

Q. Are you going to provide us with the presentation for Lean101?

A. Yes, go to www.CaptainLean.com and download the materials.

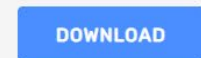


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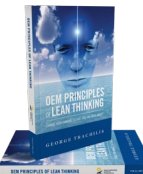
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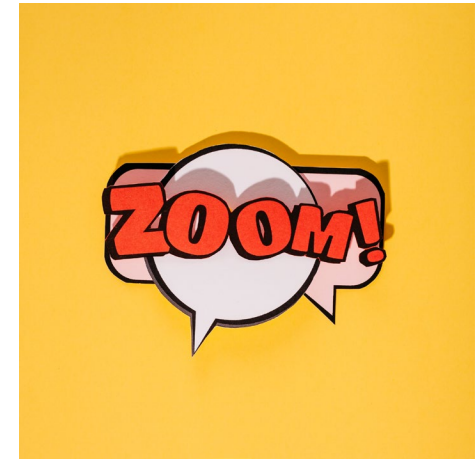


Welcome to the Value Stream Mapping Course

<https://www.youtube.com/watch?v=SaRw1sYC7JA&list=PLce8uhwYy2hl48C1vcXljnnQ-su1mol89&index=2>



We will be navigating Between Zoom and Mural



**Let's start in Zoom then Mural
and back and forth.**

About OEM Consultants Inc.

2003-2013

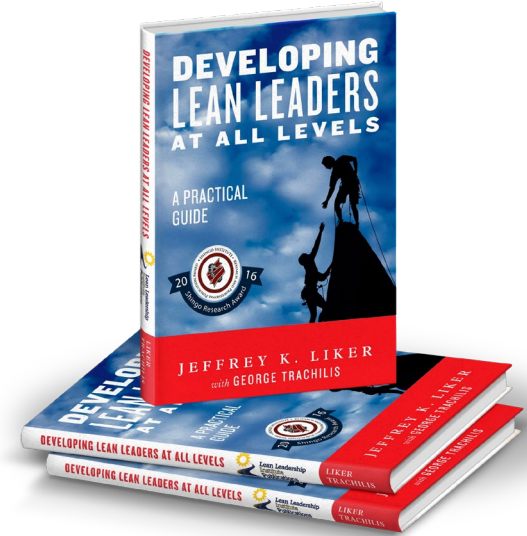
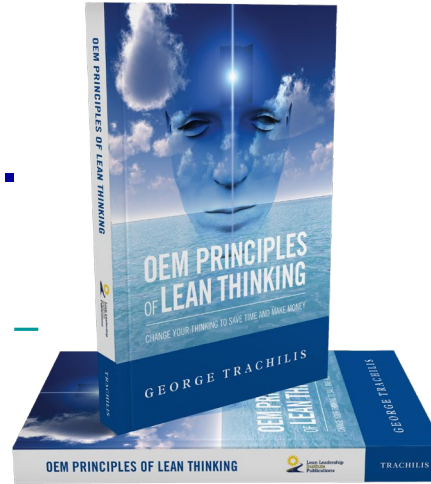


OEM Consultants Inc. was an international consulting firm that has recently expanded its consulting services to

include Lean services globally and across industries such as aerospace, banking, knowledge management, recruiting, product development, dentistry, healthcare, construction, archeology, and more.

OEM Consultants made the PROFIT HOT 50 - the definitive ranking of Canada's emerging growth companies.

<http://www.lean101.ca/>



Lean Leadership Institute

2013 +

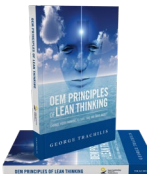
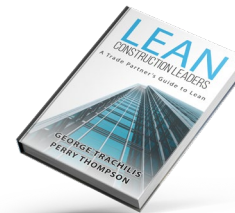
Vision

To be the global standard for Leadership Development, where leaders can find and discover anything they may require in their pursuit of continued development.

Mission

We strive to offer our client the highest valued services, the best available selection, and the utmost convenience.

<http://www.leanleadership.guru/>



Today, it's interactive online

LEAN 101 TRAINING

Distance Learning Program by
the Government of Alberta



<http://www.visionaryproducts.biz/>

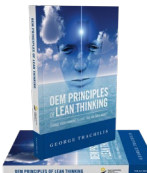


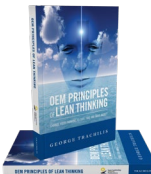
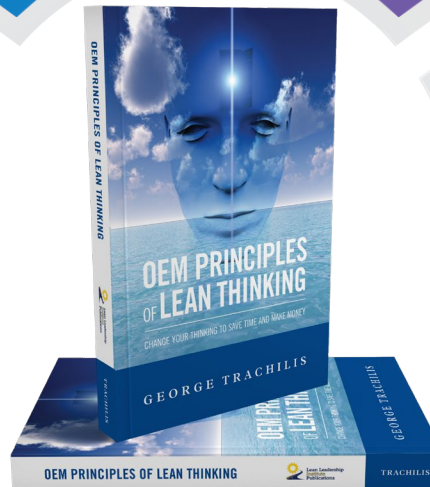
<http://www.lean101.ca/>

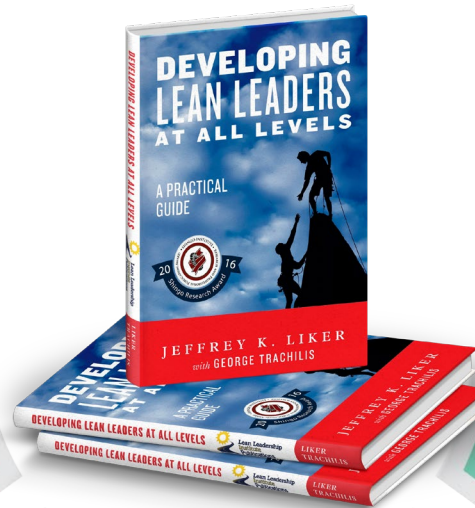


HIGH PERFORMANCE
s o l u t i o n s i n c

<http://www.hpsinc.ca/>







SIXTH

06

Live the
True North
Values

10

TENTH

Create Vision
and
Align Goals

07

SEVENTH

Commit to
Self
Development

08

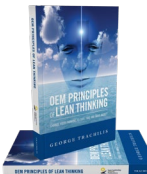
EIGHTH

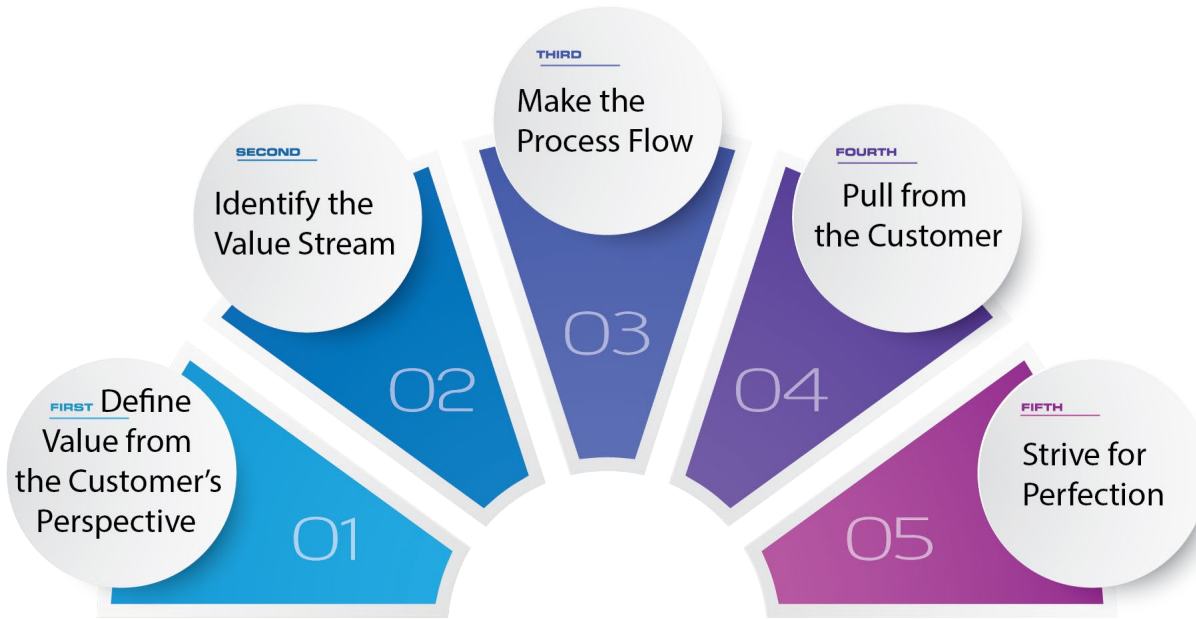
Coach and
Develop
Others

09

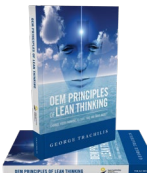
NINTH

Support
Daily Kaizen

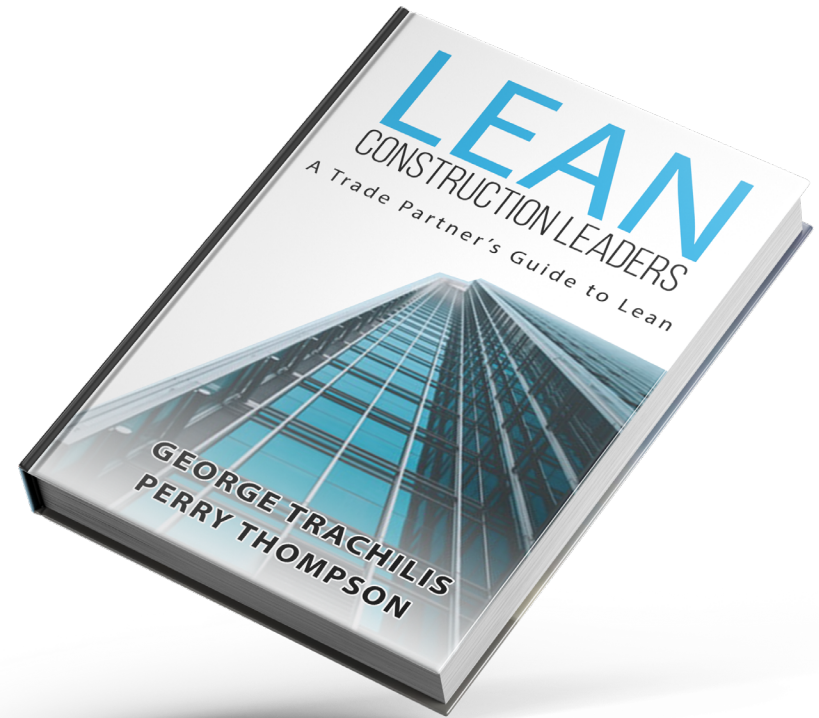
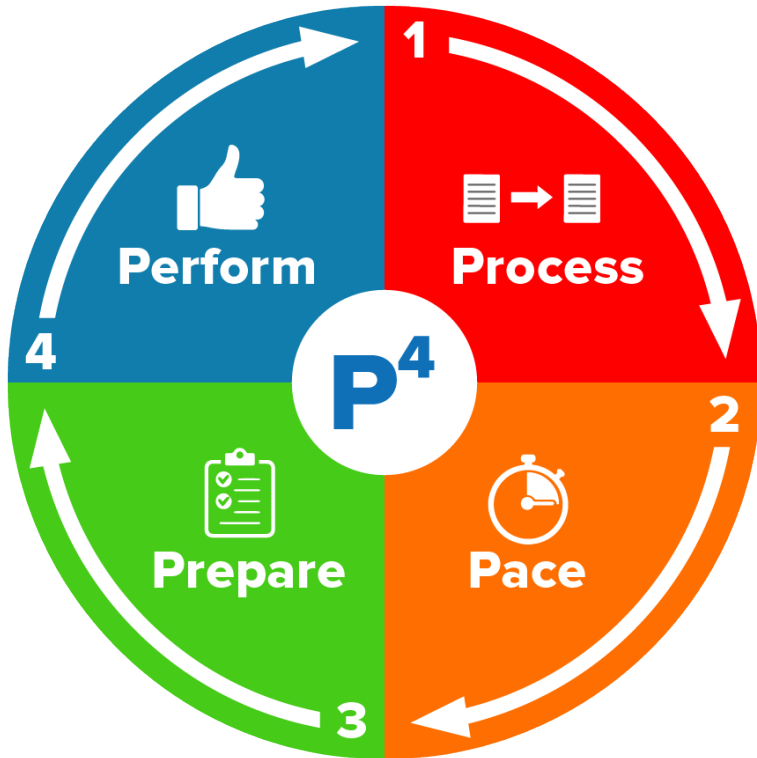




10 STEPS



LeanConstructionLeaders.com

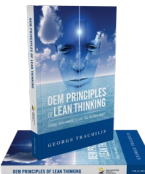


Welcome!

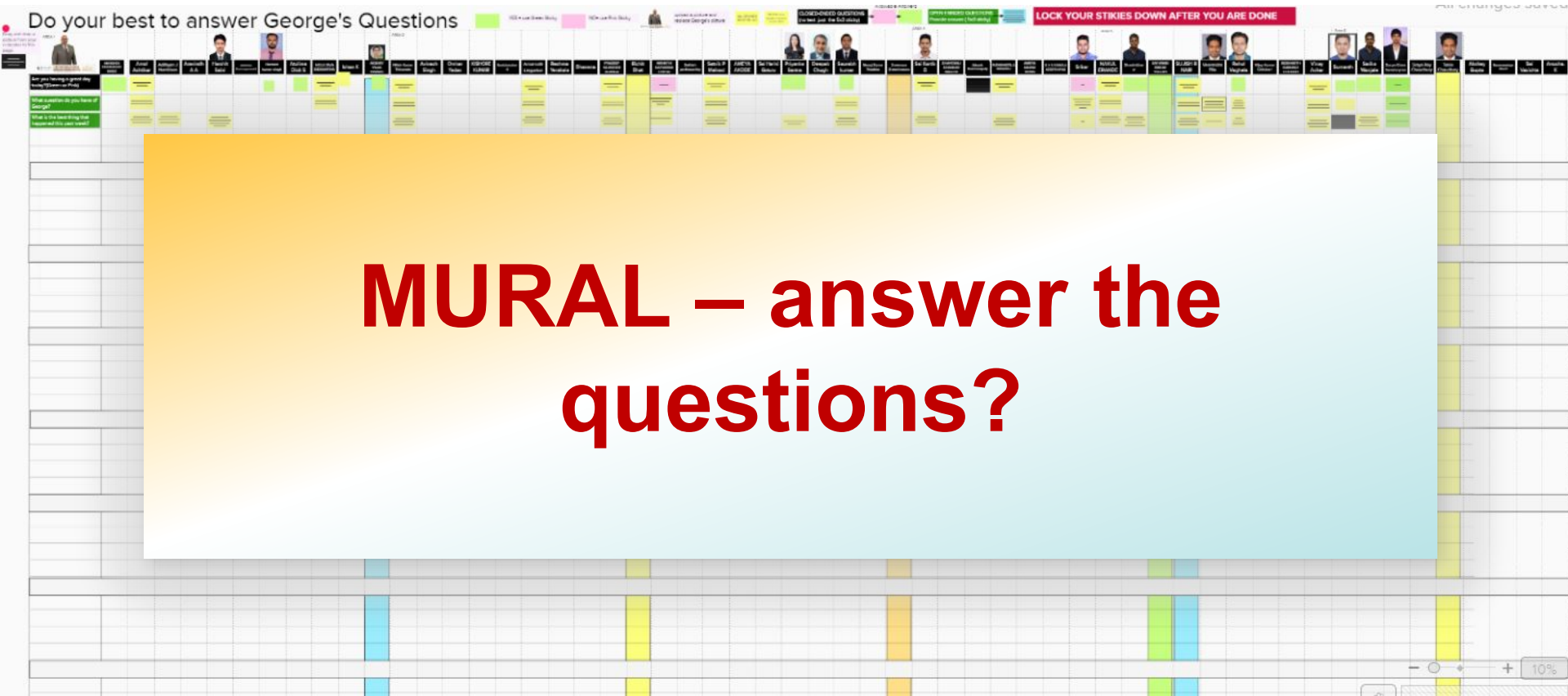
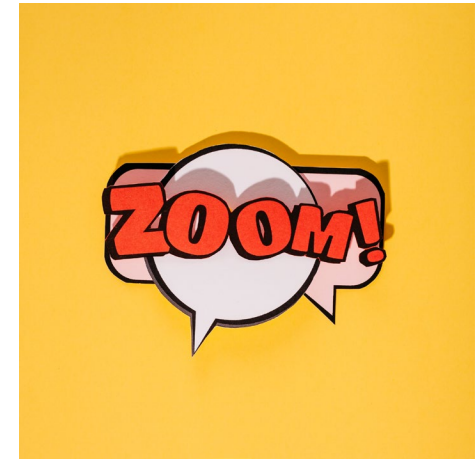


The 9 Days of Lean (specifically Value Stream Management) with George Trachilis

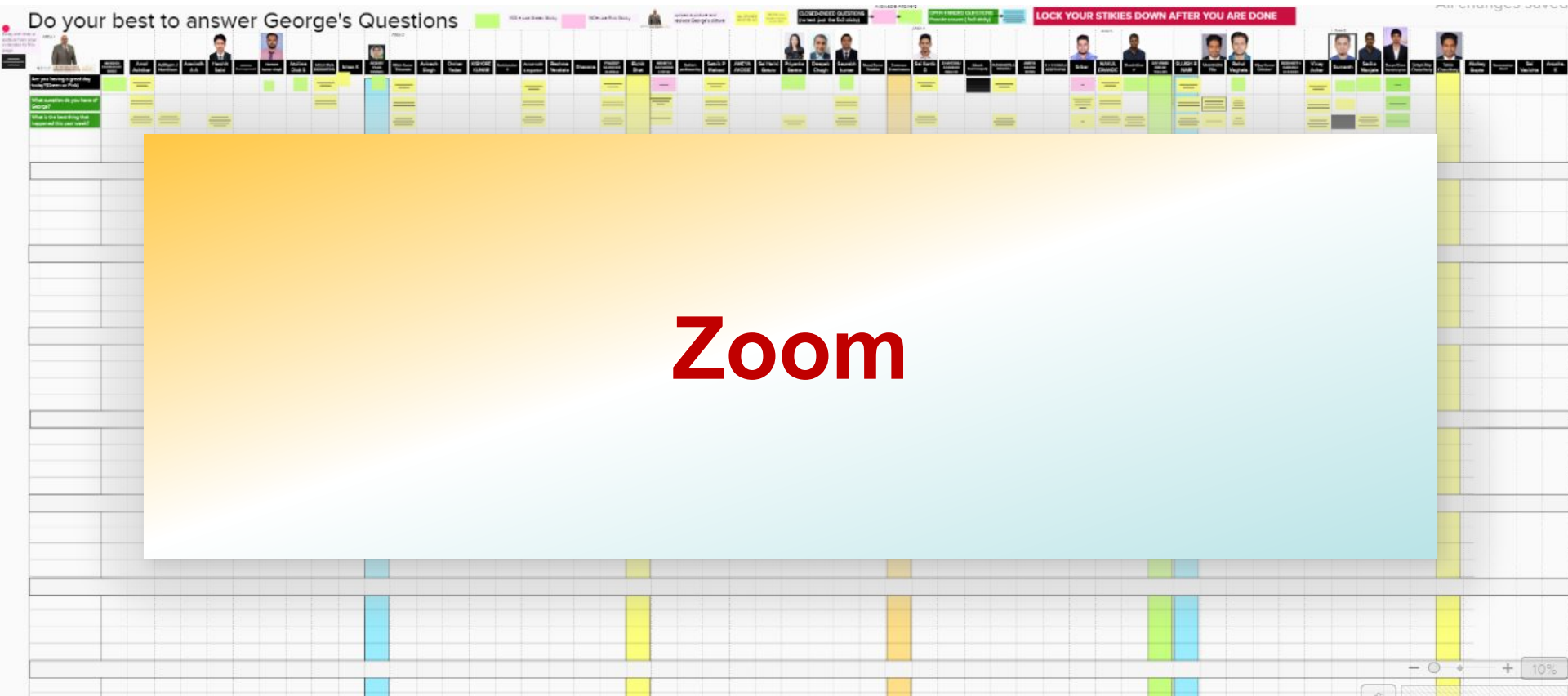
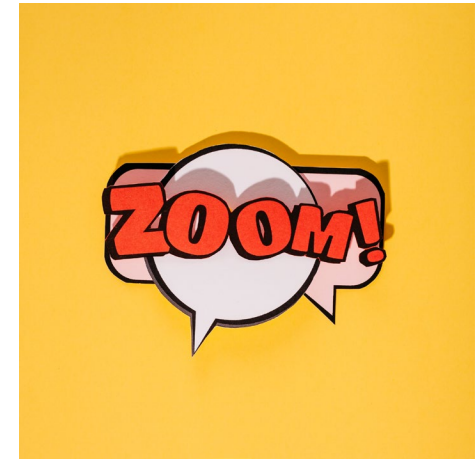
18 Hours of Training



We will be navigating Between Zoom and Mural



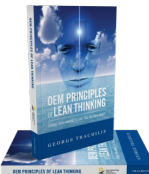
We will be navigating Between Zoom and Mural



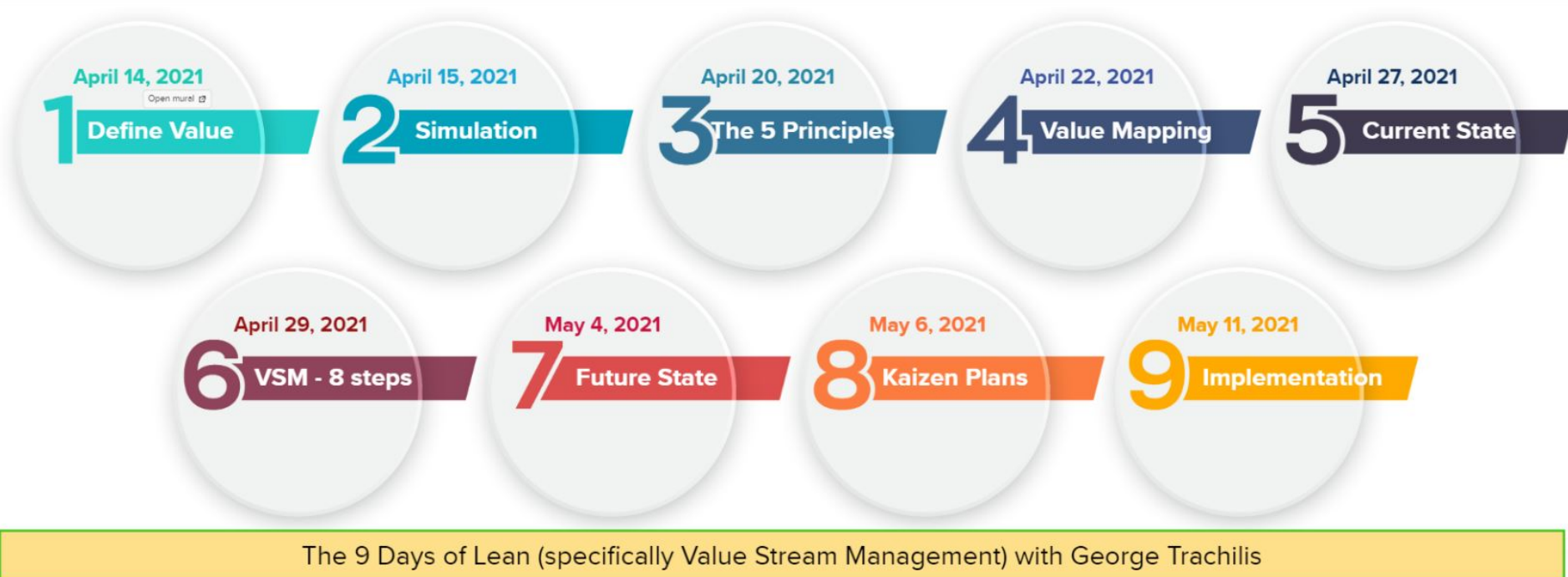


The 5 Principles of Lean Thinking

- Define value from the customer perspective
- Identify the value stream
- Make the process flow
- Pull from the customer
- Head toward perfection



18 Hours of Training



Explained in 6 minutes





6 min

The 5 Principles of Lean Thinking

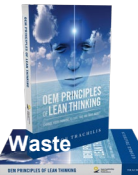
- Define value from the customer perspective

The Five Principles of Lean Thinking
by George Trachilis (a brief description)



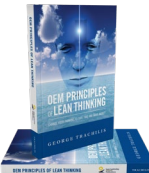
Muda is wasted motion - from Japan.

<https://www.youtube.com/watch?v=MxhYifjuBQs&list=PLce8uhwYy2hmBL4wyinBwd7-3uTi3K3sc&index=38>



Everything we do with **Value Stream Mapping** is in this video

1. Observe & Measure
2. Identify the value
3. Consider everything else non-value added
4. Identify the waste
5. Brainstorm Improvements
6. Try them
7. Measure again



SKILL 1: Go and Observe

III. Concept of Kaizen 改善の考え方

3. Recognition of work 3.仕事とムダ

When accomplishing work in production activities, and observing work motions in detail, motions can be, more or less, divided into three portions.
生産活動の中で仕事を成し遂げる時作業の動作を細かく観察する
3つに分けられる

POINT! Concept of motion 動作の考え方

- (1) Muda ①ムダ
- (2) Accompanying work without added value ②付随作業
- (3) Genuine work ③正味作業

Unnecessary action of work
-Waiting, walking, Repair
作業をする上で何の役でもない事
(まつら、空手歩行、不良品の手直し)

Genuine work 正味作業
部品を組み付ける
(加工する・切断する)

No added value of work, but inevitable work
pick up parts, packing components, pick-up tools, etc.
付随作業は無いが必須作業で、これを避けることは出来ない
(部品を取りに行く・部品を収める・工具を取る)

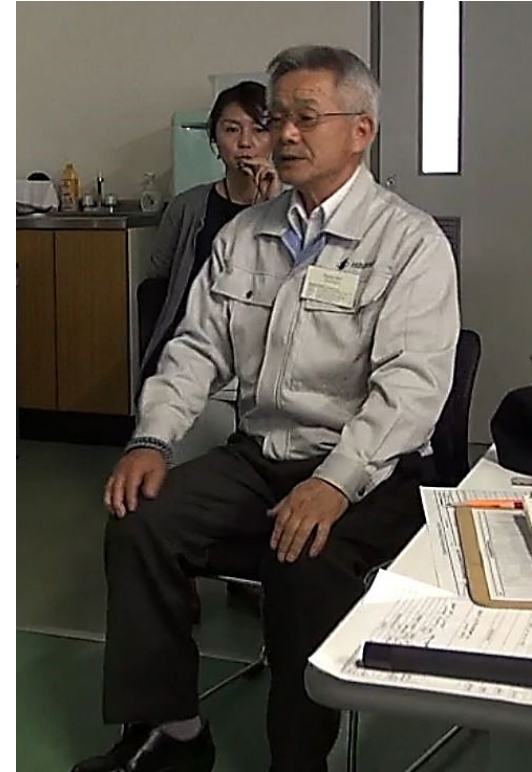
Work Motion Diagram: A circular diagram divided into three segments. The top segment is red and labeled '① Muda'. The bottom segment is green and labeled '③ Genuine work'. The left segment is blue and labeled '② Accompanying work without added value'. The center of the circle is labeled 'Motion 動作' and 'Work'.

24



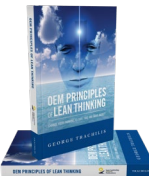
Show you a sequence of motion

*IT STARTS AND ENDS IN
THIS POSITION*



Show you a sequence of work

STEP 1: STAND UP



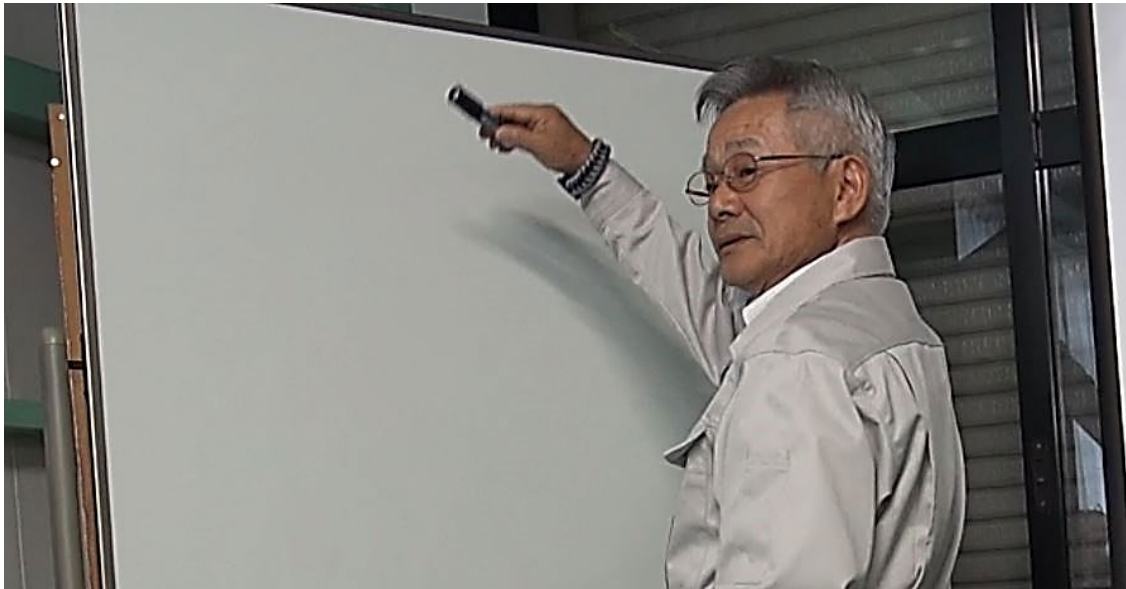
Show you a sequence of work Motion



STEP 2: WALK 7 STEPS TO WHITEBOARD



Show you a sequence of work



STEP 3: PICK UP MARKER



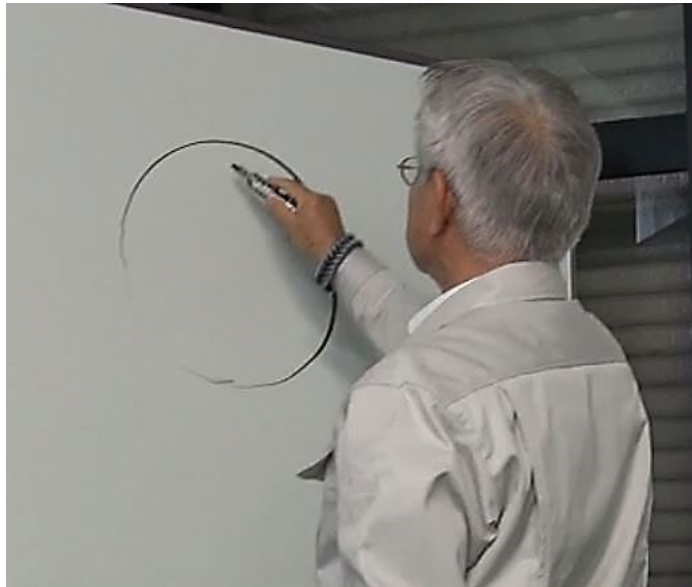
Show you a sequence of work



STEP 4: TAKE CAP OFF



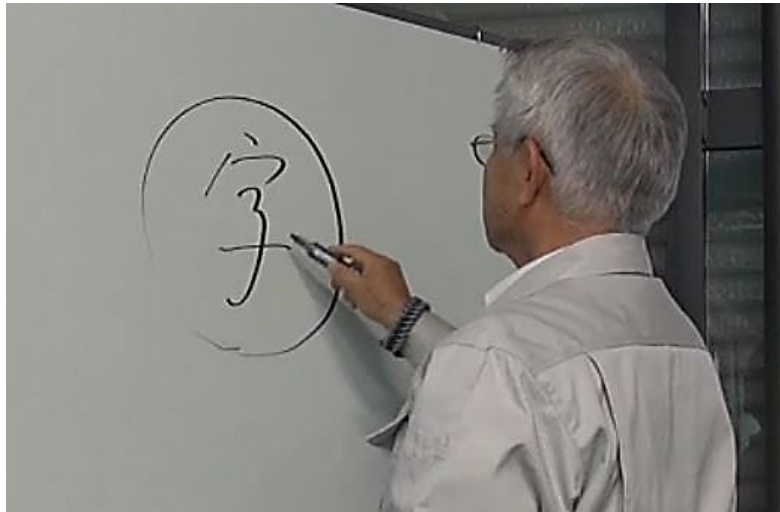
Show you a sequence of work



STEP 5: START THE WORK



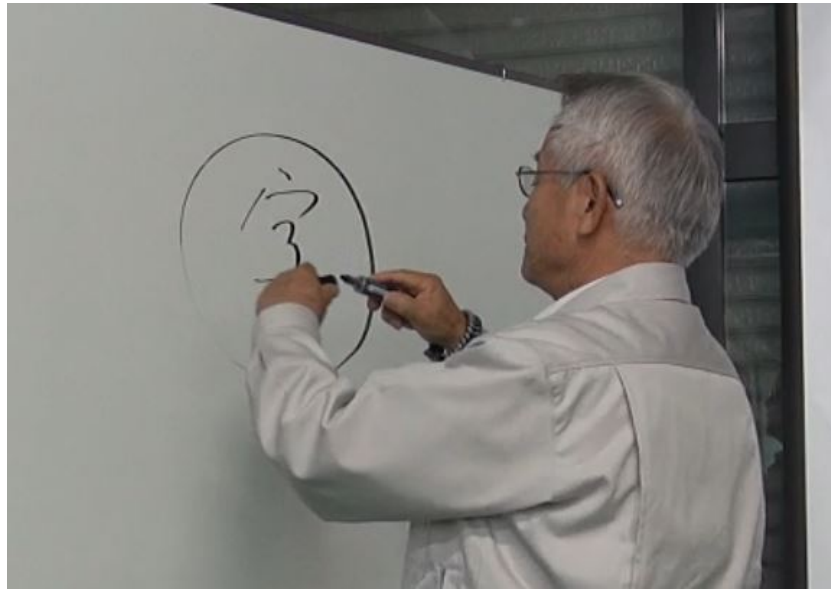
Show you a sequence of work



STEP 6: WRITE A LETTER & CIRCLE



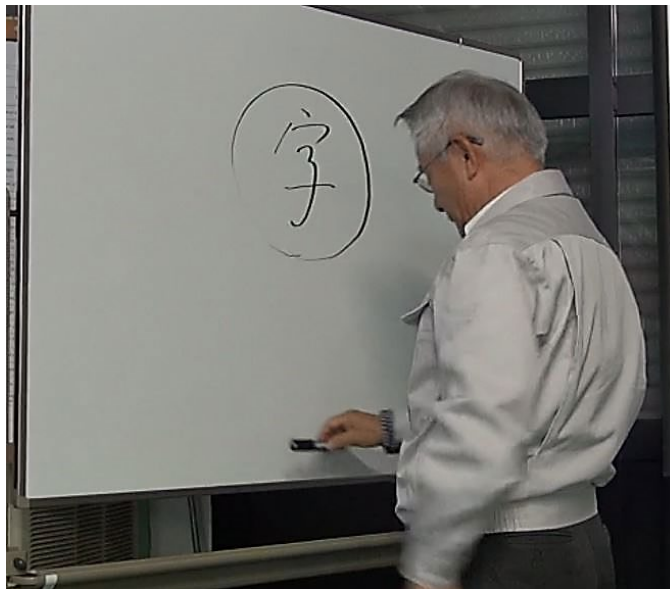
Show you a sequence of work



STEP 7: PUT THE CAP BACK ON



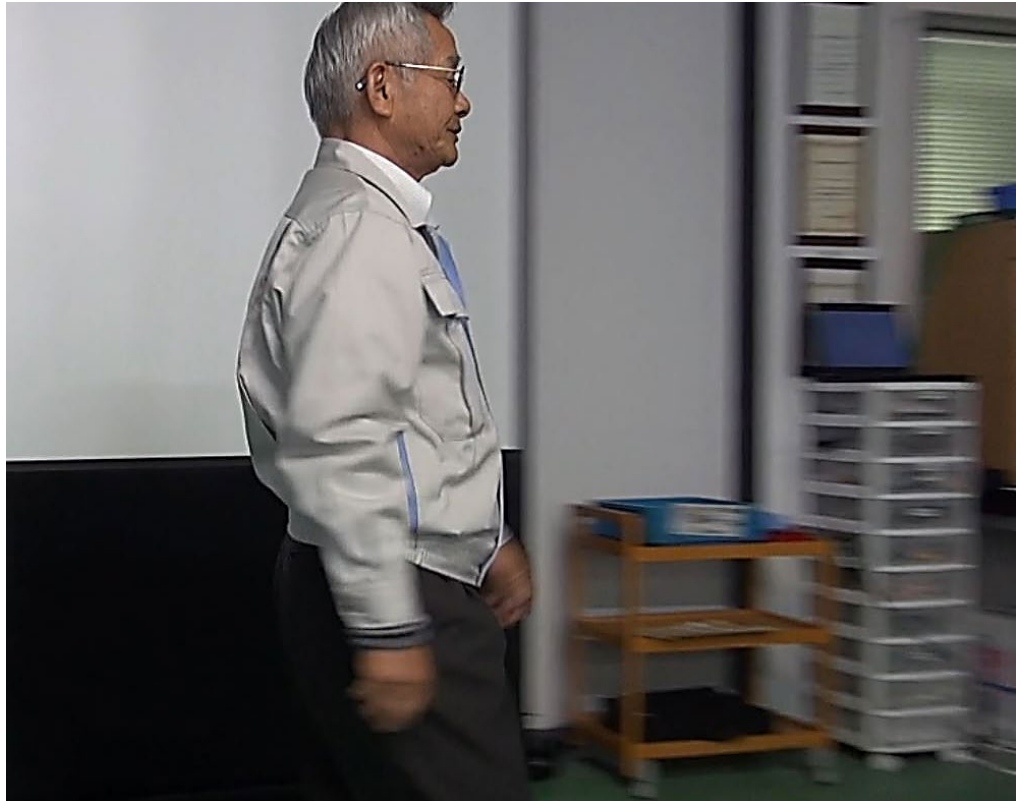
Show you a sequence of work



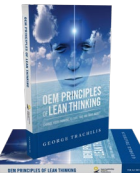
STEP 8: PLACE MARKER BACK ON LEDGE



Show you a
sequence of work



STEP 9: WALK TO CHAIR



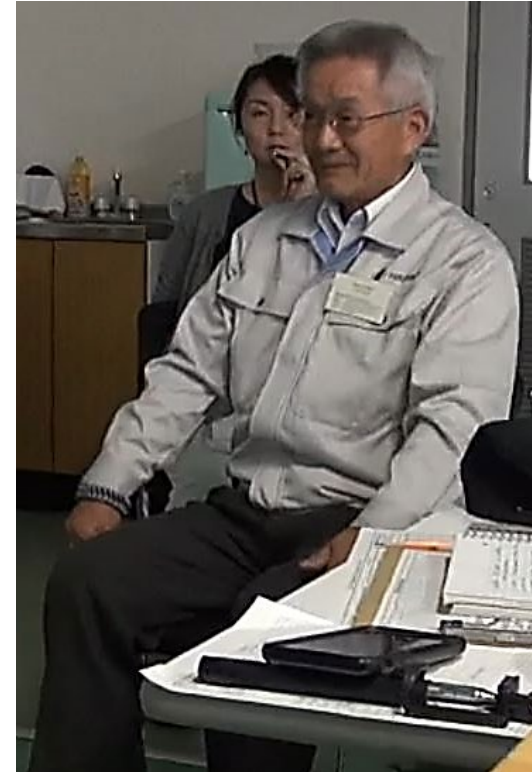
Show you a sequence of work

STEP 10: TURN

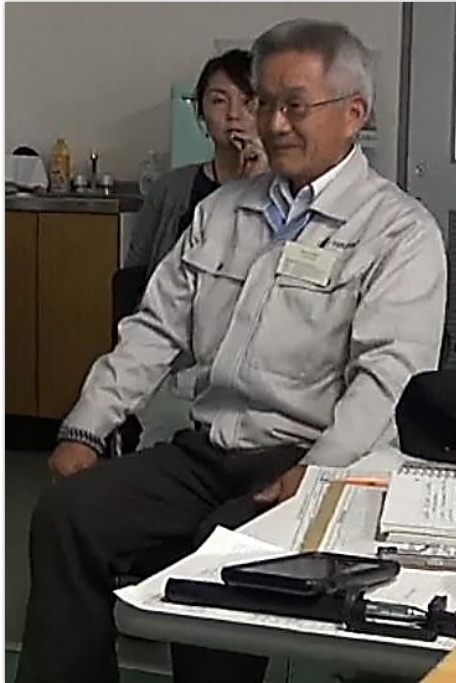


Show you a sequence of work

STEP 11: SIT IN CHAIR

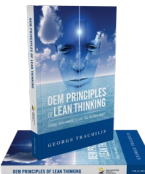


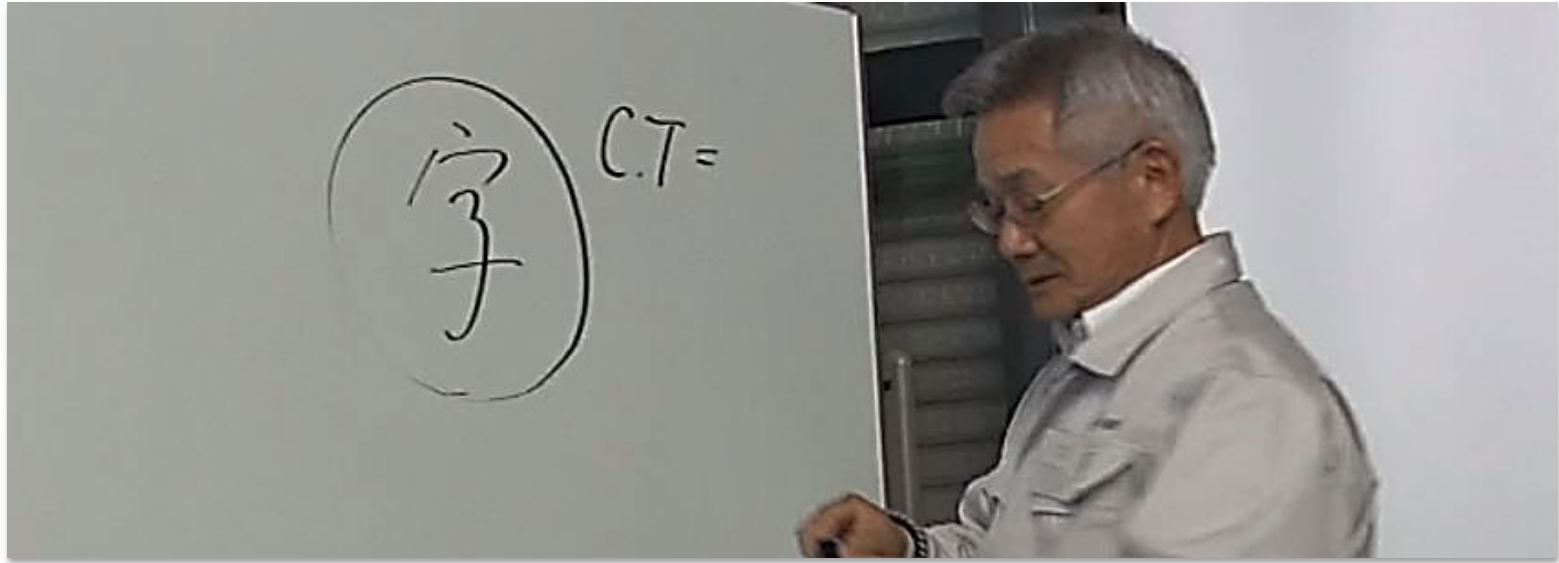
A cycle is a series of repeating steps.



Cycle Time (C/T) is the time it takes to repeat these steps.

FROM SITTING TO SITTING POSITION





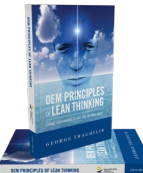
We time the **overall cycle time**.

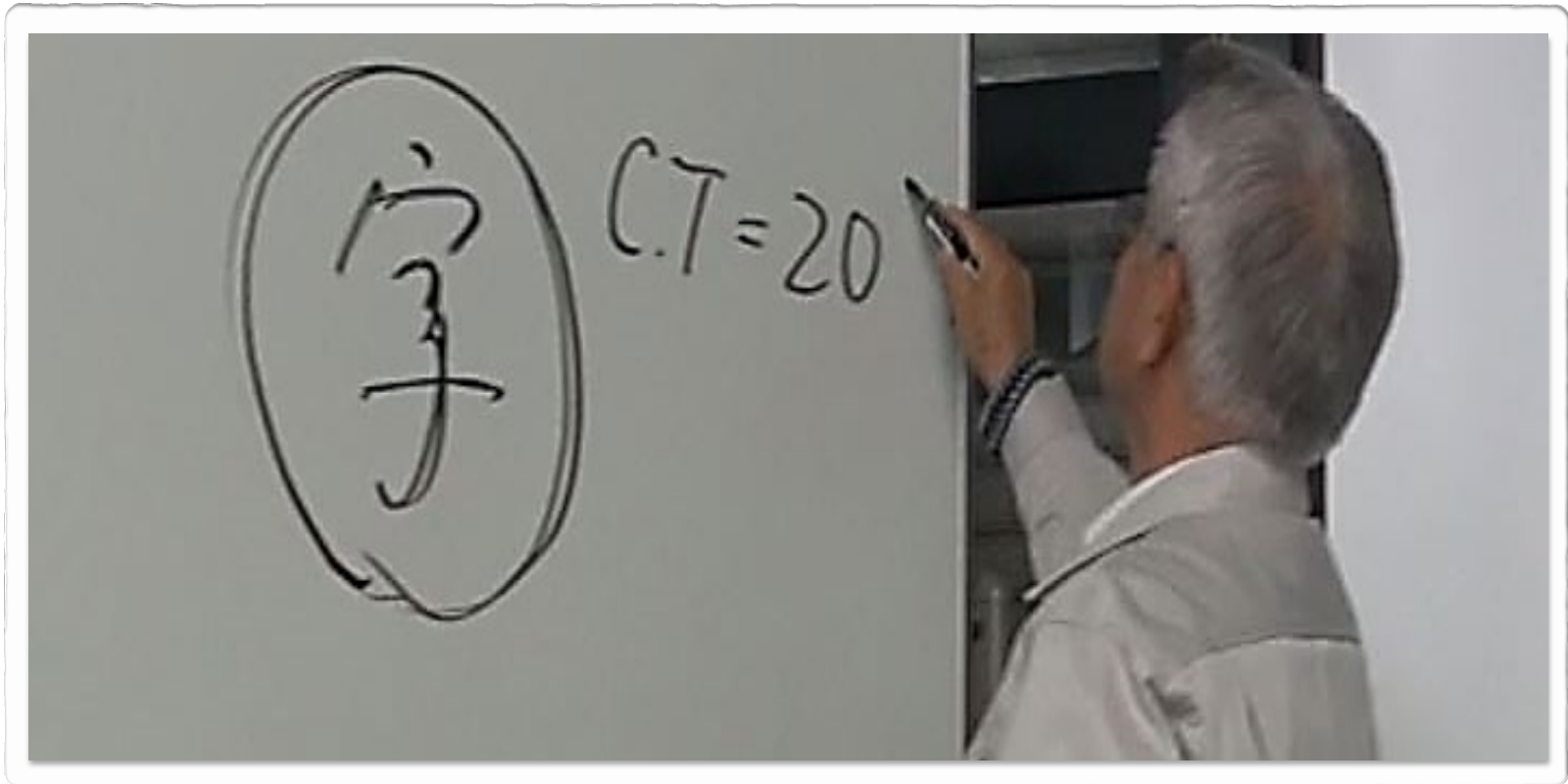


We will identify the genuine work



TIMER SAYS: YO! EE! HATZE! MAY!



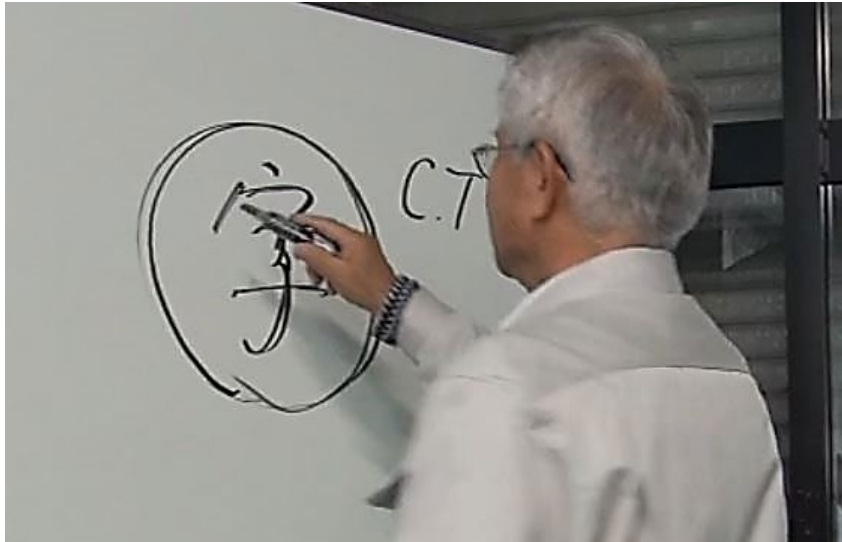


He timed it

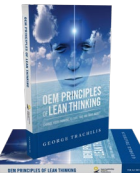
THERE WAS A TIMER SAYING, "YO! EE! HATZE! MAY!" TO START



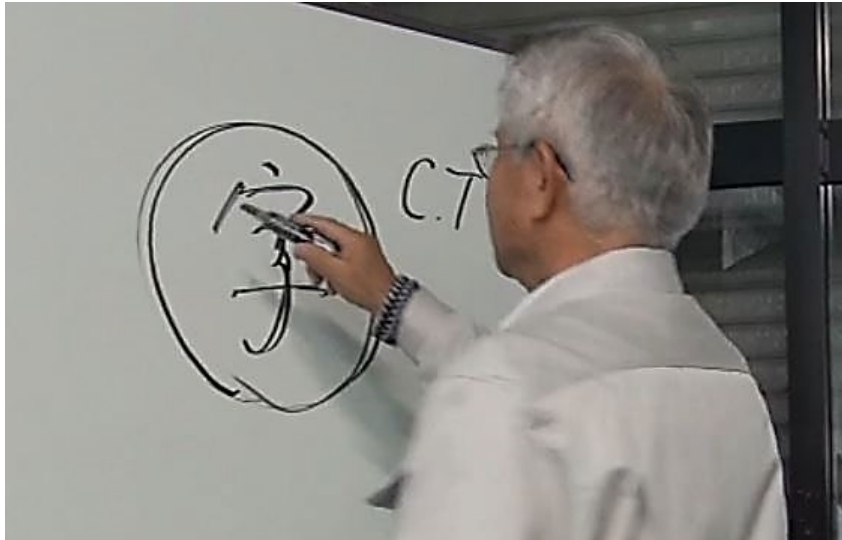
We will identify the genuine work



WRITE A LETTER (WITHIN A CIRCLE)



We will identify the genuine work



WORKER SAYS "HAI" WHEN DONE



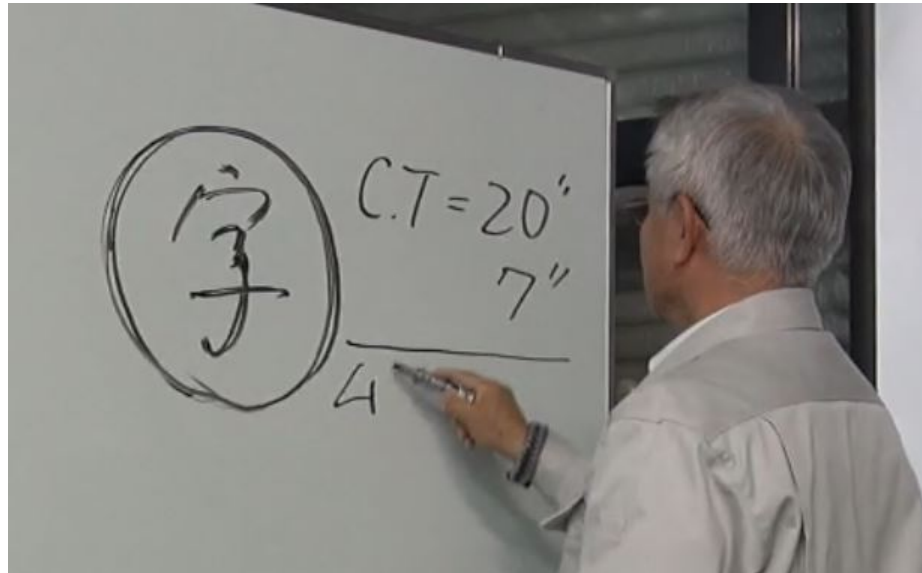
We will identify the genuine work



TIMER IS STOPPED.



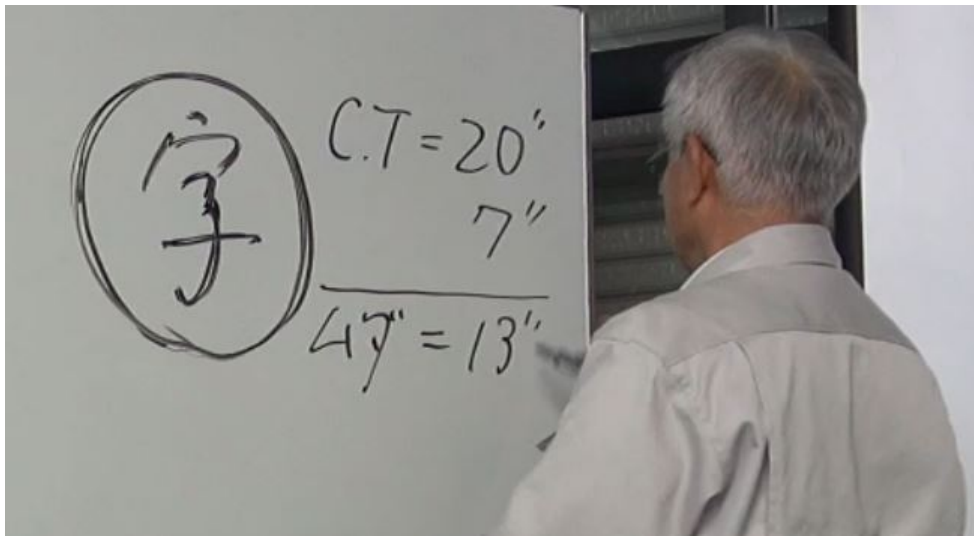
We will identify the genuine work



(VA) GENUINE WORK IS 7 SECONDS



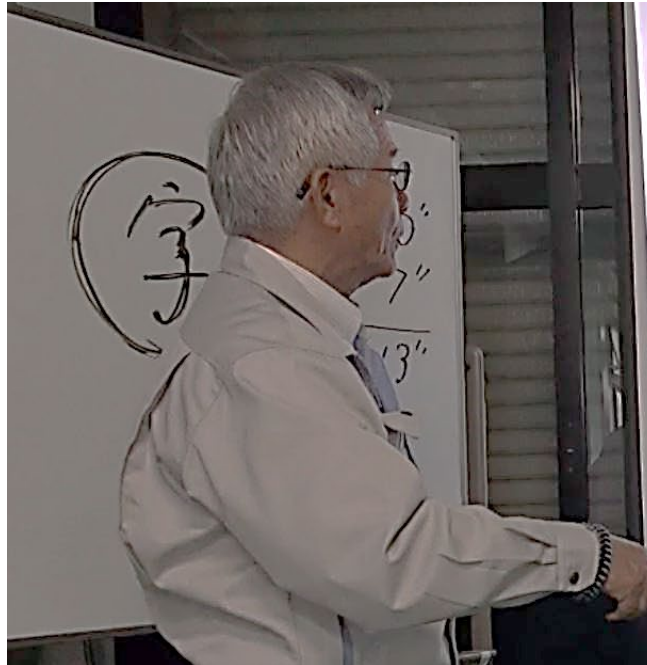
We will “Kaizen” and time it again



THE DIFFERENCE IS 13 SECONDS



Look at his pointer



The man is pointing at a presentation slide titled "3. Recognition of work 3.仕事とムダ". The slide explains that work motions can be divided into three portions: Muda, Accompanying work without added value, and Genuine work. It includes a circular diagram showing these three categories and their relationship to the overall work process.

3. Recognition of work 3.仕事とムダ

When accomplishing work in production activities, and observing work motions in detail, motions can be, more or less, divided into three portions.

生産活動の中で仕事を成し遂げる時作業の動作を細かく観察する
3つに分けられる

POINT!! Concept of motion 動作の考え方

- ① Muda ① ムダ
- ② Accompanying work without added value ② 付加価値のない付随作業
- ③ Genuine work ③ 正味作

Genuine work 正味作業
部品を組み付ける (加工する・切断する)

Unnecessary action of work
-Waiting, walking, Repair
作業をする上で何ら必要でない事。
(手待ち、空手歩行、不良品の手直し)

No added value of work, but inevitable work
-pick-up parts, packing components, pick-up tools, etc
付加価値は無いが何の作業でも上では避けることの出ないムダ
(部品を取りに行く・部品を包装する・工具を取る)

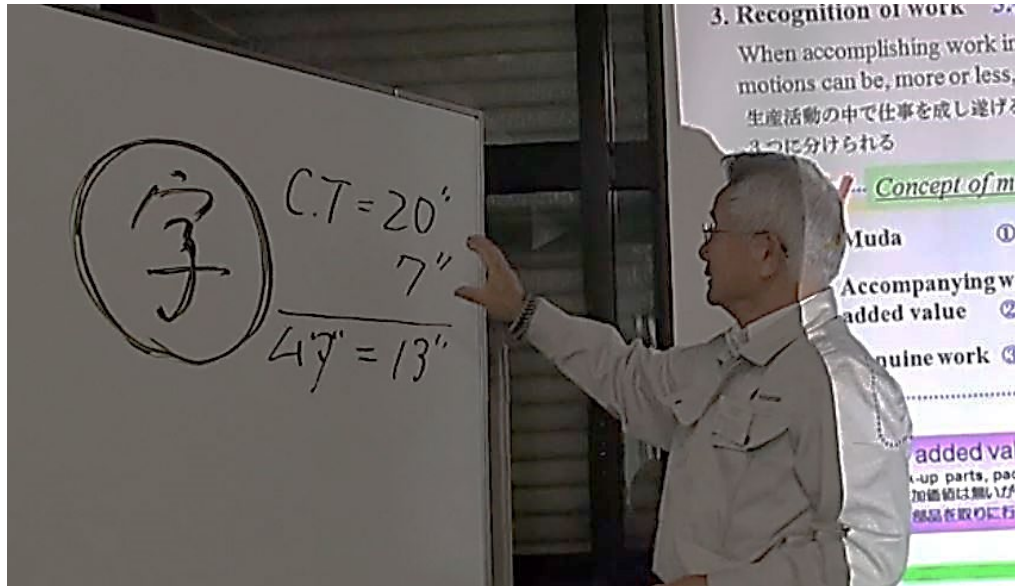
Motion 動作
Work

24

HE IDENTIFIES THE OPPORTUNITY



We will “Kaizen”

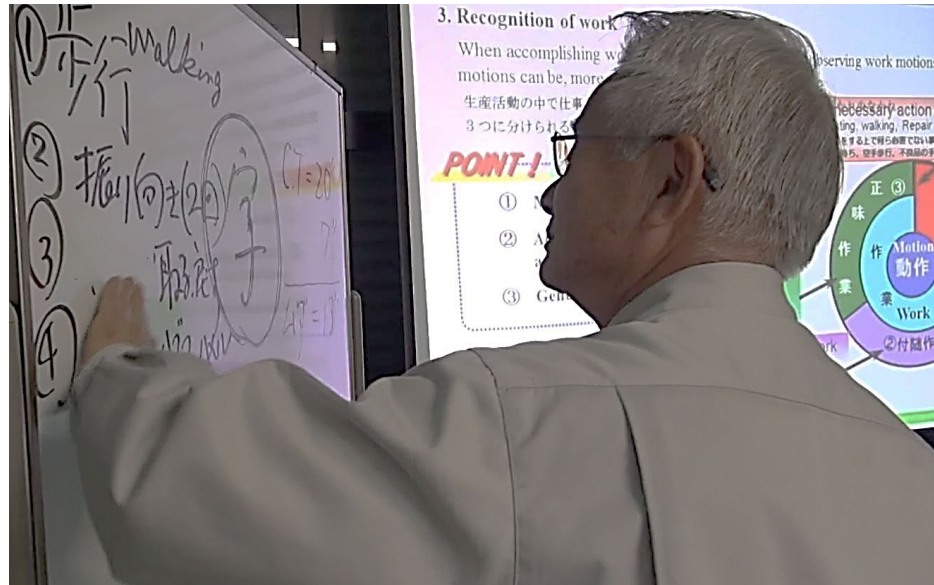


SECOND, SET THE CHALLENGE

"LET'S GET AS CLOSE TO THE 7 SECONDS AS POSSIBLE"



We will “Kaizen” and time it again

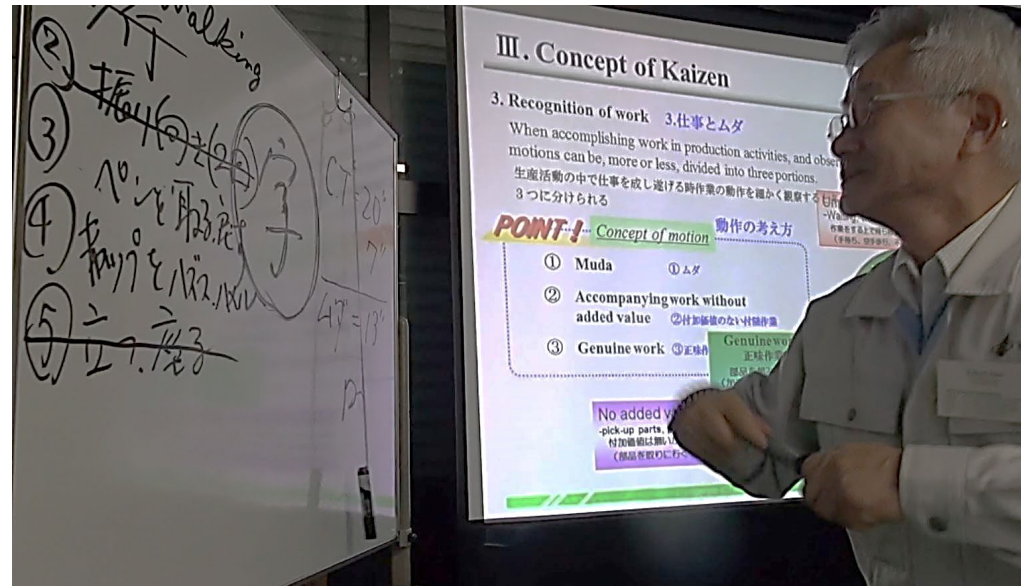


THIRD, LIST ALL OF THE MUDA
THIS IS *NOT* THE TIME TO LIST SOLUTIONS



We will “Kaizen” and time it again

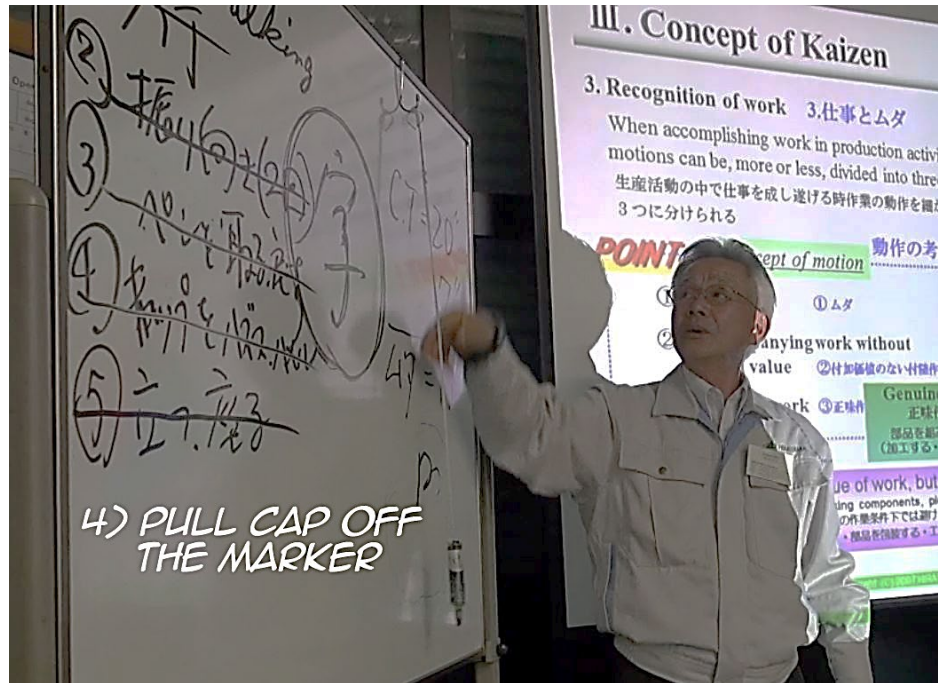
**NOW...
LIST
COUNTER-
MEASURES**



**APPROVED SUGGESTIONS ARE TO BE IMPLEMENTED
THEY ARE PART OF OUR KAIZEN EVENT (SAME DAY)**



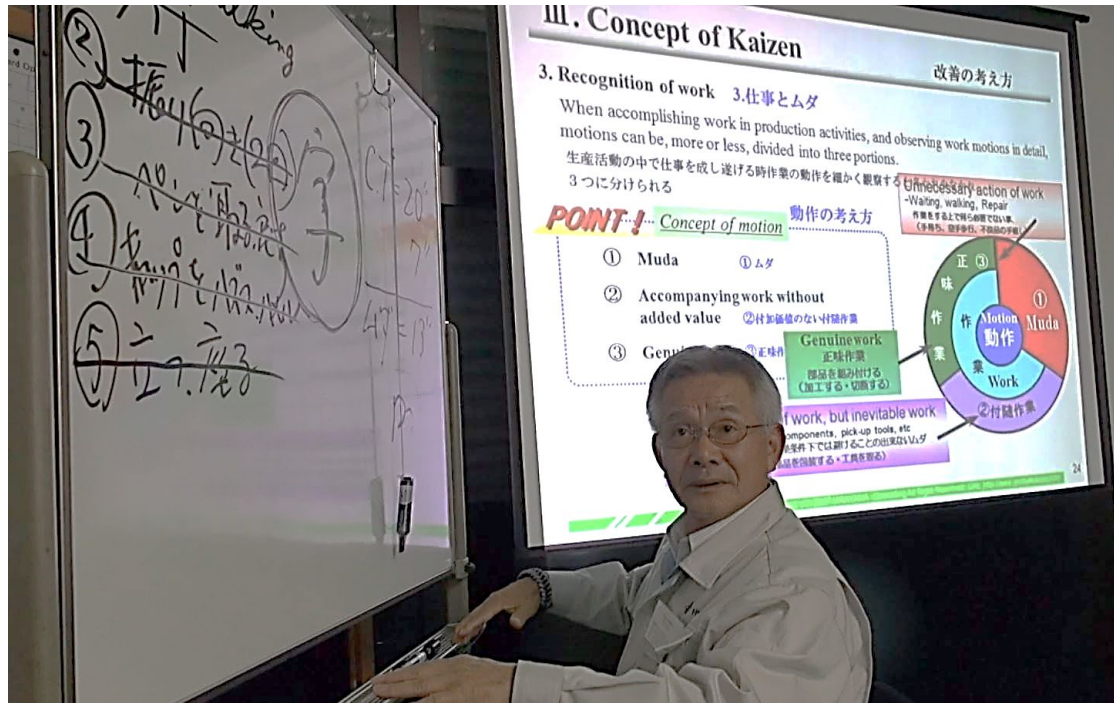
We will “Kaizen” and time it again



SUGGESTIONS MUST NOT COST MONEY
"FRUGALITY" THE USE OF A CRAYON INSTEAD



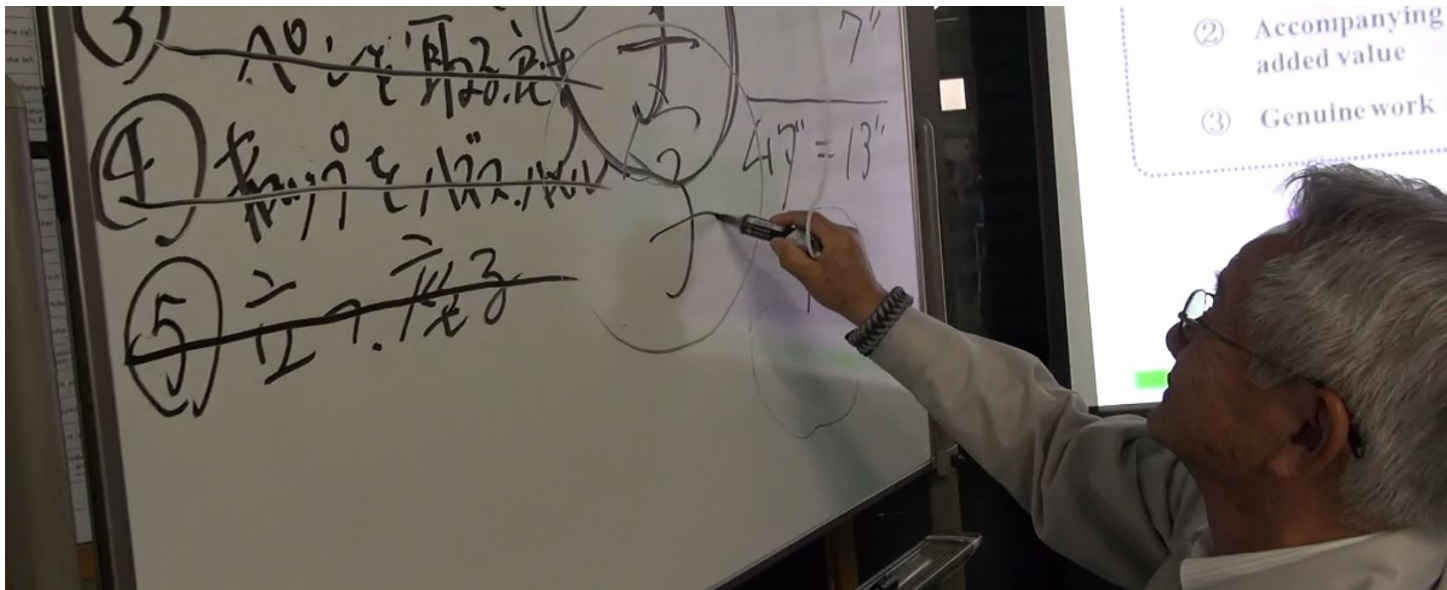
We will “Kaizen” and time it again



DON'T FORGET TO LOWER THE WHITEBOARD



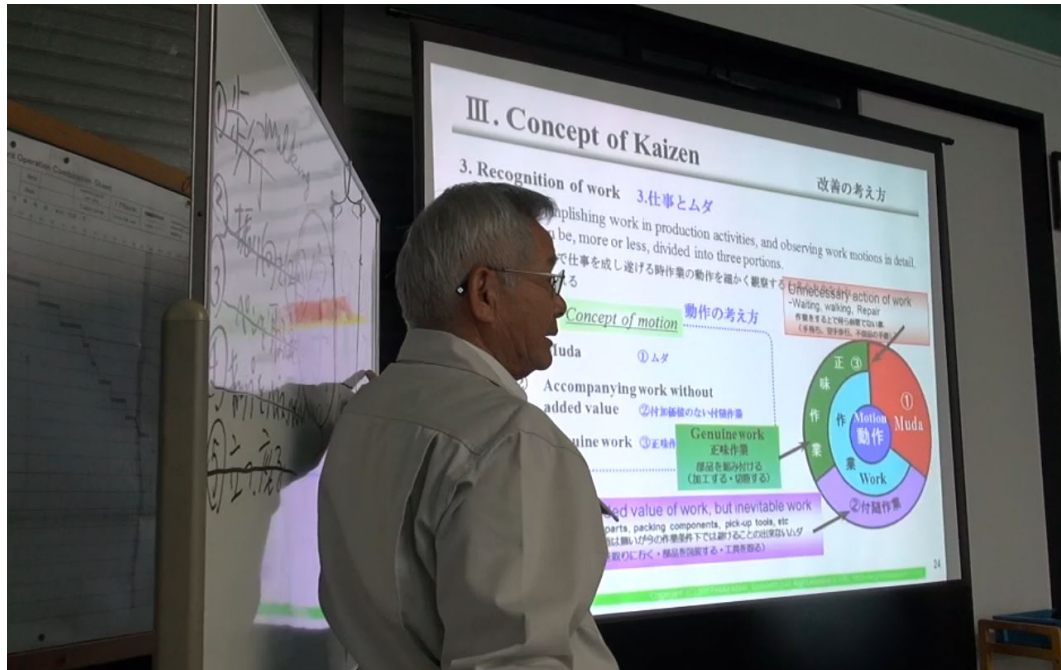
We will “Kaizen” and time it again



LET'S TIME IT AGAIN, AFTER KAIZEN



We will “Kaizen” and time it again

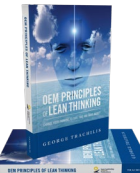


THE NEW TIME IS 8 SECONDS!



Everything we do with **Value Stream Mapping** is in this video

1. Observe
2. Identify the value
3. Consider everything else non-value added
4. Identify the waste
5. List some countermeasures to try
6. Try them
7. Measure again





The 5 Principles of Lean Thinking

- **Define value from the customer perspective**
 - **How do we define value?**
Must pass all three criteria;
 - 1) **Customer must care (willing to pay for)**
 - 2) **Must change the thing,**
 - 3) **Done right the first time.**

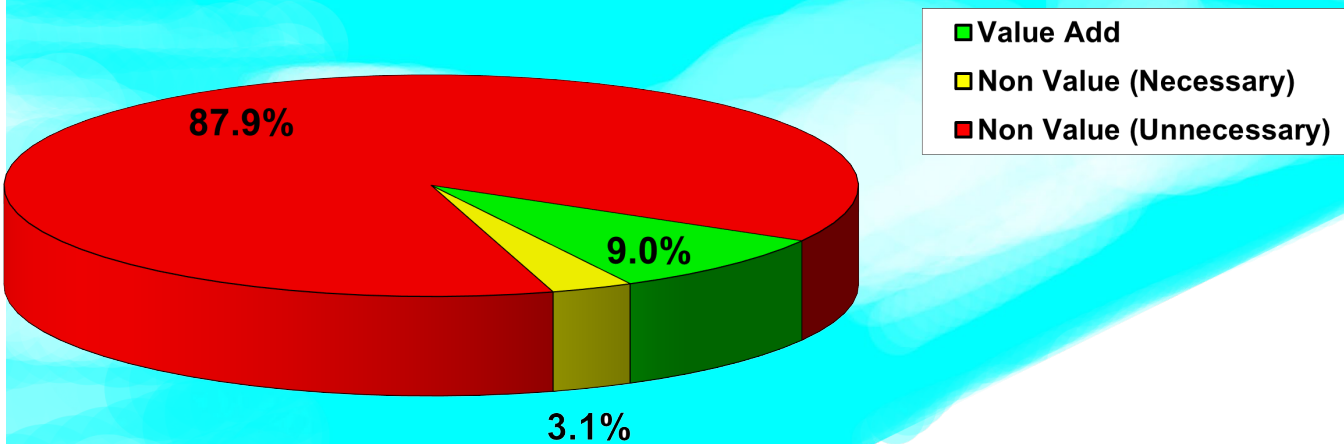


MURAMAN!

3
M's



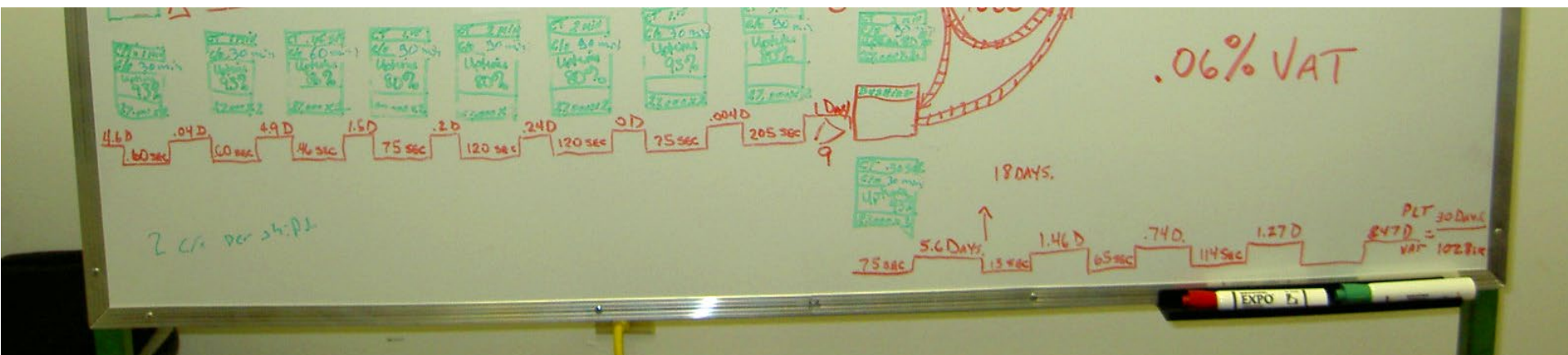
50% of the waste is invisible



Even Captain Lean needs glasses to see all of MUDAMAN

The 5 Principles of Lean Thinking

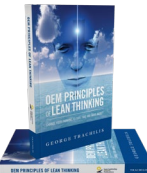
- Define value from the customer perspective
 - What percent of the activities in a manufacturing plant add value?



Seven Forms of Observable Waste

Add Costs but Not Value!

- Overproduction
- Waiting
- Transportation
- Inappropriate Processing
- Unnecessary Inventory
- Unnecessary Motion
- Defects



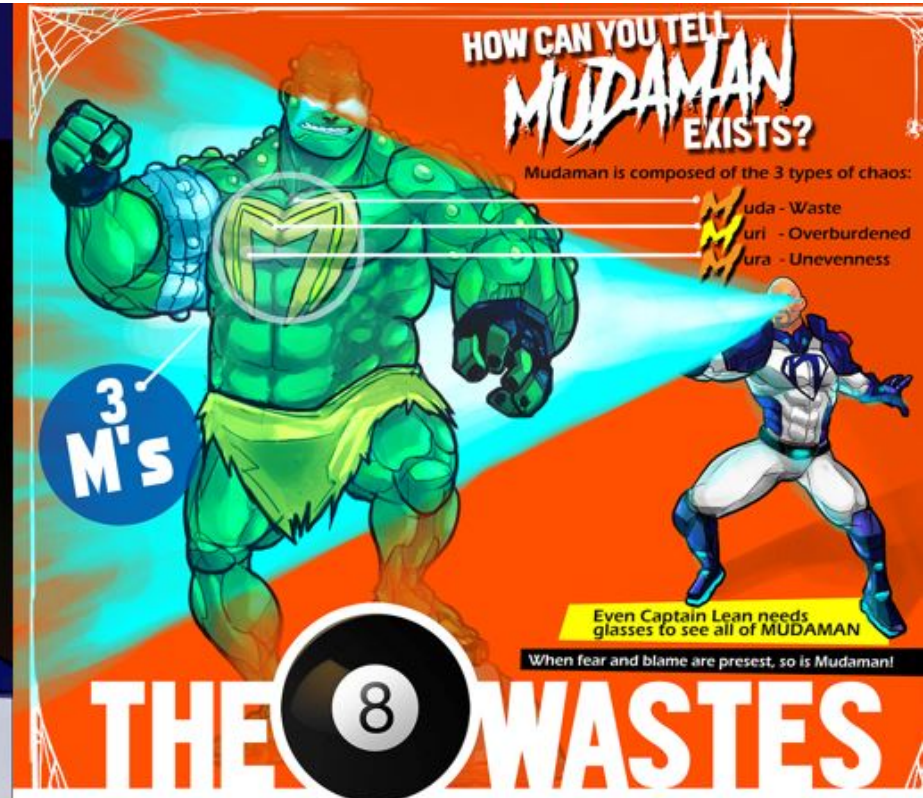
CAPTAIN LEAN



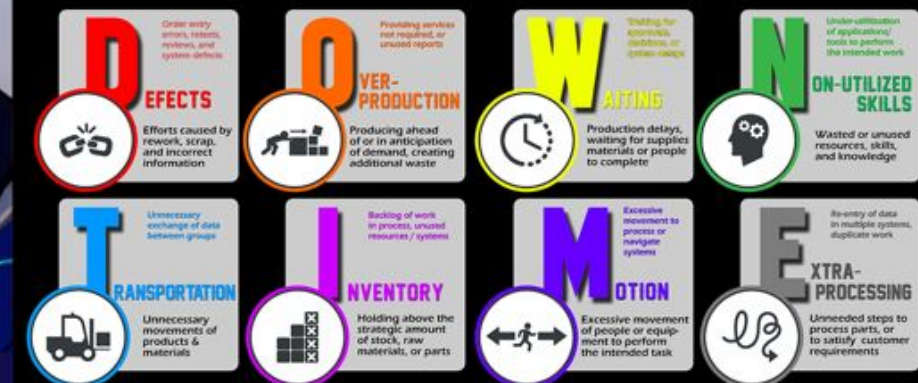
DIRECT EDITION



5 PRINCIPLES OF LEAN



TO REMEMBER THE 8 WASTES, YOU CAN USE THE ACRONYM "DOWNTIME."

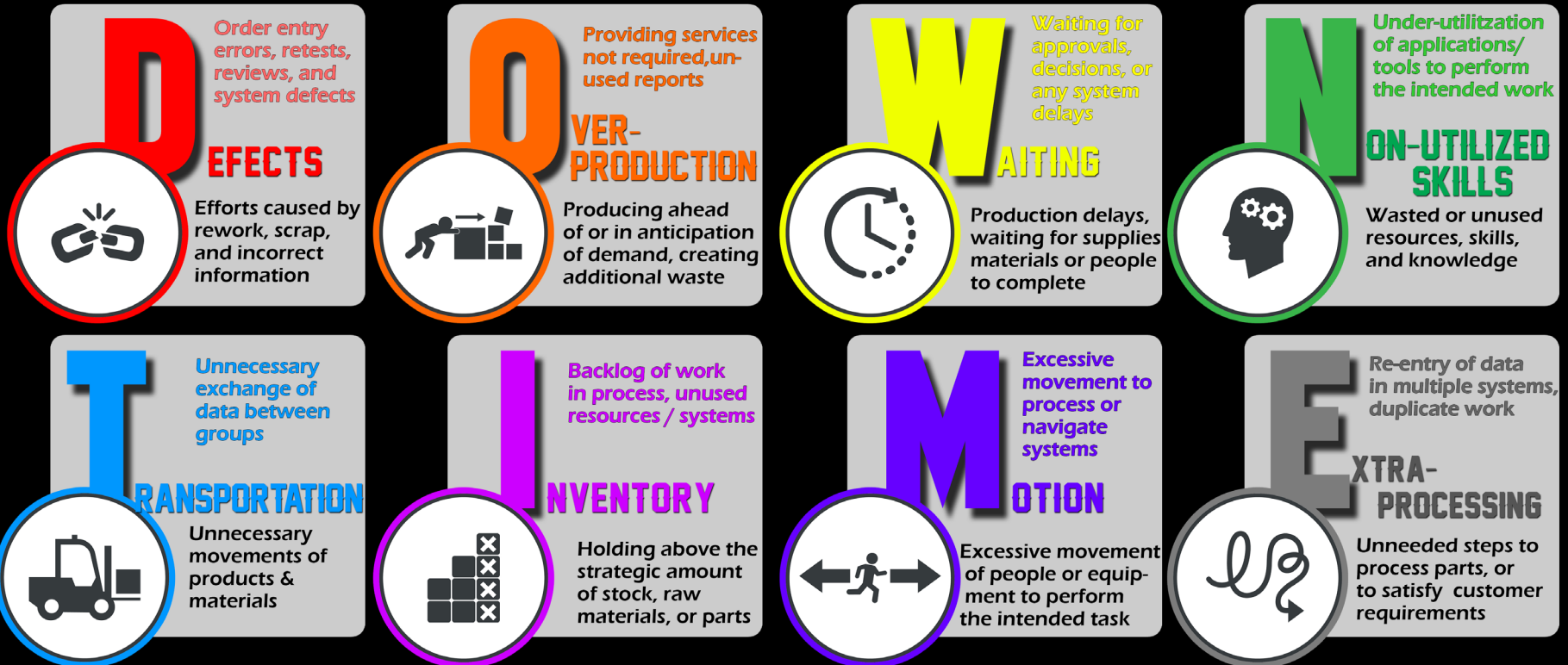


BOOK: DEVELOPING LEAN LEADERS AT ALL LEVELS, BY JEFF LIKER & GEORGE TRACHILIS

WWW.CAPTAINLEAN.COM

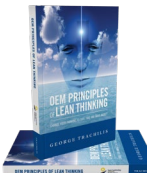
Which waste is the main root cause of the others?

TO REMEMBER THE 8 WASTES, YOU CAN USE THE ACRONYM "DOWNTIME."

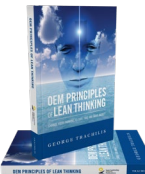
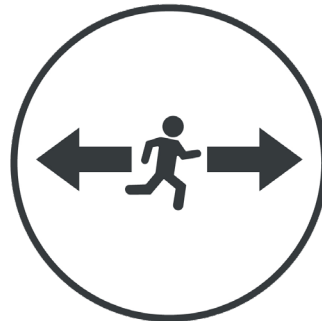
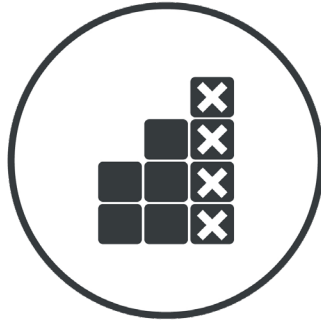


BOOK: DEVELOPING LEAN LEADERS AT ALL LEVELS, BY JEFF LIKER & GEORGE TRACHILIS

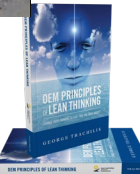
WWW.CAPTAINLEAN.COM



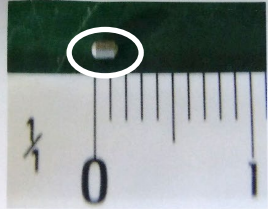
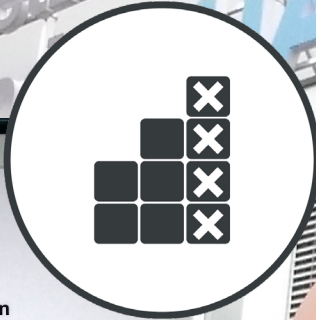
Write down your example (we will share soon)



LLI founded in 2013



RUAG Aviation repairs for the Swiss Airforce



Pin

Sicherheitsstift zur
Positionierung von Dicht
Rostfreier Stahl
ø 1.2mm Länge 1.7mm

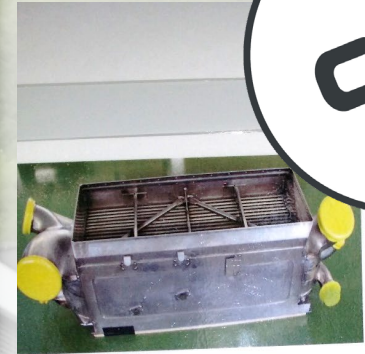
650.- sFr

Dafür bekäme ich.....



Canon PowerShot

Digitalkamera
- 6.0 Megapixel
- optisches Zoom 12x
- LCD-Monitor 2,0 Zoll
- Videoaufzeichnung A

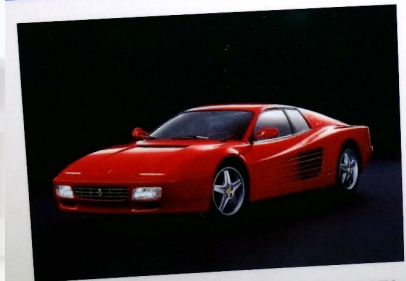


Heat Exchanger F/A-18

85'000.- sFr

Wärmetauscher aus
rostfreiem Gehäuse.

Dafür bekäme ich.....



FERRARI

TESTAROSSA
27'000km
440 PS

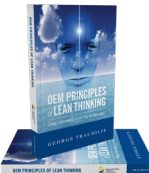




INTRODUCING MUDAMAN – OUR VILLAIN – CAUSES US TO
WASTE OUR LIVES. **THE WORST WASTE OF ALL**



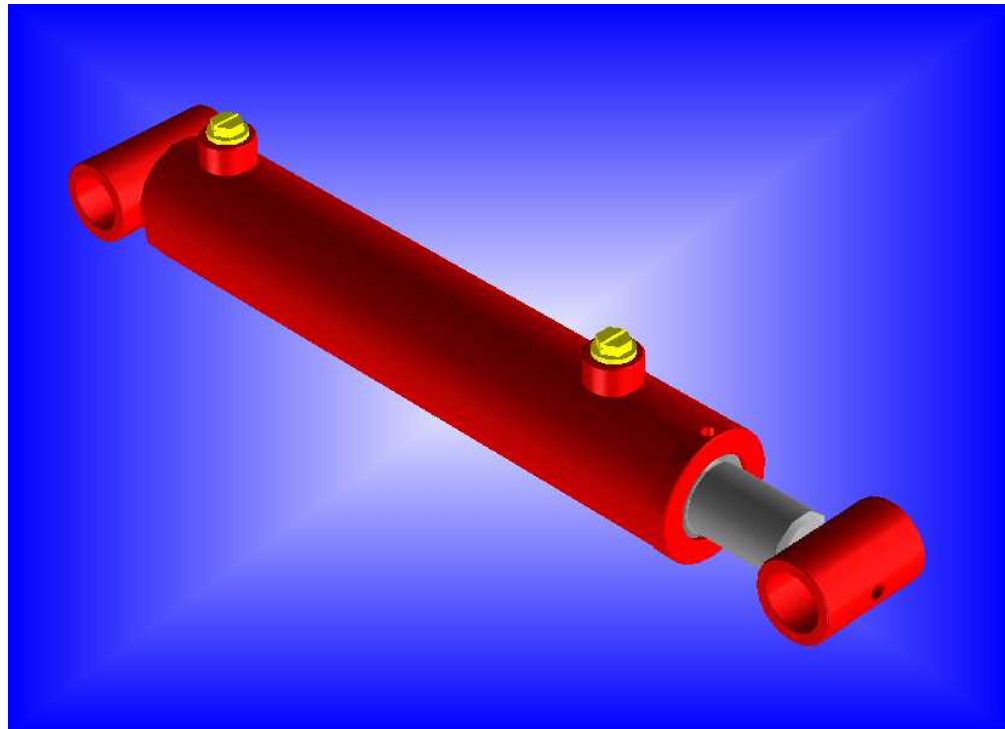
ONLY MICRON CAN BRING HIM TO HIS KNEES





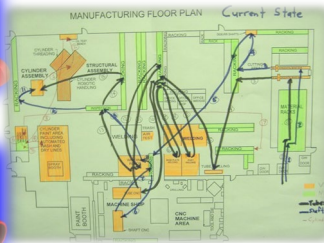
WE WILL USE A CYLINDER AS A BASIC EXAMPLE

- VALUE STREAM ACTIVITIES
- RANGE FROM:
 - CONCEPT TO LAUNCH
 - ORDER TO DELIVERY
 - RAW MATERIAL TO CUSTOMER



Define
Value from
the Customer's
Perspective

01



THE UNIQUE WORLD OF PRINCESS AUTO

ON SALE JANUARY 4th TO 23rd, 2005

Sale starts Tuesday, January 4th at 8:00 AM

SAVE 42%
39 PC TUNGSTEN ALLOY TAP and DIE SETS
• High strength tungsten alloy construction
• Rockwell hardness of HRC 60
• Adjustable tap wrench, T-handle tap wrench, die handle, screwdriver, screw pitch gauge, and case
Wt. 3.4 lbs.
8039981 - SAE
8039972 - Metric
REG. 34.99

SAVE 30%
12" BENCH MOUNT ROLLER
2" x 11-3/4" roller
8003466 - Wt. 2.7 lbs.
REG. 12.99

SAVE 40%
3/4" DR TORQUE WRENCH
50 to 300 ft.-lbs capacity
2926939 - Wt. 8.7 lbs.
REG. 99.99

SPECIAL PURCHASE
PREMIUM LINED WELDERS GLOVES
Finger split elk hide with Kevlar stitching
Wt. 0.7 lbs.
8035727 ~~SPECIAL 6.99~~

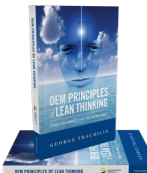
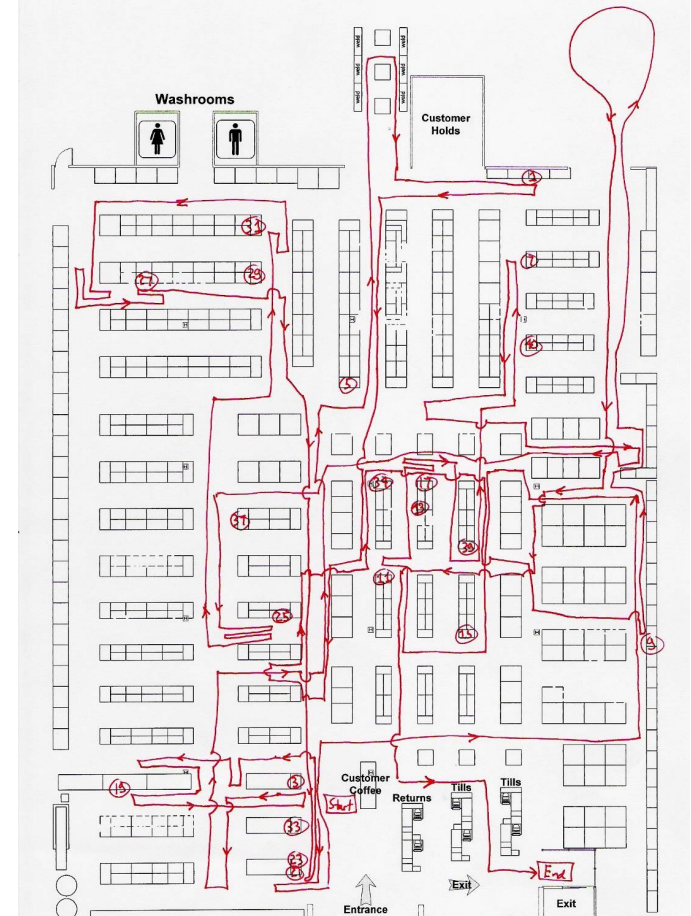
SAVE 25%
50 FT. EXTENSION CORD
• 12/3 gauge
• Clear triple outlet plug with power indicator
• Flexible to -40°C
• 15A, 125V
8035685 - Wt. 7.2 lbs.
REG. 39.99

INTRODUCTORY PRICE
29.99
Price after Nov. 23rd \$39.99

Winnipeg National Call Centre
1-800-665-8685
Fax: 1-800-265-4212
www.princessauto.com
Store Locations Page 26

SAVE 60%
UNIVERSAL METAL BENDER
• Bends angles up to 120°
• Cold steel cap: 4" x 3/16", square - 5/8" x 5/8", round - 11/16" dia., angle - 2-3/8" x 5/16"
• Hot steel cap: 4" x 9/16", square - 1" x 1", round - 1" dia., angle - 2-3/8" x 7/16"
2910280 - Wt. 70.4 lbs.
REG. 229.99

SALE 169.99





ON SALE JANUARY 4th TO 23rd, 2005

DEFECTS

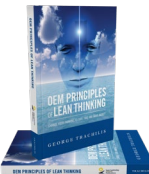
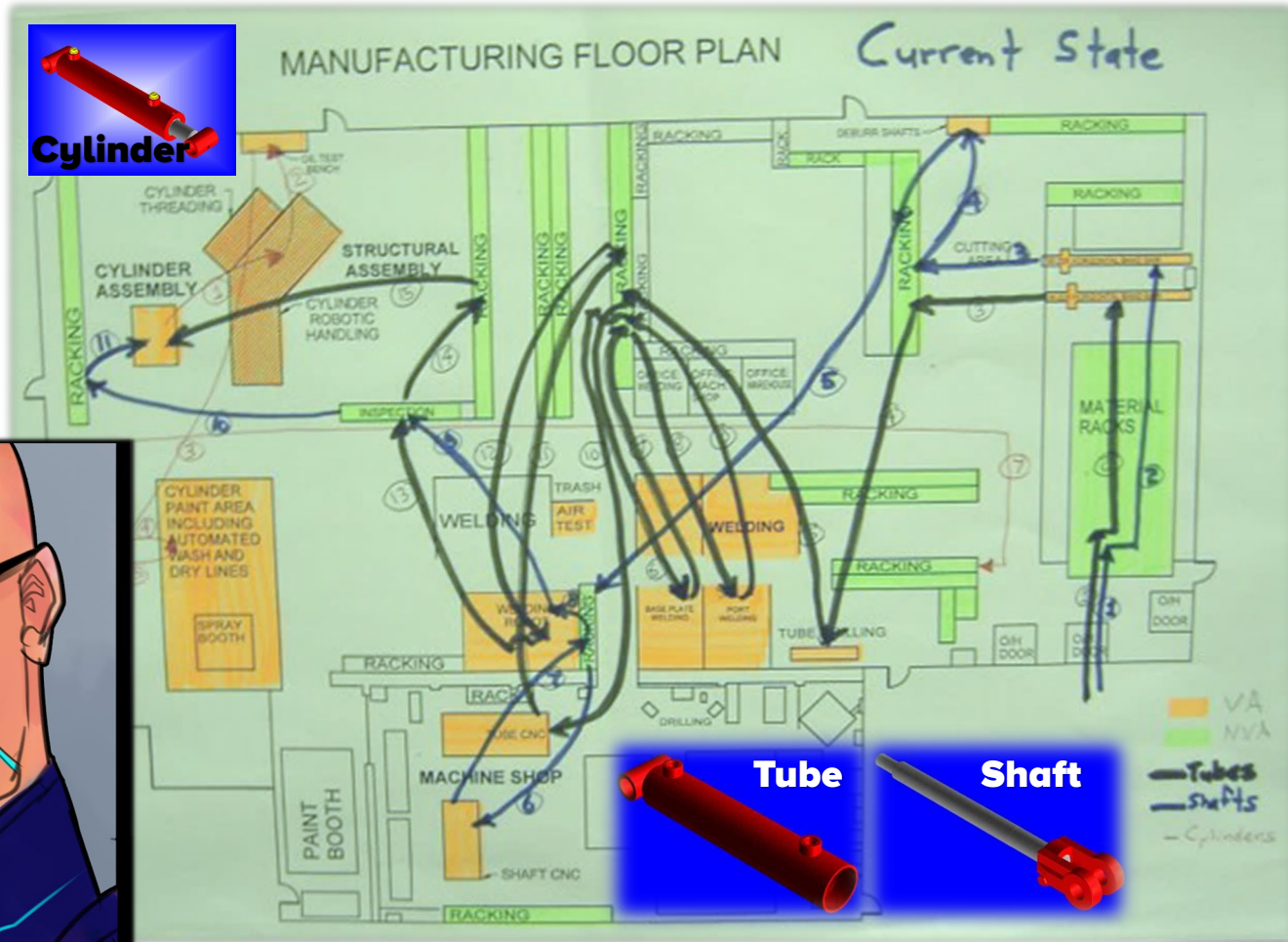
SAVE 30%
SALE 8⁹⁹
SAVE 40%
LE 59⁹⁹

* Adjustable tip wrench, T-handle tip wrench, die handle, screwdriver, screw, ratchet, wrench.

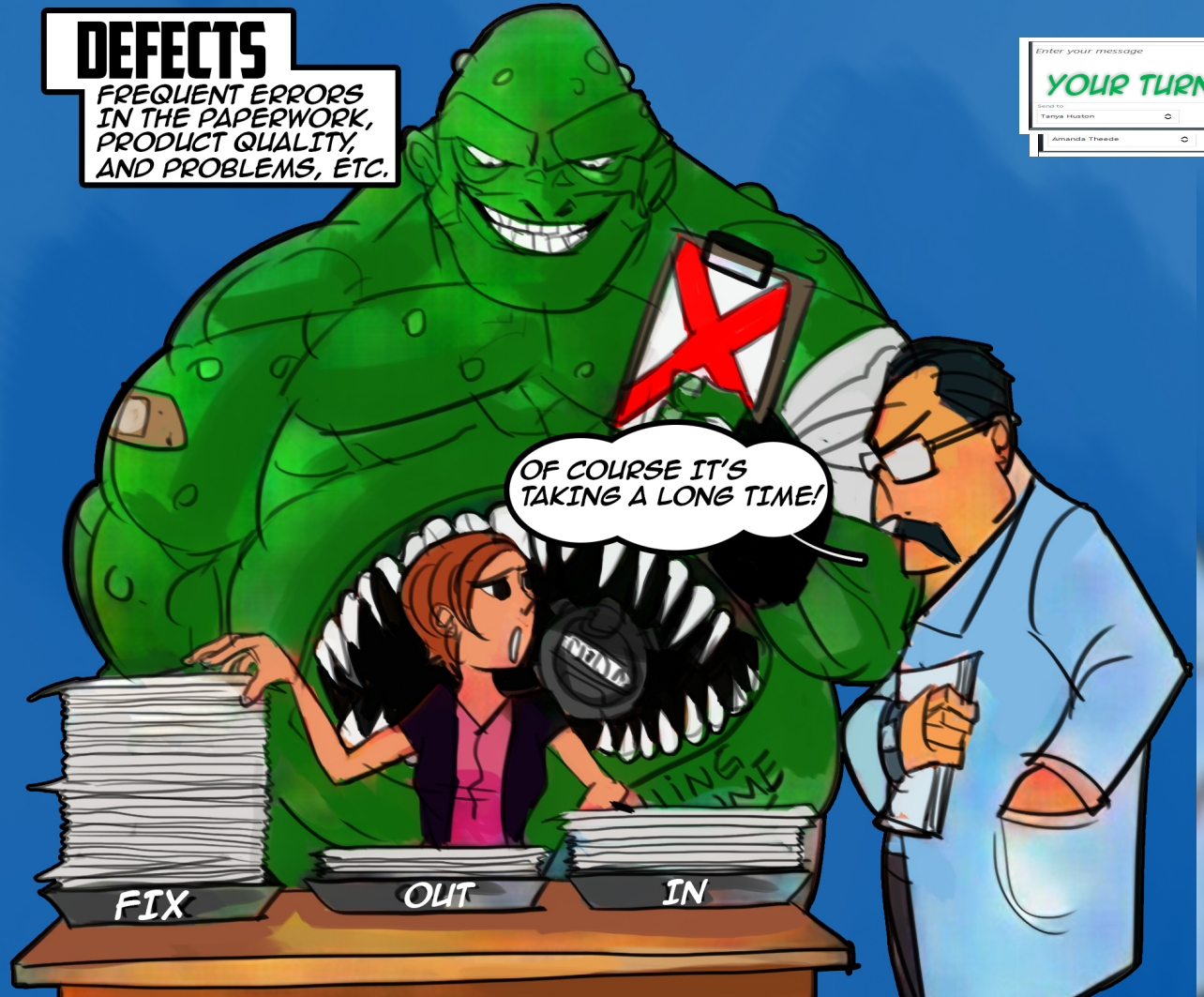
PURCHASE



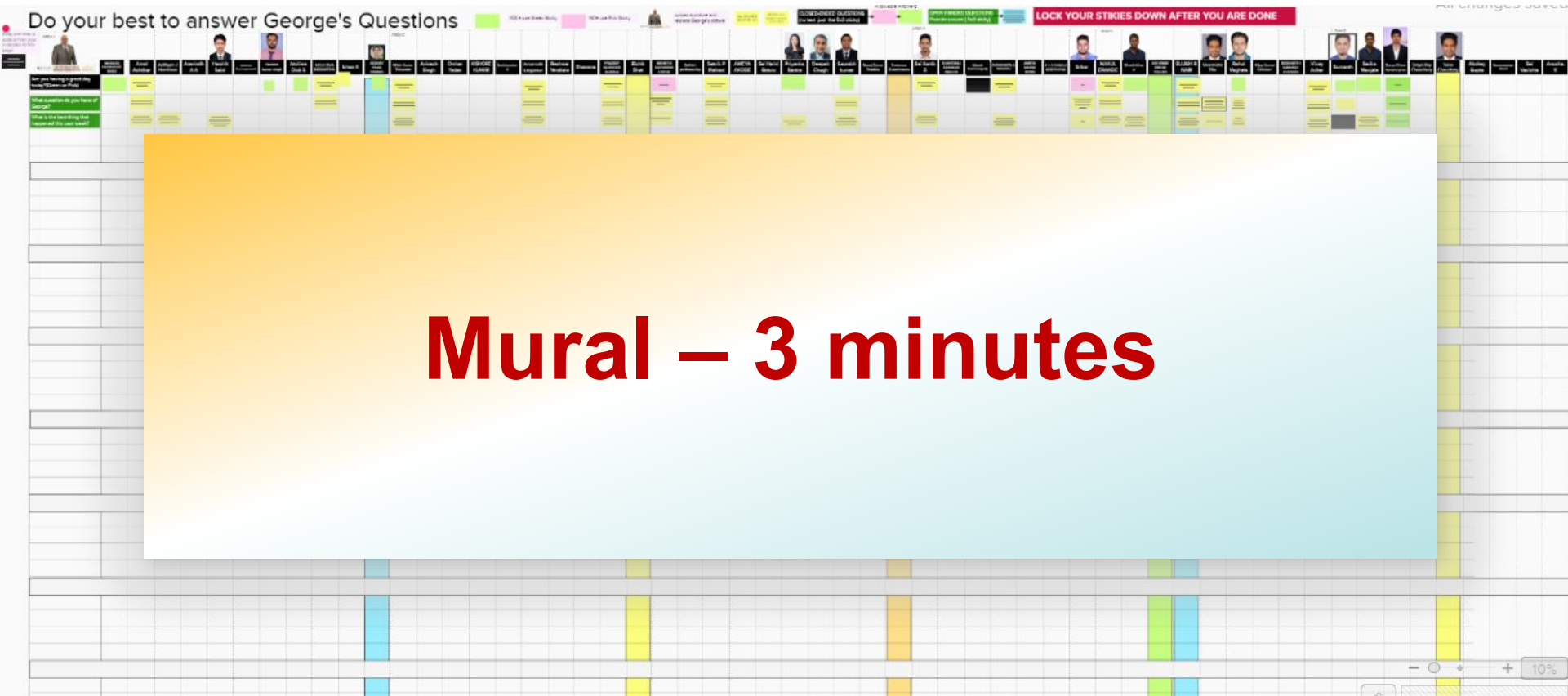
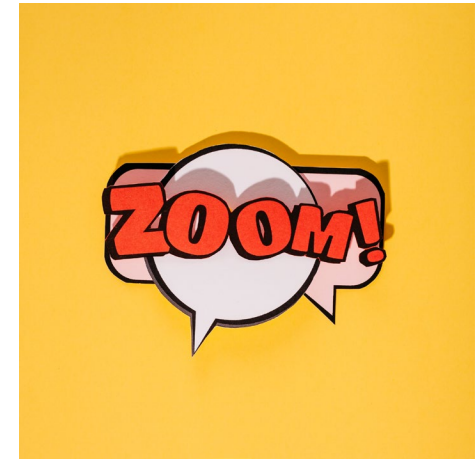
Cylinder



DEFECTS

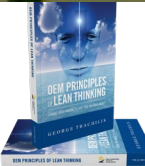
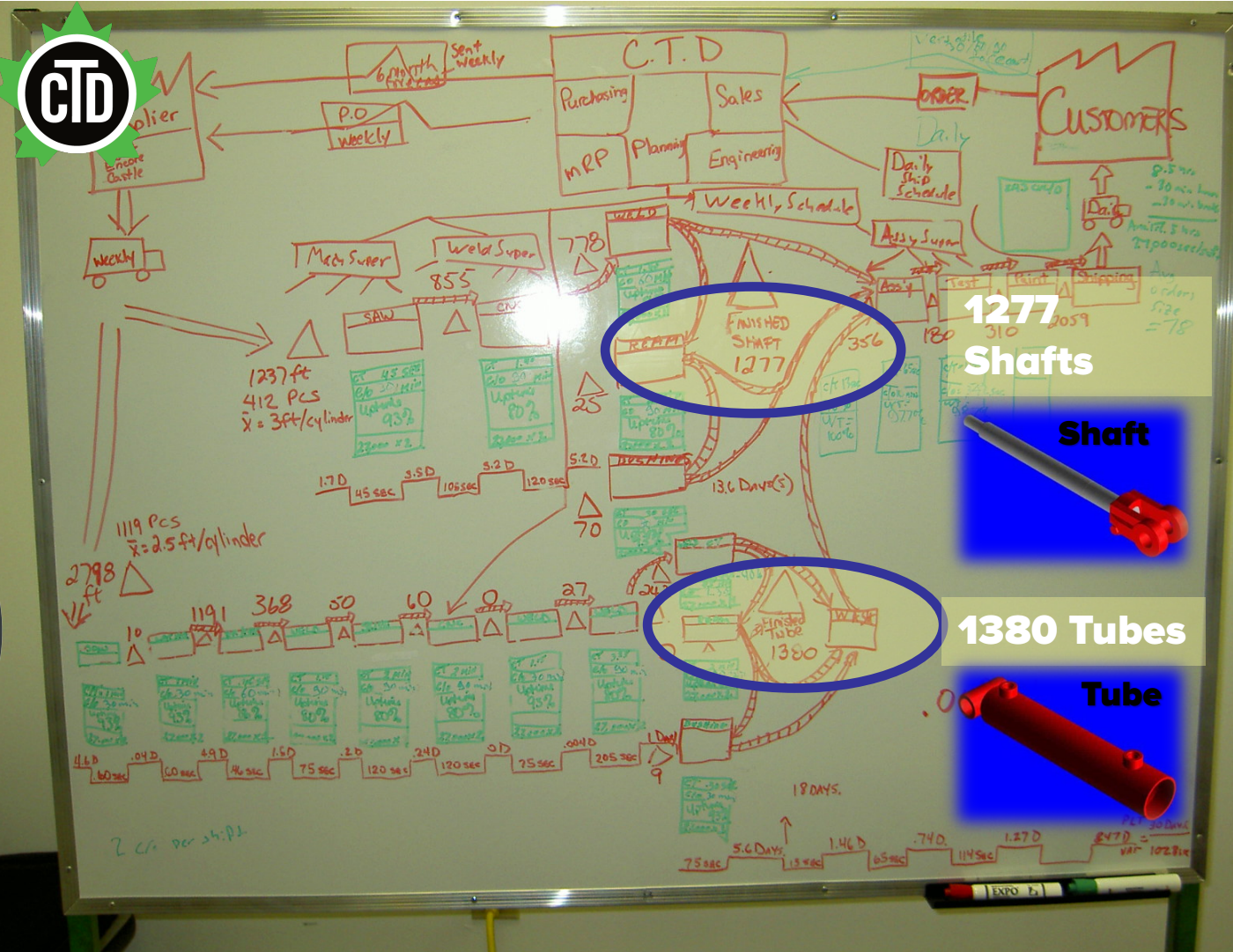
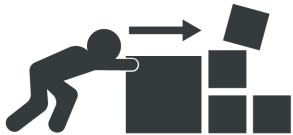


We will be navigating Between Zoom and Mural

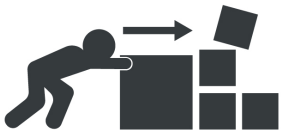


OVER- PRODUCTION

CTD



OVER- PRODUCTION



OVERPRODUCTION

PRODUCING MORE OR SOONER
THAN THE INTERNAL OR
EXTERNAL CUSTOMER NEEDS

WASTE GENERATED FROM DEFECTS WAS EASY TO SEE, BUT THE WASTE FROM OVERPRODUCTION WAS NOT EASILY SEEN. IT WAS HIDDEN IN OTHER WASTES. SO BY OVERPRODUCING WE SAVED MUDAMAN LIFE AND ENSURED HIS EXISTENCE.

WHAT?! THE
DESIGN HAS
BEEN CHANGED!

Enter your message

YOUR TURN

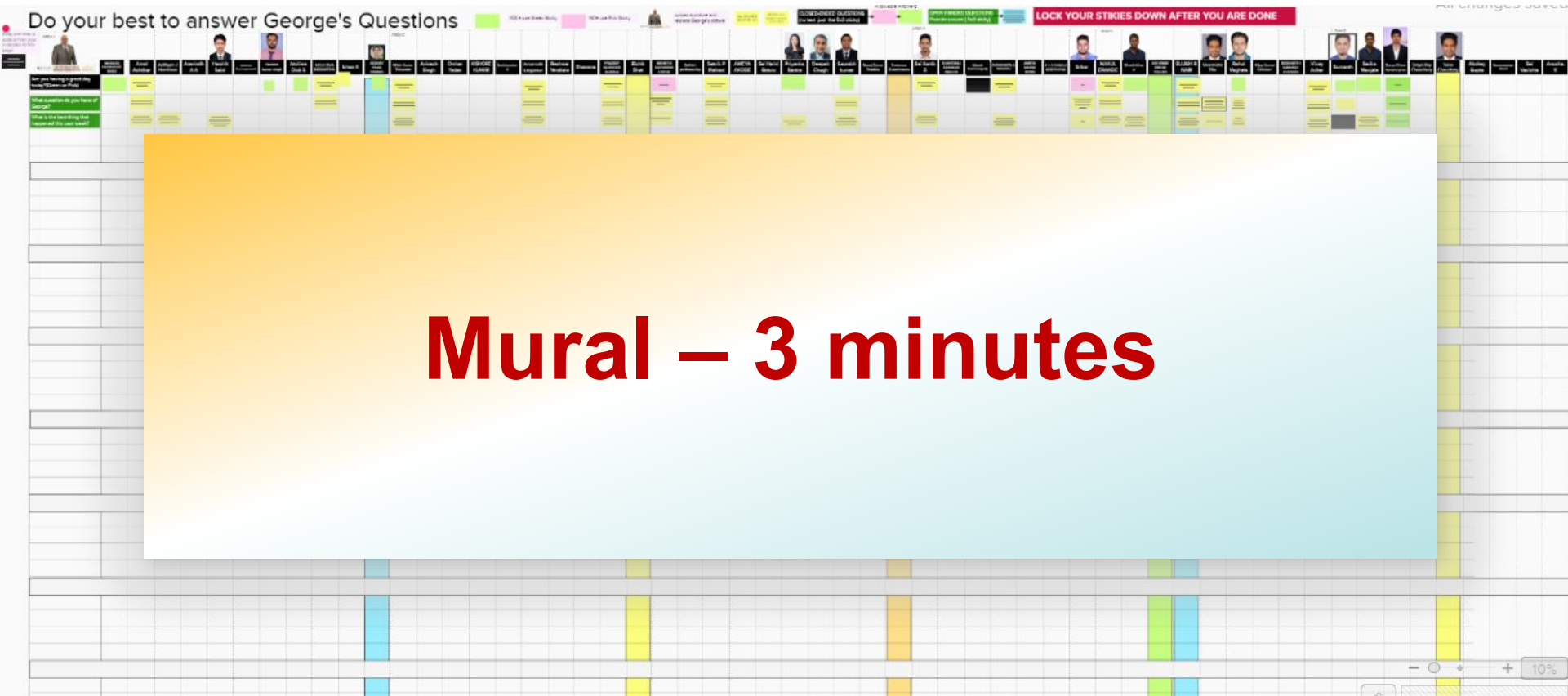
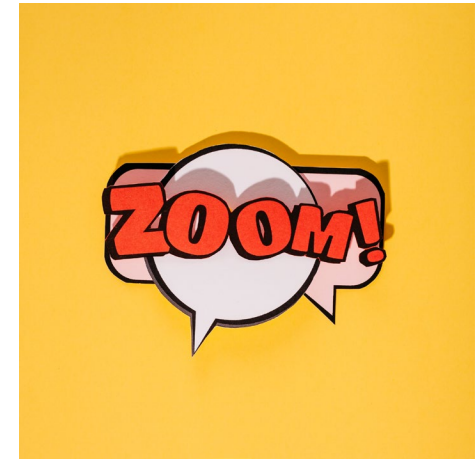
SEND TO

Tanya Huston

AMANDA THEIDE



We will be navigating Between Zoom and Mural





21-Item test



THE **PRINCESS AUTO**

ON SALE JANUARY 4th to 23rd, 2005

Sale starts Tuesday, January 4th at 8:00 AM

39 PC TUNGSTEN ALLOY TAPE AND DIE SETS

- High strength tungsten alloy construction
- Rockwell hardness of HRC 60
- Adjustable tap wrench, Thandle tap wrench, die handle, screwdriver, screw pitch gauge, and case

Wt. 3.4 lbs.
83039971 - SAE
83039972 - Metric
REG. 34.99

SAVE 42%

50 FT. EXTENSION COB

- 12/3 gauge
- Clear triple outlet plug with power indicator
- Resistant to -40°C
- 15A, 125V
- 83035685 - Wt. 7.2 lbs.

REG. 39.99

SAVE 25%

UNIVERSAL METAL BENDER

- Bends angles up to 120°
- Cold steel cap. 4" x 3/16", square - 5/8" x 5/8", round - 1 1/16" dia. angle - 2-3/8" x 5/16"
- Hot steel cap. 4" x 9/16", square - 1 1/4" x 1/4", round - 1 1/2" dia. angle - 2-3/8" x 7/16"

2910240 - Wt. 70.0 lbs.
REG. 229.99

SAVE 60%

12" BENCH MOUNT ROLLER

2" x 1-1/4" roller
R003466 - Wt. 2.7 lbs.
REG. 12.99

SAVE 30%

3/4" DR TORQUE WRENCH

50 to 300 Ft.-lbs capacity
2926939 - Wt. 8.7 lbs.
REG. 99.99

SAVE 40%

SPECIAL PURCHASE

PREMIUM LINED WELDERS GLOVES

Welder split elk hide with Kevlar stitching
Wt. 4.7 lbs.
8305372

SPECIAL 69%

Winnipeg National Call Centre
1-800-665-8685
Fax: 1-800-265-4212
www.princessauto.com
Store Locations Page 26

29%

Price after Nov. 23rd \$39.99

29%

29%

SAVE 41%

800 LB CAPACITY HAND WINCH

- Single speed
- 40 ft. x 3/16" reel cap
- Zinc plated
- Free threading position

800A99 - Wt. 4.2 lbs.
REG. 28.99

SALE 16.99

2,000 LB RUB

- Includes bearings and seal
- 4-bolt, 4" circle

2080041 - Wt. 5.2 lbs.
REG. 42.99

SAVE 41%

WHEEL BEARING SET

- Includes 2 bearings with races, grease seal, and outer pin
- Spindle O.D.: 1"
- Outer hub I.D.: 1.960"
- For 2,000 lb. hubs

2080094 - Wt. 0.6 lbs.
REG. 16.99

SALE 9.99

SALE 40%

3,200 LB CAPACITY 2-SPEED HAND WINCH

- Change speed (gear ratio) without removing handle
- Hand hook
- 5:1:1 & 14:7:1 gear ratio
- Reel capacity: 94 ft. of 1/4" cable
- 62 ft. of 5/16 cable

1510163 - Wt. 18.2 lbs.
REG. 129.99

SALE 89.99

3-LEAF SPRING

- Centre eye to eye: 23-1/4"
- Spring width: 1-3/4"
- Capacity used in pairs: 2,000 lbs.
- Wt. 10.6 lbs.

2090128

SPECIAL COMPARE TO \$63.95

SALE 19.99

SALE 30%

SINTERED IRON CASTERS

- 300 lb capacity
- 3" x 1/4"

2040154 - Swivel - Wt. 1.8 lbs.

REG. 9.99

2040157 - Rigid - Wt. 1.6 lbs.

REG. 8.99

SALE 6.99

SALE 50%

NITCH RAIL COVER

- Fits 1-7/8" and 2" ball
- Sturdy vinyl construction protects from rust and dirt

4200042 - Wt. 0.1 lbs.
REG. 2.99

SALE 1.49

SALE 40%

2,000 LB AXLE ASSEMBLY

- Complete with 3-leaf springs, 5-bolt hubs, shackles and U-bolt kit
- 48" length, 36" spring centre

2080146 - Wt. 61.3 lbs.
REG. 209.99

SALE 169.99

SALE 41%

12V RUBBER BOOT TRACTOR AND UTILITY LAMP

- 5" dia., 16 gauge
- 4 wire pigtail
- Rubber body helps eliminate shock and vibration of lamp
- Rustproof and ozone resistant body
- Universal, adjustable steel mounting bracket

4251807 - Wt. 1.1 lbs.
REG. 16.99

SALE 8.99

On Sale January 4th to 23rd, 2005



SAVE 26%

4-PLY TUBELESS TIRE
 • 18 x 8.50-8
 • 81.5 lb. capacity
 2021590 - Wt. 11.8 lbs.
 REG. 49.99



SAVE 44%

20 PC PATCH KIT
 Patching, 3" dia.
 2021392 - Wt. 0.2 lbs.
 REG. 9.99



CARLISLE

4-PLY TUBELESS TIRE
 22 x 11.00-8
 2025195 - Wt. 14.2 lbs.
 REG. 79.99



CARLISLE

20 PC PATCH KIT
 Patching, 3" dia.
 2020005 - Wt. 0.2 lbs.
 REG. 7.99



SAVE 25%

HI-SPD TRAILER TIRE ASSEMBLIES
 • 18.5 x 8.50 x 8
 • Load rating: 8
 • Capacity: 770 lbs.
 Wt. 20.1 lb.
 2021764 - Tire on 4-hole rim
 2021772 - Tire on 5-hole rim
 REG. 79.99



CARLISLE

HI-SPD TRAILER TIRE ASSEMBLIES
 • 18.5 x 8.50 x 8
 • Load rating: 8
 • Capacity: 770 lbs.
 Wt. 20.1 lb.
 2021764 - Tire on 4-hole rim
 2021772 - Tire on 5-hole rim
 REG. 79.99



100 PC ASSORTED TERMINALS
 Wt. 0.1 lbs.
 4210499



SPECIAL PRICE



25,000 LB GOOSENECK RETRACTABLE BALL MOUNT
 • 15,000 lb. vertical load capacity
 • Spring loaded U-bolts for safety chain hook up
 • Mounts to bed of pickup trucks
 • Chrome plated 2-5/16" ball
 • Fits with out way when not in use
 • Comes with grade 5 mounting hardware, instructions and cutting template
 Wt. 35.2 lbs.
 4200125



SPECIAL PRICE



5/8-30 PSI FITTER GAUGE - 1/8" NPT
 Use with either filters beads below to indicate when filter elements need replacement. (Return line only)
 80640041 - Wt. 0.1 lbs.
 REG. 4.99



3/4" NPT IN-LINE FILTER HEAD
 • Max. cont. pressure: 200 PSI
 • Max. cont. flow: 35 GPM (return) 5 GPM (suction)
 • Two 1/8" NPT gauge ports
 8060258 - Wt. 0.6 lbs.
 REG. 9.99



3/4" NPT IN-LINE FILTER HEAD
 • Max. cont. pressure: 200 PSI
 • Max. cont. flow: 35 GPM (return) 5 GPM (suction)
 • Two 1/8" NPT gauge ports
 8060258 - Wt. 0.6 lbs.
 REG. 9.99



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 REG. 4.99



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 REG. 9.99



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 • Max. cont. pressure: 200 PSI
 • Max. cont. flow: 35 GPM (return) 5 GPM (suction)
 • Two 1/8" NPT gauge ports
 8060258 - Wt. 0.6 lbs.
 REG. 9.99

The unique world of Princess Auto





THE UNIQUE WORLD OF

PRINCESS AUTO

ON SALE JANUARY 4th TO 23rd, 2005

Sale starts Tuesday,
January 4th at 8:00 AM

SAVE
42%



39 PC TUNGSTEN ALLOY TAP and DIE SETS

- High strength tungsten alloy construction
- Rockwell hardness of HRC 60
- Adjustable tap wrench, T-handle tap wrench, die handle, screwdriver, screw pinch gauge, and case

Wt. 3.4 lbs.

8039981 - SAE.

8039972 - Metric.

REG. 34.99



50 FT. EXTENSION CORD

SAVE
25%

- 12/3 gauge
- Clear triple outlet plug with power indicator
- Flexible to -40°C
- 15A, 125V

8035685 - Wt. 7.2 lbs.

REG. 39.99

INTRODUCTORY PRICE

Price after Nov. 23rd \$39.99



SALE 19⁹⁹

SAVE
60%

UNIVERSAL METAL BENDER

- Bends angles up to 120°
- Cold steel cap.: 4" x 3/16", square - 5/8" x 5/8", round - 1 1/16" dia., angle - 2-3/8" x 5/16"
- Hot steel cap.: 4" x 9/16", square - 1" x 1", round - 1" dia., angle - 2-3/8" x 7/16"

2910280 - Wt. 70.4 lbs.

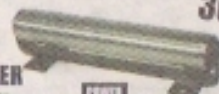
REG. 229.99



SALE 169⁹⁹

12" BENCH MOUNT ROLLER

2" x 11-3/4" roller.
8003466 - Wt. 2.7 lbs.
REG. 12.99



SAVE
30%



SALE 8⁹⁹

3/4" DR TORQUE WRENCH

50 to 300 ft.-lbs capacity.
2926939 - Wt. 8.7 lbs.
REG. 99.99



SAVE
40%



SALE 59⁹⁹

SPECIAL
PURCHASE

HORIZON

PREMIUM LINED WELDERS GLOVES

1 finger split elk hide with Kevlar stitching.
Wt. 0.7 lbs.

8035727



SPECIAL 6⁹⁹

Winnipeg National Call Centre

1-800-665-8685

Fax: 1-800-265-4212

www.princessauto.com

Store Locations Page 26



800 LB CAPACITY HAND WINCH

- Single speed
 - 40 ft. x 3/16" reel cap
 - Zinc plated
 - Freewheeling position
- 8004698 - Wt. 4.2 lbs.
REG. 28.99

SAVE
41%



SALE **16⁹⁹**

Shelby
Performance

3,200 LB CAPACITY 2-SPEED HAND WINCH

- Change speed (gear ratio) without removing handle
- Hand brake
- 5.1:1 & 14.7:1 gear ratio
- Reel capacity: 94 ft. of 1/4" cable

SAVE
40%



SALE **89⁹⁹**

1510163 - Wt. 18.2 lbs.
REG. 129.99

SINTERED IRON CASTERS

- 300 lb capacity
- 3" x 1-1/8"
- 2040154 - Swivel.
- Wt. 1.8 lbs.
- REG. 9.99
- 2040157 - Rigid.
- Wt. 1.6 lbs.
- REG. 8.99

SAVE
UP TO
30%



SALE **6⁹⁹**

SALE **5⁹⁹**

NITCH BALL COVER

- Fits 1-7/8" and 2" ball
 - Sturdy vinyl construction protects from rust and dirt
- 4200042 - Wt. 0.1 lbs.
REG. 2.99

SAVE
50%



SALE **1⁴⁹**

2,000 LB AXLE ASSEMBLY

- Complete with 3-leaf springs, 5-bolt hubs, shackles and U-bolt kit
 - 48" length, 36" spring centre
- 2080146 - Wt. 61.3 lbs.
REG. 209.99

SAVE
40%



SALE **169⁹⁹**

2,000 LB HUB

- Includes bearings and seal
 - 4-bolt, 4" circle
- 2080041 - Wt. 5.2 lbs.
REG. 42.99

SAVE
30%

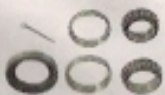


SALE **29⁹⁹**

WHEEL BEARING SET

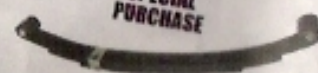
- Includes 2 bearings with races, grease seal, and cotter pin
 - Spindle O.D.: 1"
 - Outer hub I.D.: 1.980"
 - For 2,000 lb. hubs
- 2080008 - Wt. 0.6 lbs.
REG. 16.99

SAVE
41%



SALE **9⁹⁹**

SPECIAL
PURCHASE



3-LEAF SPRING

- Centre eye to eye: 23-1/4"
 - Spring width: 1-3/4"
 - Capacity used in pairs: 2,600 lbs.
- Wt. 10.6 lbs.
2080128

SPECIAL **19⁹⁹**

Compare @ \$33.99

12V RUBBER BODY TRACTOR and UTILITY LAMP

- 5" dia., 16-gauge
 - 4" wire pigtail
 - Rubber body helps eliminate shock and vibration of lamp
 - Rustproof and ozone resistant body
 - Universal, adjustable steel mounting bracket
- 4251807 - Wt. 1.1 lbs.
REG. 16.99

SAVE
47%



SALE **8⁹⁹**

4-PLY TUBELESS TURF TIRE

- 18 x 8.50-8
 - 815 lb. capacity
- 2021590 - Wt. 11.8 lbs.
REG. 49.99

SAVE
26%



SALE **36⁹⁹**

CARLISLE

ATV 2-PLY TUBELESS TIRE

- 22 x 11.00-8
 - 2025195 - Wt. 14.2 lbs.
- REG. 79.99

SAVE
37%



SALE **49⁹⁹**

CARLISLE

HI-SPEED TRAILER TIRE ASSEMBLIES

- 18.5 x 8.50 x 8
 - Load range B
 - Capacity: 770 lbs.
- Wt. 20.1 lbs.
2021764 - Tire on 4-hole rim
2021772 - Tire on 5-hole rim
REG. 79.99

SAVE
25%



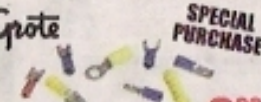
SALE **59⁹⁹**

100 PC ASSORTED TERMINALS

- Wt. 0.3 lbs.
- 4210499

Crote

SPECIAL
PURCHASE



SPECIAL **6⁹⁹**

25,000 LB GOOSENECK RETRACTABLE BALL MOUNT

- 5,000 lb. vertical load capacity
 - Spring loaded U-bolts for safety chain hook up
 - Mounts to bed of pickup trucks
 - Chrome plated 2-5/16" ball
 - Ball flips out of way when not in use
 - Comes with grade 5 mounting hardware, instructions and cutting template
- Wt. 35.2 lbs.
4200125



Buyer's

SPECIAL **139⁹⁹**

SAVE
44%



20 PC PATCH KIT

- Patches: 3" dia.
 - 2021392 - Wt. 0.2 lbs.
- REG. 8.99



SALE **4⁹⁹**

TUBELESS TIRE REPAIR CORDS

- 30 pieces, 6" long.
 - 2020035 - Wt. 0.2 lbs.
- REG. 7.99/pkg.

SAVE
37%



SALE **4⁹⁹**

PAL Hydraulics

See page 19 for the rest of our PAL specials

0-30 PSI FILTER GAUGE - 1/8" NPT

- Use with either fillers heads below to indicate when filter elements need replacement. (Return line only.)
 - 8040041 - Wt. 0.1 lbs.
- REG. 4.99

SAVE
40%



SALE **2⁹⁹**

3/4" NPT IN-LINE FILTER HEAD

- Max. cont. pressure: 200 PSI
 - Max. cont. flow: 15 GPM (return) 5 GPM (suction)
 - Two 1/8" NPT gauge ports
- 8006258 - Wt. 0.6 lbs.
REG. 9.99

SAVE
20%



SALE **7⁹⁹**

REPLACEMENT CELLULOSE FILTER ELEMENT

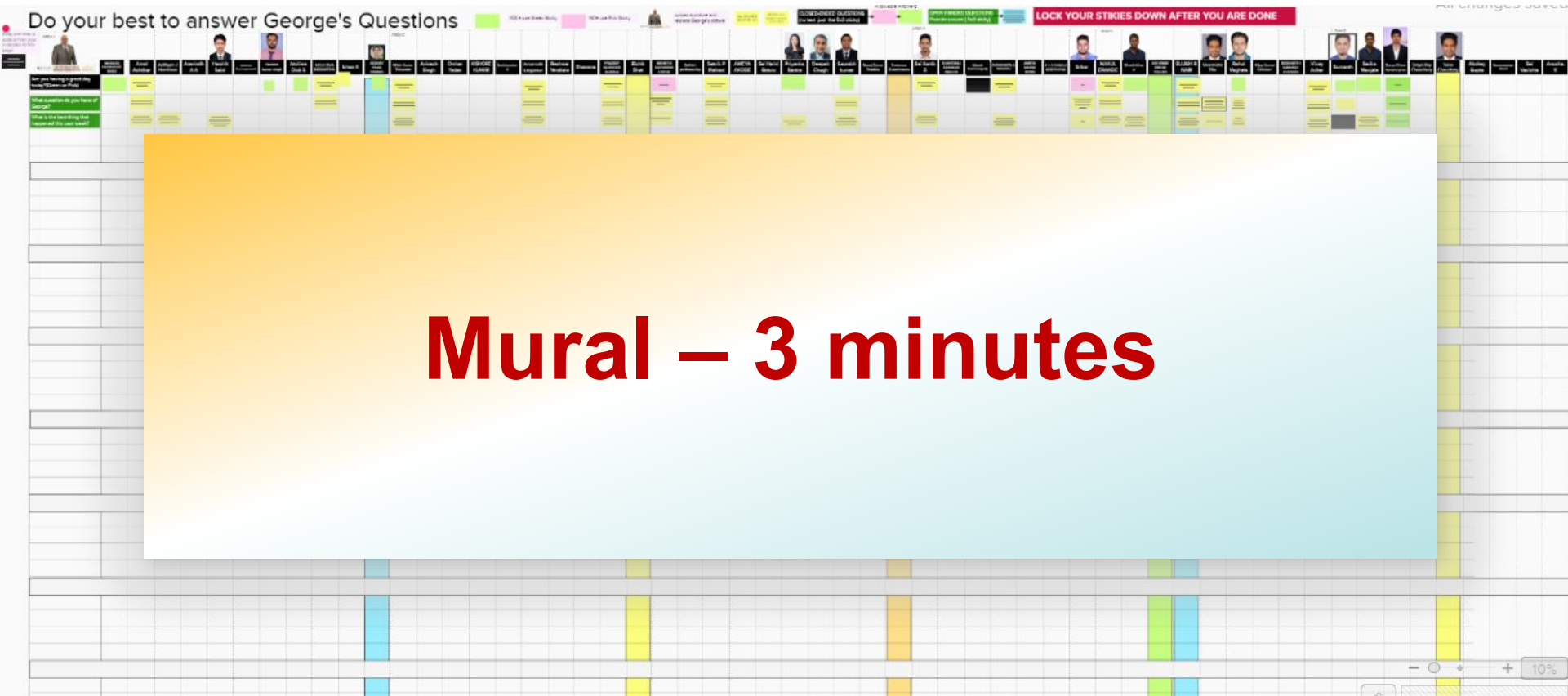
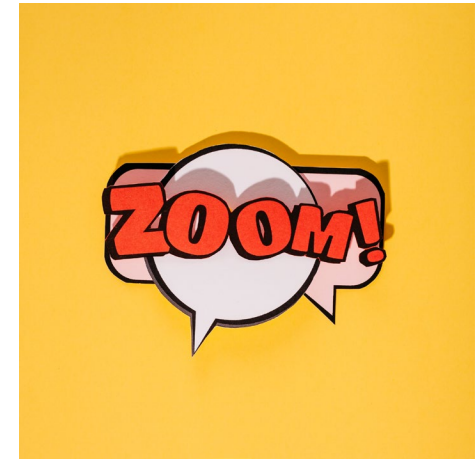
- Replacement filter element for 3/4" NPT filter head
 - Filter rating: 10 micron
 - Length: 5-1/4"
- 8038651 - Wt. 1.3 lbs.
REG. 7.49

SAVE
20%



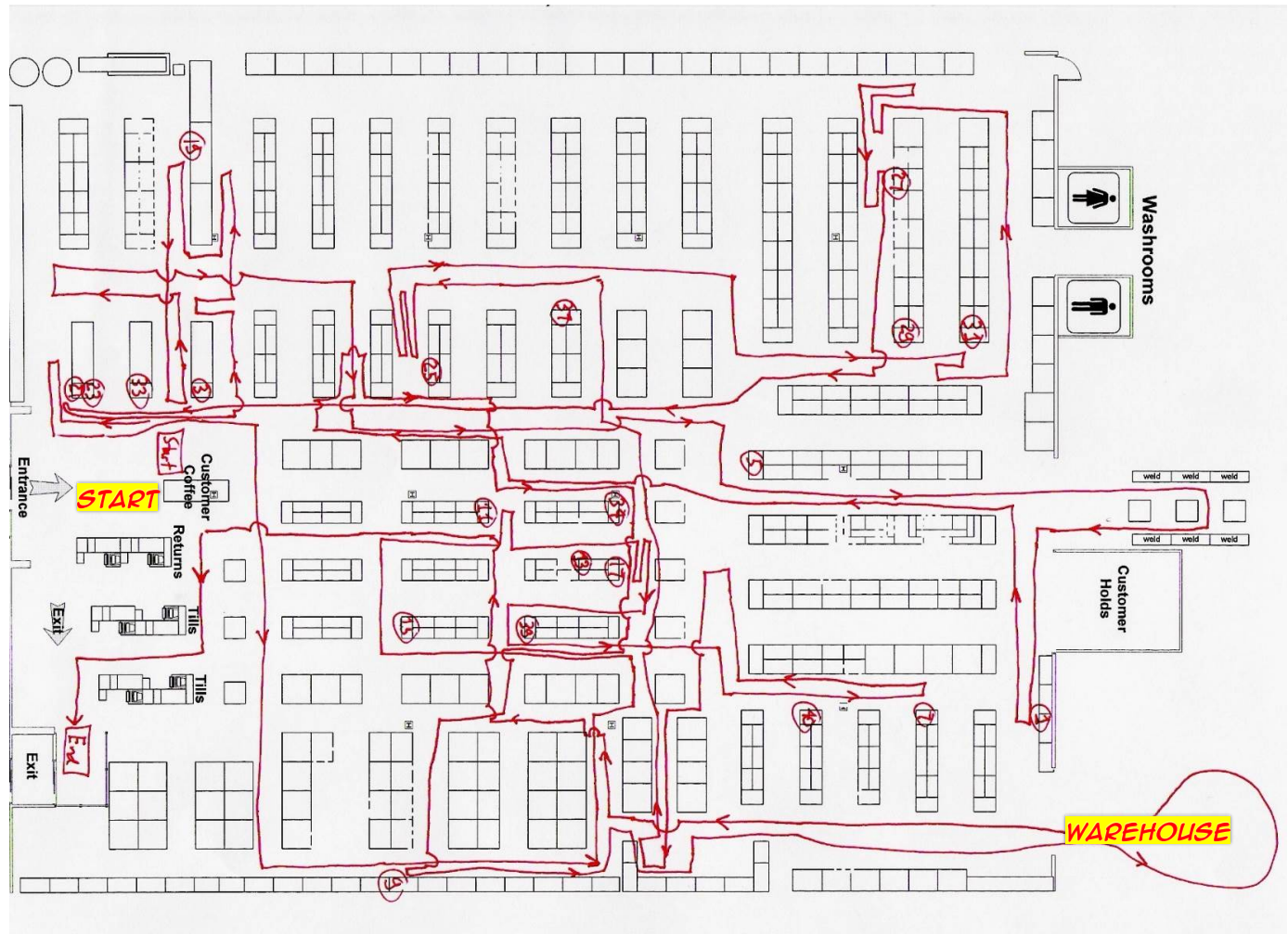
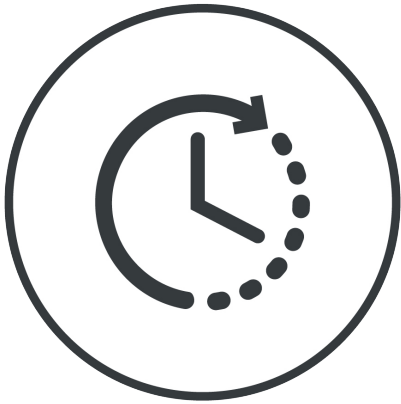
SALE **5⁹⁹**

We will be navigating Between Zoom and Mural



Tracking the shopping time

WAITING

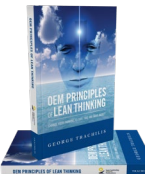
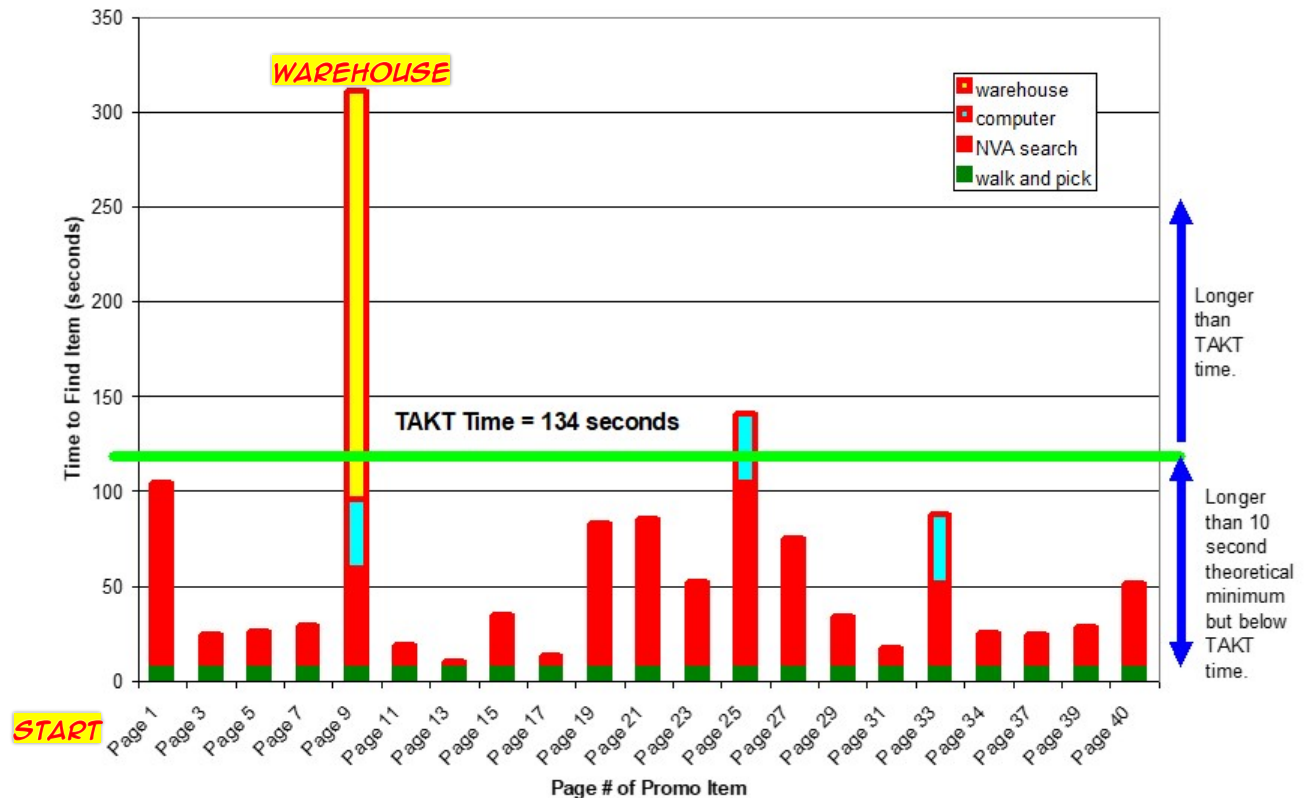


Tracking the shopping time

WAITING



Princess Auto - Team Member Balance Chart



FIRST Define
Value from
the Customer's
Perspective

01

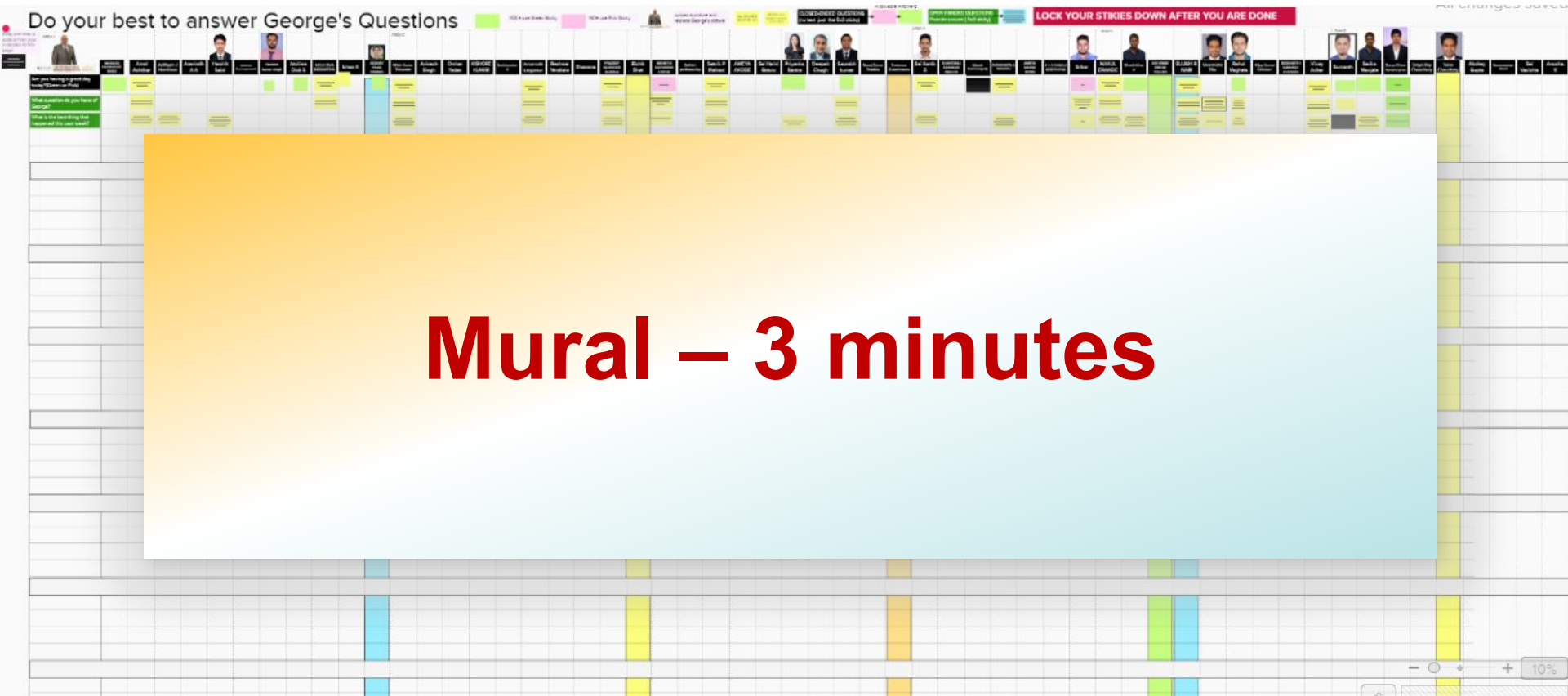
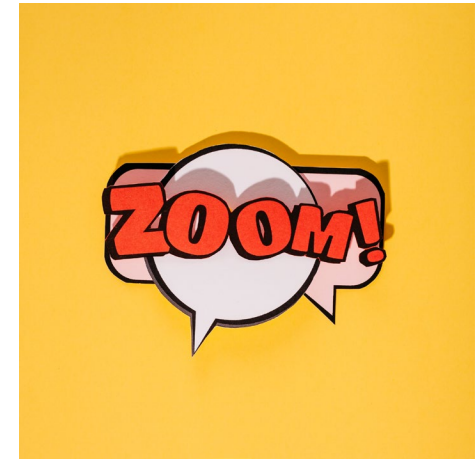
AS WE LEARNED TO OBSERVE
BETTER WE REALIZED THERE
WAS A LOT OF WASTE OF
WAITING GOING ON.

WAITING

LONG PERIOD OF
INACTIVITY FOR
PEOPLE, MATERIALS
INFORMATION OR
MACHINERY



We will be navigating Between Zoom and Mural

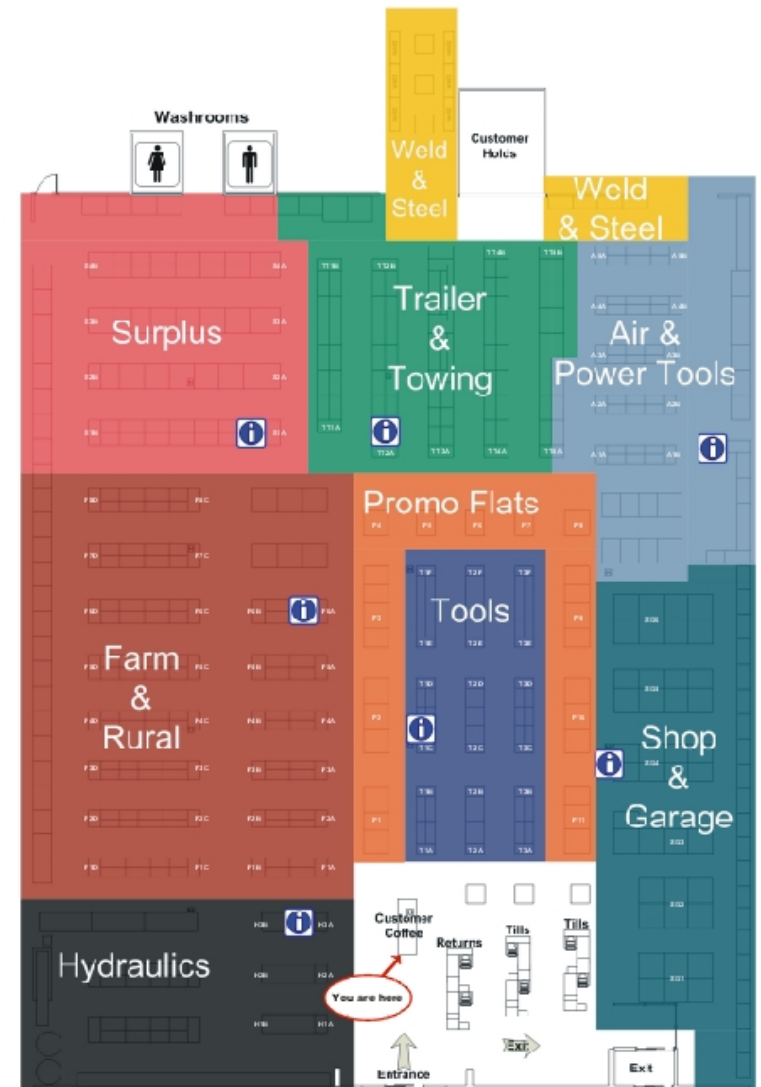


NON-UTILIZED TALENT

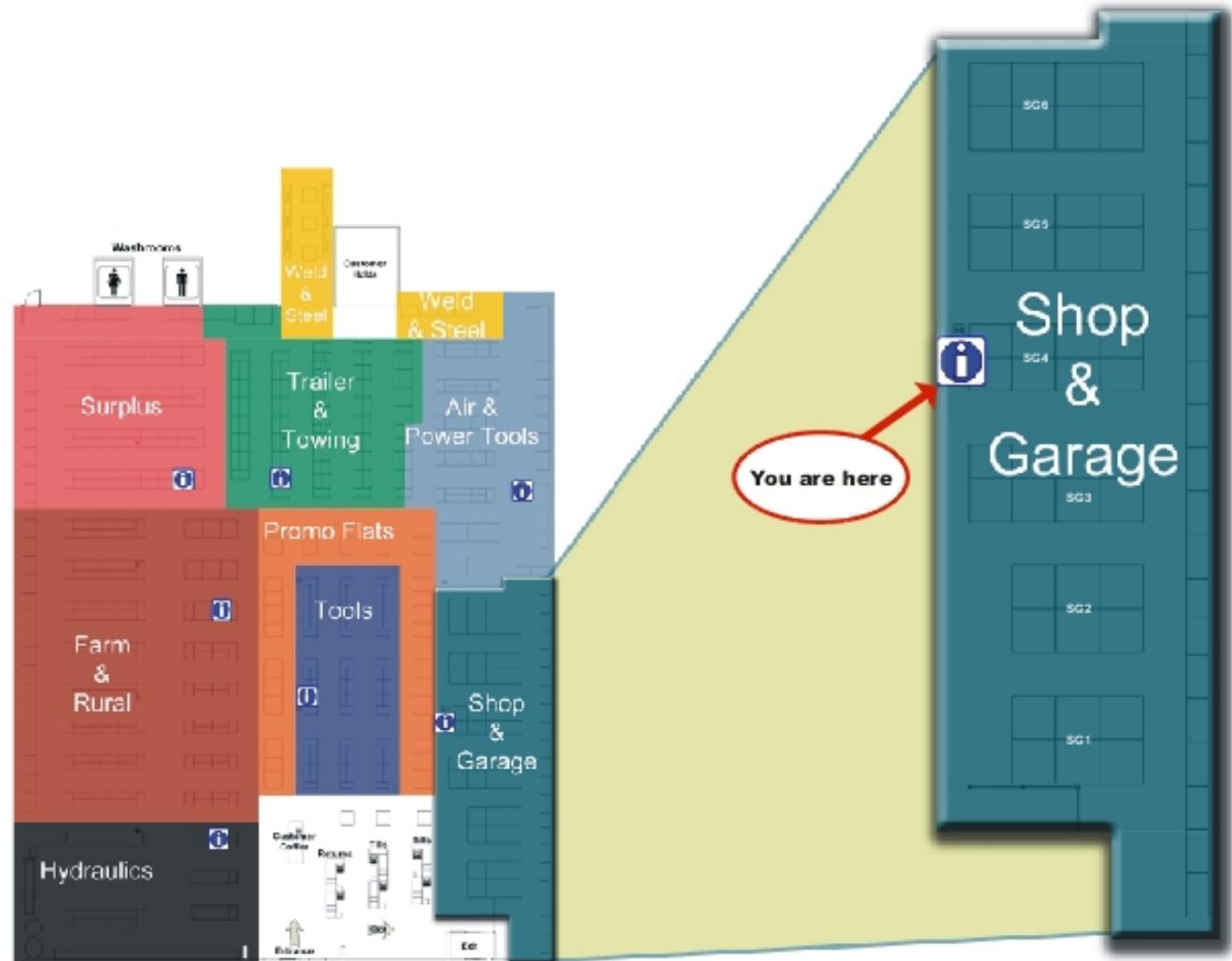


Develop visual systems to identify promo material.

STORE LAYOUT



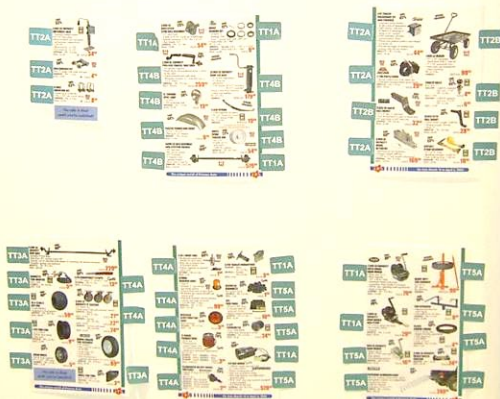
SHOP & GARAGE PROMO



TRAILER & TOWING PROMO

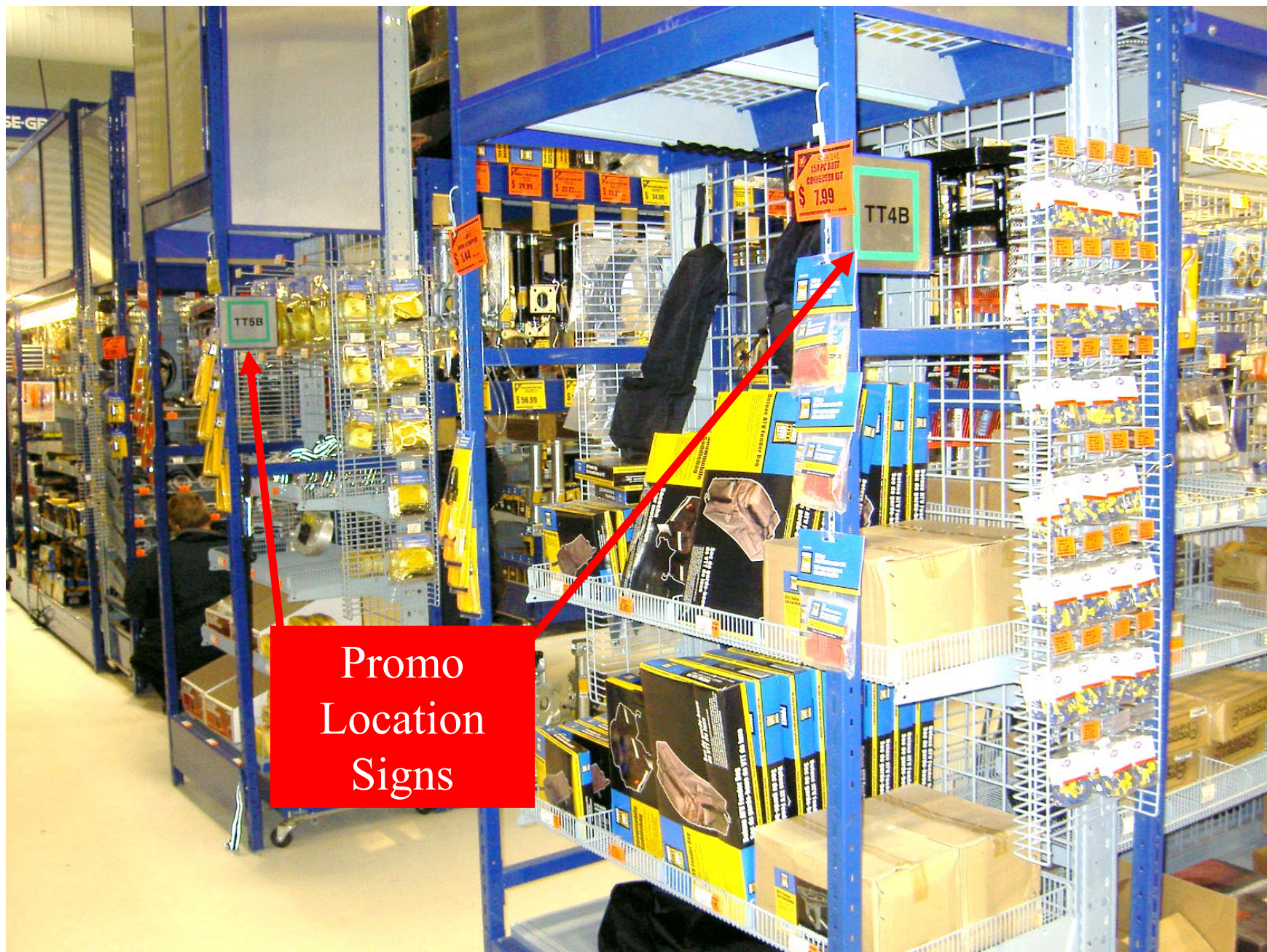


Trailer & Towing Promo



Trailer & Towing Promo





TT5B

TT4B

Promo
Location
Signs

FIRST Define
Value from
the Customer's
Perspective

01



IN THOSE DAYS... IT WAS A WAR ON WASTE! MUDAMAN WAS INVISIBLE TO MY TEAM. HE REALLY DID A NUMBER ON US ALL.

REMINDE ME OF HIS ANTICS.

MY TEAM WAS WASTING THEIR LIVES AWAY BY DOING THINGS THAT DID NOT ADD ANY VALUE.

WHAT A WASTE OF HUMAN POTENTIAL! BUT YOU FINALLY SAW THE WASTE.

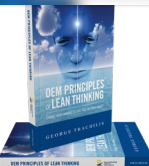
YEAH! BY STARTING WITH **"FIX WHAT BUGS YOU"** WE CATEGORIZED THOSE 7 DEADLY WASTES.

Enter your message

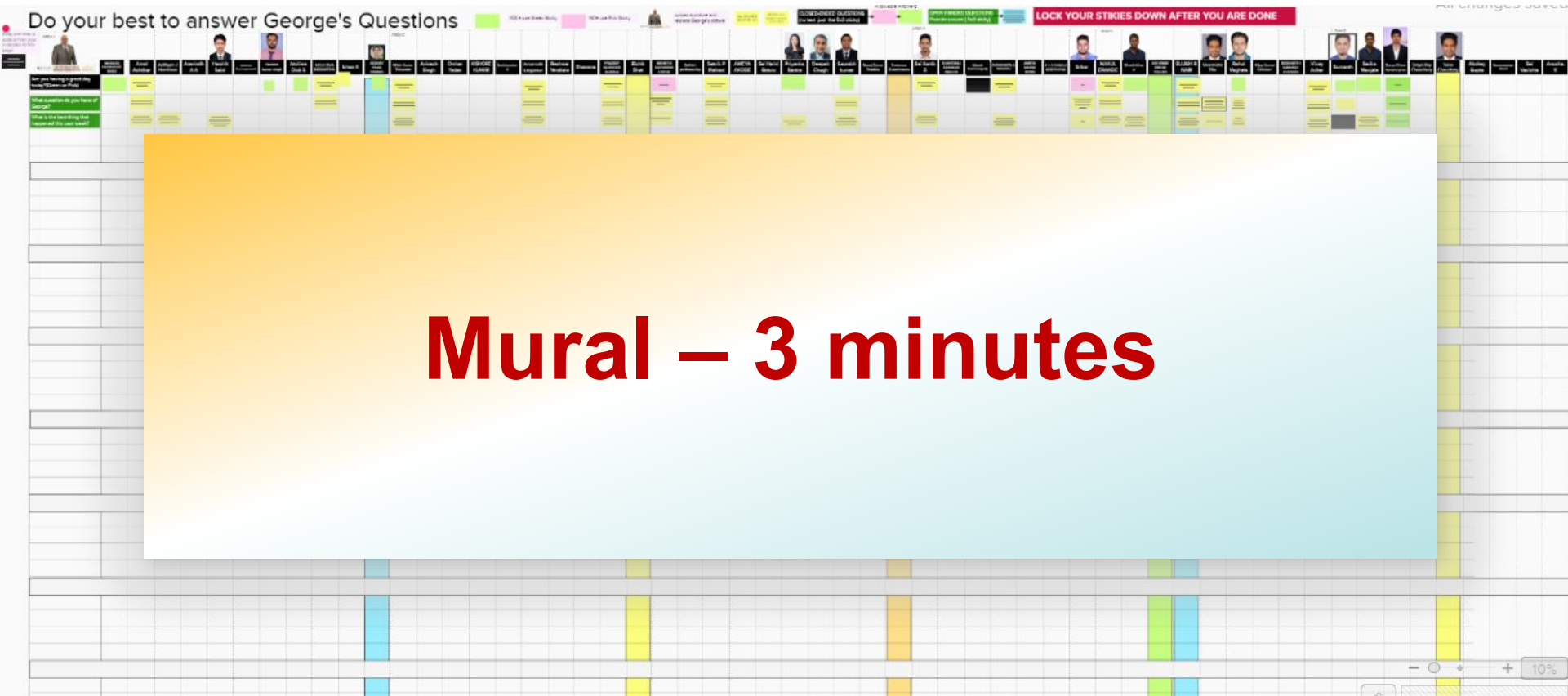
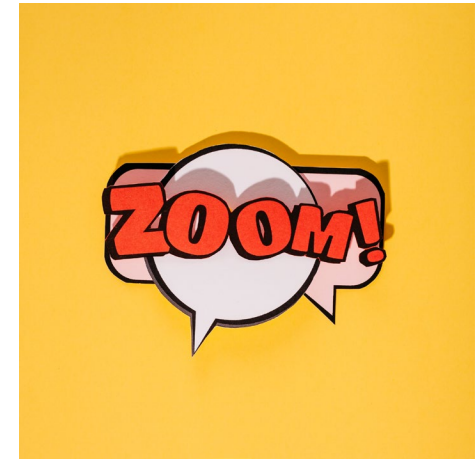
YOUR TURN

Sent to: Tanya Huston

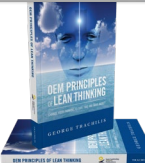
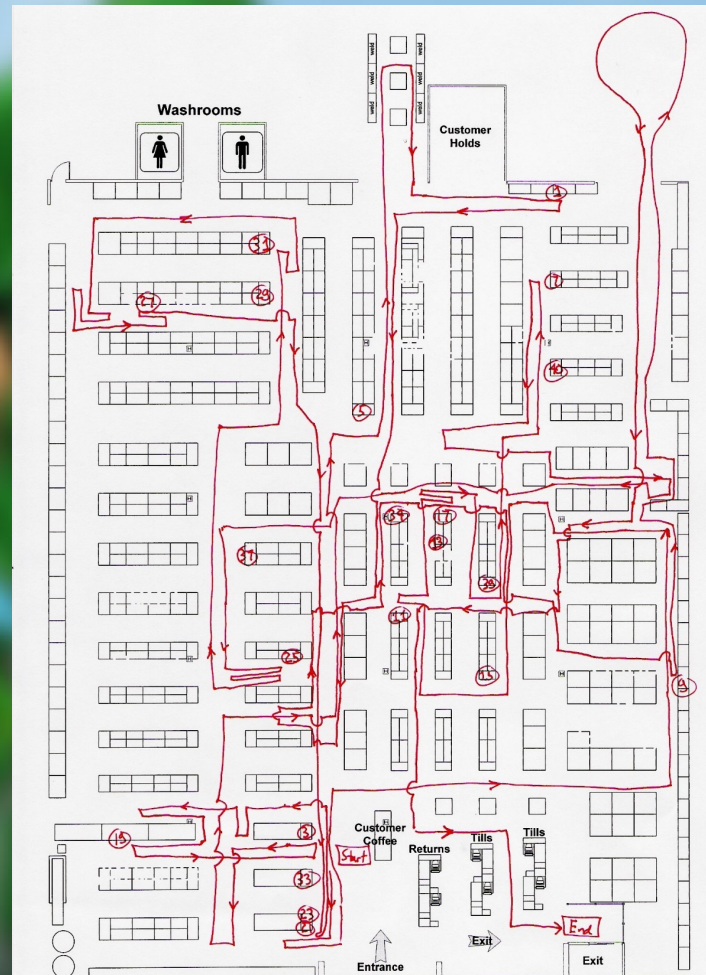
Amanda Theede



We will be navigating Between Zoom and Mural



TRANSPORTATION



TRANSPORTATION

Enter your message

YOUR TURN

Send to: Tanya Houston

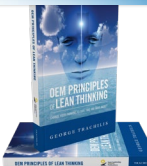
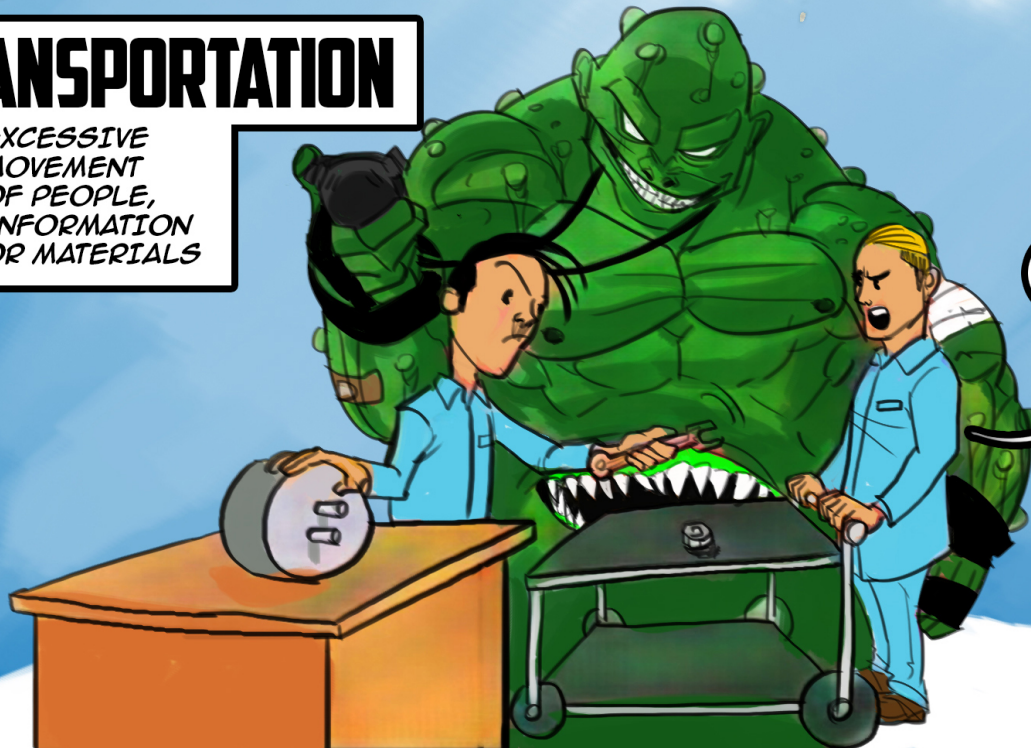
Amanda Thiede



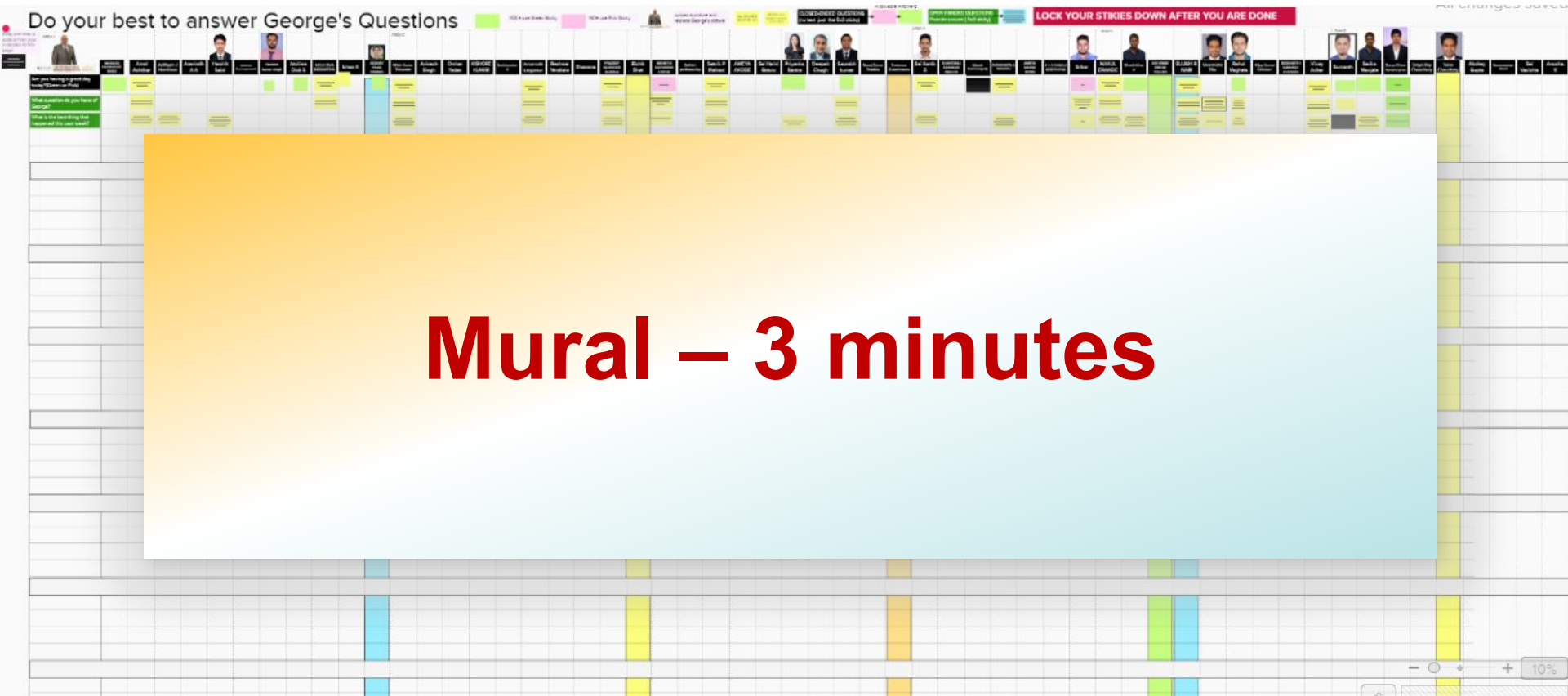
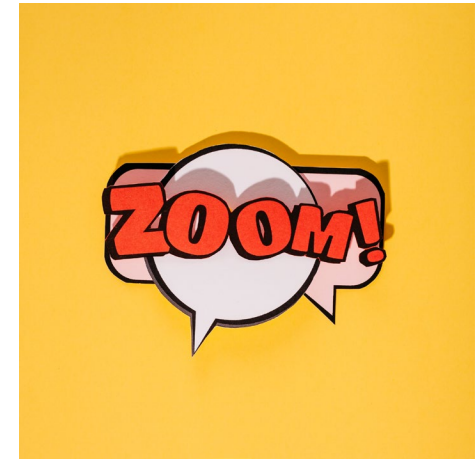
TRANSPORTATION

EXCESSIVE
MOVEMENT
OF PEOPLE,
INFORMATION
OR MATERIALS

I HAD TO GO
ACROSS THE
STREET!



We will be navigating Between Zoom and Mural



INVENTORY

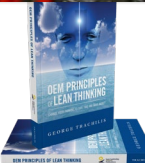


- SKUs FROM 147 to 253 in one Aisle

BEFORE



CURRENT



INVENTORY

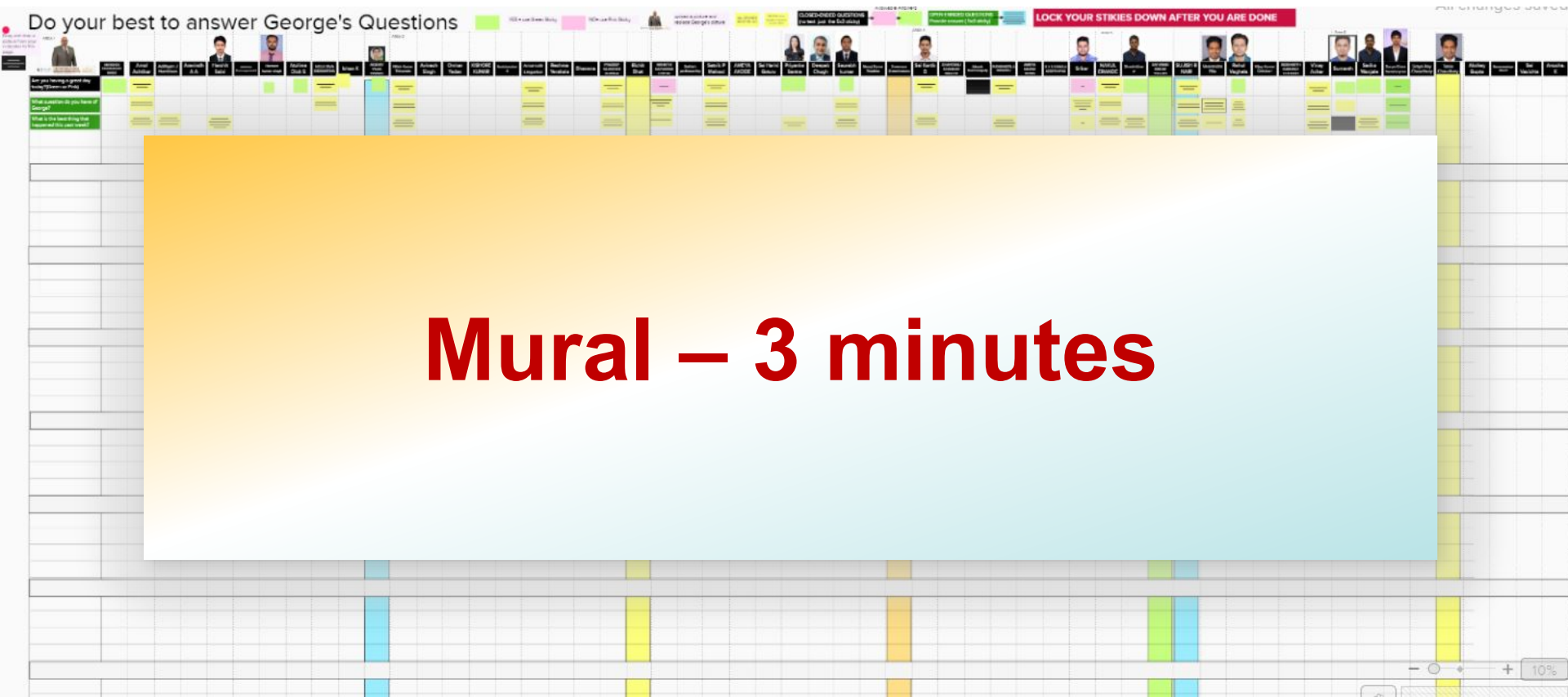
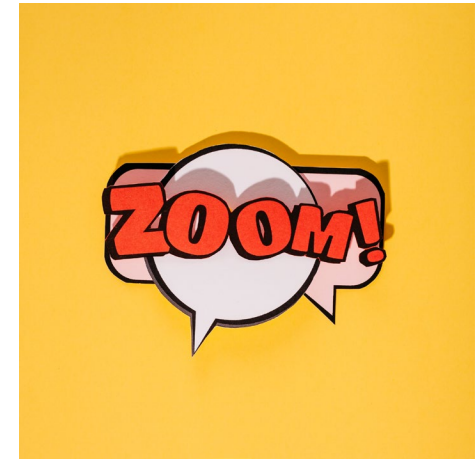
THEN WE REALIZED WE WERE WASTING TIME MANAGING EXCESS INVENTORY. USUALLY IT WAS INVENTORY THAT THE CUSTOMER DID NOT WANT.

UNNECESSARY INVENTORY

EXCESSIVE STORAGE AND DELAY OF INFORMATION OR PRODUCTS



We will be navigating Between Zoom and Mural



MOTION

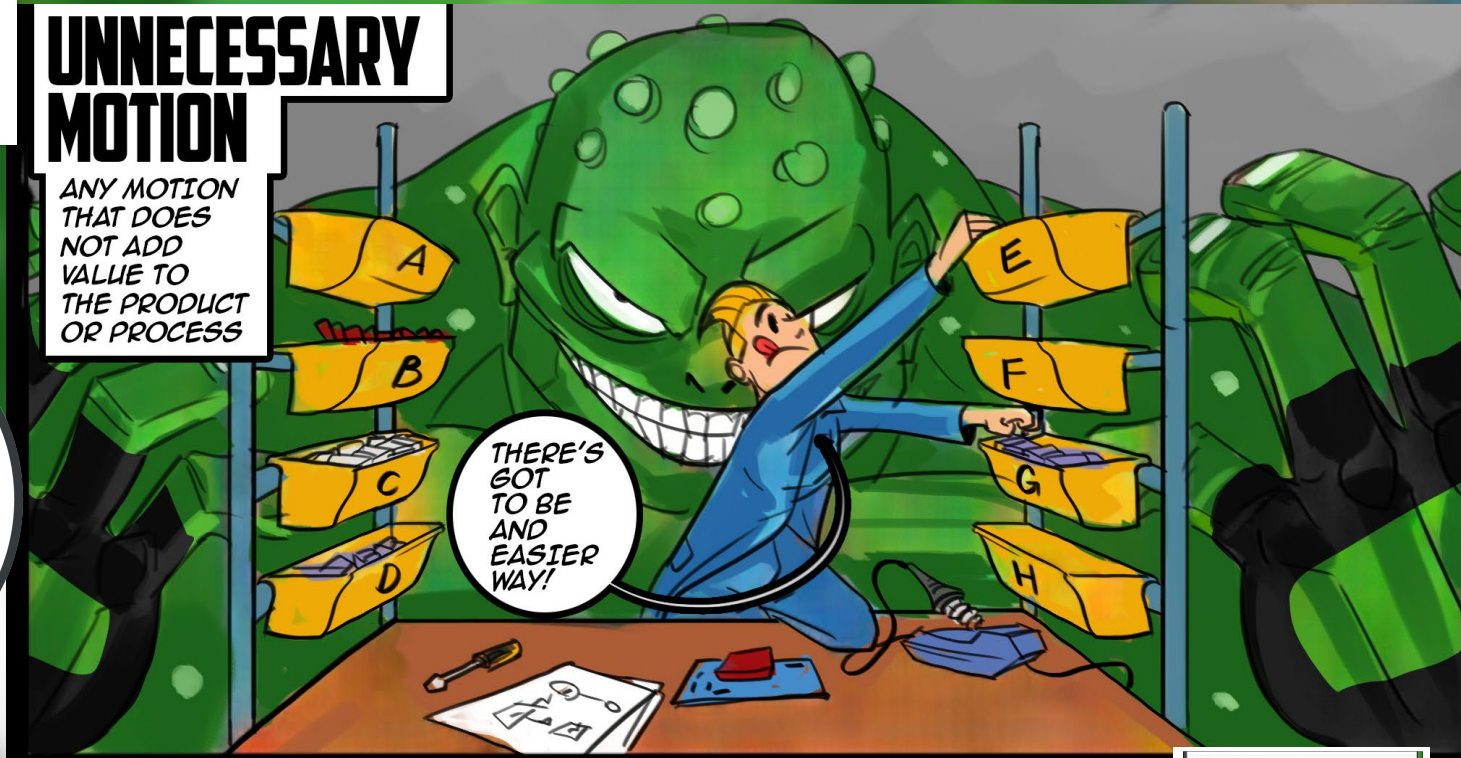


MOTION

UNNECESSARY MOTION

ANY MOTION
THAT DOES
NOT ADD
VALUE TO
THE PRODUCT
OR PROCESS

THERE'S
GOT
TO BE
AND
EASIER
WAY!

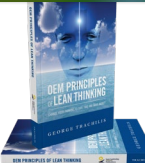


Enter your message

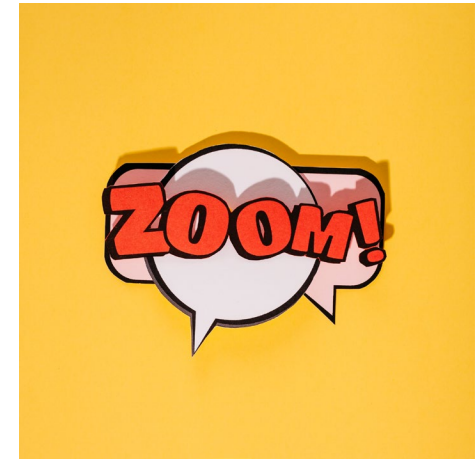
YOUR TURN

Sent to: Tanya Huston

Amanda Theede



We will be navigating Between Zoom and Mural



Do your best to answer George's Questions

LOCK YOUR STIKIES DOWN AFTER YOU ARE DONE

Mural – 3 minutes

10%

EXTRA- PROCESSING



*ENGINEERING WAS CREATING
ONE PART NUMBER FOR EVERY
CUSTOM CYLINDER ORDER.*



**AFTER USING VARIABLES IN THEIR MRP
SYSTEM, REDUCED 1,025 PARTS NUMBERS
TO 25 AND ELIMINATED ALL OF THE BOM
ENTRY, AND ORDER CREATION TIME.**

EXTRA-PROCESSING

SO MANY TIMES WE WERE DOING THINGS "OUR WAY" BUT NOT THE BEST WAY. WE WERE DUMB AND HAPPY - NOT WILLING TO CHANGE.

INAPPROPRIATE (OVER) PROCESSING

USING THE WRONG SET OF TOOLS, PROCEDURES OR SYSTEMS

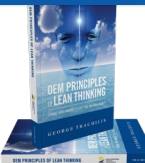
BIGGER IS NOT NECESSARILY BETTER.



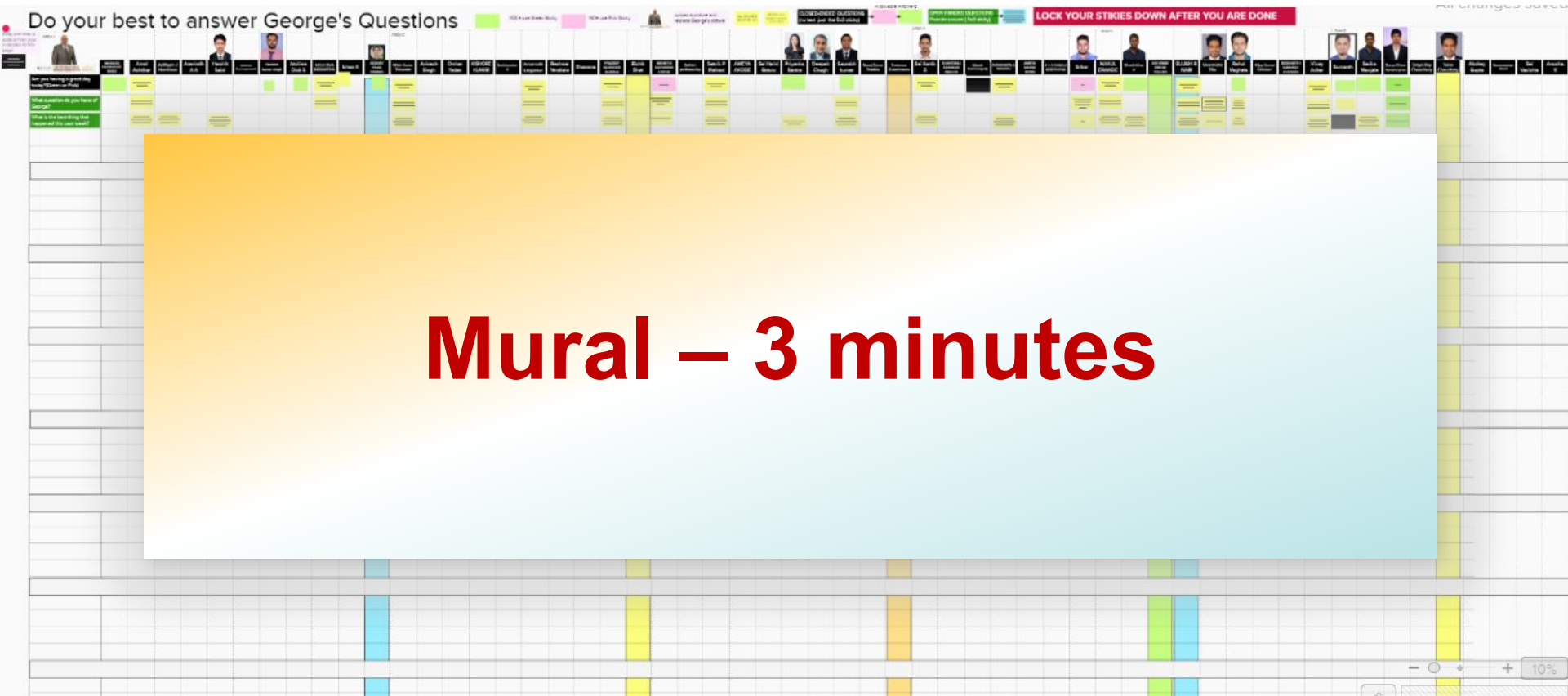
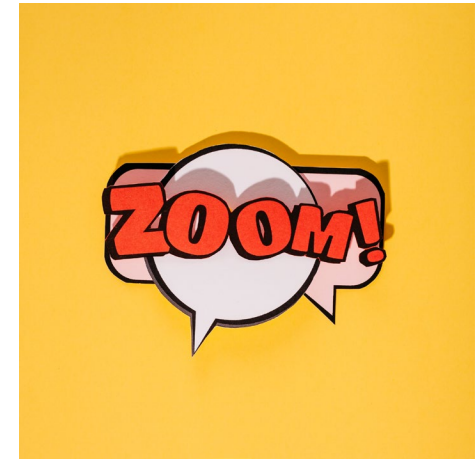
Enter your message

YOUR TURN

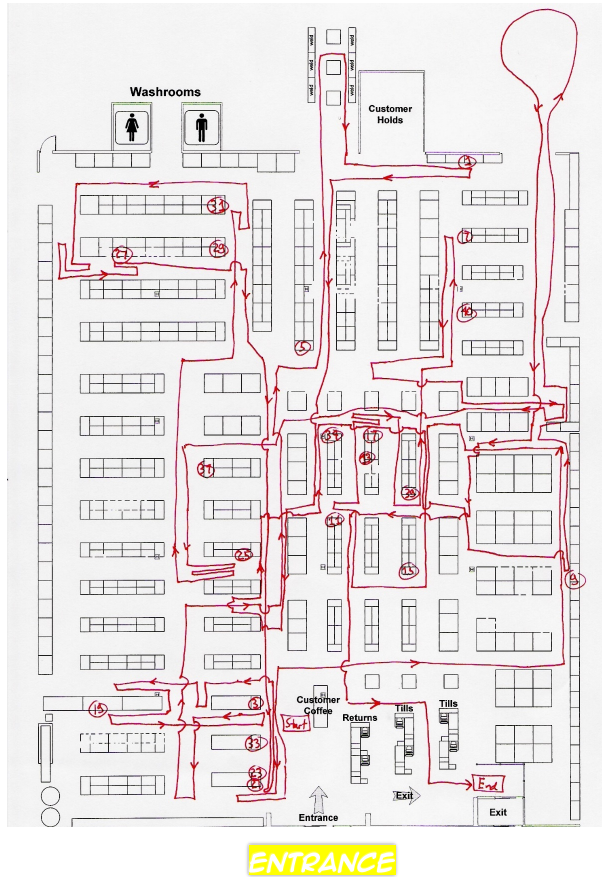
SEND TO:



We will be navigating Between Zoom and Mural



BEFORE



STORE LAYOUT



**OLD TIME
(WITH EXPERT)
22 MINUTES**

**NEW TIME
(WITH NOVICES)
9 MINUTES (AVG.)**

"Princess Auto has been thrilled with the work that George did. The current project in our Panet Rd. Store has exceeded our expectations and we certainly plan on continuing to work with George to roll the project out to other stores across Canada."

*Michael Leach,
Sr. Vice President,
Retail Operations
Princess Auto Ltd.*



FIRST Define
Value from
the Customer's
Perspective

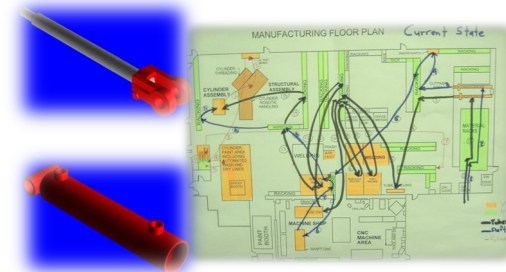
01

Tell me what you've learned



Define
Value from
the Customer's
Perspective

01



THE UNIQUE WORLD OF PRINCESS AUTO

ON SALE JANUARY 4th TO 23rd, 2005

Sale starts Tuesday, January 4th at 8:00 AM

39 PC TUNGSTEN ALLOY TAP and DIE SETS
 • High strength tungsten alloy construction
 • Rockwell hardness of HRC 60
 • Adjustable tap wrench, T-handle tap wrench, die handle, screwdriver, screw pitch gauge, and case
 Wt. 3.4 lbs.
 8039981 - SAE.
 8039972 - Metric.
 REG. 34.99
SAVE 42%
SALE 19.99

50 FT. EXTENSION CORD
 • 12/3 gauge
 • Clear triple outlet plug with power indicator
 • Flexible to -40°C
 • 15A, 125V
 8035685 - Wt. 7.2 lbs.
 REG. 39.99
SALE 29.99
 Price after Nov. 23rd \$39.99

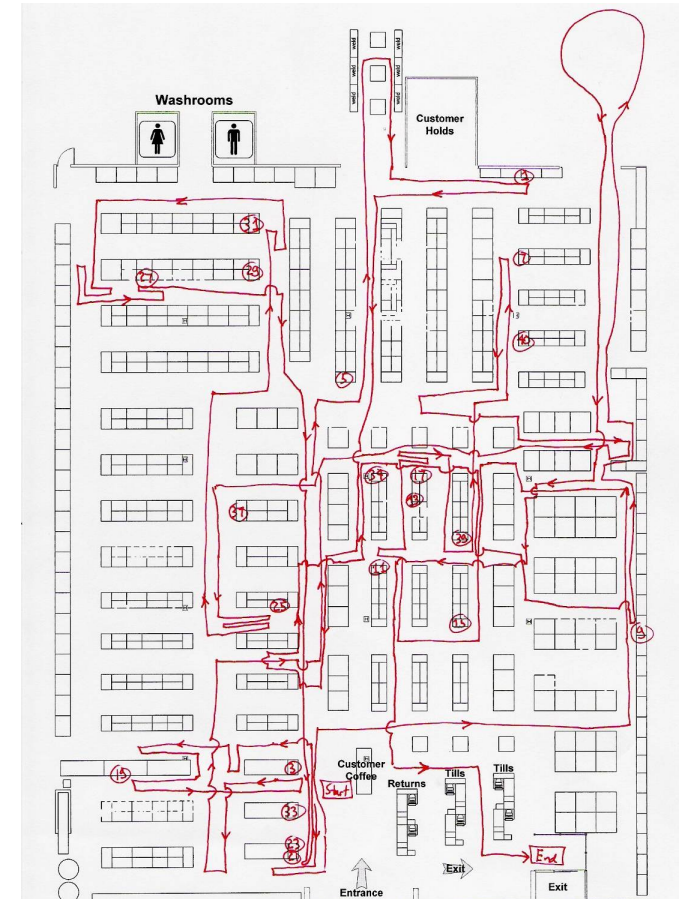
12" BENCH MOUNT ROLLER
 2" x 14-14" roller.
 8003466 - Wt. 2.7 lbs.
 REG. 12.99
SAVE 30%
SALE 8.99

3/4" DR TORQUE WRENCH
 50 to 300 ft.-lbs. capacity.
 2926939 - Wt. 8.7 lbs.
 REG. 99.99
SAVE 40%
SALE 59.99

SPECIAL PURCHASE
PREMIUM LINED WELDERS GLOVES
 Finger split elk hide with Kevlar stitching.
 Wt. 0.7 lbs.
 8035727
SPECIAL 6.99

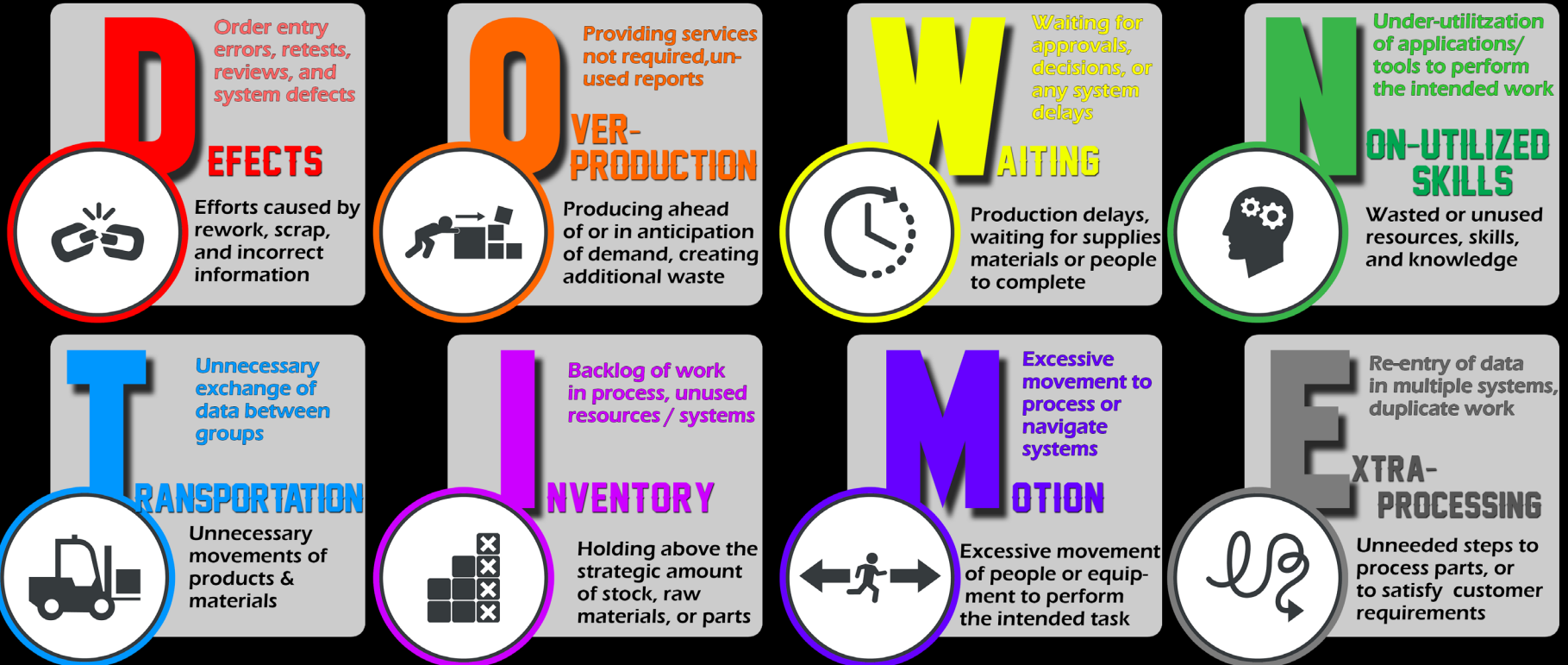
UNIVERSAL METAL BENDER
 • Bends angles up to 120°
 • Cold steel cap - 4" x 3/16", square - 5/8" x 5/8", round - 1 1/16" dia., angle - 2-3/8" x 5/16"
 • Hot steel cap - 4" x 9/16", square - 1" x 1", round - 1" dia., angle - 2-3/8" x 7/16"
 2910280 - Wt. 70.4 lbs.
 REG. 229.99
SAVE 60%
SALE 169.99

Winnipeg National Call Centre
 1-800-665-8685
 Fax: 1-800-265-4212
 www.princessauto.com
 Store Locations Page 26



Your turn – Identify *one* of each

TO REMEMBER THE 8 WASTES, YOU CAN USE THE ACRONYM "DOWNTIME."

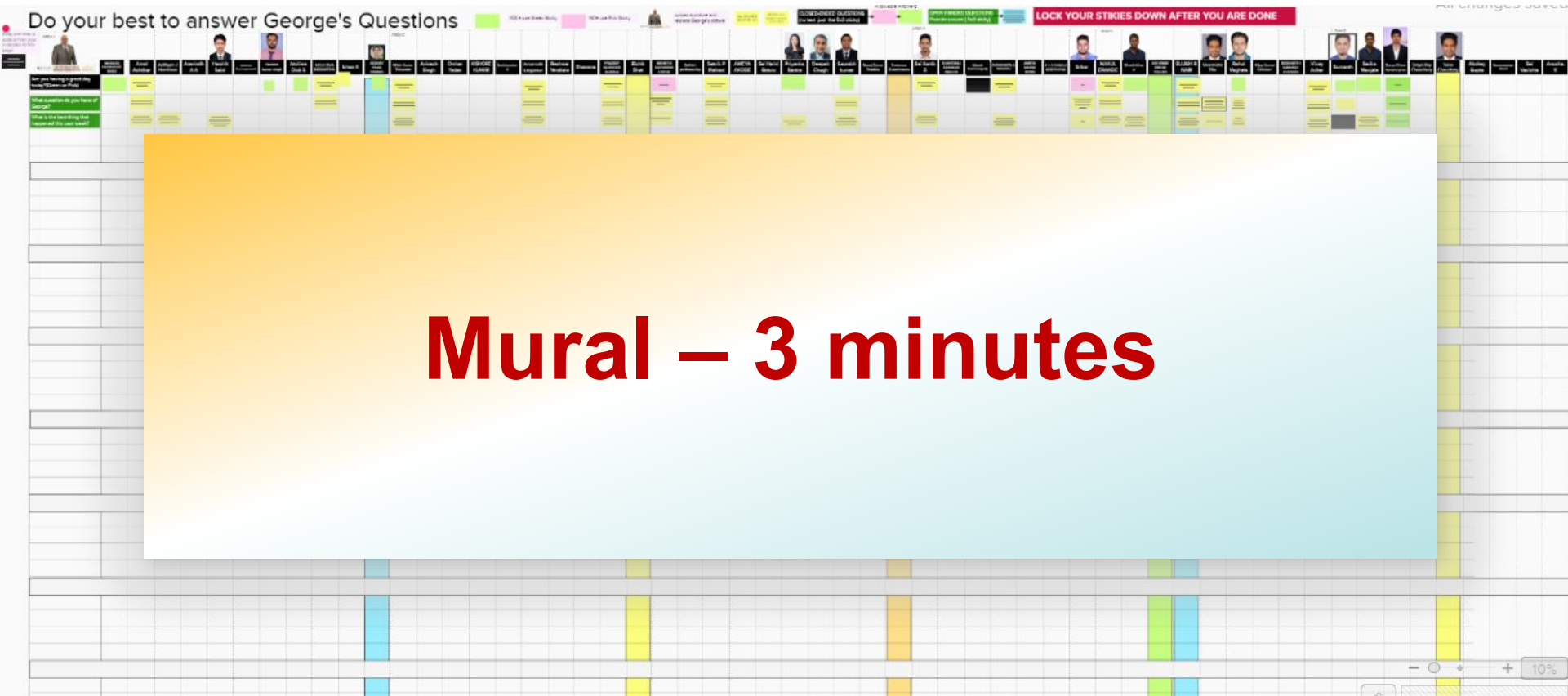
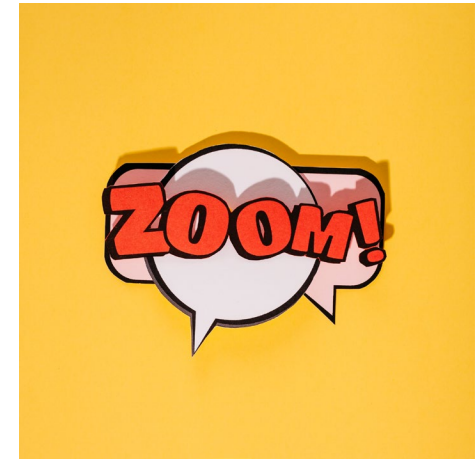


BOOK: DEVELOPING LEAN LEADERS AT ALL LEVELS, BY JEFF LIKER & GEORGE TRACHILIS

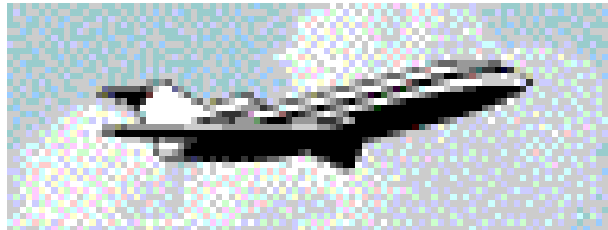
WWW.CAPTAINLEAN.COM



We will be navigating Between Zoom and Mural



Sky-View Airplane Company



A “Lean” Simulation



We have our Dojo

Lego Lean Simulation Instructions: for Day 1 - All Teams

Day 1 - Build in Batches of 5

The Sky View Airplane Company (SVAC) has the reputation of producing high quality airplanes for customers around the world. The company is in the process of implementing a large contract and will be awarded the business only if airplanes can be guaranteed.

SVAC has been considered a "traditional" manufacturing operation, using quarterly sales forecasts that drive their MRP system. A Master Production Schedule (MPS) is generated through the available information and weekly production schedules are generated and delivered to the production floor. As situations change in the plant, daily adjustments to the schedule are made.

Daily orders are received from customers and a daily shipping schedule is given to the shipping department who must ship an average of 10 airplanes per day.

Expeditors conduct daily checks at Workstations 2, 3 and 5, to ensure parts are available for customer's requirements. The information gathered is fed back to the scheduler.

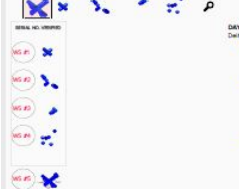
Sky View Industries (SVI) is a division of and the main supplier of parts to SVAC. SVAC gives Sky View Industries a monthly forecast of their requirements and sends them purchase orders that will cover them for the following week's production. Sky View Industries is within 5 miles of SVAC and can deliver any day of the week. SVAC decided that it would use deliveries of parts on Mondays.

SVAC has decided to adopt a "Lean Thinking" strategy to try to improve their deliveries and reduce their cost of running the company. The following additional information is available:

- It is estimated that all of the critical components required to build the aircraft are brought into the plant from Sky View Industries.
- At this point SVAC has decided to concentrate its total efforts on their assembly plant.
- The parts coming in to the plant are spot-checked for conformance to specifications.
- The plant operates on a one-off basis of 1000 with a 30-minute launch break and has 60-minute coffee breaks. At present a lot of expensive skilled people has prevented them from opening additional shifts.
- There are four assembly operators, one inspection operator and a shipping operator.

- Assembly of Primary Wing/Engine Section
- Assembly of Two Wing Sections
- Assembly of Long Section of the Tail
- Assembly of Fins, Fuselage, Cockpit, Tail and Wheels
- Inspection and Quality Control
- Information Gathering and Shipping

- A "Setup" or "Changeover" is required at Assembly Operator #2
- Plant Efficiency = 85%
- Customer Requirements = 24 aircraft/day



Note: This simulation is designed to be able to be physically replacement- if you can **not** do it physically it's **not** allowed. No sub-assemblies allowed. The supplier delivers parts as requested, however there must be space between the parts delivered. All parts **must** be assembled in sets.

Hints: Lock and unlock assets as necessary • make sure the table is "sent to back" • There are 15 nameplates (inspected by...) for the blue plane and 1 for the white plane to the right side (as your sitting down) of WS#5 • Ask to be followed if you are having problems • do not group, or lock any Lego parts, at risk of re-prioritizing (and not fitting together) • Ctrl-z will undo •

Watch Video:



The Different Requirements:



USE STICKIES TO DESCRIBE STEPS

STEP 1 STEP 2 STEP 3 STEP 4 STEP 5 STEP 6 STEP 7 STEP 8

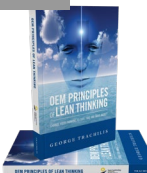


What to do at:

WS-1 WS-2 WS-3 WS-4 WS-5 SHIPPING

- 16-pin piece
- 8-pin piece
- 4-pin piece
- WS#5 Inspection Plate - white airplane
- WS#5 Inspection Plate - blue airplane
- Blue Airplane Fixture
- White Airplane Fixture

What if there is scrap?



We have our Production Facility



What to do at: WS-1 WS-2 WS-3 WS-4 WS-5 SHIPPING What if there is scrap?

USE STICKIES TO DESCRIBE STEPS



Day 1 - Build in Batches of 5

The Day View Airplane Company (DVAC) has the reputation of producing high quality airplanes for customers around the world. The company is in the process of negotiating a large contract and will be needed the business only if deliveries can be guaranteed.

DVAC has been considered a "traditional" manufacturing operation, using quarterly sales forecasts that drive their MRP system. A Master Production Schedule (MPS) is generated through the sales forecast and weekly production schedules are provided and delivered to Workstation #1 and Workstation #6. As situations change in the plant, daily adjustments to the schedule are made.

Daily orders are received from customers and a daily shipping schedule is given to the shipping department who must ship an average of 10 airplanes per day.

Questions: conduct daily checks at Workstations 2, 3 and 5, to ensure parts are available for customer requirements. The information gathered is fed back to the scheduler.

Day View Industries (DVI) is a division of and the main supplier of parts to DVAC.

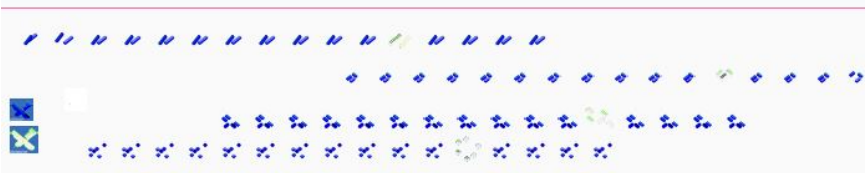
DVAC gives Day View Industries a monthly forecast of their requirements and sends their purchase orders that will cover them for the following weeks production. Day View Industries is a 50/50 joint venture of DVAC and can deliver any day of the week. DVAC decided that it would take deliveries of parts on Mondays.

DVAC has decided to adopt a "Lean Thinking" strategy to try to improve their operations and reduce their cost of running the company. The following additional information is available:

- It is assumed that all of the critical components required to build the aircraft are brought into the plant from Day View Industries.
- At this point DVAC has decided to concentrate its initial efforts on their assembly plant.
- The parts coming in to the plant are spot checked for conformance to specifications.
- The plant operates on a one-shift basis of 8:00am with a 30-minute lunch break and two 10-minute coffee breaks. 10 percent of employees arrive people have prearranged them from operating additional shifts.
- There are four assembly operators, one inspection operator and a shipping operator.
- Assembly of Primary Wing/Engine Section
- Assembly of Two Wing Sections
- Assembly of Large Section of the Tail
- Assembly of Nose, Fuselage, Cockpit, Tail and Wheels
- Inspection and Quality Control
- Information Gathering and Shipping
- A "Setup" or "Changeover" is required in Assembly Operation #3
- Plant Effectiveness = 80%
- Customer Requirements = 24 airplanes



STEP 1 STEP 2 STEP 3 STEP 4 STEP 5 STEP 6 STEP 7 STEP 8





Sky-View Airplane Company

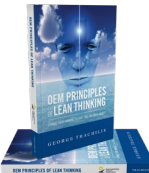
- **Traditional manufacturing set-up**
- **Produces a high-quality product**
- **Has large inventories**
- **Cannot deliver on time**
- **Is negotiating a large contract that requires delivery guarantees**



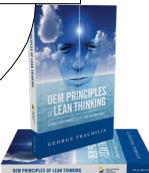
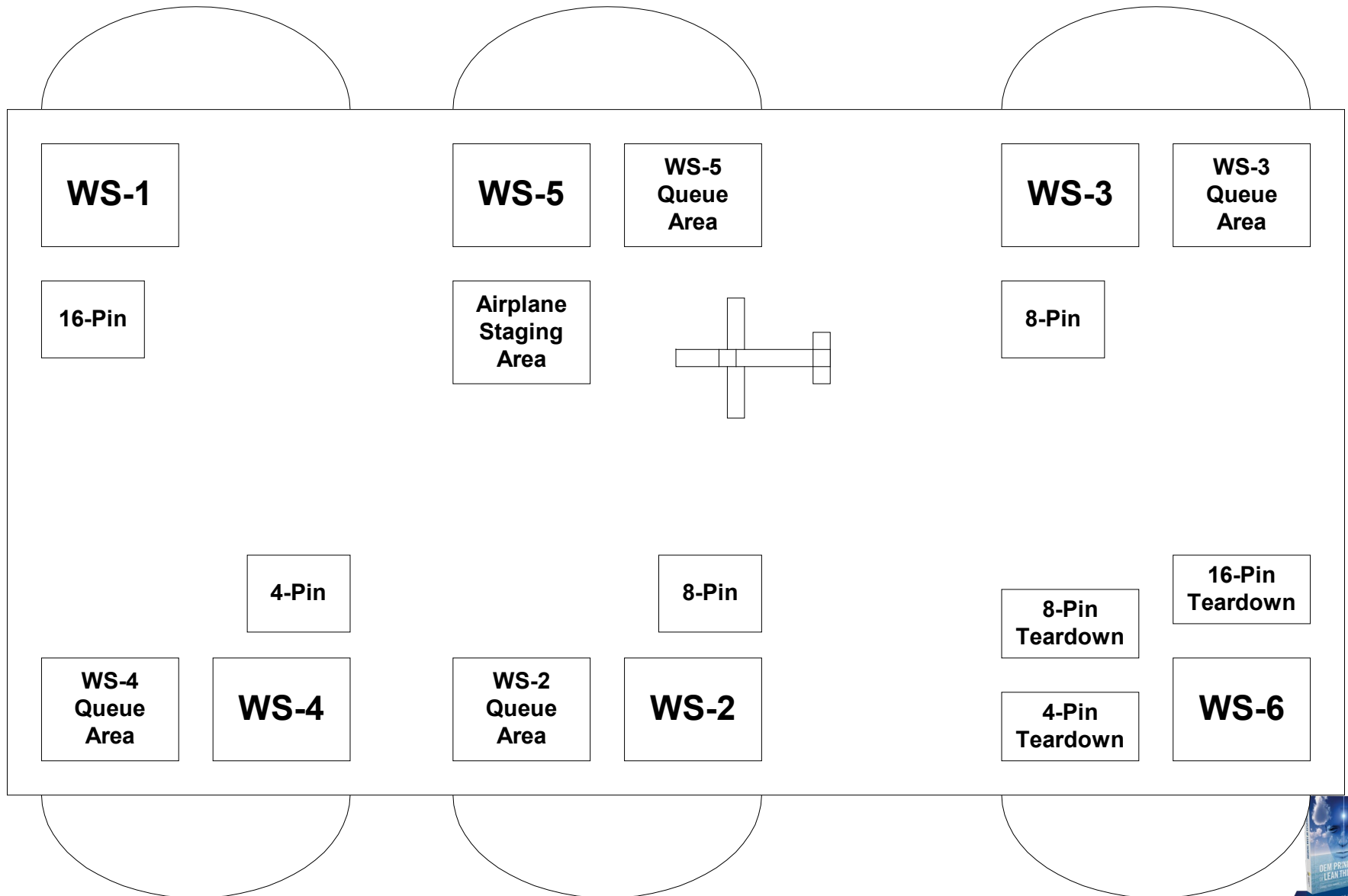
The Challenge

- **By using the principles of “Lean Thinking” we will explore improvements that will make our customers successful by achieving deliveries of 24 airplanes per day.**

–OEM Lean101 online Module 2 Section 7



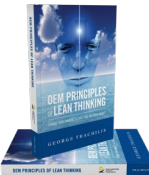
Operation Layout





Day 1

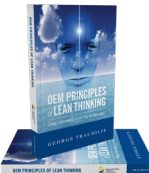
- Build in batches of 5
- Batches must remain together through final inspection
- Operators deliver batches to next operation
- Operators must procure their own parts
- Operators must maintain a steady rate of production





Day 1

- At operation 3 set-up has to be done
- Inspector must identify quality problems and set them aside but cannot communicate with the operators
- Tear-down operator will gather the data to measure how production is performing



We will be navigating Between Zoom and Mural

