

THE 5S METHOD

Optimize your workspace in 5 Steps

- ### 1 SEIRI (Sort)
- 
- **Eliminate** what is unnecessary.
 - **Distinguish** what is essential from what is not.
 - **Organize** tools, materials, and required equipment, and set aside anything superfluous.

- ### 2 SEITON (Set in order)
- 
- **Organize** efficiently.
 - Arrange items to **ensure easy access**.
 - Use **labels** or designated storage locations for each item.

- ### 3 SEISO (Clean)
- 
- Maintain a **clean workspace**.
 - **Clean** the work environment on a regular basis.
 - **Inspect equipments** to identify any potential issues.

- ### 4 SEIKETSU (Standardize)
- 
- **Establish standards** to maintain consistent practices.
 - **Define clear, simple rules** for sorting, organizing, and cleaning.
 - Formalize best practices to **ensure they endure over time**.

- ### 5 SHITSUKE (Follow and comply)
- 
- Maintain **discipline**.
 - **Encourage everyone's commitment** to comply with the established rules.
 - Conduct regular audits to ensure the **long-term sustainability of actions**.

THE DMAIC METHOD

Provide structure for implementing a Lean approach

D

DEFINE



- **Identify** the problem and the objectives.
- **Determine** what must be improved.
- **Identify** the stakeholders and define expectations.
- **Document** a clear set of requirements.

M

MEASURE



- **Collect** reliable data.
- **Assess** the current situation using precise metrics.
- **Identify** the potential causes of the issue.
- **Measure** current performance.

A

ANALYZE



- **Identify** the root causes.
- **Review** the collected data to pinpoint the issues.
- **Use tools** (cause-and-effect diagram, 5 Whys).
- **Prioritize** the critical causes to be addressed.

I

IMPROVE



- **Implement** effective solutions.
- **Design and test** appropriate solutions.
- **Implement** corrective actions.
- **Monitor** the outcomes of the improvements.

C

CONTROL



- **Ensure** the sustainability of improvements.
- **Standardize** new practices.
- **Implement** monitoring tools to verify performance.
- **Adjust** processes as needed.

THE 10 COMMANDMENTS OF KAIZEN

Implement changes gradually

1

Let go of fixed assumptions and **embrace change**.

6

Seek **low-cost ideas** to improve processes.

2

Exercise **sound judgment** and avoid following rules **without question**.

7

View problems as **opportunities for improvement**.

3

Ask questions to identify solutions rather than seeking excuses.

8

Ask yourself **five times** the question "**Why?**" in order to identify the **root cause of a problem**.

4

Do not seek immediate perfection; begin with **practical, achievable changes**.

9

Give priority to the **ideas of ten people** rather than relying on a single person.

5

Correct errors immediately to prevent them from spreading.

10

Improvement is endless; each day presents an opportunity to make progress.

VA & NVA

Distinguish perceived value from waste

VA

WHAT IS VALUE-ADDED?

Brings together **all activities that deliver direct value to the customer** and for which he is **willing to pay**.

IDENTIFY VALUE-ADDED

- **Transforms** the product or service.
- Necessary to meet **customer expectations**.
- Completed correctly **the first time**.

EXAMPLES OF VALUE-ADDED

- **Product assembly**.
- Essential **quality control**.
- **Fast and compliant** delivery.

NVA

WHAT IS NON-VALUE-ADDED?

Unnecessary or inefficient activities that **do not provide any benefit to the customer** and that increase costs or lead times.

REDUCE NON-VALUE-ADDED

- **Analyze** and **refine** processes.
- **Eliminate waste** (using 5S or Kaizen).
- Focus efforts on activities that **genuinely increase value**.

EXAMPLES OF NON-VALUE-ADDED

- Unnecessary **movement**.
- **Waiting** or **overproduction**.
- Correction of **errors**.

THE SMED METHOD

Reduce changeover time

1 TRANSITION BETWEEN PRODUCTION RUNS

This step involves measuring the **total time required** to **move** from the end of producing a run of **Product A** to the start of producing **Product B**.



2 SEPARATE INTERNAL / EXTERNAL TASKS

Categorize tasks that can be completed **during** machine downtime (internal) and those that may be performed in advance **before** the stoppage (external).



3 CONVERT INTERNAL TO EXTERNAL

By **analyzing** each internal task, it becomes possible to **anticipate** it and **convert** it into an external task, thereby optimizing setup and adjustment times.



4 REDUCE THE REMAINING INTERNAL TASKS

It is essential to **analyze** each internal task that could not be converted into an external task, and to **apply innovative thinking** in order to **reduce its duration as much as possible**.



5 OPTIMIZE EXTERNAL TASKS

Although external tasks do not affect machine downtime, optimizing them **helps reduce** the total changeover time.



6 STANDARDIZE THE NEW PROCESS

The objective is to define the **optimal method**, analyze workflow, and use the **ABC/FMR matrix** to reduce waste and prioritize essential equipments.



VSM ICONS

Standardize visual language

Value stream mapping, or **VSM** uses a highly specific visual vocabulary.
Below are some of the most commonly used symbols.

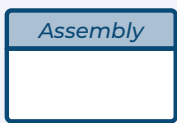
External resource



Warehouse / Storage



Manufacturing process



Data box



Inventory



Operator



Pushed flow



Finished goods movement



Physical pulled flow



FIFO



Supermarket



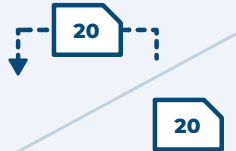
Buffer



Kanban batch arrival



Kanban production card



Work schedule



Workload leveling (Heijunka box)



Electronic information flow



Paper-based Information Flow



Kaizen workshop



Product cycle time



Lead Time



Logisticians



Shipment by truck



Shipment by train



Shipment by ship

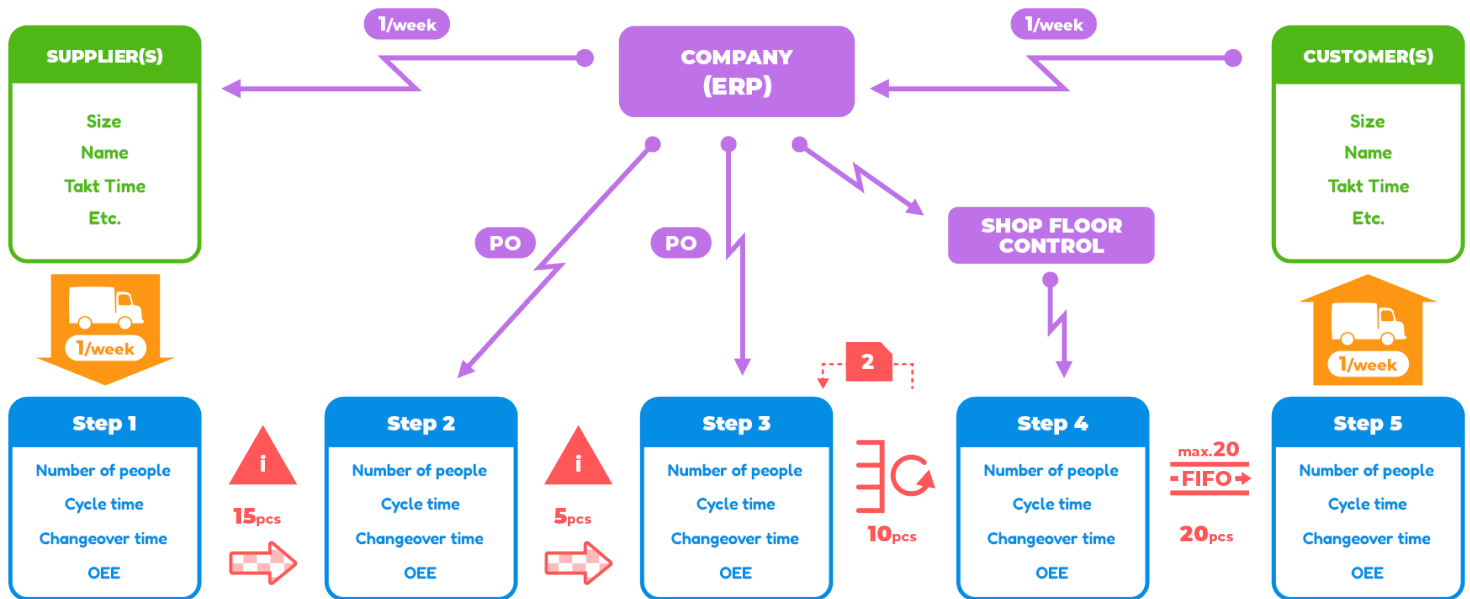


Shipment by air



BUILD A VSM

Map the production line value



Define the customer requirements

Position the **customer** in the **upper right** and the **suppliers** in the **upper left**, together with their key information (name, logistics, Takt Time, etc.).

Describe each step of the process

Position **each step** and include **all relevant informations** observed (number of people, cycle time, OEE, etc.).

Make inventory visible at each step

Identify inventory using an “i” triangle, indicate the number of parts, and specify whether control is **push-based**, **Kanban**, or **FIFO** using the VSM icons.

Define external material flows

Draw the flows between the **production line**, **suppliers**, and **customers**, as well as the delivery **method** and **delivery frequency**.

Define information and material flows

Position the **central information system** (ERP) between **customers**, the **company**, and **suppliers** to manage customers and production orders.

THE 5 KEY LEAN PRINCIPLES

Integrate the core principles of the philosophy

Place the customer at the center

The customer is the **top priority**. Focus on what they **want** and what they are **willing to pay for**. This is what is known as **value added**.

Identify and reduce waste

Identify anything that does **not add value** for the **customer**. These are **waste**. Use tools to identify them, then **reduce them** as much as possible.

Streamline the flow

Minimize the time between **order** and **delivery**. Reduce inventory and accelerate each step to deliver **faster** and at **lower cost**.

Engage all team members

Please ensure **everyone** is involved. **Collective intelligence** helps address customer needs, reduce waste, and make processes more efficient.

Commit to continuous improvement

Improvement never stops. Adapt to change, identify emerging waste, and keep teams engaged to achieve **lasting success**.

THE 5W1H

Analyze an issue from every angle

W

WHO?

Identify the individuals directly or indirectly **affected by the issue** in order to **better understand** each person's responsibilities and perspective.



W

WHAT?

Describe the **nature of the issue** as well as its **consequences**. It is essential to be **precise** and **factual** in order to avoid misunderstandings and incorrect interpretations.



W

WHERE?

Determine where the problem **occurred**. Is it confined to a workstation, a machine, a department, or a region? This information allows for **more precise targeting of corrective actions**.



W

WHEN?

Specify the point in time or the period during which the issue emerged. This question helps identify **recent changes** that may have contributed to the issue.



H

HOW?

Describe the actions or steps **leading** to the problematic situation. This makes it possible to visualize the **sequence of events** and to **understand** the mechanisms involved.



W

WHY?

Review previously obtained informations in order to identify the **root cause of the issue**. This question **clarifies the impacts** on quality, cost, timeline, or satisfaction.



THE ISHIKAWA DIAGRAM

Model the causes and effects of a problem

1

DEFINE THE PROBLEM

Write down the problem or effect to be analyzed.

2

DRAW THE MAIN SPINE

Draw a horizontal arrow pointing toward the issue.

3

LIST THE PRIMARY CATEGORIES

Draw the branches for each category (5M).

4

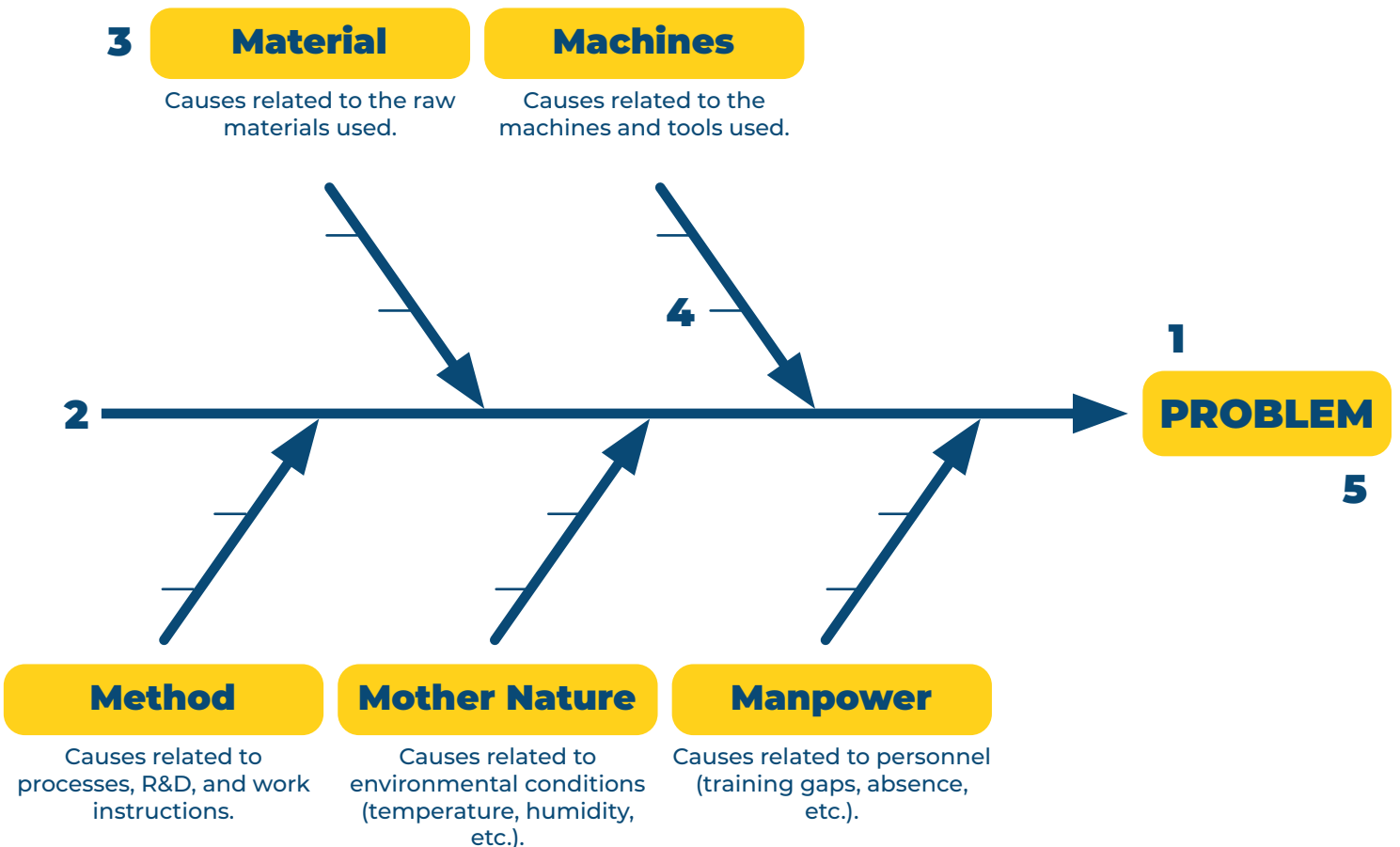
ADD POTENTIAL CAUSES

List the causes within each primary category.

5

ANALYZE

Identify the most significant causes.



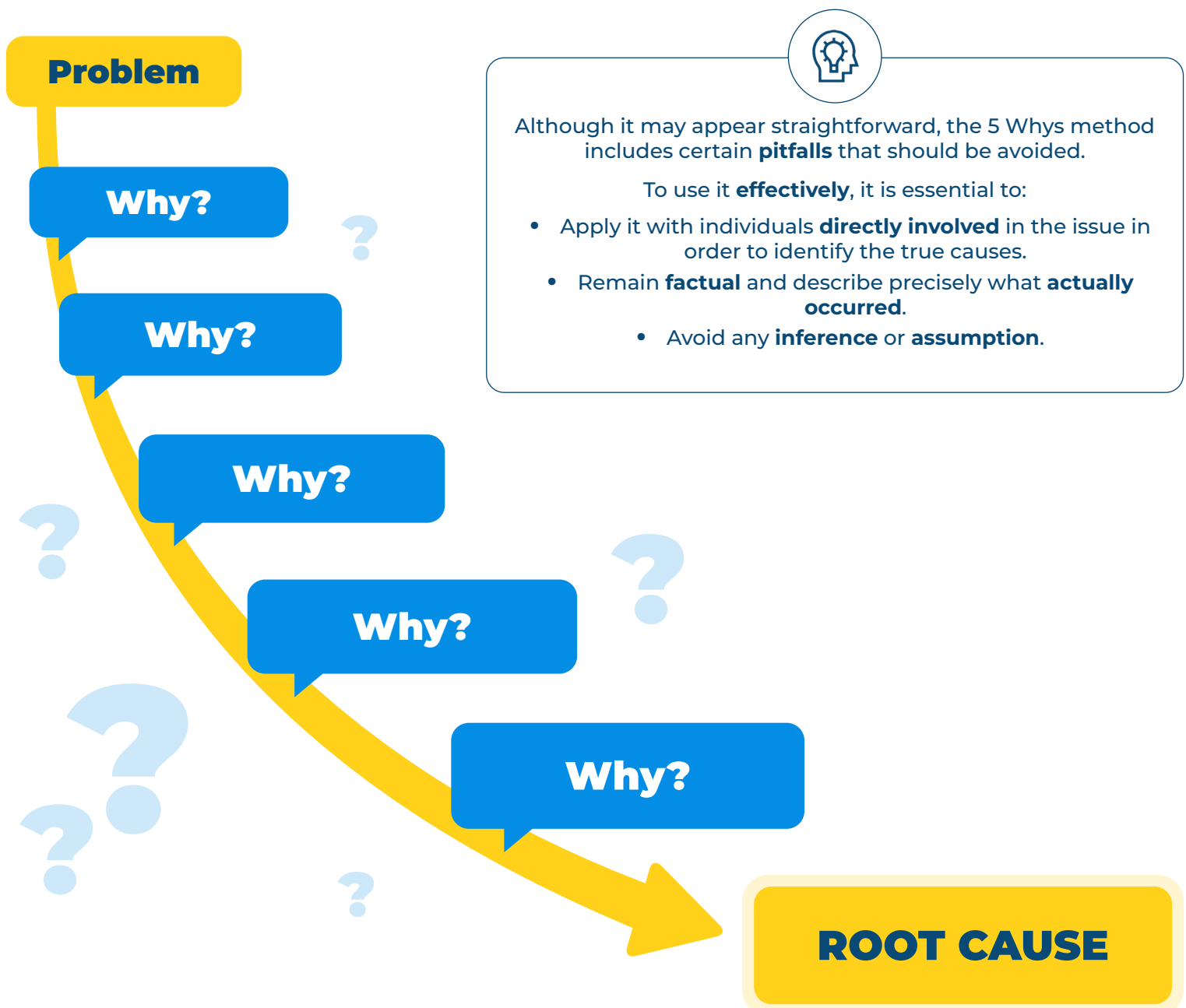
THE 5 WHYS METHOD

Trace a problem back to its root cause

The **5 Whys** method makes it possible to **identify the root causes of a problem**.

By repeatedly asking the question “Why?” starting from the initial problem, one gradually removes the **layers of symptoms** in order to trace back to the **underlying causes**.

Despite its name, it is not required to ask the question exactly five times: **depending on the situation**, it may be appropriate to stop sooner... or to continue further, until reaching the **true root cause**.

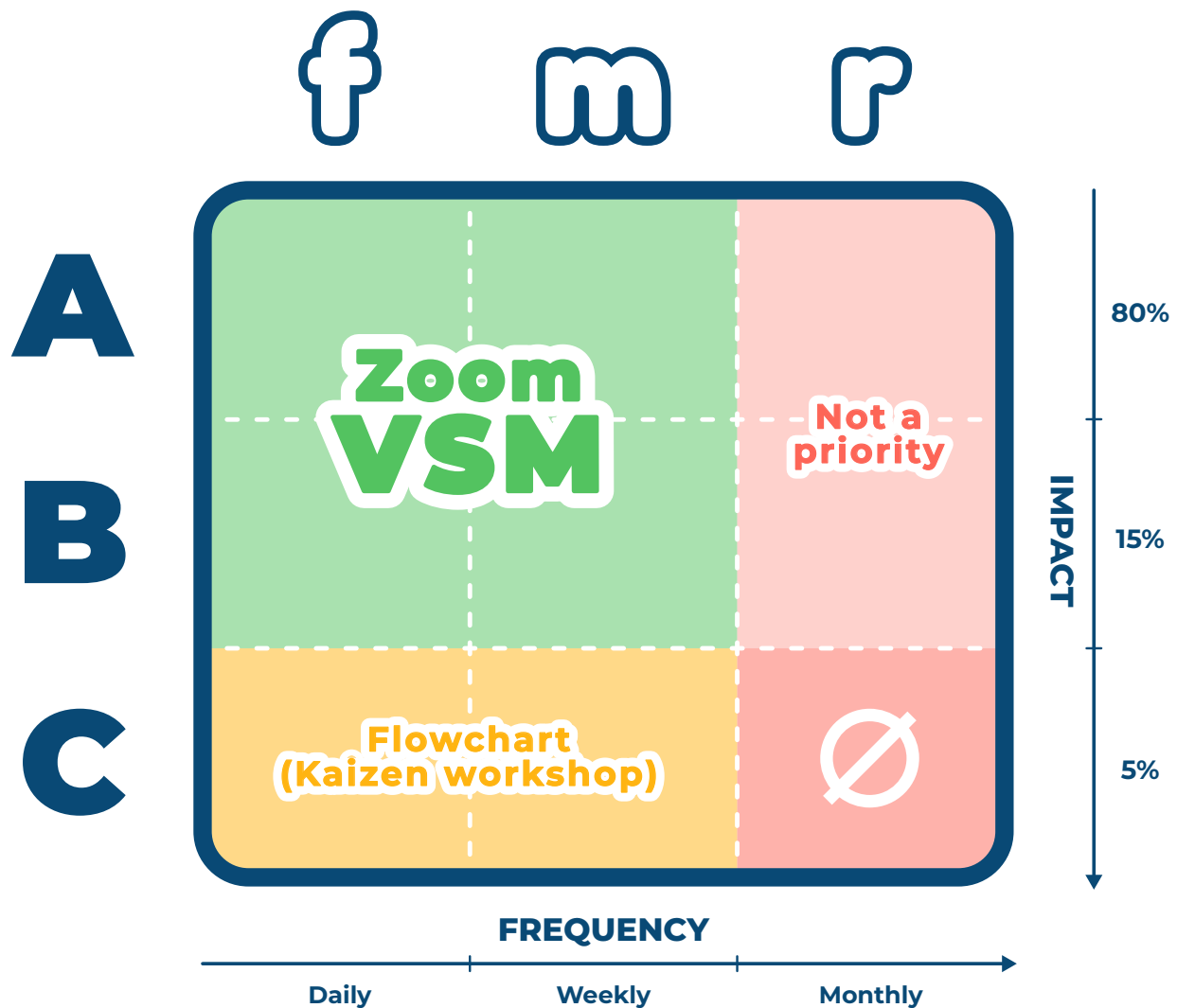


THE ABC/fmr MATRIX

Define a project's scope

The ABC/fmr Matrix helps **define the scope of action** to ensure your project starts effectively.

To ensure you achieve the **greatest gains** with the **least effort**, please focus on the products that account for the largest share of your **production volume, revenue, or hours worked**.



High value-added products manufactured daily/weekly

Low value-added products manufactured daily/weekly

High value-added products manufactured monthly or more

Low value-added products manufactured monthly or more

THE SPAGHETTI DIAGRAM

Visualize and optimize movement within a process

This tool enables you to visualize and analyze movement within a process by mapping motion flows. It highlights unnecessary routes, back-and-forth travel, and improvement opportunities to optimize work organization.

DEFINE THE OBJECTIVE

Identify the **process**, the **operator** or the **flow to be analyzed** (staff movement, material flow, information circulation, etc.). Specify the **observation period** in order to collect **relevant data**.

MAP THE SPACE

Draw a layout of the relevant area (shop floor, office, warehouse, etc.), indicating workstations, machines, access points, and other **key elements** of the process.

MAP MOVEMENTS

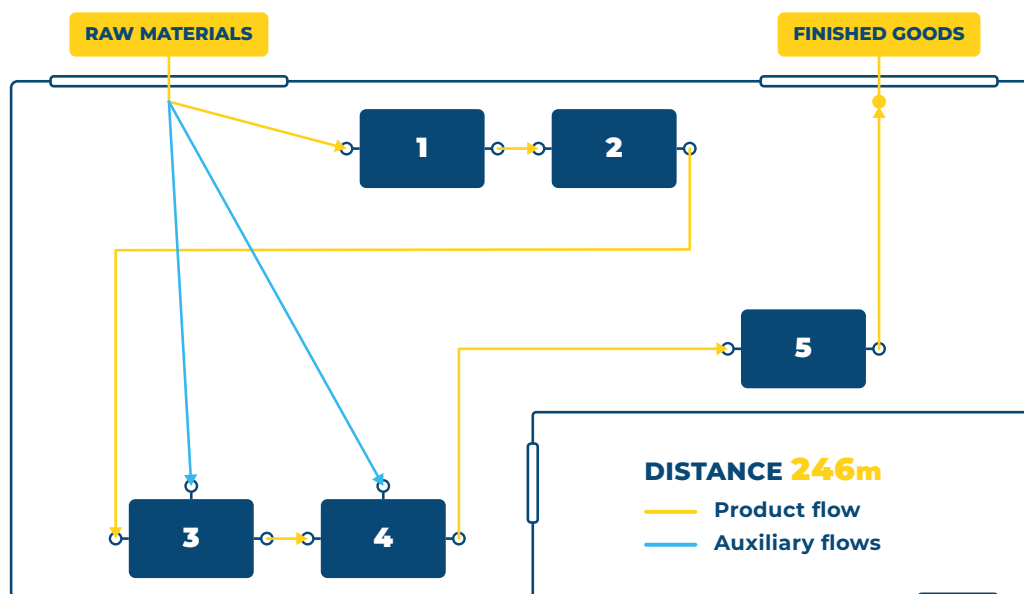
Observe movements in real time and **plot the routes** on the layout at **each step**. Use arrows to indicate directions, and distinguish flows using different colors or line weights.

ANALYZE AND INTERPRET

Identify unnecessary back-and-forth movement, congestion areas, and excessive travel. **Quantify** the distances traveled to assess the **impact of inefficiencies**.

OPTIMIZE THE PROCESS

Recommend **improvements** such as reorganizing work areas, reducing unnecessary travel, or automating certain tasks in order to **optimize productivity**.



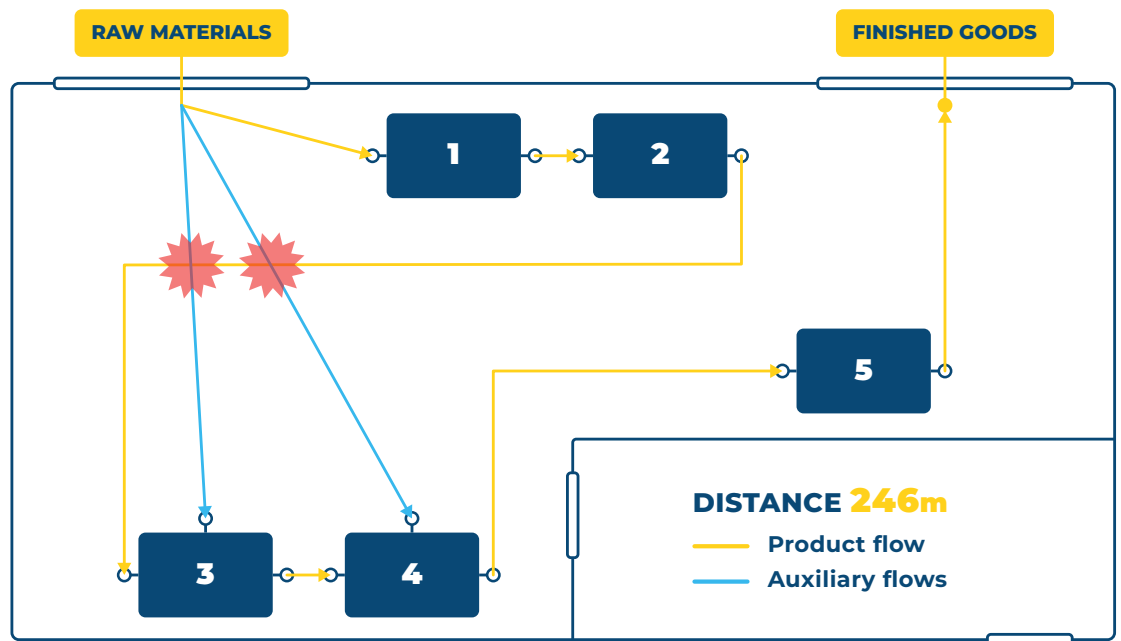
RE-LAYOUT

Enhance workspaces and flows

After completing the spaghetti diagram, the next step is re-layout, which involves rethinking the arrangement of work areas. Based on flow analysis, this reorganization is intended to reduce unnecessary movement, streamline processes, and improve overall efficiency.

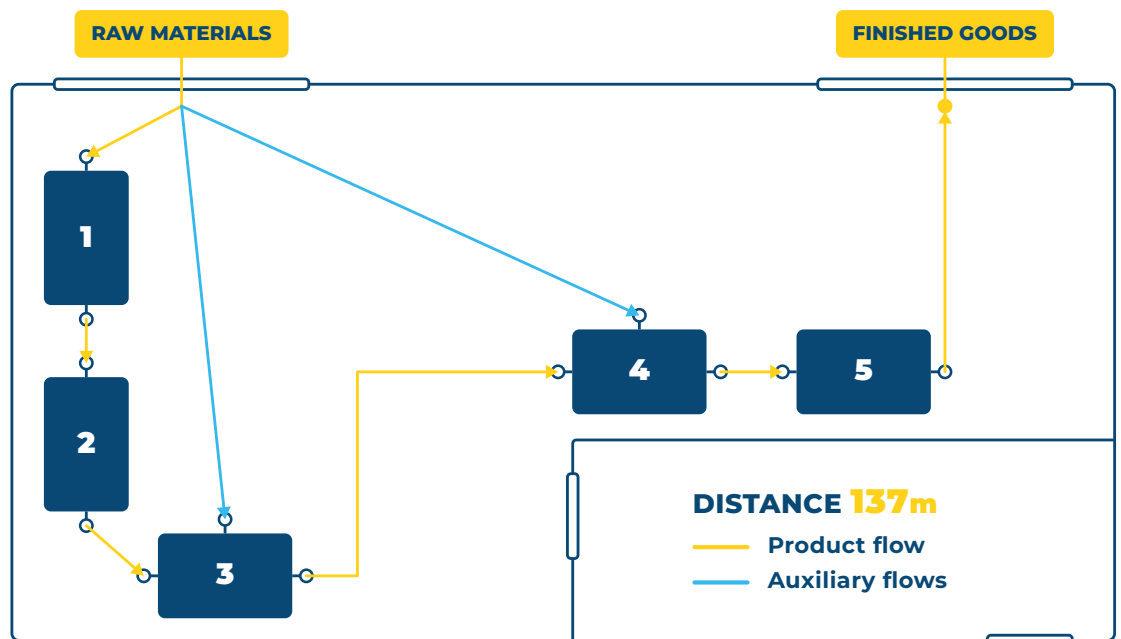
BEFORE

- Hazardous crossings
- Unnecessary movements



AFTER

- Elimination of cross-traffic
- Optimized movements



OEE & GEE

Assess and maximize performance

OEE (Overall Equipment Effectiveness) and **GEE** (Global Equipment Effectiveness) are key indicators of industrial performance.

They evaluate a process **effectiveness** by comparing **actual production** to **potential output** under **ideal conditions**.

Their primary objective is to **accurately identify losses** (breakdowns, slowdowns, quality defects) in order to optimize productivity and reduce costs.

$$\text{GEE} = \frac{U_t}{A_t}$$

$$\text{OEE} = \frac{U_t}{R_t}$$

Quality	Non-conformance	Production rate variances	Unplanned downtime	Planned downtime
U_t (Useful Time)				
N_t (Net Time)				
O_t (Operating Time)				
R_t (Required Time)				
A_t (Available Time)				

TAKT TIME

Align production with customer demand

Takt Time is a **critical metric** in production. It defines the **pace** at which a product **must be manufactured** in order to **meet customer demand**.

$$\text{TAKT TIME} = \frac{\text{Available Time (Expressed as time)}}{\text{Customer Demand (Expressed as quantity or production units)}}$$

Available Time:

The time during which production is operating, minus non-productive time.

For one day: subtract breaks.

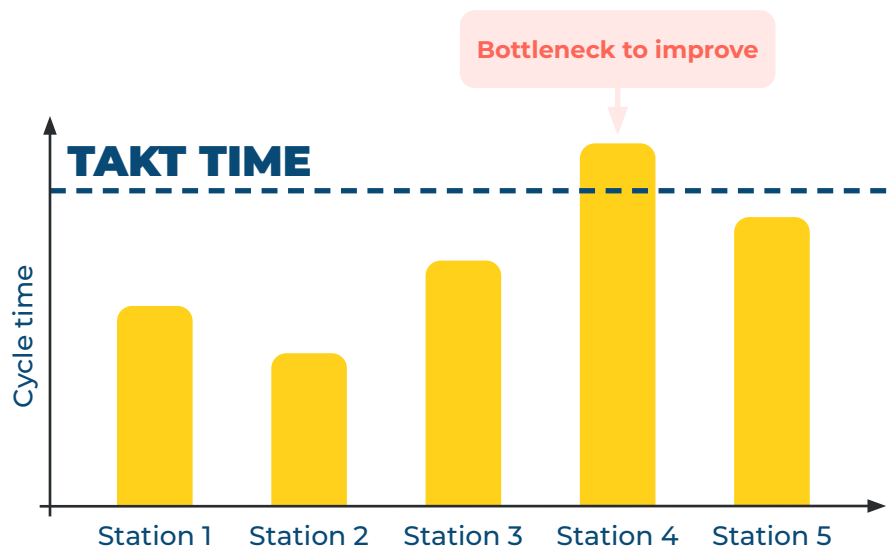
For one year: subtract vacations, summer maintenance shutdowns, etc.

Customer Demand:

Quantity to produce to meet customer requirements within the specified time interval.

By aligning production with demand, the bottleneck is easier to identify, and resources can be optimized.

This helps streamline flow, prevent overloads, and improve productivity by aligning machines and operators with actual needs.



THE PROCESS CYCLE EFFICIENCY

Calculate productive activities ratio

The Process Cycle Efficiency (**PCE**) is derived directly from **lead time**.

It represents the **portion of time** within the process that is genuinely dedicated to **value-added** activities, rather than time lost to inventory, waiting, or non-essential tasks.

To calculate this ratio, **divide** the total **value-added** time by the **total lead time**.

Then multiply the result by **100** to express it as a percentage.

$$\text{PCE} = \frac{\sum \text{VA}}{\sum \text{VA} + \sum \text{NVA}} \times 100$$

It may also be expressed as follows:

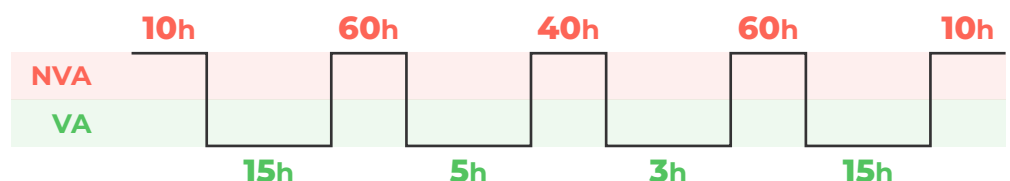
$$\text{PCE} = \frac{\sum \text{VA}}{\text{Lead Time}} \times 100$$

Process Cycle Efficiency:

$$(\text{38h} / \text{218h}) \times 100 = \text{17\%}$$

For example, if value-added time is 38h and lead time 218h, the Process Cycle Efficiency is 17%.

This indicates that only 17% of the total time is allocated to truly productive activities.



LITTLE'S LAW

Calculate Lead Time

Little's Law, derived from queueing theory, makes it possible to calculate **Lead Time** (or customer waiting time) within a production flow, and it applies to both **industrial** and **service** processes.

$$\text{LEAD TIME} = \frac{\sum \text{Work in Process}}{\text{Throughput}}$$

(Expressed as a quantity)

(Expressed in quantity/time)

Little's Law establishes the relationship among **3 elements**:

1

LEAD TIME

This is the **time required** for a product to **move through the entire process**, from entry to exit (days, weeks, months, years).



2

WORK IN PROCESS

This refers to the number of products or tasks **waiting** between two steps in the process.
Excessive work in process **slows** production and **increases** the lead time.



3

THROUGHPUT

This is the **rate** at which products or tasks are **processed** (e.g., X units per minute).
Optimal throughput helps **reduce** delays and **improve** overall performance.



THE KANBAN METHOD

Manage the workflow in a simple and visual way

The **Kanban method** is a visual management system developed at Toyota to **produce just in time**. When a product is consumed, it **releases a physical card**, which serves as a signal to trigger its **replenishment** upstream.

This “**pull flow**” principle strictly limits work in progress and prevents the creation of unnecessary inventory.

Now adapted to service environments through boards, it **streamlines work** and **immediately highlights bottlenecks**.

The **6 benefits** of the Kanban method:

1 Immediate visibility

- Work in progress is visible to the entire team.
- Obstacles can be identified at a glance.

2 Less work in process

- Parallel tasks are kept to a minimum.
- No more prolonged waiting within the process.

3 Stress reduction

- Less unnecessary pressure, one task at a time.
- Smoother workflow.

4 Responsiveness to demand

- Produce only what is needed, when it is needed.
- Less waste, greater efficiency.

5 Continuous improvement

- Kanban encourages workflow analysis and adaptation.
- It becomes an essential foundation for Lean.

6 Stronger communication

- Everyone views the same board.
- Greater transparency = better decisions.

Example of a Kanban board:

TO DO



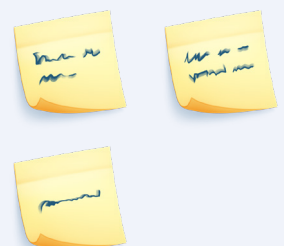
IN PROGRESS



TO CHECK



COMPLETED



BRAINSTORMING

Enhancing a team's creativity, step by step



Brainstorming is a group method for **generating ideas** to find solutions or innovate. Its goal is to **stimulate everyone's imagination** by encouraging **open expression, free from any criticism**.

It helps bring forward a large number of original ideas through the strength of **collective intelligence**. It is also an excellent way to **strengthen team cohesion** and **engage everyone** in the project.

PREPARATION

Before the brainstorming session, define the objectives and select the appropriate participants. Please also prepare the **space** (virtual or in person) and the **necessary tools** (whiteboards, sticky notes, etc.).

FRAMING

Please **review the ground rules**: no censorship, every idea is welcome, no criticism, and build on others' contributions. Please also **clarify the topic** so that all participants are aligned.

IDEATION

Begin the brainstorming session by encouraging participants to **generate as many ideas as possible**, without concern for feasibility. Please promote **collaboration** and **interaction** to further develop and enrich the ideas.

ANALYSIS

Once ideas have been generated, organize them by **theme** or **feasibility**. Review them **collectively** by voting or ranking, then select the **most promising** ideas to refine further.

FOLLOW-UP

Develop an **action plan** with clear responsibilities and deadlines. Please ensure regular follow-up to **assess progress** and adjust actions as needed.

THEORY OF CONSTRAINTS

Improve a process by eliminating the bottleneck workstation

EVERY PROCESS IS LIMITED BY A STEP KNOWN AS THE “BOTTLENECK”

In a production line with multiple stations, the station with the **lowest throughput** determines the line's **overall throughput**.

Increasing the throughput at this bottleneck station **enhances your production capacity across the entire line**.

Gramdi pipe:



How should the theory of constraints be applied?

IDENTIFYING CONSTRAINTS

Review the process to determine what is slowing overall flow.

LEVERAGING THE CONSTRAINT

Maximize utilization of the bottleneck step.

ALIGNMENT OF ALL OTHER ACTIVITIES

All other steps must be aligned with the constraint in order to prevent overloads.

INCREASING BOTTLENECK CAPACITY

Track the effects of improvements and measure their impact on overall flow.

REPEATING THE IMPROVEMENT METHOD

Once the constraint has been removed, move on to the next one.

STAFF ENGAGEMENT

Guiding your teams on the Lean journey

For a transformation effort to be **successful**, staff involvement is **essential**. Please find below the guidelines to secure everyone's commitment:

1

DEFINE A LONG-TERM VISION

- Your Lean initiative should be part of a **long-term plan** (vision, objectives, new business model, etc.).
- A Lean initiative is not a standalone effort; it is **aligned** with all other strategic priorities of the organization.



2

CHANGE AT YOUR OWN PACE

- Every person evolves at **their own pace**.
- Take this into account by forming small groups for pilot initiatives or training sessions. **Vary the participant profiles** : committed, hesitant, and less motivated.



3

START WITH THE PROBLEM

- **State the problem**, not the solution.
- People are more likely to embrace an idea when it originates with them. Clearly present what is at stake to foster **commitment** and allow **team-driven solutions** to emerge.



4

RECOGNIZE AND SUPPORT INITIATIVES

- Encourage your teams to **test, propose** and **take initiative**.
- Involve them in validating ideas in order to **build commitment**.
- An error is not a failure; it is a valuable lesson that helps you **move forward**.



5

BUILD YOUR OWN LEAN CULTURE

- Do not “copy and paste” the operating methods or formulas of **other organizations**.
- Your company or organization has **its own history**, and your staff has **its own culture**.

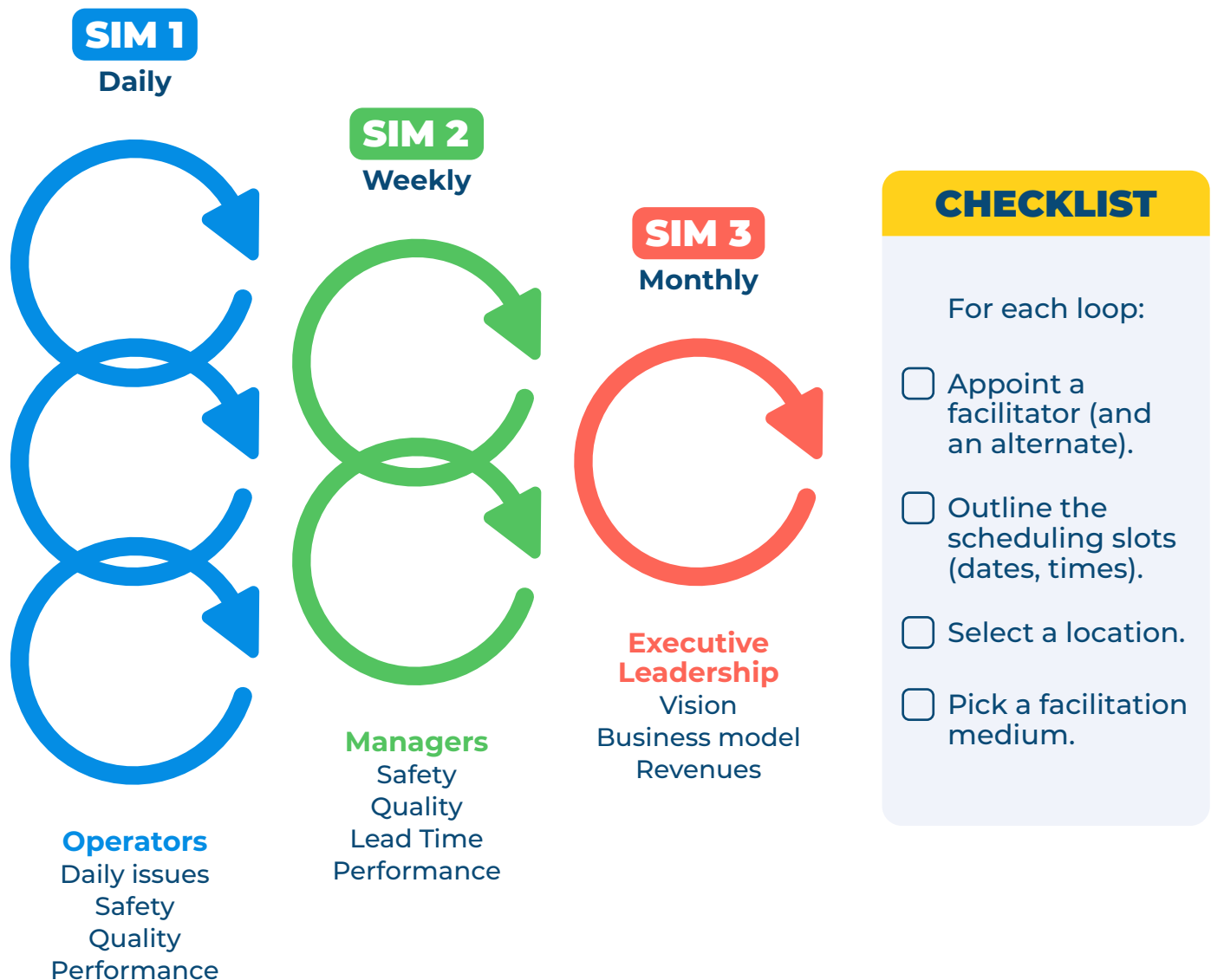


SHORT INTERVAL MANAGEMENT

Keep a regular pace for sharing informations

Short interval management (or SIM) are **brief, regular** and **structured** team meetings loops. Their purpose is to **rapidly escalate information** from the shop floor (daily) to executive leadership (monthly).

Their objective is to strengthen visual communication and resolve issues as close to the shop floor as possible. This consistent cadence helps **align the entire organization, reinforce team accountability** and **manage performance**.



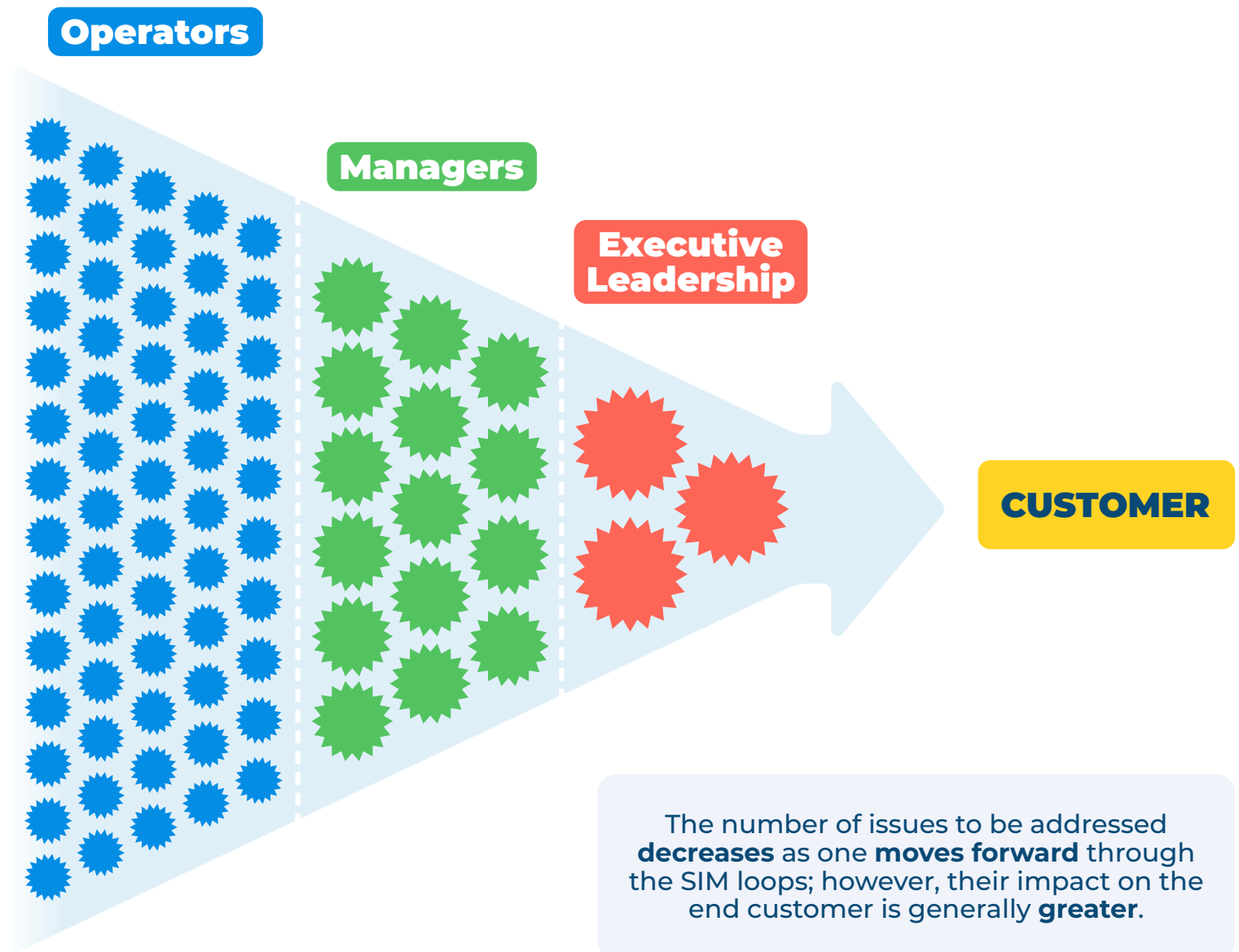
For **larger organizations**, it will be necessary to replicate Loops 1 and 2 based on the number of production lines or cells. Loop 3 may also be subdivided according to the “size” of your organizational chart.

THE PURPOSE OF SIM LOOPS

Address the right issue at the appropriate level

The purpose of SIM loops is to **screen** and **address** each issue at the **appropriate level of accountability**.

Operators tackle numerous minor technical issues on a **daily basis**. **Managers** step in to resolve **organizational roadblocks** that require coordination across departments. Lastly, **executive leadership** adjudicates **major strategic decisions**, occurring less often but significantly affecting customers.



Day-to-day issues with minimal customer impact



Organizational issues with a moderate impact on the customer



Strategic issues with significant customer impact

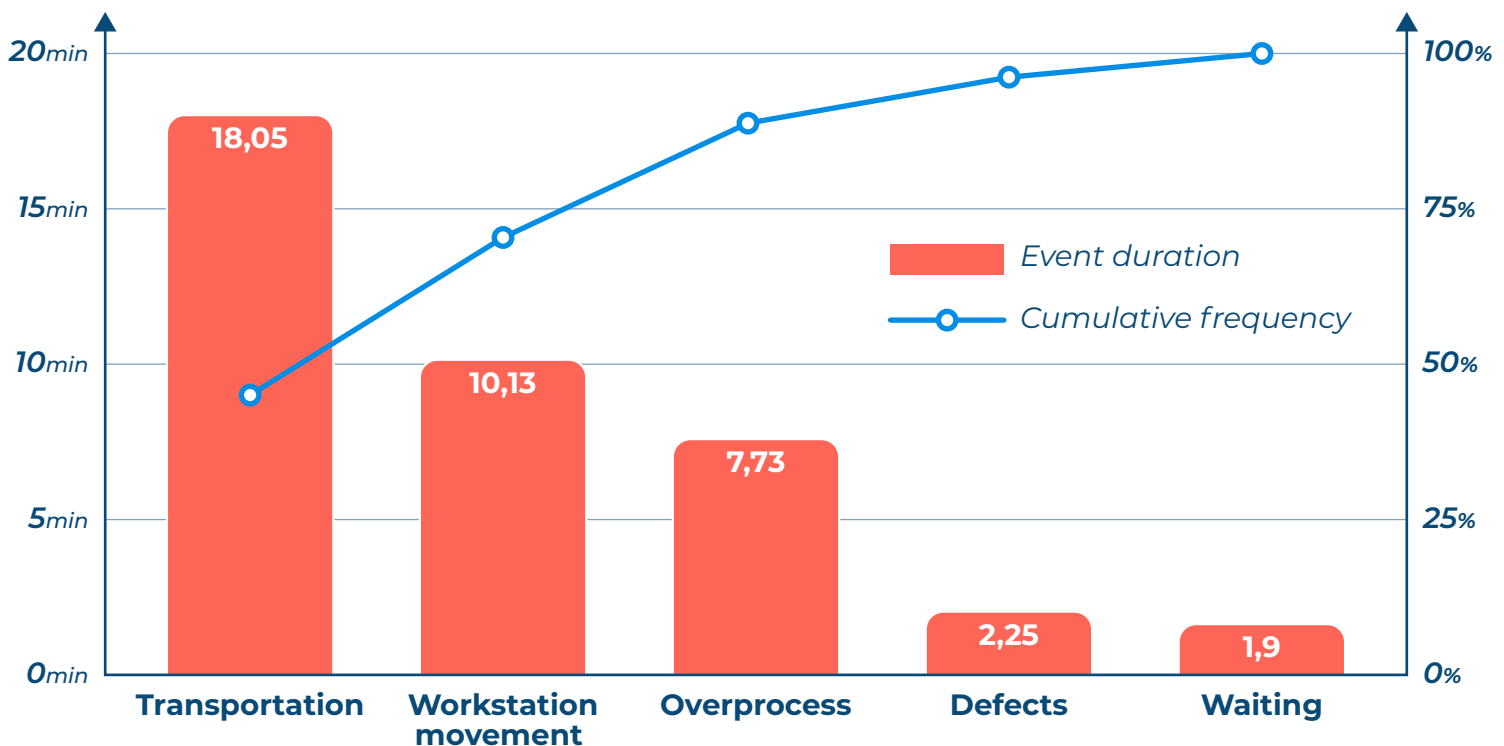
THE PARETO DIAGRAM

Prioritize the causes with the greatest impact

The **Pareto diagram** is an **analysis** and **prioritization** tool that makes it possible to identify the **few causes responsible for the majority of effects**.

The principle is straightforward: in many situations, a **small share of causes** accounts for a **large share of the problems**, often summarized by the 80/20 logic.

By ranking causes in descending order of impact, Pareto helps **focus improvement efforts** where they will deliver the **greatest results**.



HOW DO YOU BUILD A PARETO DIAGRAM?

- **List** the issues or causes to be analyzed.
- **Measure** their frequency, cost, or impact.
 - **Sort** the data in descending order.
- **Calculate** the percentage for each cause and the cumulative percentage.
 - **Display** the causes as bars.
- **Plot** the curve representing the cumulative percentage.
- **Focus** your actions on the **few causes** that account for the **majority of effects**.



80/20 logic is a **prioritization principle**, not a strict mathematical rule. Depending on the situation, the distribution may vary, but the objective remains the same: **identify the most critical causes in order to act first**.

THE TPM APPROACH

Improve equipment reliability and secure processes

The **TPM approach** is designed to assign teams **shared responsibility** for the **proper operation of machines**. Its objective is to maximize equipment availability by **reducing breakdowns** and **maintenance activities**. TPM is built on **8 essential pillars**, which rely primarily on the **effective application of 5S**.

TPM Total Productive Maintenance

Autonomous Maintenance

Targeted Improvements

Predictive Maintenance

Training

Quality Maintenance

Process and Product life cycle
improvements

Safety, Health, and Environment

TPM in Office environments

Improving
process efficiency

Establishing the conditions for
industrial performance

5S

THE SMART METHOD

Set clear and effective goals

The **SMART** method is a **management tool** that enables you to set goals that are effective, structured, and **results-oriented**.

By applying these principles, goals become clearer, more motivating, and easier to monitor, thereby supporting **stronger organization**, **well-informed** decision-making, and **improved performance** within teams or projects.

S

SPECIFIC **What? Who? How?**

By examining each detail, this attribute ensures a shared understanding and removes any ambiguity.



M

MEASURABLE **Measurable quantities and quality**

This not only makes it possible to define concrete criteria for tracking progress, but also to ensure an objective assessment of results.



A

ACHIEVABLE **Feasible and acceptable objectives**

The objectives may subsequently be endorsed by the teams, thereby ensuring collective buy-in and sustained motivation.



R

REALISTIC **Objectives aligned with the strategy**

The objectives align with client expectations, thereby supporting growth and long-term success.



T

TIME-BOUND **Defined start, end, and duration**

This step ensures effective time management by eliminating unnecessary delays and reinforcing time discipline.



THE SIPOC DIAGRAM

Map processes from suppliers to customers

The **SIPOC** diagram represents a process-mapping methodology. This essential tool in process management highlights the importance of upstream partners (**suppliers**) and downstream partners (**customers**) in the process's **overall operation**.



SUPPLIER

The individuals or organizations that provide the inputs.
example: manufacturers of specific subassemblies, third-party services (scheduling, etc.)

INPUT

The resources required to achieve the process.
example: components, assembly plan, tools, etc.

PROCESS

Activities that add value to the inputs.
example: the main stages of the line: cutting, assembly, painting, packaging, etc.

OUTPUT

The finished product intended for the customer.
example: the assembled product, the approved compliance test report, as well as waste to be sorted, etc.

CUSTOMERS

Individuals or organizations that use the finished product.
example: the packaging department (an internal customer that completes the product), the distribution logistics platform, etc.

JIDOKA

Respond as soon as a defect appears

Jidoka involves stopping a process **as soon as an issue is detected**, so that **defects** do not proceed further. This ensures **quality** at every stage.

With Jidoka, machines or operators can trigger an **alert** in order to **respond promptly**, **correct the issue**, and **identify its root cause**.

UNDERSTAND AND ANALYZE PROCESSES

The process begins by mapping workflows to identify high-risk areas, control points, and potential vulnerabilities.

IMPLEMENT A DETECTION SYSTEM

Tools or rules are implemented to automatically identify anomalies, fraud, or suspicious deviations.

ESTABLISH RESPONSE STANDARDS

Procedures are established to define how to respond to an alert: who is responsible for what, within what timeframe, and with what level of escalation.

TRAIN AND RAISE AWARENESS AMONG STAKEHOLDERS

Teams receive training on the system, associated risks, and the appropriate responses to ensure it operates effectively.

CONTINUOUS IMPROVEMENT

The system is consistently updated and improved in response to feedback, incidents, and new risks.



Andon is a visual system that **indicates** in real time the status of a workstation:

- **Green** : all operations are functioning normally.
- **Orange** : minor issue; work may continue.
- **Red** : breakdown or stoppage; immediate action required.

This essential Jidoka tool makes it possible to **detect** and **report** issues as soon as they occur, enabling prompt action and ensuring quality.

POKA-YOKE

Anticipate errors before they occur

The **Poka-Yoke** method is designed to prevent errors by incorporating fail-safe features that prevent an incorrect operation from being performed.

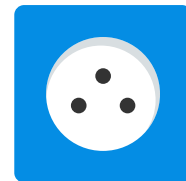
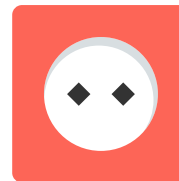
These mechanisms help prevent mistakes that could damage the product or compromise quality.

Before implementing these solutions, it is essential to identify errors within the process. To do so, the Jidoka principle should be activated to quickly detect any abnormality and facilitate prompt intervention.

Accordingly, Poka-Yoke complements Jidoka by providing physical or logical safeguards to prevent errors from occurring.

Example of a well-known Poka-Yoke:

Using specific shapes on electrical plugs prevents devices that are not compatible from being connected.



Implement **Poka-Yoke**:

1 Identification

Review the process to identify all potential errors that may arise.

2 Analysis

Examine the root causes to understand how and why errors occur.

3 Design

Develop mistake-proofing features that prevent incorrect actions or make them immediately apparent.

4 Automation

Implement automated checks that can stop the process as soon as an error is detected.

5 Training

Raise awareness and train operators on the proper use of the mechanisms to ensure their effectiveness.

6 Improve

Monitor results on a regular basis and adjust the mechanisms to ensure they remain consistently effective.

THE GEMBA WALK

Go to the field, where value is created

Conducting a **Gemba Walk** means going to the actual place where operations **take place** to observe processes, ask questions, and clearly identify opportunities for **improvement**.

In summary: challenges are not resolved from a desk, but by going **to the field**, where they arise.



For a successful **Gemba Walk**:

1 DISCUSS
Listen attentively to the individuals directly affected by the issues in order to understand their experiences, needs, and expectations.



2 COLLABORATE
Jointly identify actions that can be implemented promptly, prioritizing small, concrete, and readily achievable projects.



3 SUPPORT
Promote collaborative work and shared commitment in implementing these collective initiatives.



4 IMPLEMENT
Provide teams with the necessary resources such as time, financial support, and equipment to ensure project success.



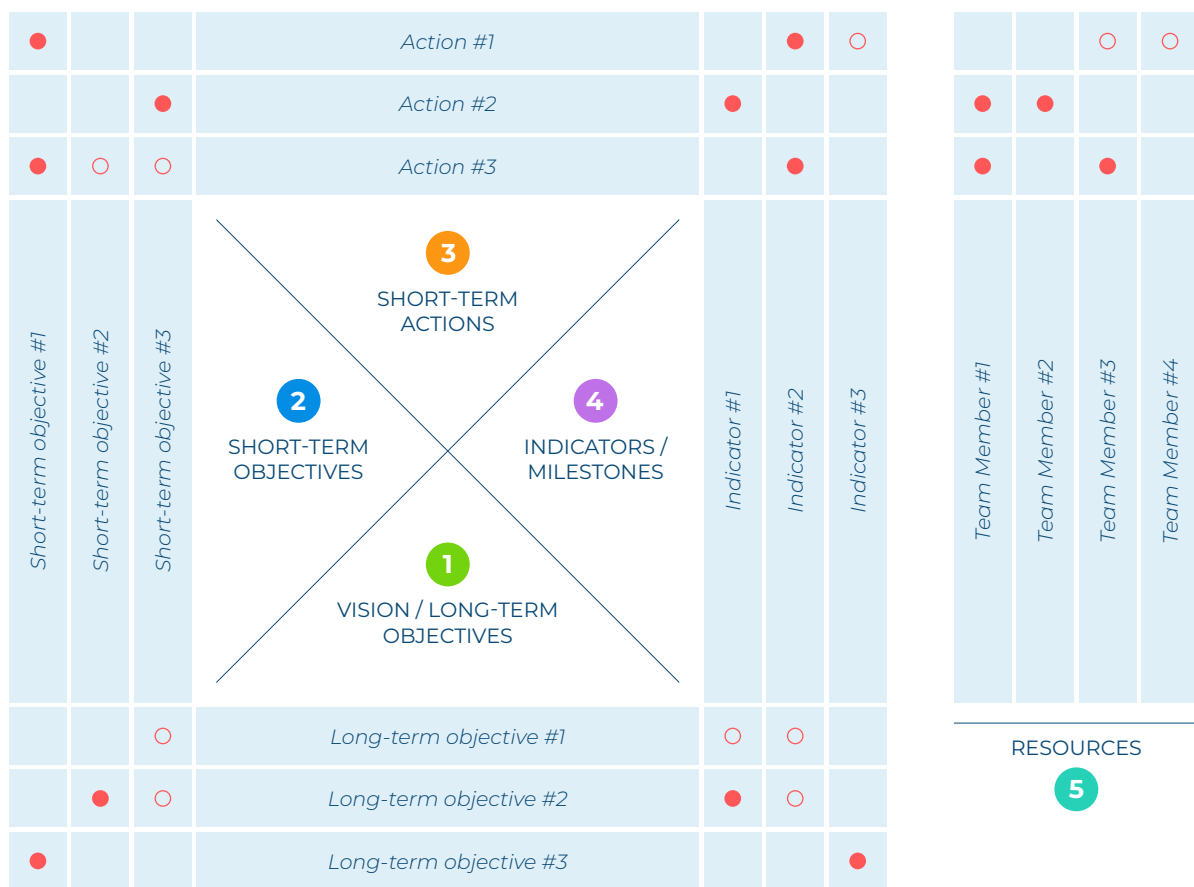
THE HOSHIN KANRI X-MATRIX

Translate vision into tangible results

The X-Matrix enables the organization's long-term vision to be translated into **annual objectives, concrete actions, and measurable indicators**.

Through a **concise visual representation**, it highlights the connections among strategic priorities, improvement initiatives, expected outcomes, and the individuals accountable.

Sometimes referred to as "True North" it helps align the organization's various levels around a **shared direction**.



HOW DO YOU BUILD AN X-MATRIX?

- 1 Define the vision or long-term objectives.
- 2 Translate them into measurable annual objectives.
- 3 Identify the priority actions or projects to implement.
- 4 Assign the corresponding performance indicators.
- 5 Appoint the owners responsible for each action.
- 6 Finally, connect the elements using the correlation symbols (filled circle = strong link, open circle = weak link, no symbol = no meaningful link).

IMPACT / EFFORT MATRIX

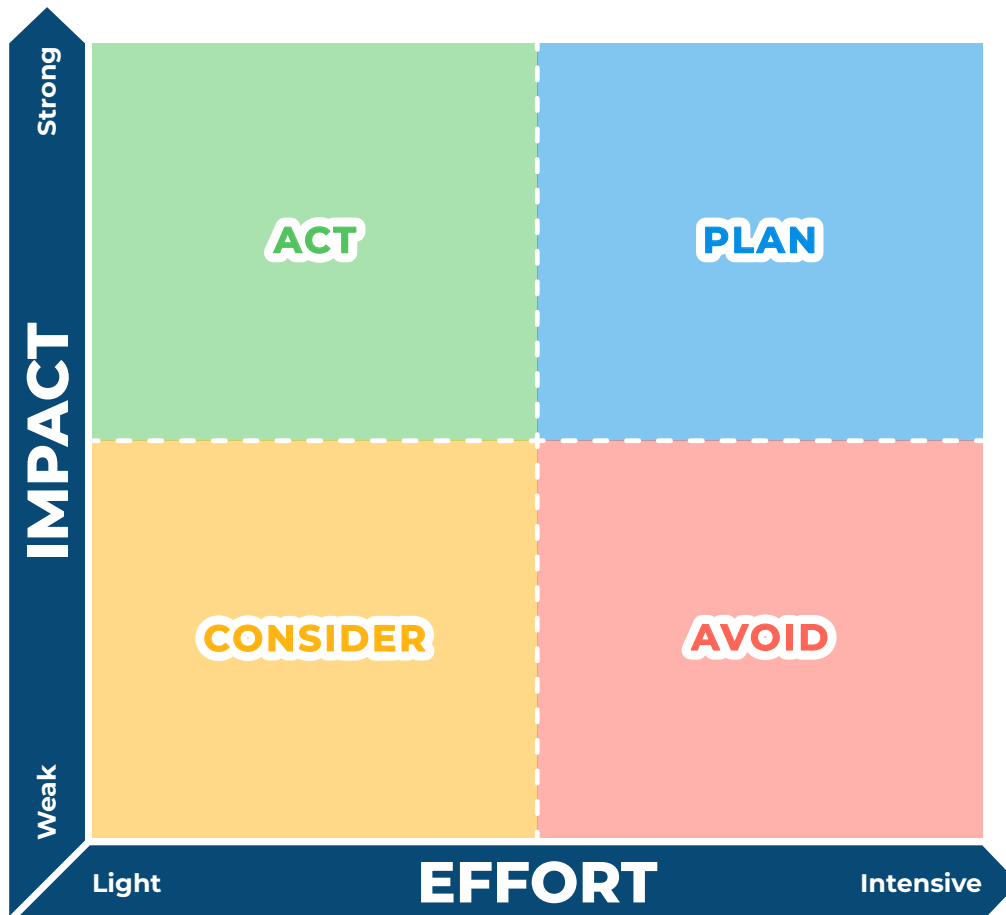
Manage priorities

The **Impact / Effort matrix** is a straightforward, visual tool for **prioritizing actions**. It links the **impact of an action** with the **required level of effort** to implement it, in order to focus resources on the **most cost-effective tasks**.

POSITION ACTIONS

Each proposed action is placed on the matrix based on:

- the expected benefits → vertical axis
- the effort required for implementation → horizontal axis



ACT

“Quick Wins” to initiate as soon as possible.

PLAN

To be planned over time, using a project approach.

CONSIDER

To be addressed based on availability.

AVOID

Do not let resources go to waste.

STUDENT SYNDROME

Postponing tasks until they become urgent

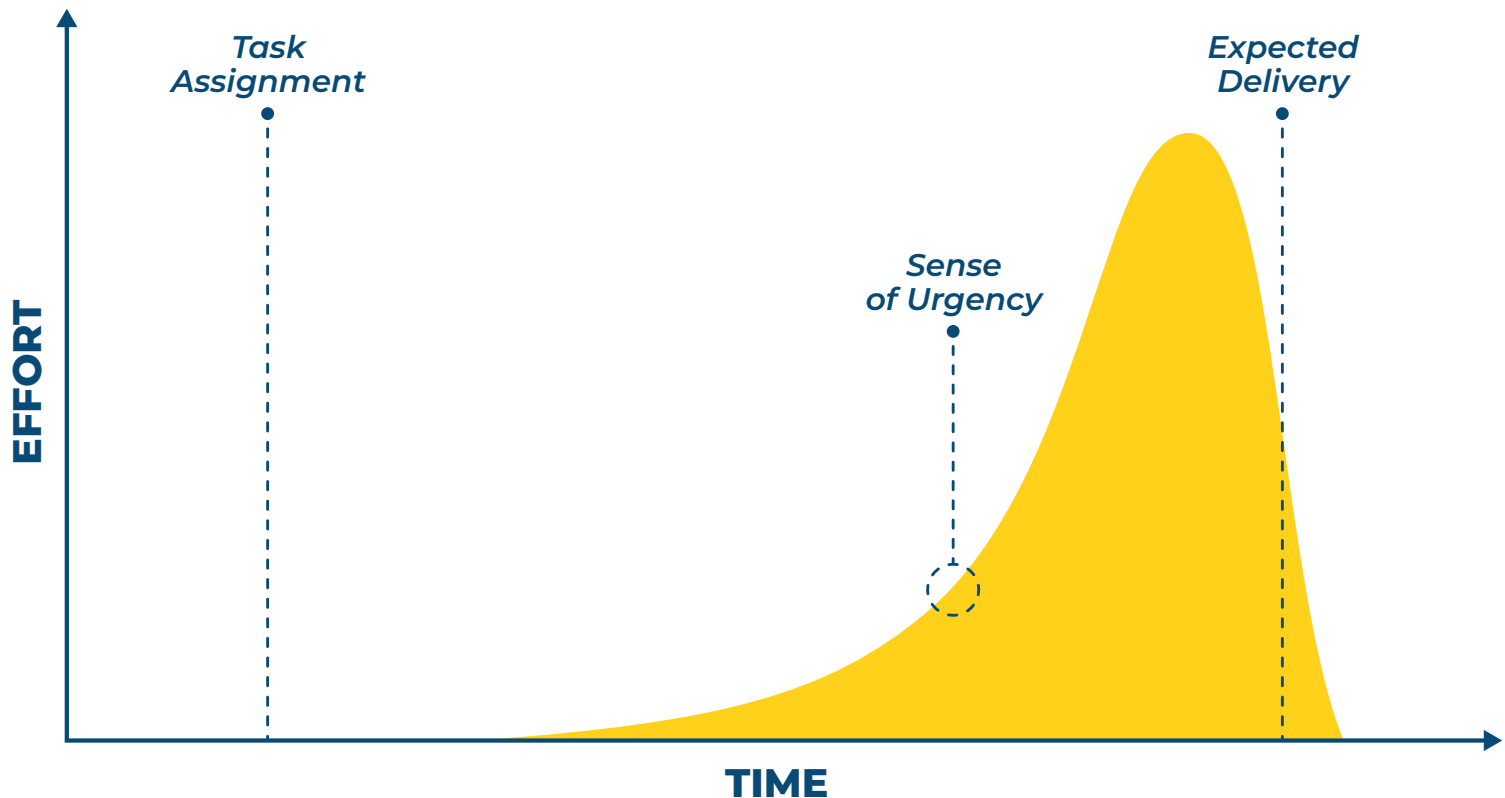
The student syndrome occurs when, having **ample time** to complete a task, we give priority to **other matters**.

Only when there is **just enough time remaining** to focus on it does the original task become a **priority**.

This pattern of behavior leads to two **primary difficulties**:

- One rarely completes the work **before** the scheduled date.
- Issues arise only at the time of execution, which is **too late** to address them calmly.

Managing a task affected by the **student syndrome**:



AVOID THE “RUSH”

A few recommendations for avoiding the student syndrome:

- **Break the project into milestones:** divide a large, long-term task into several short-term subgoals with mandatory interim deadlines.
- **Reduce “padding” in schedules:** avoid artificially inflating safety buffers.
- **Make progress visible:** use indicators to publicly display the status of progress on a topic.

THE 7 WASTES

Identify waste in manufacturing and office operations

	LEAN MANUFACTURING	LEAN OFFICE
TRANSPORT	Raw materials, finished goods.	Paper files transferred between departments.
INVENTORY	Work-in-process between workstations and inventory awaiting delivery.	Unnecessary or outdated information, emails, data, and paper files.
MOVEMENT	Poor ergonomics at the workstation.	Poor ergonomics in the office or within a software application.
WAITING	Waiting for raw materials or tools.	Waiting for information, approval, or IT troubleshooting.
OVERPROCESS	Excessive steps; unnecessary documentation.	Excessive meetings; too many recipients copied on an email.
OVERPRODUCTION	Output exceeds demand.	Unnecessary document copies; performance indicators not monitored.
DEFECTS	Rework; products that do not meet customer expectations.	Insufficient information; errors in data entry.

THE YAMAZUMI CHART

Visualize workload imbalances

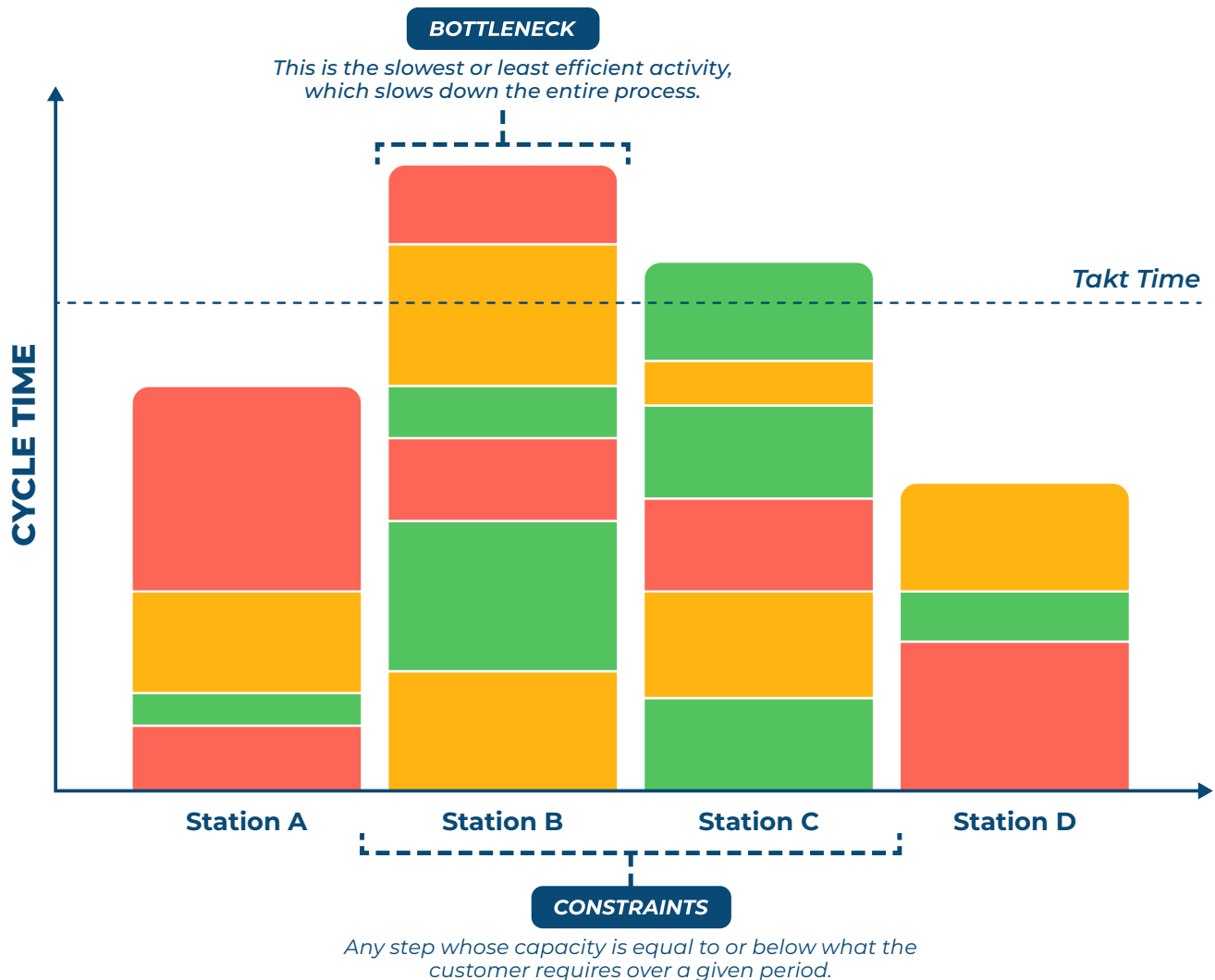
The **Yamazumi chart** is a stacked bar chart used to visualize the **cycle time** of each workstation within a process.

Its primary purpose is to highlight **workload imbalances** by comparing each station's time to the pace of **customer demand** (Takt Time).

By visually breaking down the tasks, it helps **pinpoint waste with precision**.

It is the ideal tool for **rebalancing** a production line, **eliminating the bottleneck**, and **smoothing operators' work**.

Example of a **Yamazumi chart** for a 4-station process:



VALUE-ADDED TASKS

Tasks that provide a direct benefit to the customer and for which he is willing to pay.

ESSENTIAL NON-VALUE-ADDED TASKS

Tasks required for the process to function properly, but not regarded as valuable by the customer.

NON-VALUE-ADDED TASKS

Tasks that, from the customer's perspective, result in a loss of time or efficiency.

THE SWIMLANE DIAGRAM

Define each stakeholder's responsibilities

The **Swimlane** is a visual tool used to **depict, review, and optimize** processes, along with the tasks that comprise them. This type of diagram promotes collaboration among the various departments through process completion. It helps identify potential bottlenecks and provides a **clear view** of activities, responsibilities, and the roles of **each stakeholder** involved.

Benefits of the **Swimlane** diagram:

ANALYZE

Review the process and its various steps to identify issues or potential sources of waste.

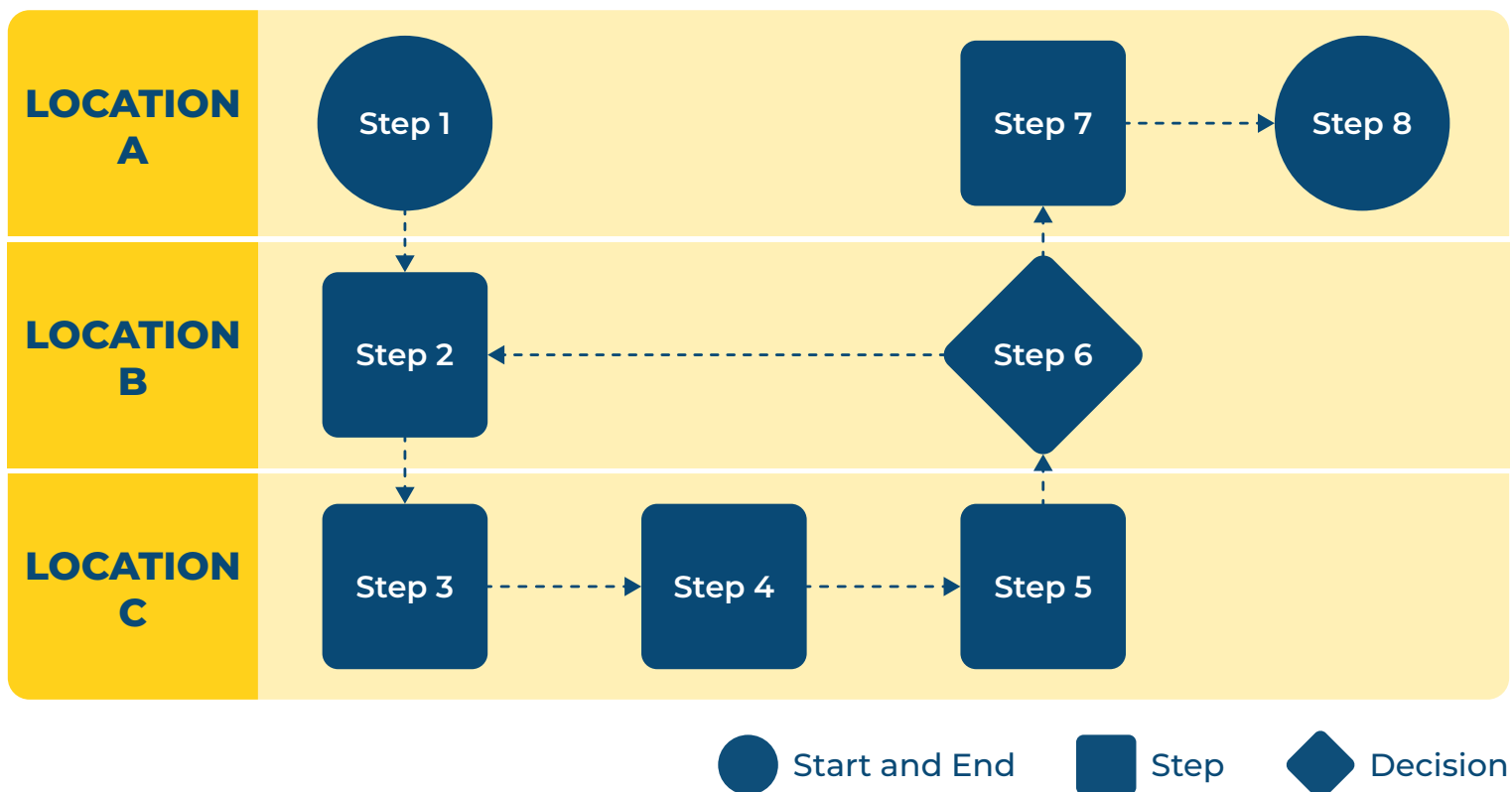
IMPROVE

Enhance the process, for example by streamlining tasks or removing assigned responsibilities.

COMMUNICATE

Provide an overview of the process and the roles of each department or individual.

A **Swimlane** diagram is organized into distinct **horizontal lanes**, each corresponding to a **department, a team, an individual, or a specific function**. The various steps or actions in the process are placed **in columns**, clearly indicating **which stakeholder** is responsible for **which task** and **at what point in time**.



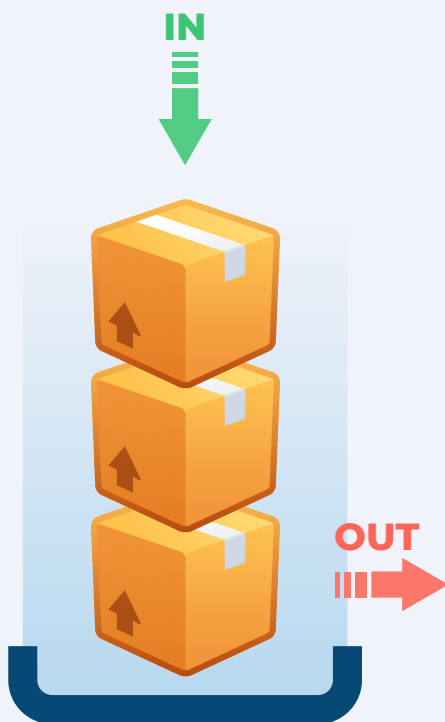
FIFO and LIFO

Manage costs and flows

FIFO (First In, First Out) and **LIFO** (Last In, First Out) are the two foundational methods for managing inventory rotation. Under the **FIFO** principle, the **first items received** are the **first to be issued**, which is ideal for reducing waste. Conversely, **LIFO** prioritizes **issuing the most recently received items first**, which streamlines handling in stacked storage. Mastering both approaches enables you to **align physical product flow precisely with the nature of your goods**.

FIFO METHOD

The **first** products **received** are the **first to be shipped out**.



WHEN SHOULD IT BE USED?

For perishable goods:

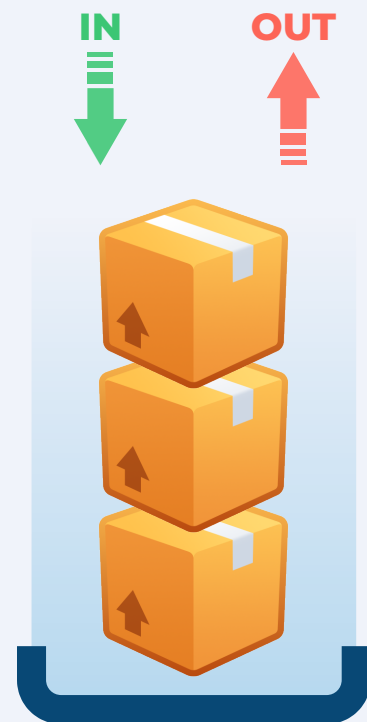
Goods decline in quality over time.

Warehouse management:

When storage areas must remain unobstructed, avoiding the buildup of older, unsold batches.

LIFO METHOD

The **most recently** received products are the **first to be issued**.



WHEN SHOULD IT BE USED?

For nonperishable products:

Move inventory quickly to reduce goods storage costs.

Tax benefit:

This method more accurately reflects raw material costs during significant fluctuations.

DDMRP

Manage replenishment based on demand

DDMRP (Demand Driven Material Requirements Planning) is a method for **planning** and **flow management** that enables organizations to improve **responsiveness** to **actual demand**. Its purpose is to reduce **stockouts** and **excess** inventory, while making the supply chain **more agile, responsive, and collaborative**.

Implementing **DDMRP** takes place in three key stages:

1 - POSITION

Strategic inventory

Place the right inventory in the right locations to ensure secure, reliable flow.

2 - PROTECT

Buffer profiles and levels

Define appropriately sized buffer zones to absorb variability.

Dynamic adjustments

Adjust inventory levels in line with changes in demand.

3 - SORT

Demand-driven planning

Produce and replenish solely in line with actual needs.

Visible, collaborative execution

Share information to act promptly and effectively as a team.

THE STANDARD OF PRODUCTION

Formalize the execution of a task

A **Standard of Production** is a document that describes the **best way to perform a task**. The Standard of Production is intended to **eliminate variations** in work methods among multiple employees **or** in the work methods used by the same employee at different times.

The objective is to **identify, standardize, and share** the **best way of working**, without relying solely on the trainer's memory.

Example of a **Standard of Production**:

Name of the task to be performed

Brief description of the task, its purpose, key points of attention, etc.

Steps required to complete the task, listed in order of execution

Detailed instructions for each step (text, images, charts, etc.)

SOP (Standard Of Production)
ORDERS ENTRY

Reference **Date**

DESCRIPTION :

TASKS	KEY POINTS	TIME	SUPPORT
#1: ERP Data Entry		30min	
#2: Order Preparation	 	1h 30min	
#3: Send to the Customer		30min	 

Standard reference and/or date to track updates

Estimated time required to complete this step

Additional information (issue resolution, etc.)

The benefits of a well-designed **Standard of Production**:

VERSATILITY

Encourages broader skill development within teams members.

SHARING

Accelerates onboarding and training for new team members.

QUALITY

Ensures a clear, consistent execution method for everyone.