

40% Productivity improvement from waste walking the process - Unitised Cladding

Initial Condition:



Unitised Cladding - Off-site prefab & on-site synchronisation
Same resource is utilised to assemble the cladding offsite as well as install the cladding on site

An initial process observation on how the Unitised Cladding was erected on site revealed some minor process improvements, by simply changing the sequence of erection and re-emphasising the focus on parallel working between crane-driver and handler sub-team and the two fitters erecting the panels, minimising waiting by either party.

The bulk of the activity was actually conducted off site, so a visit to the off-site fabrication facility was arranged to see where the team could gain significant process improvements resulting in a step change productivity improvement, reducing the time required to conduct off site work, increasing on site activity.

The initial condition had 8 people working across 7 assembly stations, with two primary assembly stages, excessive motion and transportation waste incurred by all team members across the facility. Targeted output was 4 units per day, actual output was around 2.5 units per day.

Improvement:



The current layout configuration induced excessive waste, the number of workstations in use resulted in excessive work in progress for the targeted output and throughput capability, whilst hindering the ability to store sufficient finished goods in readiness for installation/delivery dates.

By reducing the number of work stations from 7 to 4 a productivity uplift of 60% could be achieved. Assembly stages 1 and 2 would each work across 2 work stations, with operatives working at one station at a time.

Whilst one station is being worked on, the other station is being prepared with all materials and equipment sorted and arranged ready for the assembly operative to move across and build straight away.

This maintains a constant flow of work. Stand preparation can be done by the existing driverline-feeder or Team Leader.

The ability to hit the targeted run rate of 4 units per day is mainly constrained by the skill levels of operatives. The company constantly churns its operatives each week (current timescale needed to get people up to speed quoted at 2 weeks by the Team Leader).

Operatives were visibly struggling to build and having difficulty interpreting drawings. As a result they have to walk the length and breadth of the facility to find previously built items as a reference point.

Allocating a stable team and introducing improved work standards such as exploded view 3D drawings to aid assembly could lead to a 37.5% productivity improvement

Impact:

Benefits:
Opportunity identified to double output from 2.5 units per day to 5 units per day, with existing labour count and hours of work.

The risk of missing the key milestone as a result of the lack of cladding resources significantly reduced.

30% Productivity improvement through modular near-site solution - Data Hall fit-out

Initial Condition:



Data Hall fit-out previous methodology

- Work assembled at height from component parts inside the Data Hall
- Approximately 25-30% of labour were MEWP "spotters"
- 25% of available time observed as motion waste. (slow traversing in MEWP, up/down & gathering materials)
- Data Hall used for material storage – causing disruption, dust traps & trip hazards
- Approximately 50 MEWPS, that create damage to floors & walls

Improvement:

On-site modular process designed within a temporary (dented) facility

Stage 1 – Contractor 1 assembles frames within the prefabrication tent
Stage 2 – Partial electrical fit out
Stage 3 – Towed to site & wheeled into Data Hall position

Stage 4 - Lifting jig is used to slide frame in underneath – raise module up a metre to working height

Stage 5 – Contractor 2 complete installation of busbar, light fittings, tap offs and jay boxes

Stage 6 - Complete module lifted into final position by Contractor 1

Impact:

- Eliminated 50% of Elect MEWP activity (Working At Height) in the Data Halls
- Improved productivity by 30%
- Reduce the fit-out sequence by 5.5 weeks
- Controlled manufacturing environment
- Specified standards & built to a uniform quality.
- Multiple in process QA / QC checks enabling snag free installation
- Each module can have its production history stored electronically to review the life cycle of the module.
- Less material handling damage and damage after install, due to reduced handling and fewer MEWPS
- Reduced material storage in the Data Hall – floor can be cleaned easier

7 weeks betterment through process simplification - Parliamentary Estate

Initial Condition:

The fit-out of Fire Life Safety systems throughout the Palace of Westminster. The programme of works included upgrades to automatic fire detection and alarm systems alongside modifications to the emergency lighting and fire escape signage.

The project had been impacted by significant delays.

Project management was co-ordinated through a complex and high maintenance tracking process.

200 lines of a 3000 line tracker creates ambiguity.



Improvement:

Simplified Production Focus - Total 216 units over 12 weeks. = 26 per week (every week). Complemented with short interval control, not flash but very effective

"Requires no interpretation and provides a reaction"

Kitting area



40 units of 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000, 1010, 1020, 1030, 1040, 1050, 1060, 1070, 1080, 1090, 1100, 1110, 1120, 1130, 1140, 1150, 1160, 1170, 1180, 1190, 1200, 1210, 1220, 1230, 1240, 1250, 1260, 1270, 1280, 1290, 1300, 1310, 1320, 1330, 1340, 1350, 1360, 1370, 1380, 1390, 1400, 1410, 1420, 1430, 1440, 1450, 1460, 1470, 1480, 1490, 1500, 1510, 1520, 1530, 1540, 1550, 1560, 1570, 1580, 1590, 1600, 1610, 1620, 1630, 1640, 1650, 1660, 1670, 1680, 1690, 1700, 1710, 1720, 1730, 1740, 1750, 1760, 1770, 1780, 1790, 1800, 1810, 1820, 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Business project level measures you defined by the Sustainability Toolflow



Other sustainability measures

Environmental measures

- 1. Carbon footprint
- 2. Energy consumption
- 3. Material consumption
- 4. Water consumption
- 5. Waste management
- 6. Air quality
- 7. Noise and vibration
- 8. Land use and biodiversity
- 9. Resource efficiency
- 10. Circular economy
- 11. Greenhouse gas emissions
- 12. Environmental impact
- 13. Environmental risk
- 14. Environmental compliance
- 15. Environmental reporting
- 16. Environmental management system
- 17. Environmental policy
- 18. Environmental objectives
- 19. Environmental indicators
- 20. Environmental performance

Social measures

- 1. Human rights
- 2. Labor practices
- 3. Community relations
- 4. Diversity and inclusion
- 5. Employee health and safety
- 6. Customer satisfaction
- 7. Supplier relations
- 8. Product quality
- 9. Innovation
- 10. Research and development
- 11. Intellectual property
- 12. Data privacy
- 13. Cybersecurity
- 14. Information security
- 15. Digital transformation
- 16. Artificial intelligence
- 17. Blockchain
- 18. Internet of Things
- 19. Cloud computing
- 20. Big data

Process, customer & delivery measures

Process measures

- 1. Process efficiency
- 2. Process quality
- 3. Process cost
- 4. Process risk
- 5. Process innovation
- 6. Process compliance
- 7. Process reporting
- 8. Process management system
- 9. Process policy
- 10. Process objectives
- 11. Process indicators
- 12. Process performance
- 13. Process improvement
- 14. Process optimization
- 15. Process automation
- 16. Process integration
- 17. Process collaboration
- 18. Process transparency
- 19. Process accountability
- 20. Process responsibility

Customer measures

- 1. Customer satisfaction
- 2. Customer loyalty
- 3. Customer retention
- 4. Customer acquisition
- 5. Customer engagement
- 6. Customer feedback
- 7. Customer support
- 8. Customer service
- 9. Customer experience
- 10. Customer journey
- 11. Customer segmentation
- 12. Customer targeting
- 13. Customer positioning
- 14. Customer differentiation
- 15. Customer value proposition
- 16. Customer benefits
- 17. Customer needs
- 18. Customer expectations
- 19. Customer perceptions
- 20. Customer attitudes

Delivery measures

- 1. Delivery quality
- 2. Delivery quantity
- 3. Delivery cost
- 4. Delivery risk
- 5. Delivery innovation
- 6. Delivery compliance
- 7. Delivery reporting
- 8. Delivery management system
- 9. Delivery policy
- 10. Delivery objectives
- 11. Delivery indicators
- 12. Delivery performance
- 13. Delivery improvement
- 14. Delivery optimization
- 15. Delivery automation
- 16. Delivery integration
- 17. Delivery collaboration
- 18. Delivery transparency
- 19. Delivery accountability
- 20. Delivery responsibility

Examples



Visualizing performance



Review of Information overload



Control rooms



The leadership challenge



Project Dashboard



System architecture



System performance



System resilience

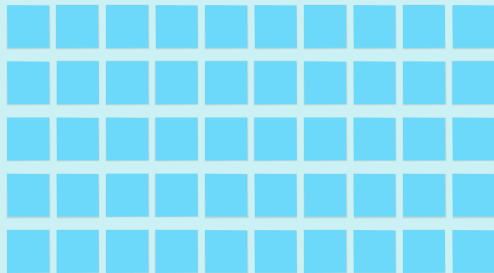


System sustainability

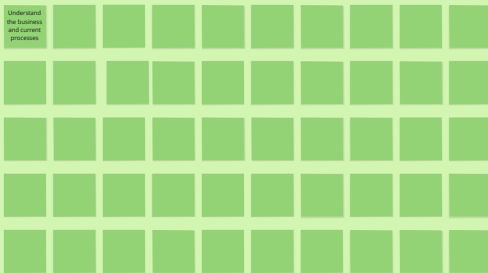


Key takeaways and the call to action

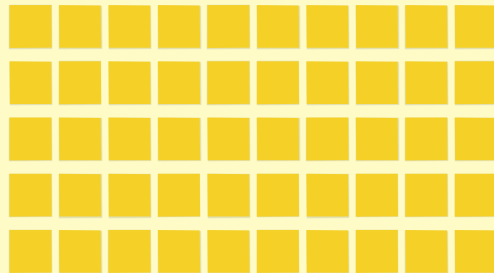
Key learning



Call to action - what can you do to overcome the productivity challenge?



Things I would like to know more about



What is Productivity?

A measured comparison of the **output** of a task, project, or industry with the corresponding factors of **input** required to generate that output.

Essentially it measures how efficiently inputs, such as labour and capital, are being used to generate a given level of output.



There are significant benefits to boosting construction sector productivity

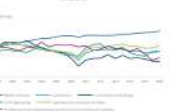
Productivity can seem like an intangible term, used only by economists. Simply put it's about increasing output more per person or per hour. In a construction context, this means:

- Projects completed faster
- Getting things right first time, eliminating the need to repeat work
- Improved sustainability and reduced carbon footprint through reduced waste

It means benefits across every sector and every community: better homes that are cheaper to run; smarter and safer buildings; lower emissions and cleaner air.

Figure 3: Productivity growth has been slow in construction (relative to other sectors) in comparison with the whole economy

Real gross value added construction (2015 prices) and real gross value added (2015 prices) 1997-2018



Source: Office for National Statistics - ONS productivity

Why is the Government looking to improve Productivity across the sector?



- Adopt highly productive ways of working
- Grow the skills to be ready to grasp the opportunities of the global infrastructure market
- Build new homes in weeks – and even days – rather than months
- Deliver new buildings at a third of the cost
- Provide affordable, energy efficient homes
- Lower emissions and provide cleaner air

Ref: HM Government - Industrial Strategy Construction Sector Deal 2018

What does Improved Productivity mean for your business?



- Projects completed faster
- Project costs reduced
- Higher quality levels, with processes designed to build in quality and eliminate rework
- More accurate estimates & competitive bidding
- Improved Health & Safety through better organisation and control
- Improved Sustainability and reduced carbon footprint through reduced physical waste, deliveries, material movements and activities

Efficient	Low	Low	Low
Cost	Cost	Cost	Cost
Time	Time	Time	Time
Quality	Quality	Quality	Quality



What does Improved Productivity mean for the individual?



- Improved working environment & organisation
- Less wasted effort and frustration
- Reduced fatigue
- Improved morale & attitude
- Improved consistency of skills and knowledge sharing
- Ultimately driving better wages and conditions



Project Director
James Sharpley
Last Update
12/3/18

Project

Hyperscale Datacentre 4000

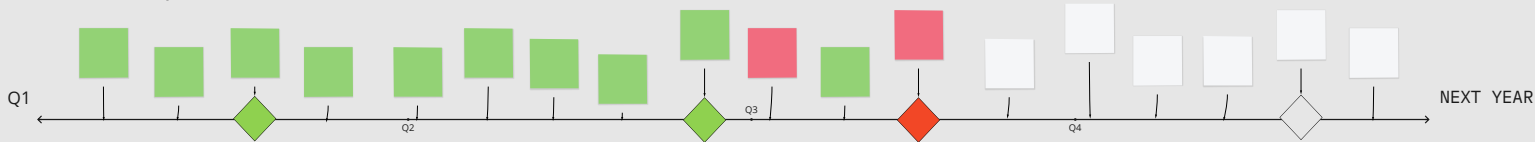
Client

Cloud 101

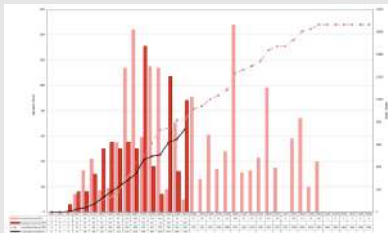
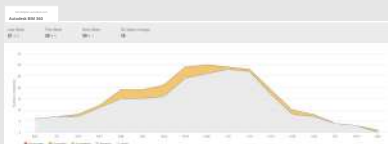
Variance	Status
-4 Days	

Critical Path

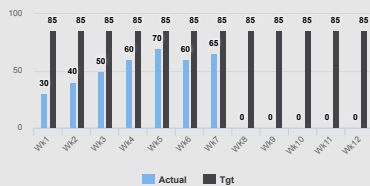
Timeline / Completion Milestones



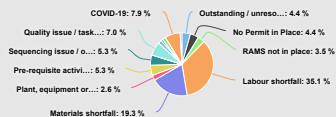
Past - Performance / KPI Trends



Percentage Planned Completed



Reasons for Delay Wk1



Present - Current Performance

KPI	Target	Actual	Status
Safety Tours	12	12	
Unsatisfactory Observations	0	4	
LTI	0	0	
Quality Inspections	12	12	
Snags	0	0	
PPC	85	65	
Productivity (Value per Labour Hour)	£55k	£45	

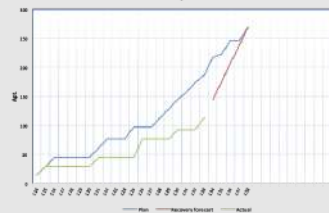
Area Completion	Target	Actual	Variance	Status
HV1	27/11/17	16/1/18	-50	
HV2	4/12/17	20/12/17	-16	
AZB	17/11/17	17/11/17	0	
SBA	29/9/17	20/10/17	-21	
AZC	22/2/18	26/2/18	1	

Future

Risks



Recovery Forecast



Countdown


Milestone	Days to Go
All Enclosures Installed	60

Key Project Concerns

Date Raised	Concern	Containment	Who	When	Cause	Corrective Action	Owner	Due Date	Status
17/2/18	Ballistic Glass Damaged after install on every panel in Security Office 2	Order Replacement Glass and advise ETA	TJ	19/2/18	Rash from grinding frames due to poor fitting	Improve end of line QC of frames at factory prior to despatch.	JP	28/2/18	

Action Status Key: On Plan Behind Plan

Options for further support:



Training Services


Develop your people's skills, mindsets and toolsets at all levels within your organisation through impactful programmes, delivering real change.

Unique training and coaching for the built environment
Our approaches are high impact and generate real sustainable change for long term success.

Bespoke to suit your individual business needs, all training is collaborative and delivered efficiently to support each team's capability.

We deliver accredited training, on or off site, face to face or remotely. When delivered remotely, we use our highly interactive digital platform to reach more people.

Generating engagement at all levels



What our customers say...

"Proactive, changing, practical involvement within all project delivery. Excellent trainer delivery each day."

The BBI Services training strategy to develop enhanced capability

We deliver essential tooling and development programmes to enhance personal growth, build team engagement and involvement while driving impact.

INSPIRE - SUPPORT - DRIVE

1. Leadership Strategies & Systems Thinking

THE OUTCOME: Senior leaders will inspire and support teams in driving excellence.

LEAD - DEPLOY - ENGAGE

2. Lean Construction Practitioner Programme


THE OUTCOME: Building capacity to drive betterment throughout the business.


FACILITATE - RUN - OVERSEE

3. Foundation Tools & Routines

THE OUTCOME: Teams actively engage to deploy the right tools at the right time and implement effective daily reviews to improve performance.

DELIVERY & PEOPLE EXCELLENCE





Training delivery methods

Our training solutions are delivered through a combination of methods, each designed to suit your organisational needs.

Our learning approaches include:

E-Learning
Theory based

Workshops
Putting the theory into practice


Coaching & Mentoring
Support and ongoing applied learning

We combine best practice coaching, state-of-the-art e-learning and collaborative working leadership, offering unique opportunities for individuals and teams looking to improve themselves and inspire others.

Get in touch today:

Contact us today to learn more about how we can take your organisation to the next level.

T: 01408 664589
E: contact@bbiservices.com
W: www.bbiservices.com



Bespoke Leadership Programmes and our Executive Super Series


1. Executive leaders develop and inspire a shared vision
2. Enhance personal and team effectiveness through collaborative approaches
3. Instill a performance culture and create the conditions for success


The Lean Construction Practitioner Programme

1. A unique and fully accredited practical development programme
2. Develop leadership approaches to drive business betterment
3. Tangible return on investment benefits and business improvements

Improve Efficiency and Delivery of Business Objectives

1. Embedding improvement skills across teams and the organisation
2. Improve organisation efficiency and performance
3. Approved to utilise your CITB Levy funding





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The Improvement Foundation Skills Programme

Delivered by BBI Services

The programme focuses on laying the foundations for performance improvement through experiential hands-on practical workshops, delivered remotely or on-site. The training can also be tailored to meet your individual business needs.


APPROVED FOR CITB LEVY FUNDING

Practical training for the built environment

Module 1	Module 2	Module 3
Introduction to Lean	Waste & Value adding	Problem Solving & Continuous Improvement
Visual Management	Collaborative Planning & Production Control	5S Workplace Organisation
Standardising Working	Value Stream Mapping	

How can we help?

1. We can assist you in setting up a practical improvement programme through practical training.
2. We can assist you in setting up a practical improvement programme through practical training.
3. We can assist you in setting up a practical improvement programme through practical training.
4. We can assist you in setting up a practical improvement programme through practical training.
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Modules Available

Pick and mix from the modules below to suit your business needs (minimum of two modules per day)

CUSTOMER NEEDS

1. Long term
2. Short term
3. Immediate

LEARNING MODULES

Access through SCSS portal

WORKSHOP MODULES

Delivered on-site or remote to suit needs

FOLLOW UP

Application review

Everyone can learn from this training

From leadership teams and directors to those leading or working in teams, participants have the opportunity to support each other in using the best tools and techniques for any process in construction, manufacturing or business.


Reclaiming the CITB Levy

Fully funded by the CITB Levy - if you have this available it is a straightforward effective process.

Get in touch today

This is the perfect time to take advantage of the great opportunity. Contact us today to find out more information and to see how we can help you and your team.

T: 01408 664589
E: contact@bbiservices.com
W: www.bbiservices.com



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BBI Training Services.pdf

BBI FOUNDATIONS.pdf

Construction Productivity - The Need & Opportunity

[Construction Productivity - The Need & Opportunity - YouTube](#)



Your expectations

Lisa Maric - NH Head of Quality for Ops and working closely with PDF community to increase pavement life . Aware of productivity

Genevieve Farmer, Quality Manager at Connor Construction (South West) Ltd: Looking to learn new ways to remove barriers for business improvement

David Spray
HSEQ Systems, data and certification
Associated Asphalt

gain a better understanding on PDF framework, to support business and collaboration with NH

Alen
Project Engineer
DDC

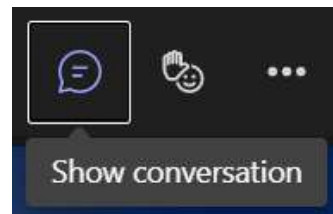
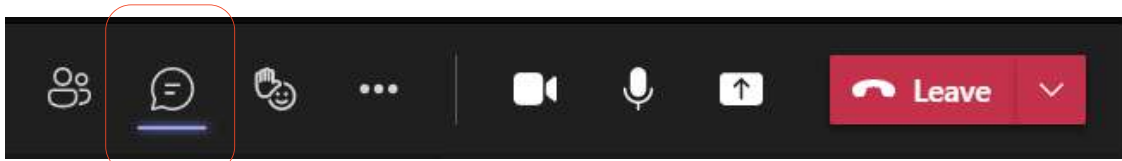
Trevor Sarupinda, Senior Quality engineer/inspector

Keen to learn how we can improve productivity output on site/ production

Raahil-
project director-
DDC



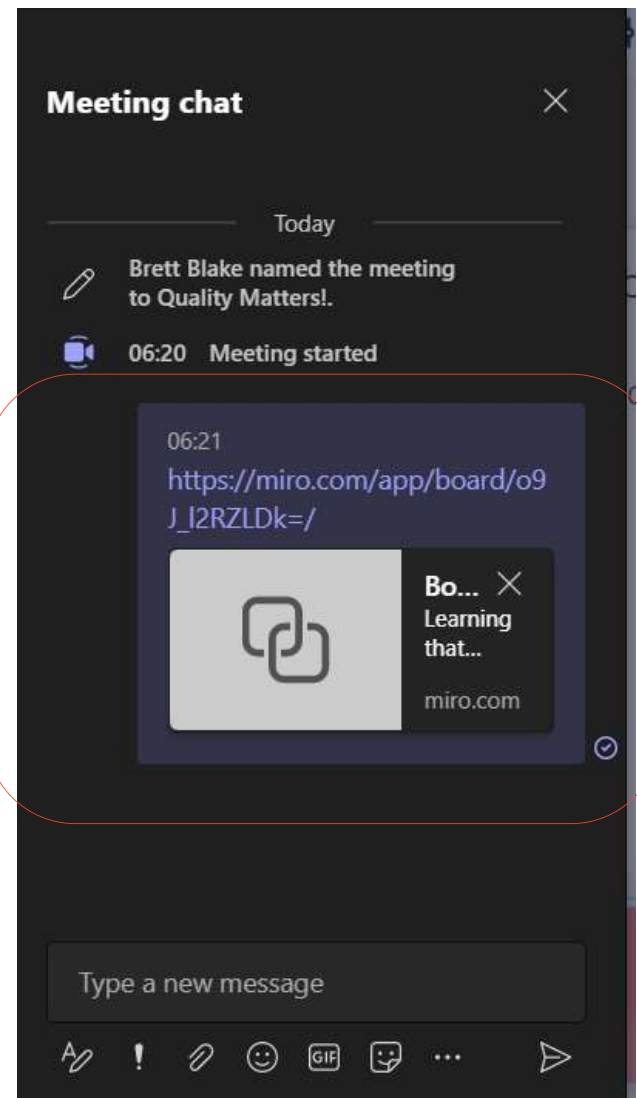
Accessing the miro board for this workshop



To access the miro board,
click the 'show
conversation' in Teams

This will bring up the
meeting chat!

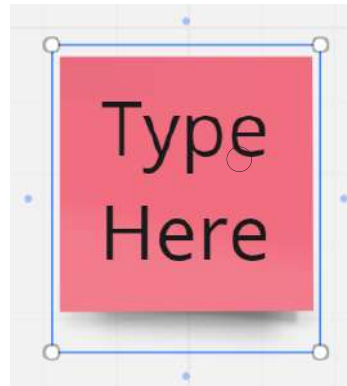
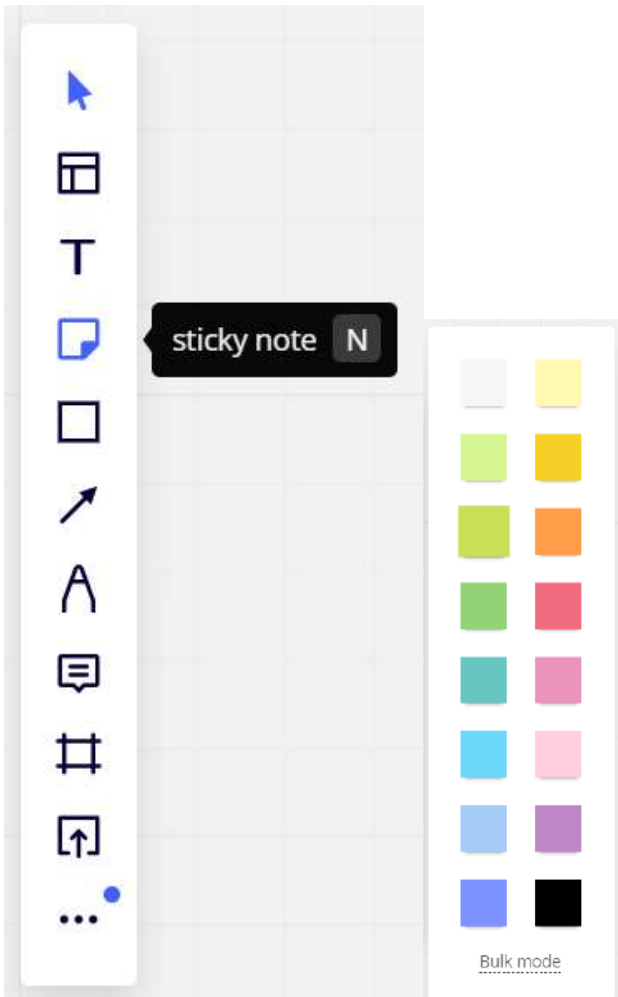
Click the link and sign in
as a guest only, there is
no need to register for an
account for this workshop



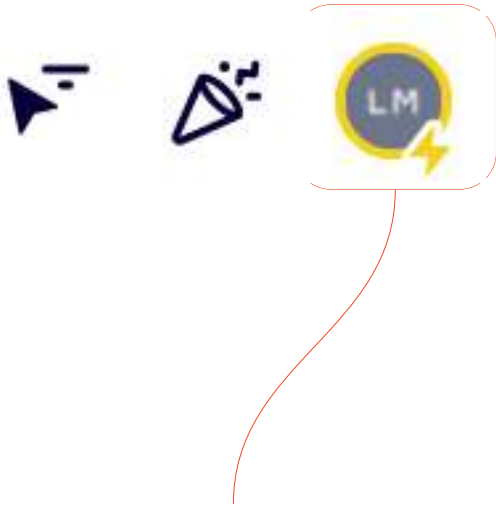
Welcome to our miro board for this 'Workshop'

To add content in the form of a sticky note:

1. Click the sticky note icon with your mouse
2. Select the colour of sticky note you require
3. Place the sticky note where you would like it
4. Add text

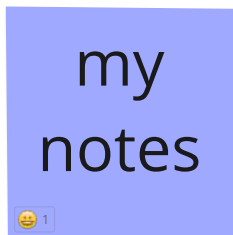
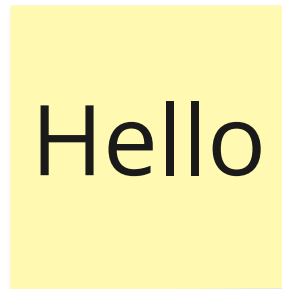
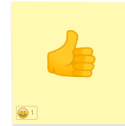
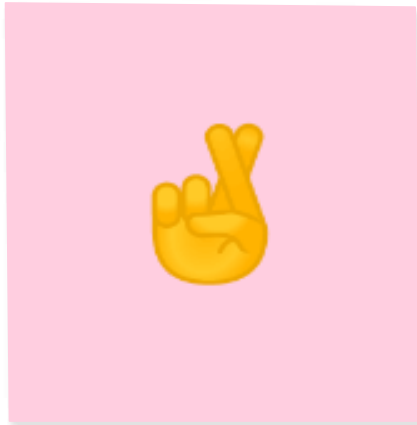


Following the presenter -



To follow the presenter, click their initials and you will be brought to where they are on the Miro Board

Try adding a sticky note here



The Need for Change:

Exercise:

The Need for Change

The Brief:

What is your Why? Articulate the compelling need for change.

What are the key barriers standing in your way?

Time:

20 Mins

The Compelling Need for Change:



Barriers to Change:



The Need for Change:

Exercise:

The Need for Change

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Barriers to Change:

The Need for Change:

Exercise:

The Need for Change

The Brief:

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What are the key barriers standing in your way?

Time:

20 Mins

The Compelling Need for Change:

Barriers to Change:

Exercise:

Measure definition

The Brief:

Define two Productivity
measures you could look to
deploy

KPI description	Unit of measure	Why measure is needed	How it's calculated	Frequency	Who measures it	Accessed through	Who acts/owner

Exercise:

Measure definition

The Brief:

Define two Productivity
measures you could look to
deploy

KPI description	Unit of measure	Why measure is needed	How it's calculated	Frequency	Who measures it	Accessed through	Who acts/owner

Exercise:

Measure definition

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Define two Productivity
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deploy

KPI description	Unit of measure	Why measure is needed	How it's calculated	Frequency	Who measures it	Accessed through	Who acts/owner



Work can be categorised in 3 ways



Understanding the biggest pain



8 Wastes



The 8th Waste



Service Wastes



Leadership Wastes



Service Wastes



1). **Opportunity Lost** - The lost opportunity to win, retain or even just to impress a customer

2). **Unclear Communication** - Causing the customer misunderstanding



3). **In-correct Inventory** - Having different products or services available, to what the customer wants

4). **Errors** - Not right first time in the eyes of the Customer



5). **Duplication** - Rework from the Customers perspective

6). **Unnecessary Movement** - Having to make more service encounters than necessary

7). **Delay** - Any delay experienced by the customer



Leadership Wastes



1). **Structure waste** - When no comprehensive system is in place to maintain focus throughout the organisation.



2). **Discipline waste** - The loss caused by failure to maintain the behaviors and processes of the structure.



3). **Focus waste** - Arises when everyone is not aligned and energized on critical issues.

4). **Ownership waste** - Occurs when the management team and other significant individuals do not personally, take direct responsibility for eliminating all of these wastes.



5). **Resource allocation waste** - Happens when time and money are not formally committed to agreed upon initiatives.

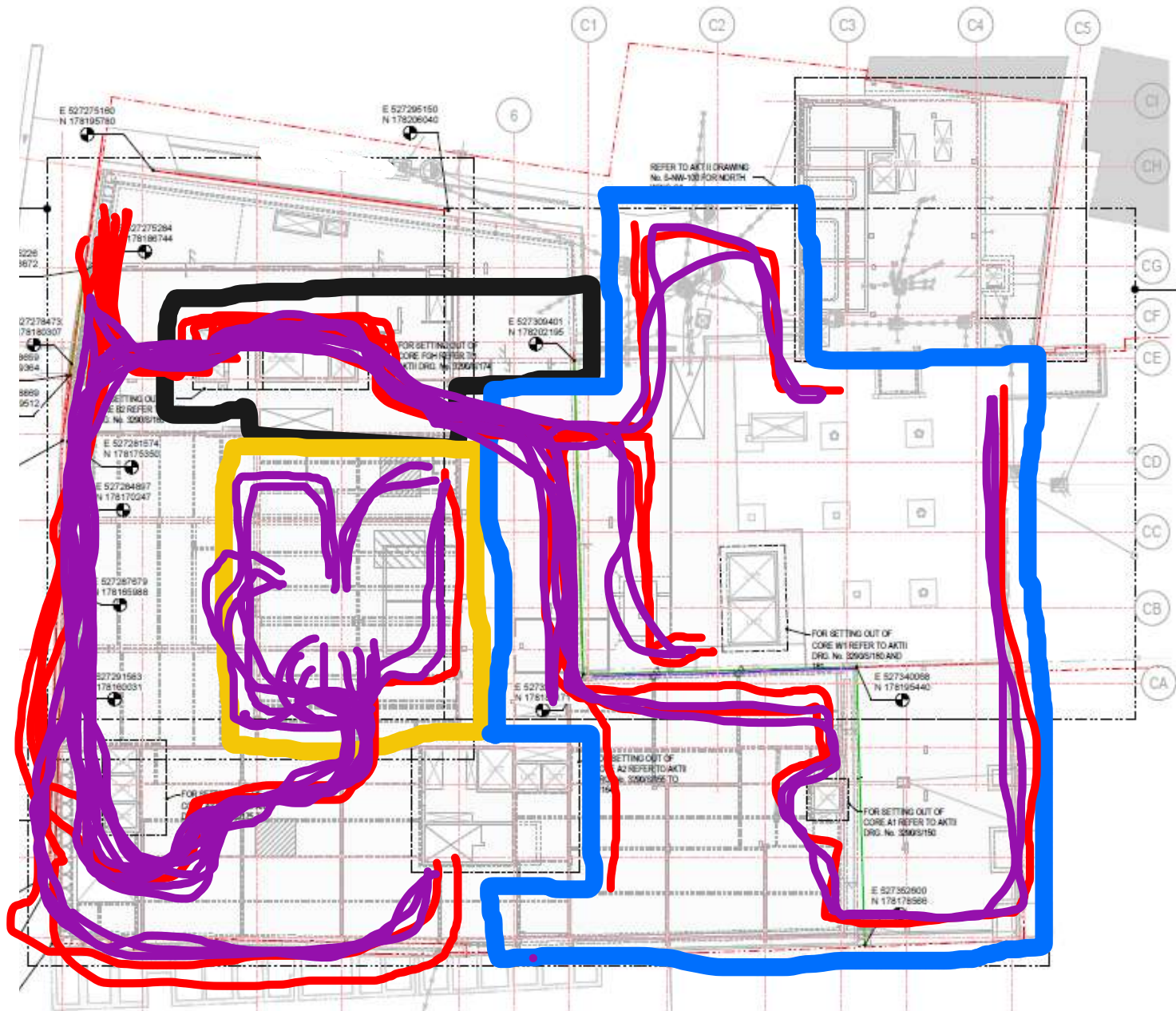


6). **Involvement waste** - Arises when employees are not required to participate in efforts that impact their work and work areas.



7). **Integration waste** - Arises when all methods, initiatives, tools and programs are not compelled to work together seamlessly.







A 'Go Look See' is a means of walking around your chosen workplace and identifying with the following:

- What is working well?
- What is not working so well?
- What is causing frustration?
- What are the potential opportunities to improve?

A 'Go-Look-See' can also include talking with the team to understand how they feel about the work they are involved with.

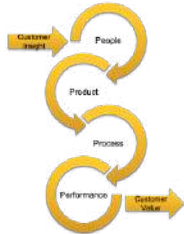
8 Wastes



The 8th Waste
Underutilising
people's skills,
talent and
knowledge

Waste	Description
Transport	Transportation waste is excessive or unnecessary moving or handling of materials, information or equipment. E.g. double or triple handling materials onsite from drop off point, to store, to work face.
Inventory	Inventory waste is excess material, equipment, time, people or information. Excess means more than is required to maintain the build at the planned rate or the process flow.
Motion	Motion waste is any unnecessary or excessive walking, bending, turning and reaching. A physically difficult or awkward part of the process e.g. working above your head.
Waiting Time	Where an area, process or person is idle due to waiting on another function or process to be performed e.g. waiting for preceding trade when your rate of work is quicker than theirs – poor line of balance.
Over Processing	Over processing is unnecessary or complicated processes, too many steps in a process or unplanned downtime. E.g., over complicated and lengthy processes delaying access to workplace.
Over Production	Overproduction is producing more than the (downstream) customer requires at that point in time. E.g. working ahead of schedule where it results in using up resource required for other tasks, resulting in them being short or delayed.
Defects	Defect waste includes scrap or rework, anything not right first time. E.g. defects found during inspections by main contractor, next trade or final client, resulting in snagging.
Skills	Untapped human potential when an organisation misses the opportunity of utilising its employees' skills, creativity and experience in order to continuously improve the business

The core levers of productivity improvement



- Shared values & aligned behaviours
- Clear roles & responsibilities
- Effective skills development
- VOC & target value design
- Design for construction
- Rigorous adoption of BIM
- End-to-end process optimisation (on-site & off-site)
- Waste elimination
- Digital technologies
- Visual management & control
- Seamless reporting
- Improvement & knowledge sharing

Delivering profitable growth

Delivering Profitable Growth through Value Creation

- Flawless delivery
- Faster, more reliable service
- Speed to market on new products and services
- Products and services aligned to needs
- Better quality and delivery performance
- Simplicity and ease
- Greater accuracy of information
- Innovative products and services, better aligned to customer needs
- Enabling profitable growth for the customer
- Delighting the consumer!

Delivering Profitable Growth through Waste Elimination

- Removal of all blockages, delays and errors
- Removal of all unnecessary activities
- Ensuring that every necessary activity is performed right first time every time
- Ensuring that every necessary activity is performed when it is needed
- Delivering more output with less resource or much more with the same!

Top tips

1. Productivity = wealth
2. Productivity improves when:
 - Less input produces the same output
 - Output increases with the same input
 - Reduced input with increased output
3. Focus on the customer & the process not just the results
4. Promote teamwork & collaboration across the entire organisation
5. Always maintain a healthy dissatisfaction with the status quo - challenge all the fixed ideas
6. Take the value and benefits of small improvements - 1% better everyday
7. Focus on improvements you can directly control
8. Go-Look-See! You will find the answers in the workplace.
9. Maintain a sense of urgency and crisis. Starting something right now is the only way to win - do it now, no excuses!
10. Improvement is infinite, better is not good enough

