



Lean Thinking for Process Productivity



Orlando, Dec 06, 07 2018

Agenda

1. Introduction.
2. Vision and Strategies. Action thru Processes
3. Lean Manufacturing → Lean Thinking
4. Value and Waste. 7 + 1 Wastes
5. Problem Solving & Improvement Tools
6. Measuring Performance
7. Summary

Strategic Planning

SMART Objectives



Specific

Can the detail in the information sufficient to pinpoint problems or opportunities? Is the objective sufficiently detailed to measure real-world problems and opportunities?



Measurable

Can a quantitative or qualitative attribute be applied to create a metric?



Actionable

Can the information be used to improve performance? If the objective doesn't change behaviour in staff to help them improve performance, there is little point in it!



Relevant

Can the information be applied to the specific problem faced by the manager?



Time-bound

Can objectives be set for different time periods as targets to review against?



Mission

- Processes
- Customers
- Values



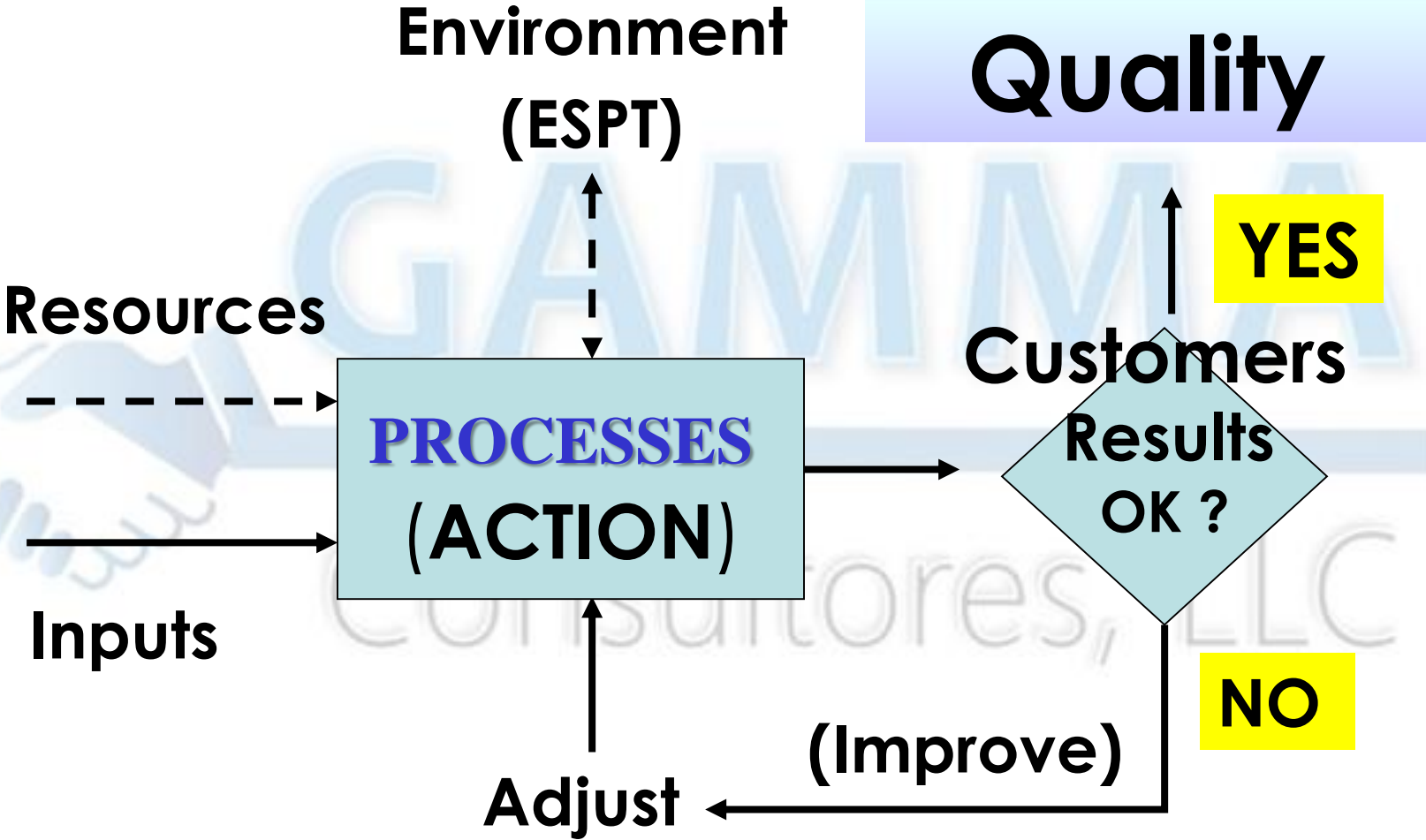
Vision

- VS1
- VS2
- VS3
- VS_n

- **SMART** Objectives
- Action Plans
- **PROCESSES**

Performance Indicators System

Processes, Customers & Quality



What is LEAN?

- *“Lean is the elimination of anything not absolutely required to deliver a quality product or service, on time, to our customers”*
- LEAN is based on eliminating unnecessary actions
- LEAN links value activity in a continuous sequence
- *“Only a small fraction of total time and effort in an organization adds value for end customer”*
- *Practice & Commitment → Lean Thinking Culture*

Why LEAN?

- Severe Competitions in all areas of business
- Firms face reduction in margins to keep the market share
- Every little saving will improve the economy
- Time for every available resource to perform the best
- Operation Cost reduction is critical to survive
- **Profits** = Price – Cost (price *dictated* by the market and cost *incurred* by us)
- **Cost** = Activities involved (**VA + NVA**)

LEAN Principles

1. Specify what creates **value** from customers' perspective
2. Adapt all steps across the whole **value stream**
3. Make those actions that create the **Value FLOW** at the **pull** of customer
4. Involve and **empower** Employees
5. Strive for **perfection** by continually eliminating the successive layers of waste.

What is Value?

- **Value** is what the **customer wants**; when they want it, in the expected quantity and quality they want
- **Establish** the “**customers’ wants**”, ask as much as needed to include all aspects
- **Analyze** the “**customers’ wants**”, define priorities and relative weights

Define Values in the Eyes of Customer

- What Product / Service?
- What attributes / Features?
- What Quality Levels?
- What Delivery?
 - Rate
 - Response time expectations
- Which is more important ?

Are we measuring it? If yes, **What and How?**

Value Adding Activity

- *Activities within the company or supply chain for which the customer would be happy to pay for*
- *An activity that changes the size, shape, fit, form or function of material or information as to satisfy customers' demands and requirements*

Non-Value Adding Activity

- Activities that do not contributing directly to satisfying customers' requirements
- Activities that consume resources but do not meet the customers' demands or requirements
- ***Necessary Non-value adding***: NVA that are necessary under present operating system & will take time to eliminate

WASTE

- *“Any activity that absorbs resources but does not create value...”*
- *“Waste is so often in front of us that we always do not see it!”*
- *“Most of our processing is a waste and it is an ongoing process to remove waste from each layer as to reach perfection”*

OHNO'S SEVEN WASTES

WASTE IMPORT

- **W**aiting (material or people)
- **I**nventory
- **M**otion (man)
- **P**rocessing
- **O**ver Production
- **R**e-work / Reject
- **T**ransportation

EIGHTH WASTE

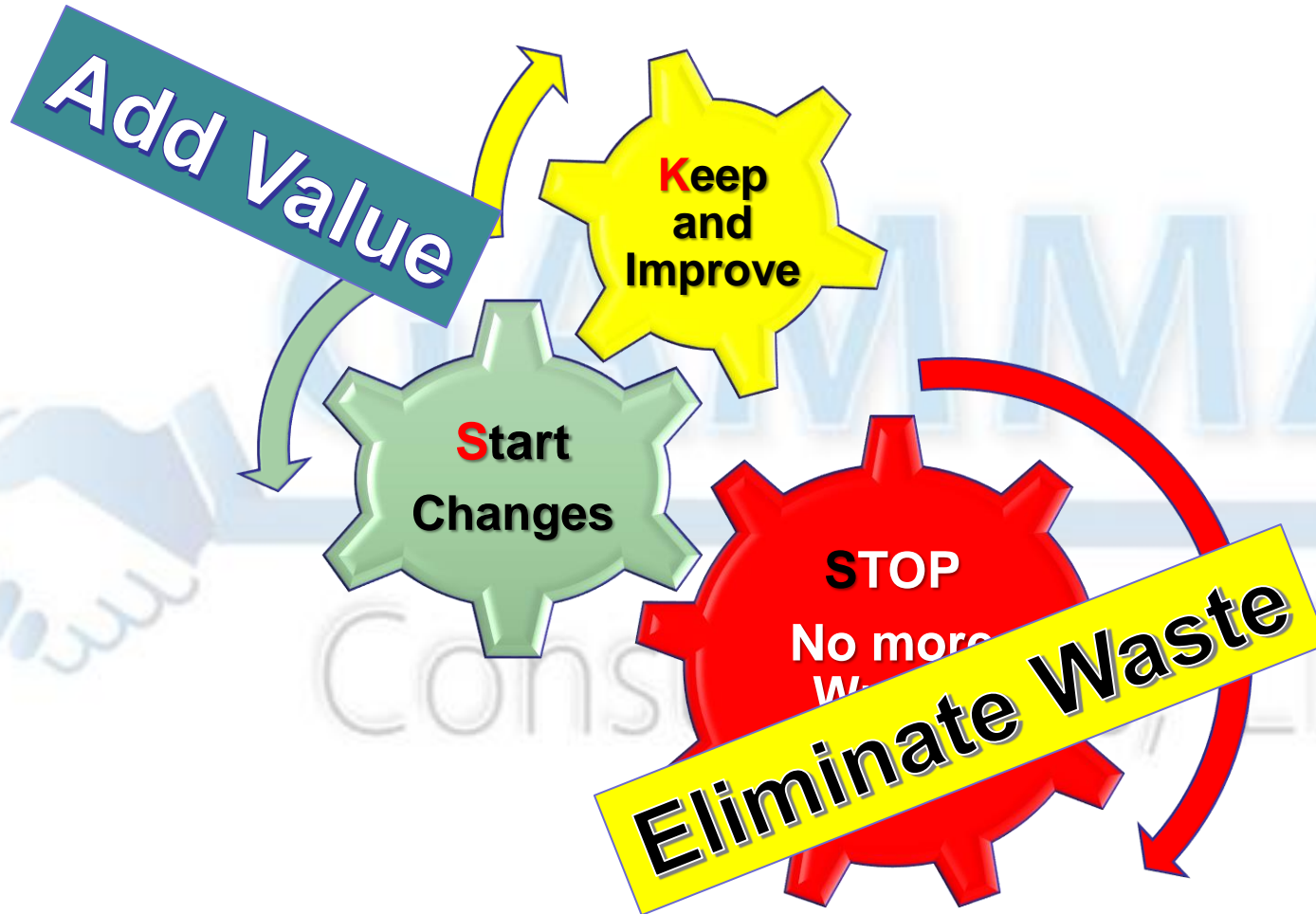
- **Untapped Resources (Brainpower)**

- People are told to **do** & *not* asked to **think**
- Problems are overlooked & opportunities missed
- People lose motivation at work. (Leadership)
- Management spends too much time dealing with day-to-day affairs instead of focusing on longer-term issues (Important vs Urgent)

Sources of Waste

- ❖ Layout (distance)
- ❖ Long setup time
- ❖ Incapable processes
- ❖ Poor maintenance
- ❖ Poor working methods
- ❖ Lack of training
- ❖ Lack of adherence
- ❖ Ineffective scheduling
- ❖ Poor supervisory skills
- ❖ Inconsistent measure of performance
- ❖ Functional organization
- ❖ Excessive controls
- ❖ No back-up / cross training
- ❖ Unbalanced workload
- ❖ No decision rules
- ❖ No visual control
- ❖ Supplier quality
- ❖ Lack of workplace organization
- ❖ Bottlenecks

Process Improvement → **KSS**



Use the RIGHT TOOLS

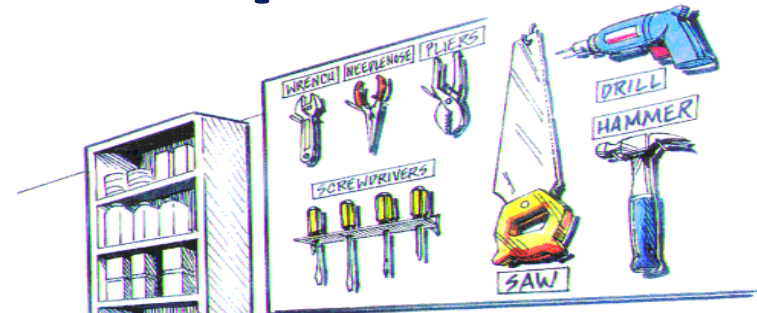
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Depending on the Type of WASTE

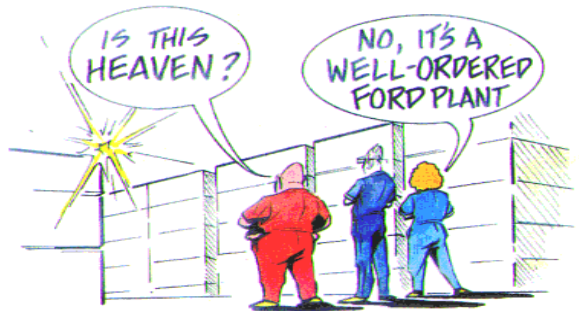
A place for everything ... and everything in its place !



1. Sort



2. Stabilize

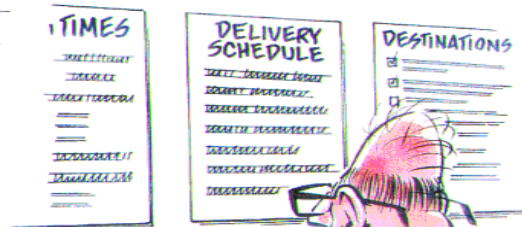


5. Sustain

5 S's



3. Shine



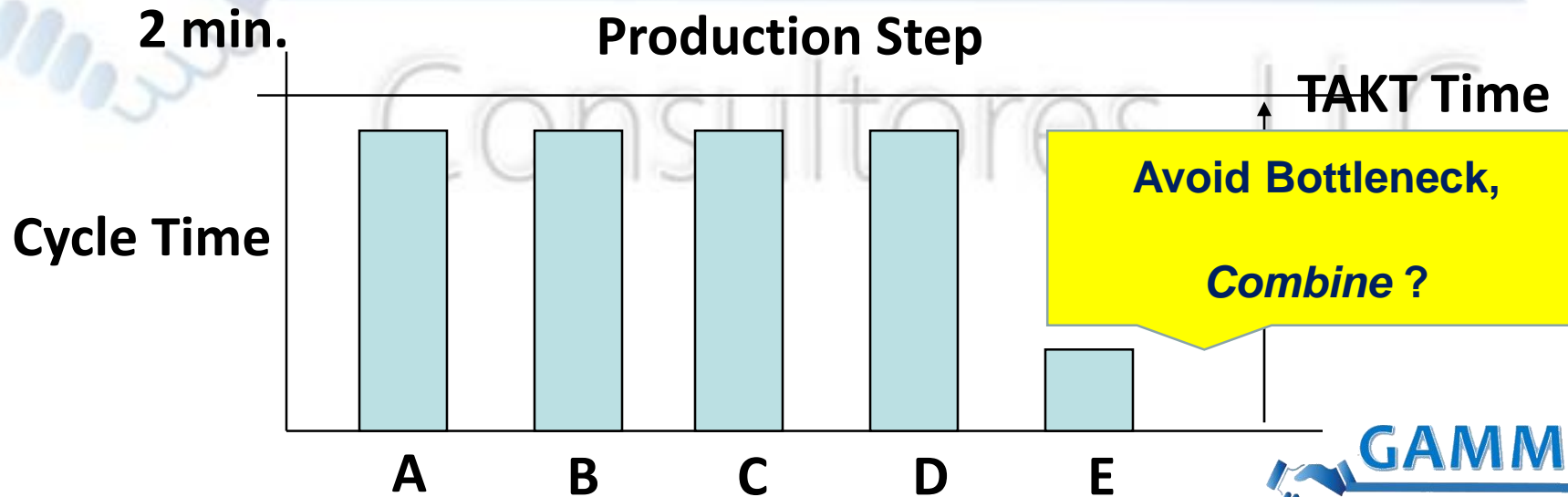
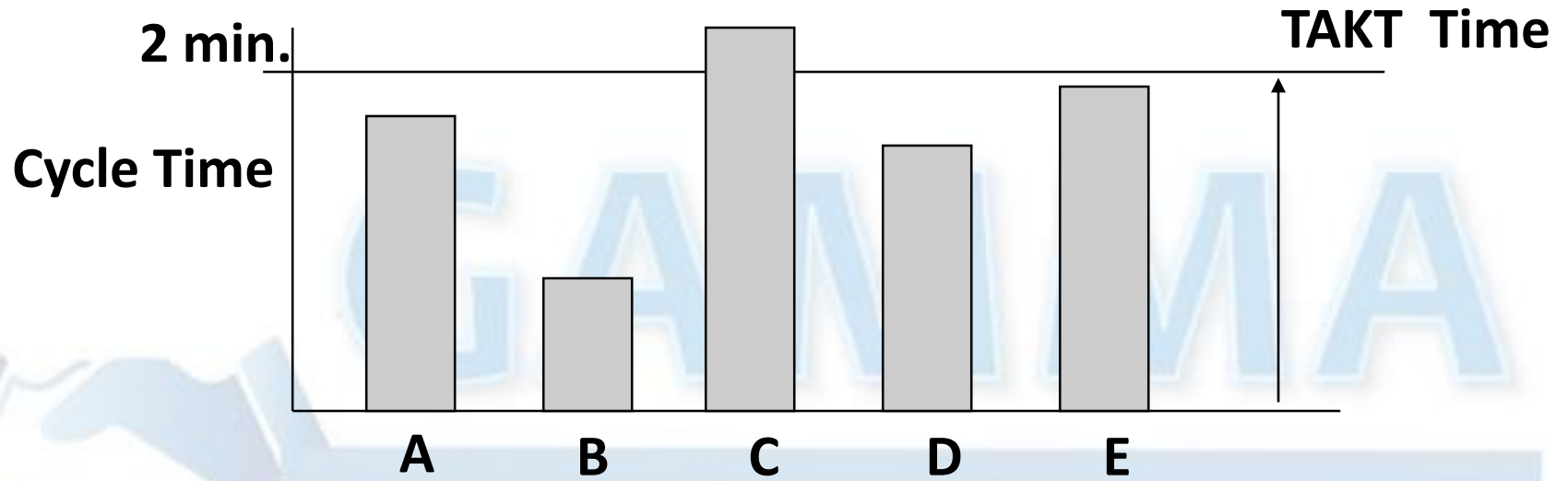
4. Standardize

Demand Rhythm : TAKT Time

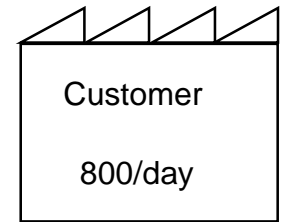
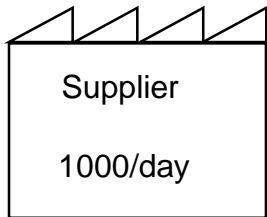
- The Available operating time to satisfy customer demands
- Establishes the pace, beat or cadence of the process
- Takt time is used to balance the various loads and identify the bottlenecks in the process

➤ **TAKT Time** =
$$\frac{\text{Net Available time per day in seconds}}{\text{Customer demand per day in pieces}}$$

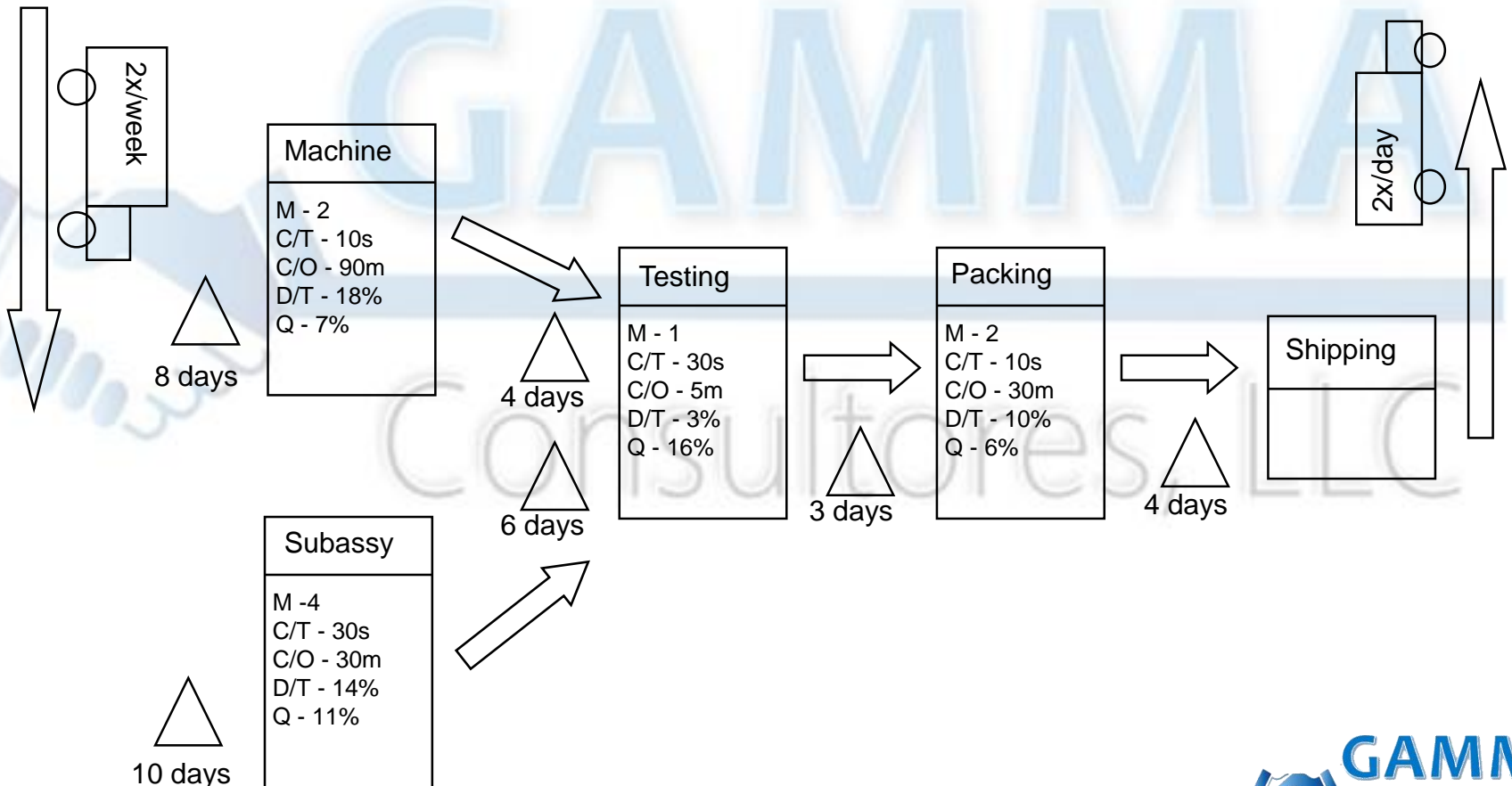
Balance: HEIJUNKA & TAKT



Sample Map of Value Stream



**Note: Value Adding time is 70 secs
Inventory moving is 23 days!**



FLOW Design – Lay Out – One Piece

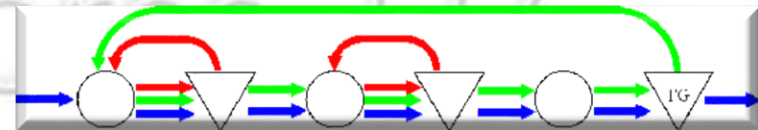
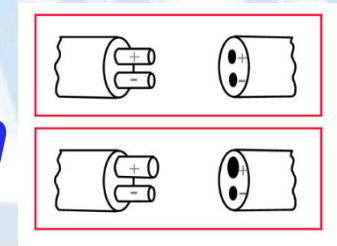
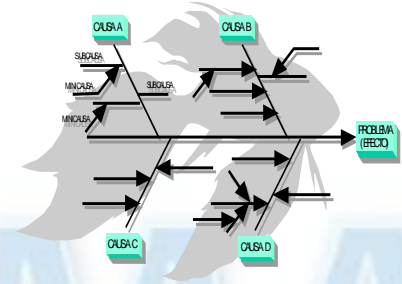
- Product or service **does not stop** once it is launched
- No “de-tours”, “no back-flows”, “**no waiting**”
- **Interruptions** to in-flow work process must be **avoided**
- ✓ *“When information and material **flow in opposite directions**, the third flow – **CASH FLOW** starts pouring in”*

Single Minute Exchange of Dies (SMED) Quick Changeover (QCO)

1. Do Product **Changes as Quick as Possible**
2. Product Mix and Sequence **Scheduling**
3. Be ready with all “**External**” operations. Those **not requiring** line to stop. Minimize “**Internal**”
4. Use **Material Handling Devices** to reduce Set Up
5. **Prepare** Ingredients and Packaging in advance
6. **Standardize** all Changeover Operations

Other Tools

- *Cause – Effect Diagram*
- *Total Productive Maintenance*
- *Poka-Yoke. Mistake Proof. Andon*
- *Kanban / Constant Flow of Work In Process*
- *Job Standards. Procedures*
- *Reduce Constraints. Bottlenecks*



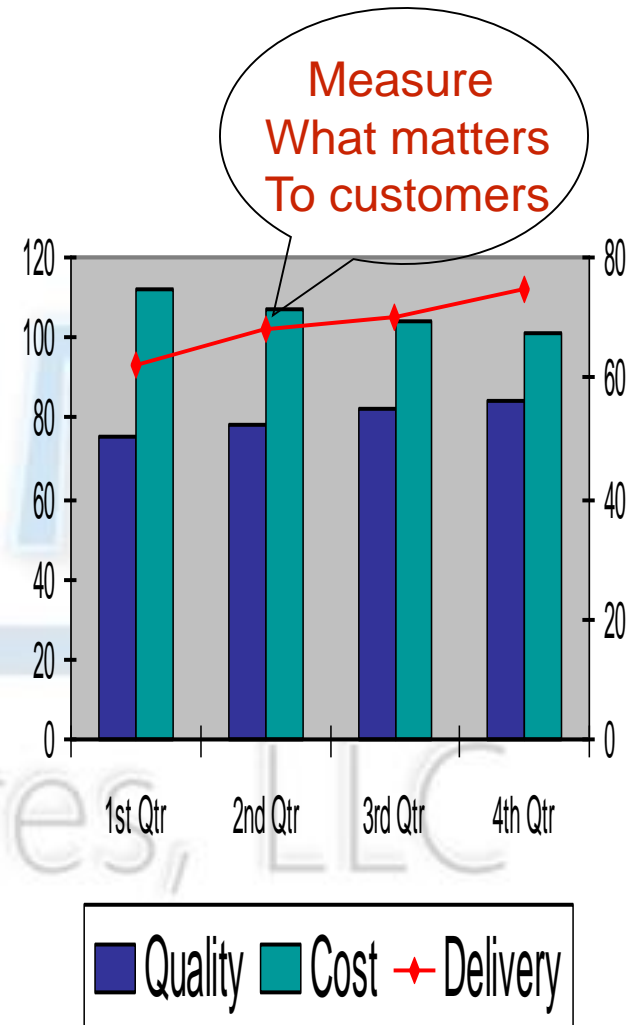
Seek Perfection

- Continuously monitor, evaluate and assess the process
- Eliminating wasted steps and defects
- Reducing inventories and volatility
- Cutting management time devoted to fire-fighting and negotiating. Planning

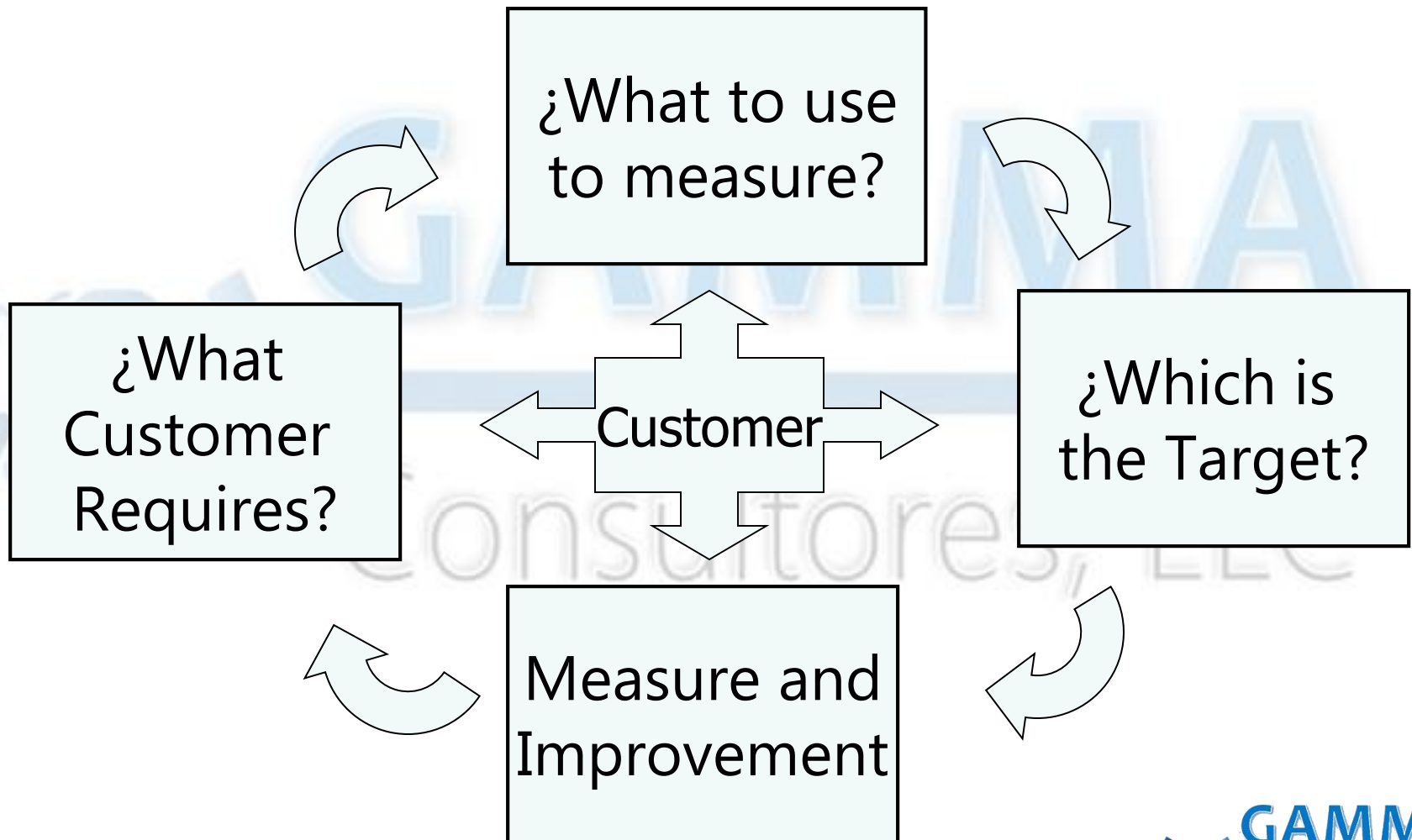
“The whole enterprise must pursue not its competitors but perfection”

What to measure?

- % **On time delivery** to customers
- Do we meet what we **promise** our customers? (Y / N)
- **Cycle Time & Throughput**
- **Quality** – RTY (*rolled throughput yield*), TDU (*total defects per unit*)
- **Productivity** – (Units produced / pers-hour)
- **Work In Process Inventory** (Units)
- Quality, Delivery, **shortage frequency** of purchased items
- Annual **Inventory turns**
- **Finished Goods** inventory
- **Floor Space** consumption (used cu. ft. / available cu. ft.)



Performance Indicators Cycle



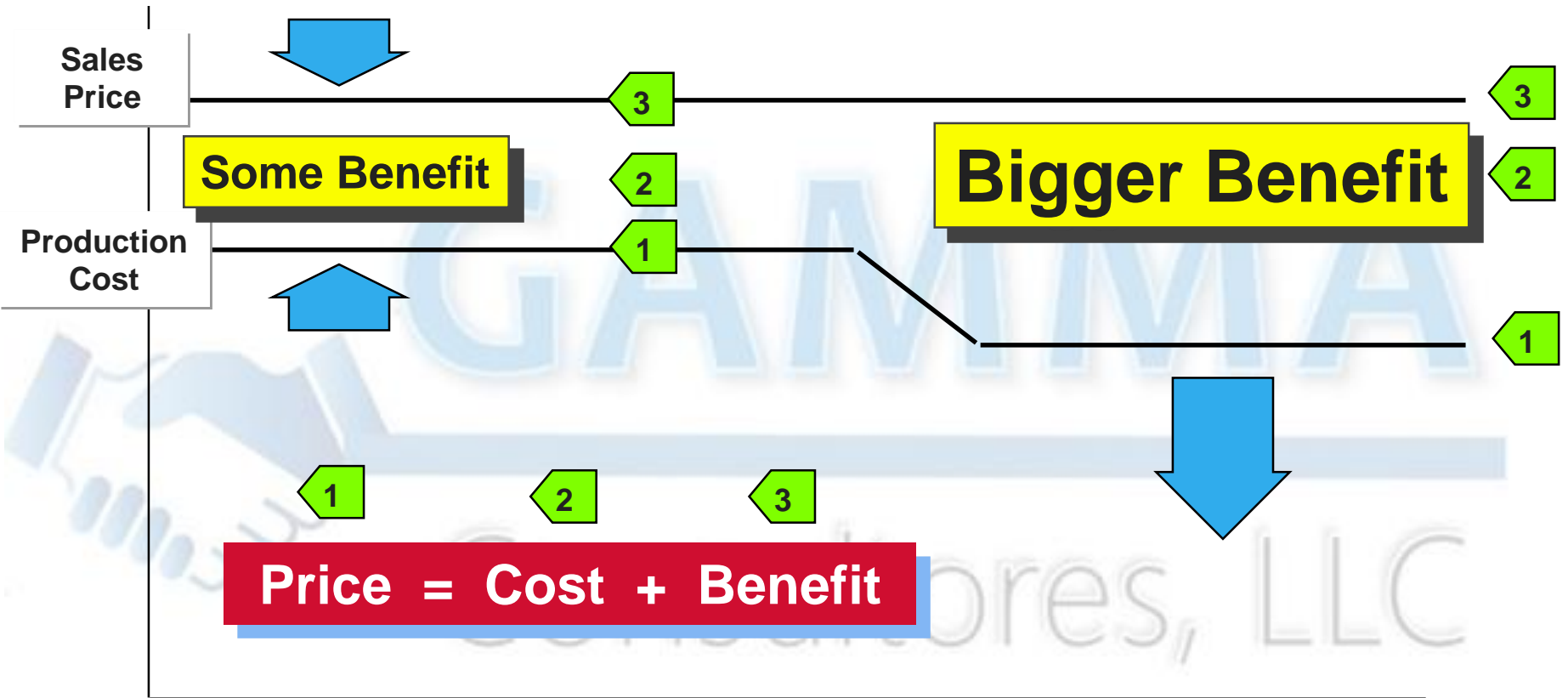
OEE – Overall Equipment Effectiveness



OEE = Availability * Performance * Quality

OEE = 0,75 * 0,70 * 0,96 = 0,50 = 50%

Cost Reduction



Measure Production Cost (\$ / Pound)

LEAN Message

There is only **One Place**
where **Success** come
before **WORK**, it is ...
at **DICTIONARY !!**

Muchas
Gracias.
Thanks

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