

PRINCIPLE 4 :
LEVEL OUT THE WORKLOAD
(*HEIJUNKA*)

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GLIMPSE : THE TOYOTA WAY



THE TOYOTA WAY

RESPECT FOR PEOPLE

Respect

- Respect others
- Make every effort to understand each other
- Take responsibility
- Do our best to build mutual trust

Teamwork

- Stimulate personal and professional growth
- Share opportunities for development
- Maximize team and individual performance

CONTINUOUS IMPROVEMENT

Challenge

Long term vision to meet challenges with courage and creativity to realize our dreams

Kaizen

Improve business operations all the time by always trying for innovation and evolution

Genchi Genbutsu

Go to the source to find the facts to make correct decisions and build consensus and trust



TAIICHI OHNO, 1988

“The slower but consistent tortoise causes less waste and is much more desirable than the speedy hare that races ahead and then stops occasionally to doze. The Toyota Production System can be realized only when all the workers become tortoises.”



3 M'S (MUDA, MURI, MURA)



LEVEL OUT THE WORKLOAD: HEIJUNKA

Heijunka is a system of production-leveling that produces the right product mix as demanded by the customer by making optimal utilization of the available capacity

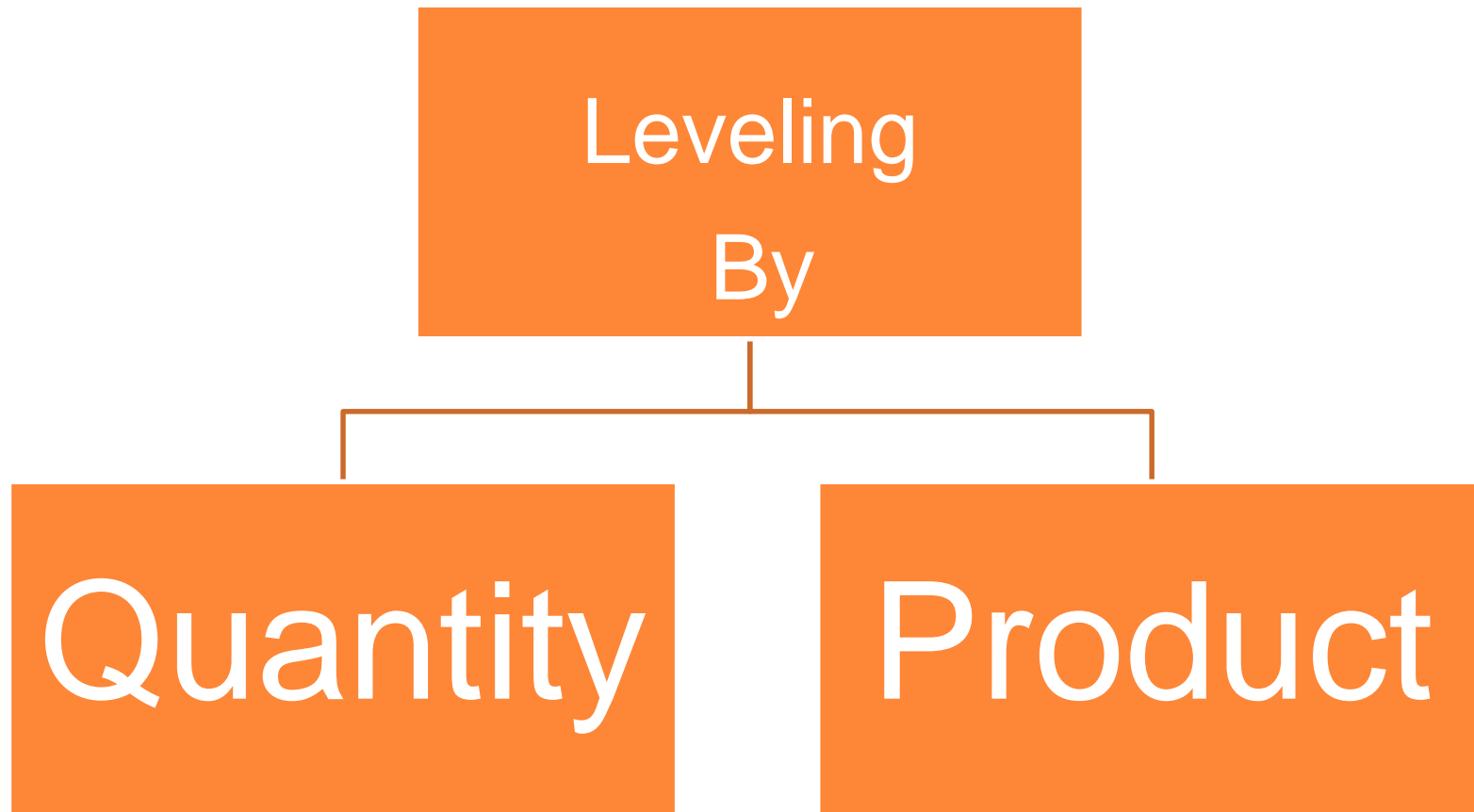


WHAT HEIJUNKA DOES?

- Stabilizes production volume and variety by consolidating total number of customer orders
- Spreads out the production in an even manner through-out the day
- Ensures high order fulfillment rate
- Ensures internal production is balanced
- Established capacity is not over or under-utilized



LEVELING OUT THE PRODUCTION

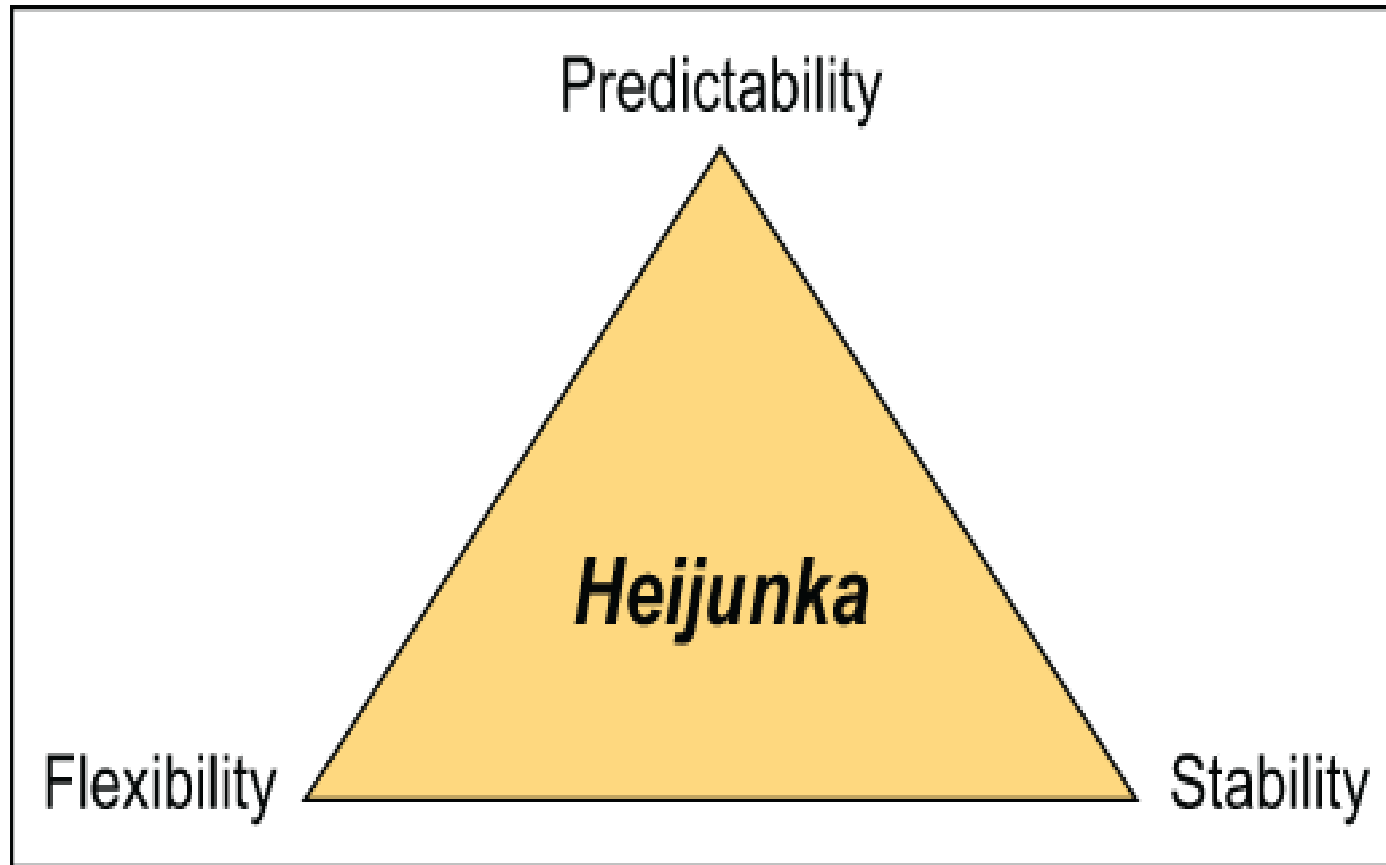


WHY IMPLEMENT HEIJUNKA

- Many companies want to produce what customers want and when they want
- They follow build-to-order approach
- However customer orders creates uneven production schedule becomes uneven
- This eventually leads to large amount of inventory , hidden problems and poorer quality
- And here arises the need for creating balanced lean workflow ***“Heijunka”***



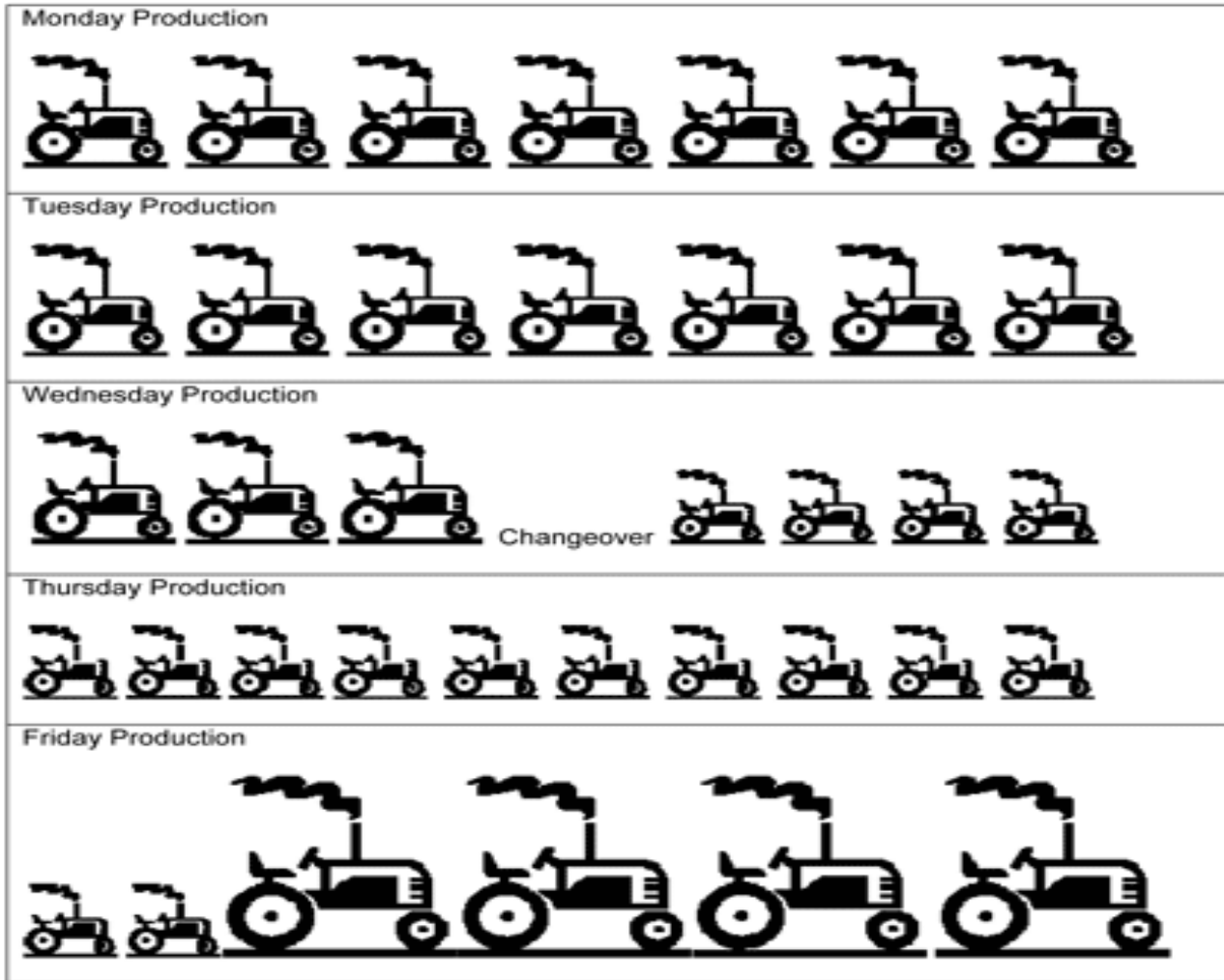
ACHIEVING HEIJUNKA



HOW DOES HEIJUNKA WORK



TRADITIONAL PRODUCTION (UNLEVELED)



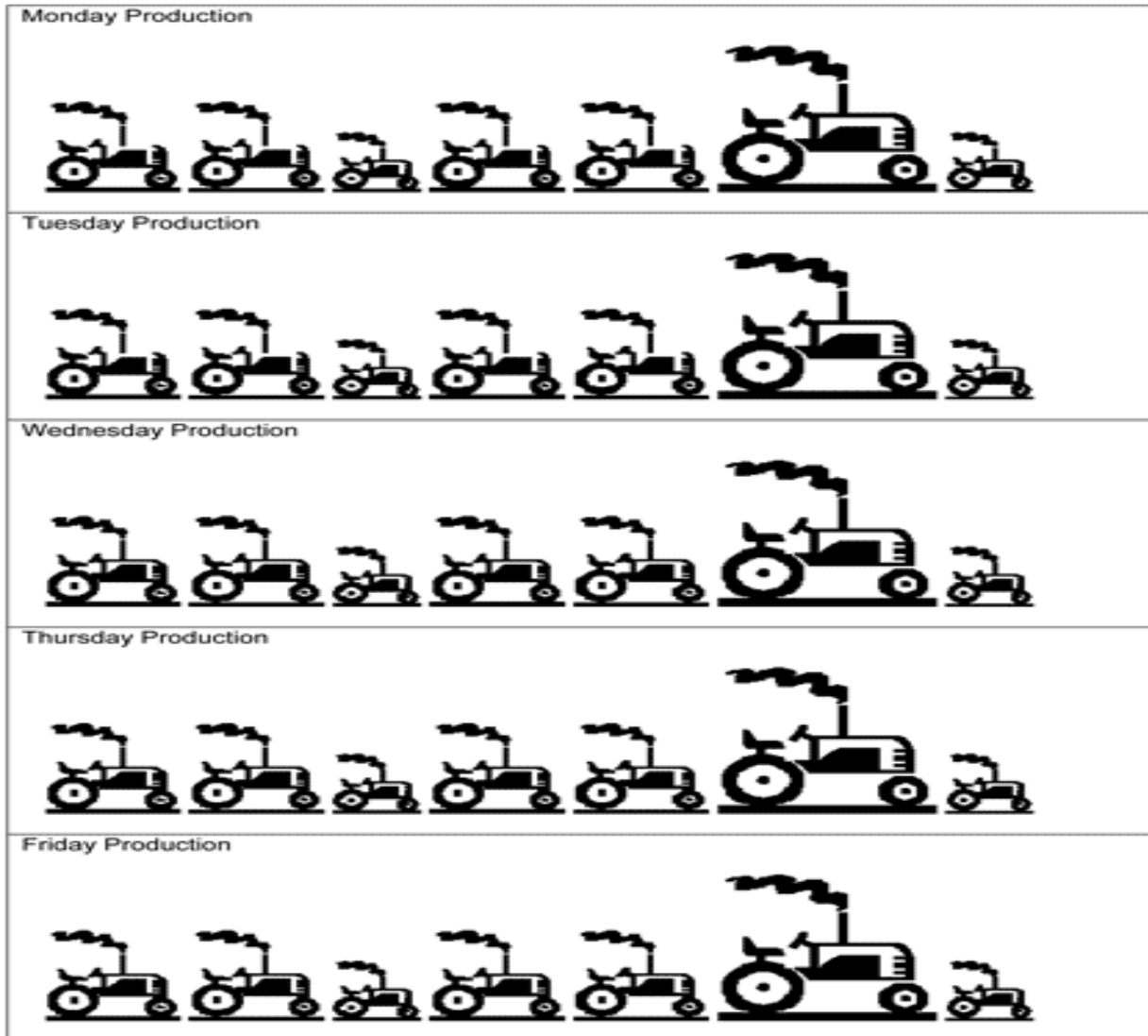
DRAWBACKS

TRADITIONAL PRODUCTION (UNLEVELED)

- Customers do not buy products predictably
- There is risk of unsold goods
- The use of resources is unbalanced
- Placing an uneven demand on upstream processes



MIXED MODEL PRODUCTION (LEVELED)



BENEFITS

MIXED MODEL PRODUCTION (LEVELED)

- Flexibility to make what customer wants when they want it
- Reduced risk of unsold goods
- Balanced use of Labor and Machines
- Smoothed demand on upstream process and the plant's suppliers



CHALLENGES OF HEIJUNKA

- Requires major tool redesign to gain flexibility
- Large inventory of finished goods
- Requires a predictable environment as well as timely-accurate data to implement
- Proper co-ordination with the customer to project better future demand



CHALLENGES OF HEIJUNKA

- High degree of discipline within the workforce
- Thought out work standards must be followed all the times
- As there is little operator leeway it can result to resistance due to lack of flexibility



THIS IMPLEMENTS HEIJUNKA

Takt Time

Volume
Leveling

Type
Leveling

Type
Standardization

Work Slowly
&
Consistently

Changeover
Time

Buffer
Inventory

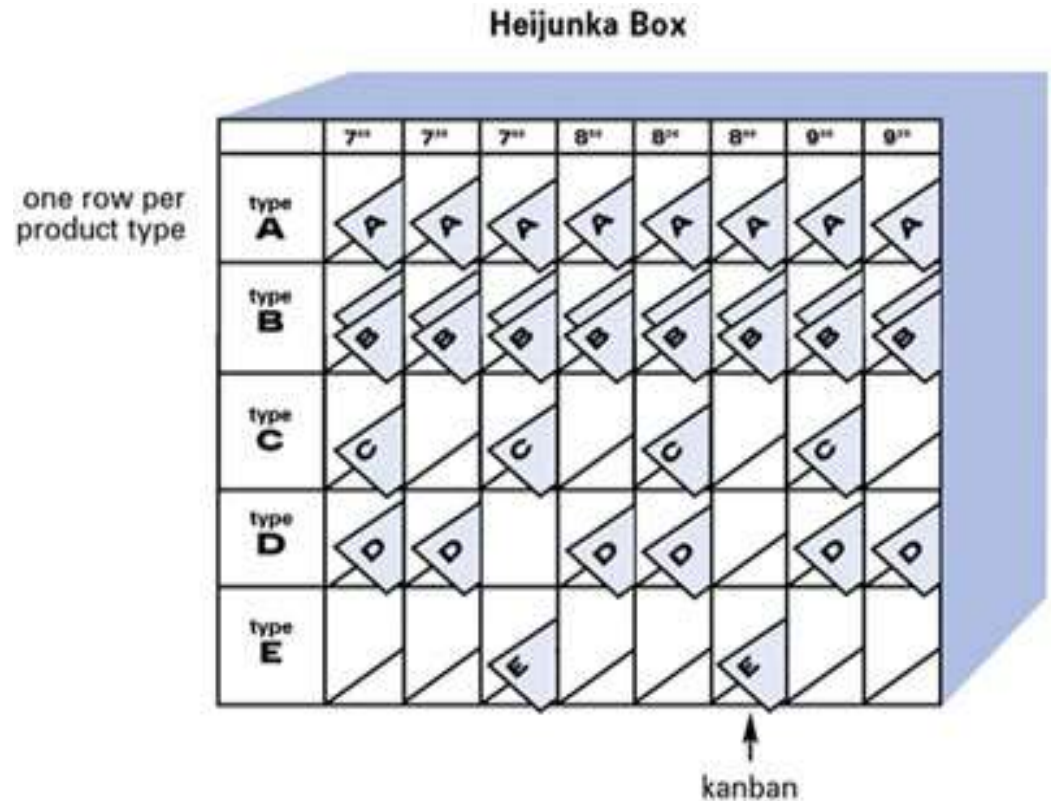
Error-
Proofing

Heijunka
Box & Board



HEIJUNKA BOX AND BOARD

- Place where the production signals or Kanban in a leveled production system are kept.
- Visual tool to show the people what to be produced



LEVELING THE SCHEDULE— INVENTORY'S ROLE

Heijunka builds inventory to safeguard against fluctuations. It categorizes inventory into :

Build-to-
Order
inventory

Seasonal
inventory
buffer

Safety
Stock

Buffer Stock



“BUILD TO ORDER”

YET

HEIJUNKA



HEIJUNKA IN SERVICE OPERATIONS

- Fit customer demand into a leveled schedule
- Establish standard times for delivering different types of service



JUST IN TIME VS. HEIJUNKA

JIT

- Meet customer demand upon request
- Reduce finished goods Inventory
- Unpredictable work schedules
- Overtime occasionally

Heijunka

- Meet customer demand in total over a given period of level production
- Finished goods inventory to make up for short periods of higher demands
- Predictable work schedules
- Overtime savings



CASE STUDY: 1

Wiremold



MTO / VGO HEIJUNKA LAYOUT

DUE TODAY

is broken up into hours for cards to be made today.

NEXT WEEK / 2 WEEKS / 3 WEEKS OUT

is broken up into days for cards to be made in the corresponding weeks

TICKETS PENDING DECISION

is for cards that are awaiting a decision on how to proceed



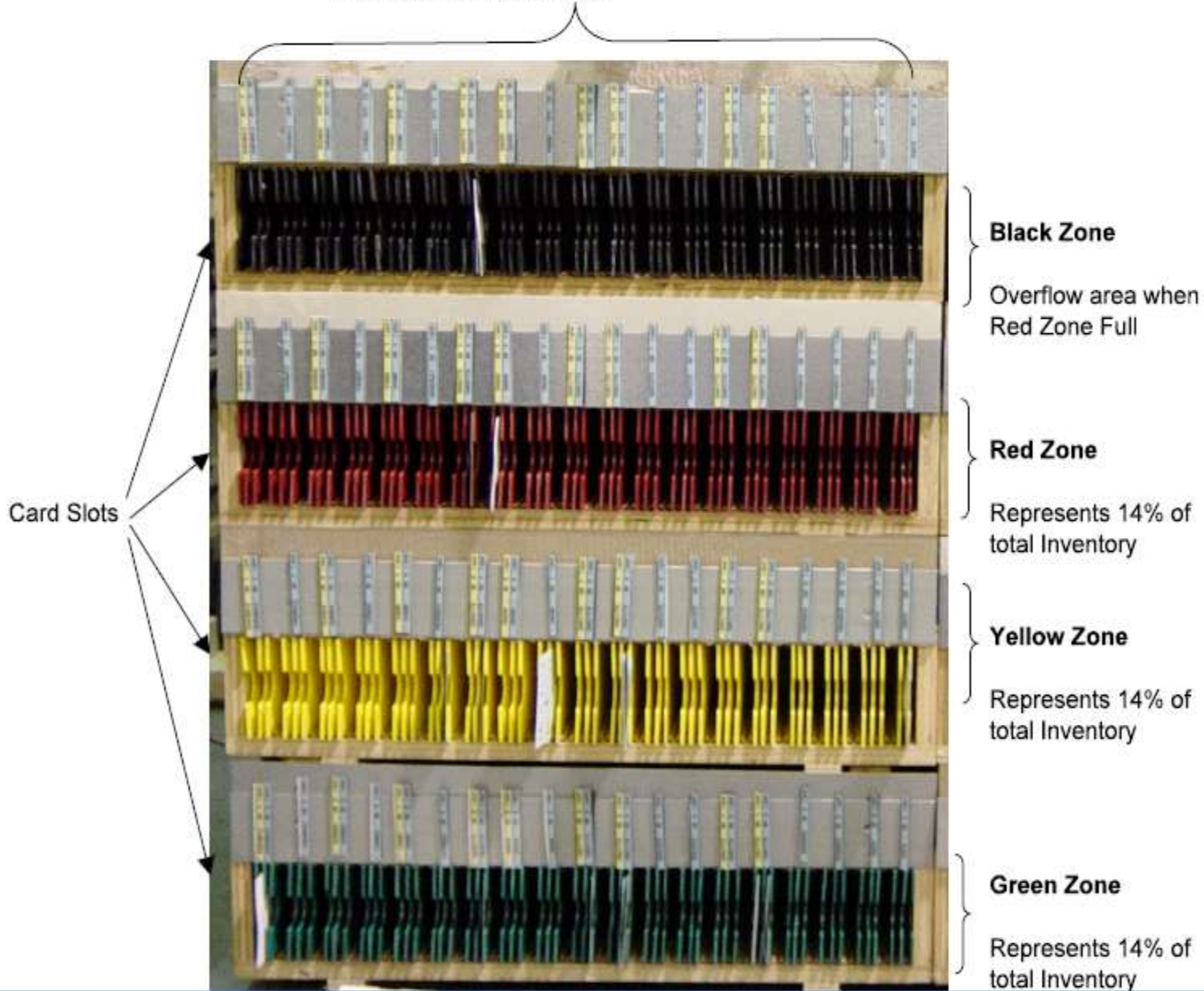
THIS WEEK is broken up into days for cards to be made each day this week

4 WEEKS & BEYOND is for cards scheduled months away.



Wiremould Warehouse Heijunka Layout

Part Number A,B,C,D etc



CASE STUDY: 2

Building Aluminum Gutters on a Level Production Schedule



RESULTS ACHIEVED BY IMPLEMENTING HEIJUNKA

- 40% lead-time reduction
- 70% change-over time reduction
- 40% reduction in work in progress (WIP)
- 60% reduction in inventory obsolescence
- 100% improvement in on-time customer delivery



CONCLUSION

Heijunka is fundamental to eliminating ***mura***, which is fundamental to eliminating ***muri and muda***







CASE STUDY: 1

EZDK Steel Plant (Egypt)



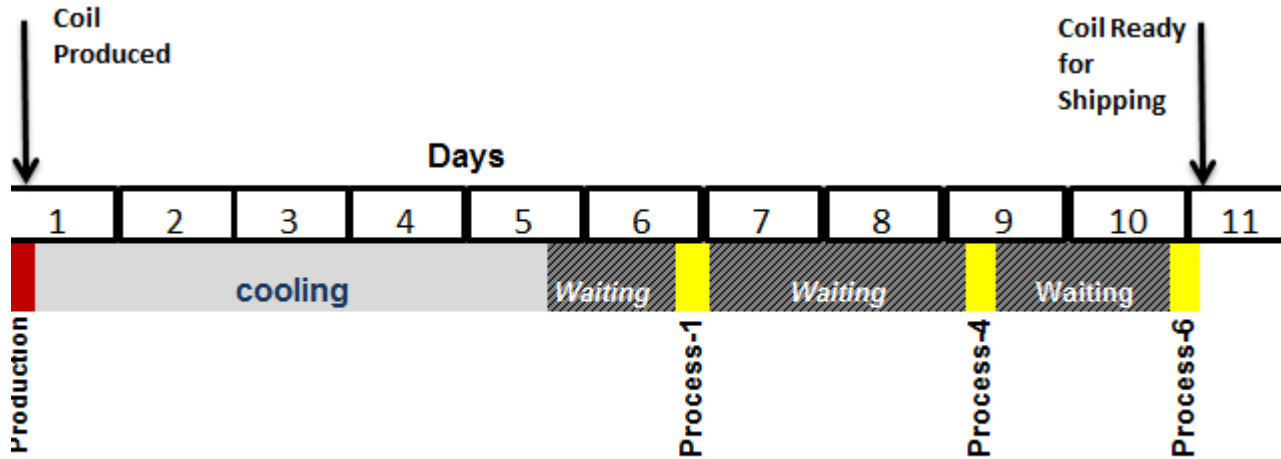
APPLICATION OF HEIJUNKA

Day 1	Day 2	Day3
Pickled Product	Skin Passed Product	slitting Product

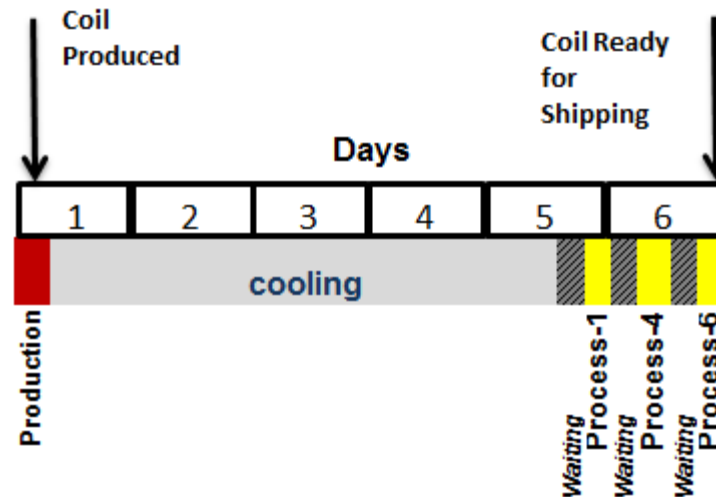
Day 1				Day 2				Day3			
Pickled Product	Skin Passed Product	Slitting Product	Sheets	Skin Passed Product	Skin Passed Product	Slitting Product	Pickled Product	Sheets	Sheets	Skin Passed Product	Skin Passed Product



IMPLEMENTING HEIJUNKA USING 'PULL'



Condition with Push Production



Condition with Pull Production

