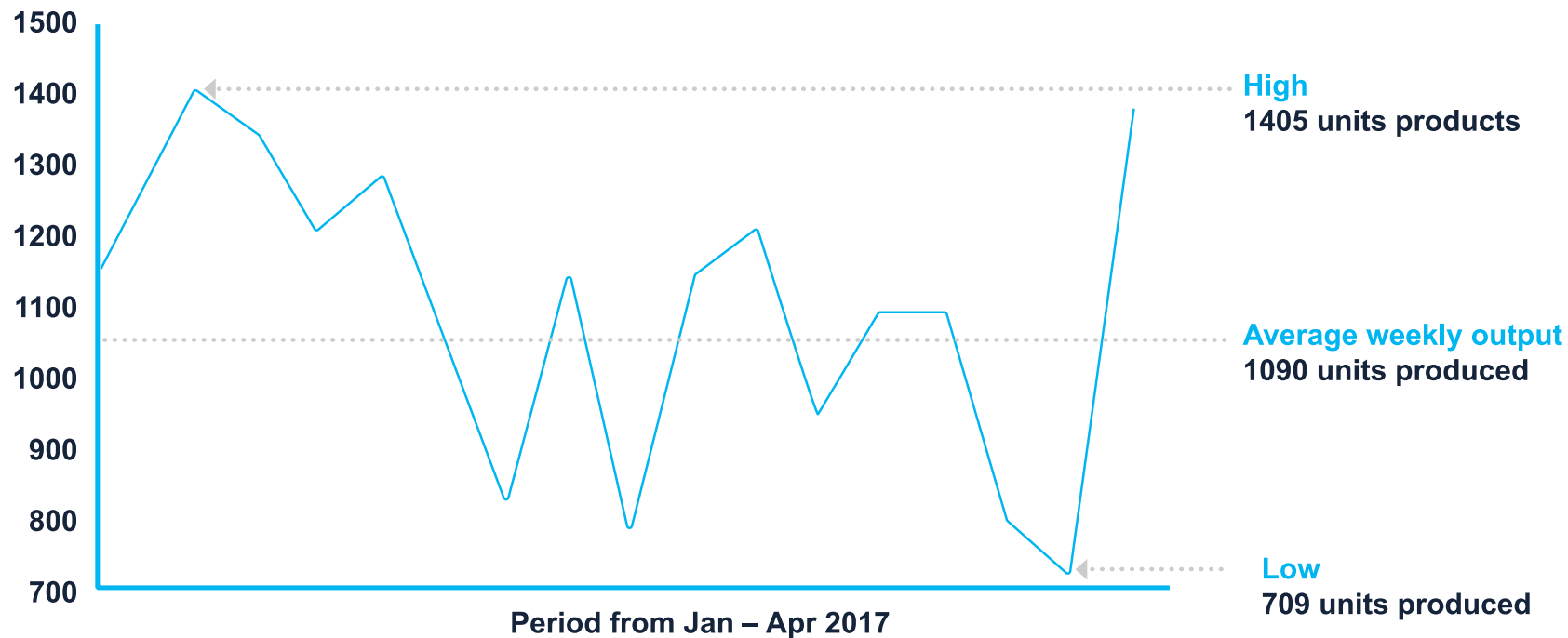
- * Clear definition – what's the problem?
- * What does the ideal look like?
Where do we want / need to be?
- * Identify the gap between current and ideal state
- * Contain the problem
- * Useful tools:
 - Gap analysis
 - Pareto
 - Graphs



Step 1

Clarify the Problem

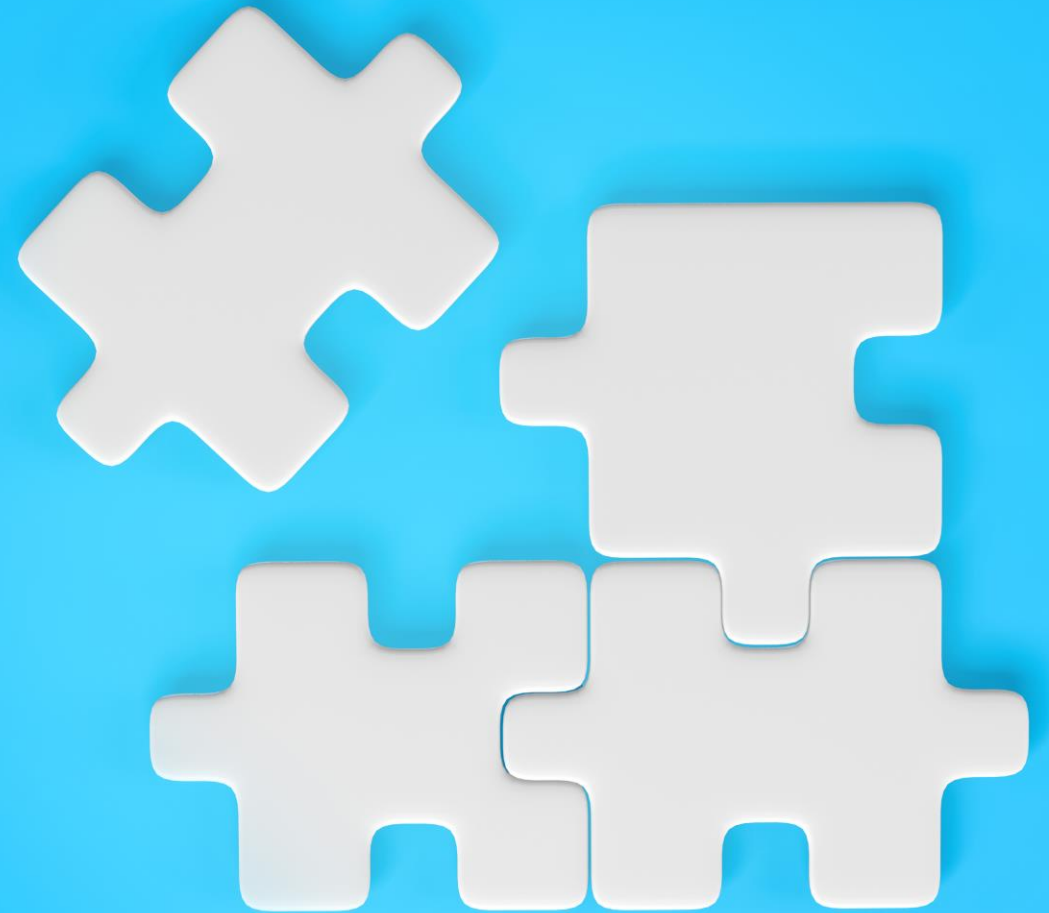
Our growth plans indicate that we need to increase our output of mattresses and stabilise the unit cost of mattress assembly. Year to date we are averaging 1090 mattresses per week.



Step 2

Breakdown the Problem

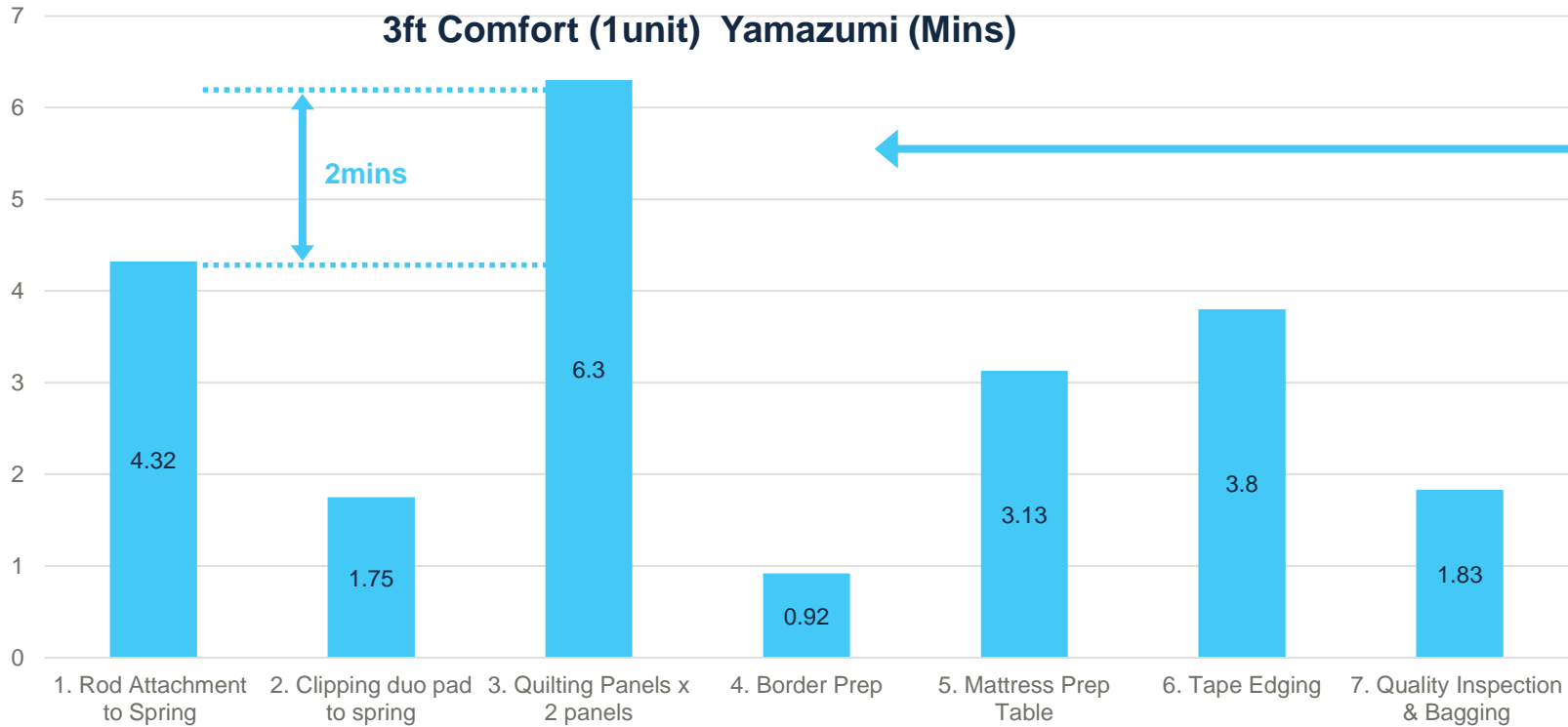
- * Break the problem down into manageable chunks
- * Check the point of occurrence – ‘Go & See’
- * Gather factual data
- * Eliminate or Verify the cause, is it visible/measurable



Step 2

Breakdown the Problem - Example

Identify where the bottlenecks are within product mix: basics



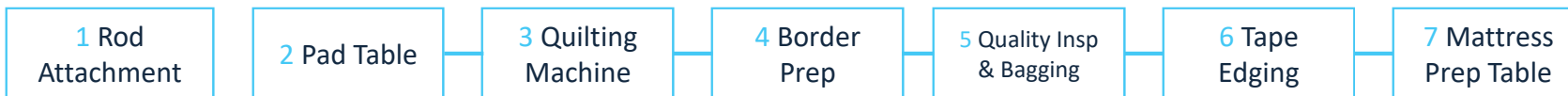
Stage 3

Quilting Panels
(Largest bottleneck – 6.3mins)

Max daily throughput
78 units of 3ft Comfort

If reduce to
stage 1 throughput
Would rise to 115 units

47%
improvement
throughout



Step 3

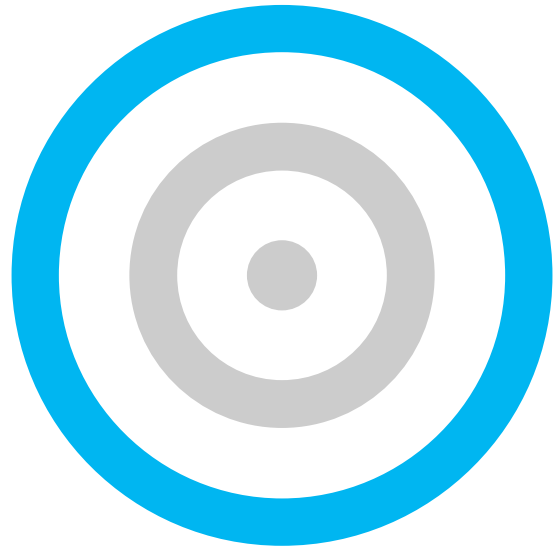
Set the Target

- * What's the Scope?
- * What are you trying to achieve?
- * Set SMART targets / objectives
- * Is your target adequate to address the gap?
- * Set criteria to allow you to prioritise possible solutions (Impact - Cost - Ease)

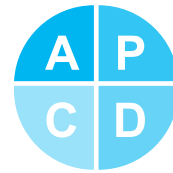
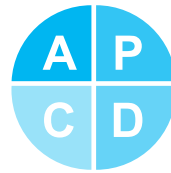
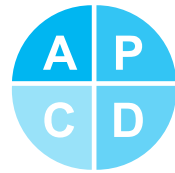


Step 3

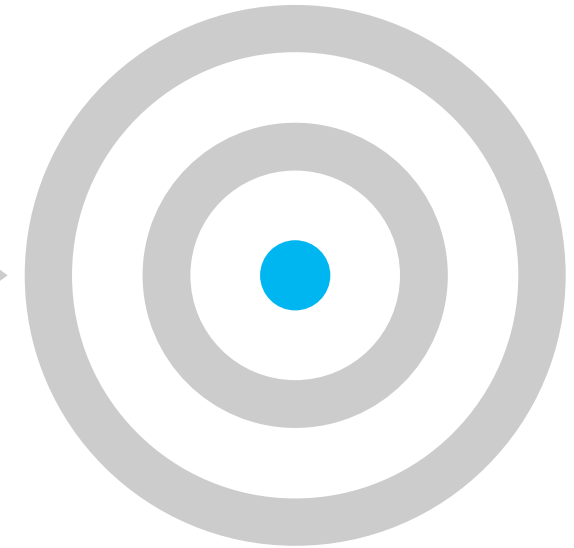
Set the target



**Current
Condition**



(It may take **multiple** PDCA projects to get to your target condition, each with an **interim target**.)

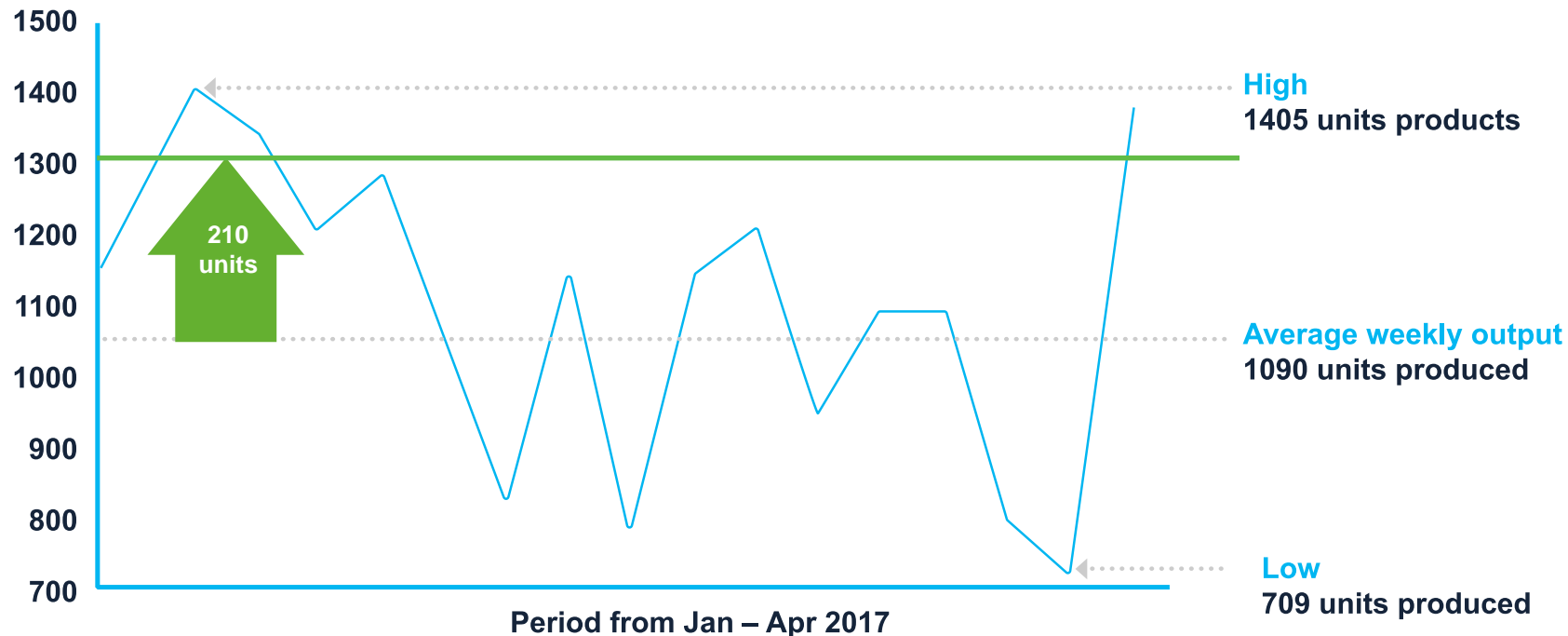


**Target
Condition**

Step 3

Set the target - Example

Beds R Us weekly mattress production output



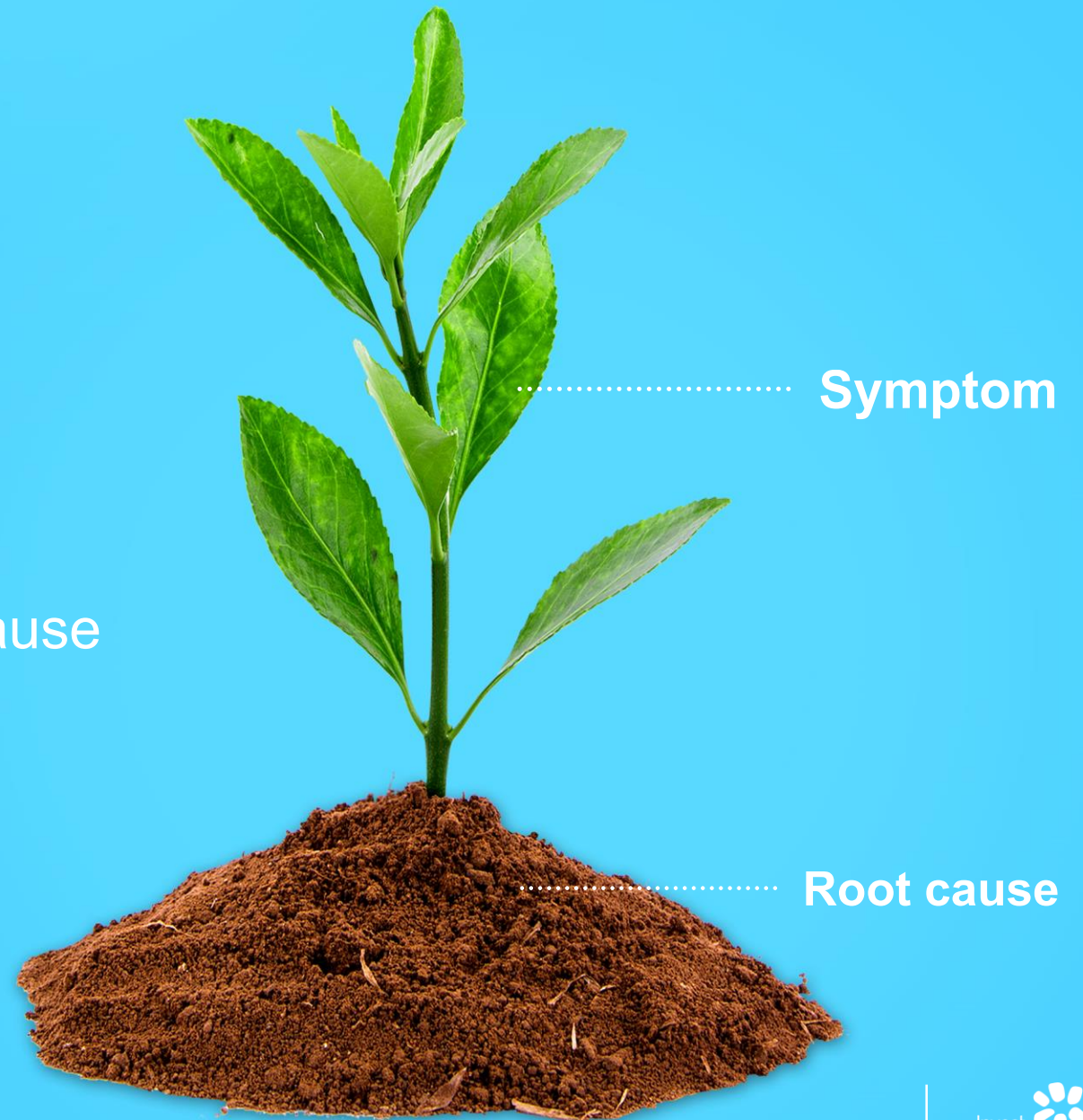
Increase & stabilise weekly production to 1300 units per week

Actual 1090 units
Target 1300 units
Gap 210 units

Step 4

Analyse Root Cause

- * Perform Root Cause Analysis
- * Identify all the root cause(s) of the issue / problem
- * Use 5 Why's to get to actionable cause
- * Prioritise / Rank root causes
- * Action(s) required



Step 4

Analyse Root Cause - Example

Identified Root Causes
No historical key data
Lack of visual target at key production stages
Employees not at Gemba <ul style="list-style-type: none">- To gather items for build- To carry out other tasks to off load containers/ cut materials
Scheduling
Gaps in Training: <ul style="list-style-type: none">- 2nd Prep tables unable to build Signature Range of Mattresses- 3rd Prep tables unable to build Signature Range of Mattresses
Seasonality of demand
Production Supervisor pulled away from production floor & not present at key times
Lack of storage space for stocked items if orders are low

Step 5

Develop Countermeasures/Solutions

- * Develop as many potential solutions as possible
- * Identify an effective solution(s) that directly addresses the root cause
- * Narrow down the solutions to the most practical, effective and feasible:
 - Impact
 - Cost
 - Ease



Step 5

Develop Countermeasure - Example

Issue	Countermeasure	Difficulty
1. Lack of visual targets at key production stages	Install white boards at key measure points. Install visual targets with measurement	Easy
2. Prep & tape edge personnel leave stations to gather items for build	<ol style="list-style-type: none"> 1. End of day review and next day review 2. Ensure mgt aware of non stocked items that the business now requires 	Easy
3. Prep table personnel leave to off load containers/timbers/ polyester	<ol style="list-style-type: none"> 1. Request deliveries before noon/outside hours 2. Now have trained forklift drivers. Require ongoing supervision 3. Operator A is present for off loading 	Moderate
4. 2 nd & 3 rd Prep tables unable to build Signature Range of Mattresses	Training 2nd & 3rd Prep	Moderate
5. Production Supervisor pulled away from production floor & not present at key times	<ol style="list-style-type: none"> 1. Supervisor A to prioritise to ensure present at key times 2. Key staff visual on floor to support 	Easy
6. Lack of space for stocked items if orders are low	<ol style="list-style-type: none"> 1. Sell redundant machinery taking space 2. Zoning (Map the Area) 3. Purchase of trailers for loading throughout day 	Difficult Difficult Moderate

Step 6

Implement Countermeasures/Solutions

- * Seek help & ideas
- * Communicate the status
- * Never give up



Step 6 Implement Countermeasures - Example

Issue	Countermeasure	Who	When	Difficulty
1. Lack of visual targets at key production stages	Install white boards at key measure points. Install visual targets with measurement	Supervisor A/PM	Implemented from Thurs 4 th May & Mon 10 th May 17	Easy
2. Prep & tape edge personnel leave stations to gather items for build	<ol style="list-style-type: none"> 1. End of day review and next day review 2. Ensure mgt aware of non stocked items that the business now requires 	Team Leaders/ Supervisor A	Implemented Tuesday 6 th May 17 & Ongoing	Easy
3. Prep table personnel leave to off load containers/timbers/ polyester	<ol style="list-style-type: none"> 1. Request deliveries before noon/outside hours 2. Now have trained forklift drivers. Require ongoing supervision 3. Ensure Operator A is present for off loading 	Purchasing Mgr Supervisor A PM		
4. 2 nd & 3 rd Prep tables unable to build Signature Range of Mattresses	Training 2nd & 3rd Prep	Operator A&B	25th May 17	Moderate
5. Production Supervisor pulled away from production floor & not present at key times	<ol style="list-style-type: none"> 1. Supervisor A to prioritise to ensure present at key times 2. Key staff visual on floor to support 	Supervisor A Purchasing Mgr PM/Project Sponsor	6 th May 17 & ongoing	Easy
6. Lack of space for stocked items if orders are low	<ol style="list-style-type: none"> 1. Sell redundant machinery taking space 2. Zoning (Map the Area) 3. Purchase of trailers for loading throughout day 	Purchasing Mgr Supervisor A Purchasing Mgr	ASAP Oct 17? May 17	Difficult Difficult Moderate

Step 7

Monitor Results & Processes

- * Was the countermeasure effective?
- * Assess the impact of changes
- * Collect data
- * Evaluate process used

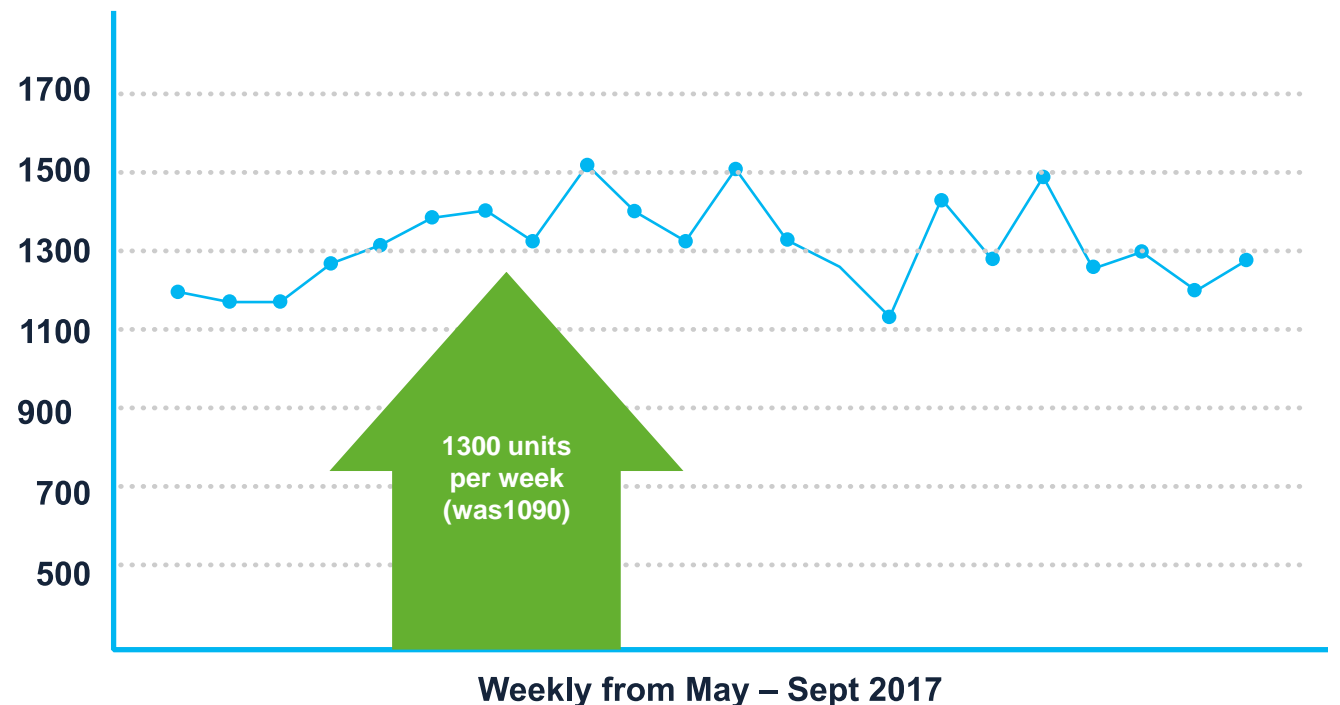


Step 7

Monitor Results & Processes - Example

Weekly finished production (Mattresses in units)

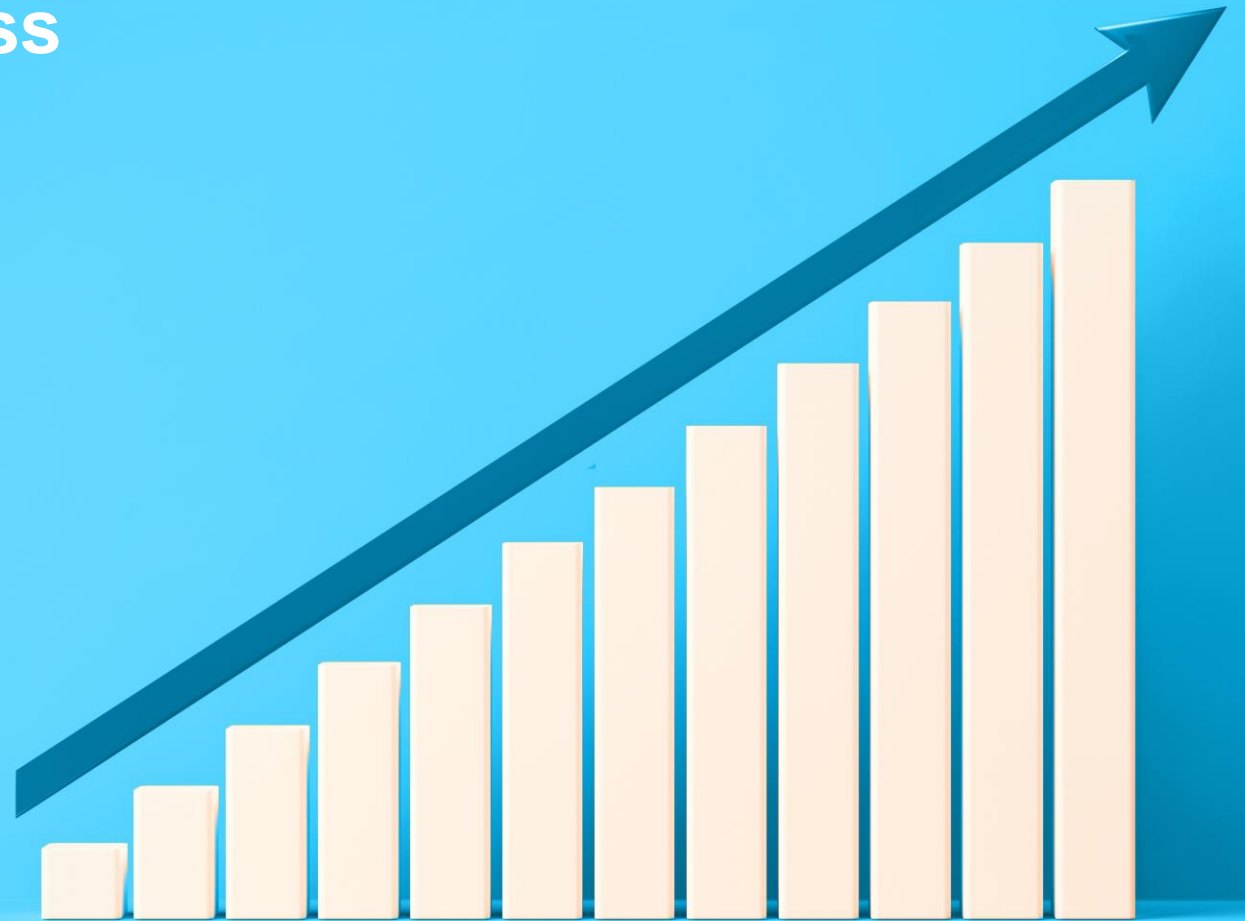
- * Annualised additional capacity of 10,920 units (19% increase) – Generating £425,000 of additional revenue
- * Visual implementation of production schedule
- * Targets set - Employees know what a good day looks like
- * Daily huddle at the Gemba – understand constraints
- * Better communication



Step 8

Standardise & Share Success

- * Learn from unresolved issues
- * Establish, communicate the new standard
- * Set target for next improvement



Step 8

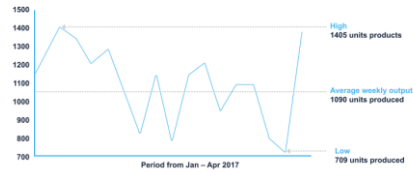
Standardise & Share Success - Example

- ❁ Stabilised our process and introduced standard work
- ❁ Implementation of standards‘a clear base line’
- ❁ Sales, scheduling & production...’now aligned’
- ❁ Targets implemented ‘a good day’
- ❁ Visual Management’better communication’
- ❁ Early warning system ...’quicker problem solving resolutions’
- ❁ More input from team members ...’to solve problems’
- ❁ Sustainability’with pricing’

A3 Template - Example

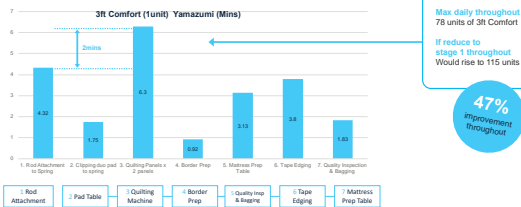
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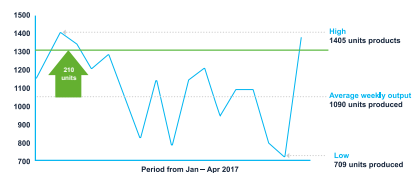
Step 2 Breakdown the Problem

Identify where the bottlenecks are within product mix: basics



Step 3 Set the target

Beds R Us weekly mattress production output



Step 4 Analyse Root Cause

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3. Prep table personnel leave to off load containers/ timbers/ polyester	1. Request deliveries before noon/outside hours. 2. Now have trained forklift drivers. Require ongoing supervision 3. Ensure Operator A is present for off loading	Purchasing Mgr Supervisor A PM		
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6. Lack of space for stocked items if orders are low	1. Sell redundant machinery taking space 2. Zoning (Map the Area) 3. Purchase of trailers for loading throughout day	Purchasing Mgr Supervisor A Purchasing Mgr	ASAP Oct 17 May 17	Difficult Difficult Moderate

Step 7 Monitor Results & Processes

Weekly finished production (Mattresses in units)

- Annualised additional capacity of 10,920 units (10% increase) – Generating £425,000 of additional revenue
- Visual implementation of production schedule
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Step 8 Standardise & Share Success

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- Sustainability 'with pricing'

COVID-19
RECOVERY

Invest
Northern
Ireland

Invest NI: Operational Excellence Team

Who are we?

Business-experienced Coaches

What do we do?

Improve the productivity, profitability & competitiveness of NI Businesses

How do we do it?

Tailored support using training, mentoring & coaching to promote best practice and build capability within our clients' businesses to deliver quantifiable & sustainable improvement

Queries: opexquery@investni.com



COVID-19
RECOVERY





Get in touch...

For more information from the
Operational Excellence Team:

opexquery@investni.com

A3 Template

Issue	Ask Yourself
1. Clarify the Problem / Opportunity	What's going on?
2. Breakdown the Problem / Opportunity	What do we know about the problem?
3. Set targets / objectives for improvement	What is it we want to solve and when?
4. Identify root causes of the problem	What are the root causes?
5. Develop Solutions	What could be the solution and what's the best solution?
6. Implement Solutions	What's the best approach?
7. Monitor results and Process	Is the problem solved successfully?
8. Share Learning	Is there any further scope of improvement?