Continuous Improvement Toolkit

A3 Thinking
The Continuous Improvement Map

Managing & Risk
- FMEA
- RAID Log*
- Risk Analysis*
- Fault Tree Analysis
- Traffic Light Assessment
- Lean Measures
  - OEE
- Process Yield
- Capability Indices
- Gap Analysis*
- Bottleneck Analysis
- Reliability
- MSA

Understanding Performance*
- Benchmarking***
- Data collection planner*
- Check Sheets**
- Data Collection
- Interviews
- Questionnaires
- Focus Groups
- Observations
- Suggestion Systems

Selecting & Decision Making
- Break-even Analysis
- Quality Function Deployment
- Payoff Matrix
- Decision Tree
- Critical-to X
- Cost of Quality*
- Descriptive Statistics
- Probability Distributions
- Normal Distribution
- Histograms
- Graphical Methods
- Run Charts
- Control Charts
- Brainstorming
- Affinity Diagrams
- Mind Mapping*
- Five Ws

Understanding Cause & Effect
- Importance Urgency Matrix
- Cost Benefit Analysis
- Delphi Method
- Voting
- Force Field Analysis
- Hypothesis
- Chi-Square
- Nonparametric
- ANOVA
- Multi-variate
- Correlation
- Regression
- 5 Whys
- Root Cause Analysis
- Scatter Plots
- SIPOC*
- Tree Diagram*
- How-How Diagram***

Planning & Project Management*
- Daily Planning
- PERT/CPM
- MOST
- RACI Matrix
- Activity Networks
- SWOT Analysis
- Stakeholder Analysis
- Project Charter
- Improvement Roadmaps
- PDCA
- Policy Deployment
- Gantt Charts
- DMAIC
- Kaizen Events
- Control Planning
- Standard Work
- Document control
- Best Practices
- Implementing Solutions***
- TPM
- Automation
- Mistake Proofing
- Health & Safety
- Simulation
- Just in Time
- 5S
- Quick Changeover
- Visual Management
- Product Family Matrix
- Flow
- Pull
- Spaghetti**
- Process Redesign
- Waste Analysis**
- Value Stream Mapping**
- Value Analysis**
- Process Mapping
- Flow Process Charts**
- Time Value Map**
- Flowcharting
- IDEFO
- Service Blueprints

Group Creativity
- SCAMPER***
- Attribute Analysis
- Morphological Analysis
- Flowcharting
- IDEF0

Designing & Analyzing Processes
- Attribute Analysis
- Morphological Analysis
- Flowcharting
- IDEF0
- Service Blueprints
- SIPOC*
- Tree Diagram*
- How-How Diagram***

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A3 Thinking

As a leader, a big part of your job is to solve problems as they come
There are many approaches and tools that can help in the area of problem solving which is the driving force behind continuous improvement.

They range from the more complex Six Sigma methodologies to the simple A3 thinking approach.
A3 thinking is a **logical** and **structured** approach for problem solving and continuous improvement.

Can be **used** for most kinds of problems and in any part of the business.
A3 Thinking

Adopted by Lean organizations around the world and developed as part of the Toyota Production System

Typically used by lean manufacturing practitioners
A3 Thinking

Provides a **system** for planning and problem solving, and at the same time develops and maintains a **culture** for continuous improvement.
A3 Thinking

The power of the A3 process lies in the systematic and **structured** method it takes to solve problems and implement solutions.
Although it appears to be a step-by-step process, A3 is built around the **PDCA** philosophy.
Relies on the belief that it is much better to address the real root-cause of the problem rather than trying to overcome it.
It’s important not to jump to the solution when solving a problem as it is likely to be less effective.
A3 Thinking

It enables to gather and use data to truly understand the problem and implement the best corrective actions and countermeasures.
The practice of getting the problem, analysis, countermeasures and action plan written on a single sheet of paper.
A3 Thinking

Provides a concise summary of the project and considered a good **storytelling** tool to communicate any project
The name A3 is derived from the international-sized A3 paper.
A3 Thinking

No special software or tool is needed to use the A3 approach

You may use ready made A3 templates or just a pencil and eraser as you will need to erase and rewrite several times

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The flexibility of the A3 approach makes it an **ideal tool** for many other applications such as planning, decision making and innovating.

- Deciding which supplier to select
- Planning to improve customer satisfaction
- Innovating a new product development
An A3 report is a high-level report that does not get into specific details.

So, you don't get overwhelmed with details you don't need.
A3 Thinking

It helps to solve problems at all levels of the organization from strategic to operational.

Leaders should ensure the alignment from the top all the way to the bottom.
A3 Thinking

A3 thinking is not just a report to plan for and report improvement

The development of a continuous improvement **culture** is at the core of A3 thinking
It has become one of the most popular lean tools today where people and teams work together to solve problems.
The standard A3 report is often used to share plans, results and success.
A3 Thinking

It requires the effort of a dedicated team who should use the tool to improve and collaborate.
A3 thinking is a way of structuring and sharing knowledge that enables teams to practice **scientific thinking** as a way of discovering and learning together.
A3 Thinking

01 Provides a structured and consistent approach to the improvement process

02 Helps the team to gain deeper insight into problems

03 Allows people to see problems through the same lens

04 Helps closing the gap between planning and doing

05 Promotes collaboration and knowledge sharing and encourages learning and continuous improvement on every organizational level

06 Encourages root cause analysis and the use of data

07 Encourages commitment to common goals and strengthens the levels of responsibility

08 Empowers people to develop their critical thinking

09 Provides concise updates and a snapshot of the project health

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An A3 process is often **managed by** an individual who should own and maintain the document. He/she should **drive the process** and encourage team participation.
A3 Thinking

He/she will **draw up** the A3 report with the support and input of the team members

All feedback and ideas from the **A3 thinking sessions** should be integrated into the A3 report
A3 Thinking

Other Key Individuals

<table>
<thead>
<tr>
<th>Project owner</th>
<th>Process owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note taker</td>
<td>Champion</td>
</tr>
</tbody>
</table>
A3 Thinking

Make sure you involve the concerned people so that they can help and contribute to the project.

Other stakeholders may have interest in the outcome of the A3 project.
A champion is a more **senior leader** who works directly with executives.

<table>
<thead>
<tr>
<th>The driving force behind the implementation</th>
<th>Ensures the availability of resources</th>
<th>Participates in scoping, reviews and evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides recommendations</td>
<td>Helps overcome roadblocks</td>
<td>Being accountable for results</td>
</tr>
</tbody>
</table>

Make sure each A3 project has a facilitator and a champion.

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A3 thinking provides an effective way to bring together many of the **problem-solving tools** into one place.
A3 Thinking

Make sure you use **visuals and graphics** in the A3 report

They take less space and are more effective than text in communicating ideas or illustrating points
It is important to utilize a system to allow A3 reports to be shared between teams and departments.
A3 Thinking

How to Implement A3 Problem Solving

The A3 process usually contains **multiple stages** based on the PDCA model

The number of stages may vary depending on the needs and preferences of the company

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The exact **number of stages** is not what matters but rather having a structured approach for problem-solving.

**A3 REPORT**

1. Problem Definition  
2. Cause Analysis  
3. Action Plan  
4. Results

**A3 REPORT**

1. Problem Definition  
2. Cause Analysis  
3. Action Plan  
4. Results  
5.  
6.  
7.  

A3 seven stages model  
A3 four stages model
A3 Thinking

How to Implement A3 Problem Solving

A3 thinking process focuses on developing understanding of the current situation and where you would like to be before thinking about solutions.
One of the most common models is the **seven stages** model.
A3 Thinking

How to Implement A3 Problem Solving - Background

The first step is to identify the business reason for choosing this problem or opportunity.

In this stage, you need to identify the gap in performance and the extent of the problem.

Other useful information: where does it happen, how often, and if there is a pattern or trend.

You may use graphs or charts to show the facts visually.
How to Implement A3 Problem Solving - Background

Remember that each A3 report should be focused on only **ONE** specific problem or opportunity.
How to Implement A3 Problem Solving – **Current Situation**

The purpose of this stage is to document the current state of the problem.

You may need to refer to the process map to enhance your understanding of any process.

Sometimes you need to go to the Gemba to truly understand the current situation.

The problem statements should be agreed upon by the team members.

The problem statement can be refined to reflect any new learning that takes place.
<table>
<thead>
<tr>
<th>Problem Statement</th>
<th>The problem is the gap between the intended purpose and actual usage</th>
<th>Indicate mainly what is being affected and where it is occurring (WHAT &amp; WHERE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INSIGHTS</strong></td>
<td></td>
<td>You can use the 5W2H to further enhance your knowledge of the problem</td>
</tr>
<tr>
<td>It is sometimes written in the following format:</td>
<td></td>
<td>Should be brief and specific</td>
</tr>
<tr>
<td>• The problem of...</td>
<td></td>
<td>Should be supported with data</td>
</tr>
<tr>
<td>• is affecting...</td>
<td></td>
<td>There is no right or wrong way of writing a problem statement</td>
</tr>
<tr>
<td>• the impact of which is...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Should not Include background information or goals</td>
<td>Should not discuss the causes or solutions</td>
<td></td>
</tr>
</tbody>
</table>
A3 Thinking

Example of a PROBLEM statement

The manual oil refilling process using drums in the forming machines in line #4 make it difficult to control oil losses which may reach more than 4% per drum.
A3 Thinking

How to Implement A3 Problem Solving – Current Situation

Problem Categories

- Quality
- Waste
- Cost
- Efficiency
- Delivery
- Health and safety
- Moral
- Customer satisfaction
How to Implement A3 Problem Solving – **Target**

The purpose of this stage is to define the desired future state and goals

- Clearly identify the expected benefits from solving the problem and implementing the solution
- Clearly identify the key metrics that will help measure the success of the project
- Clearly define the scope of the project – what is involved and what is not
### A3 Thinking

<table>
<thead>
<tr>
<th>Should clearly define the purpose of the project</th>
<th>Should respond to the problem statement</th>
<th>Should be brief and specific</th>
<th>Goal Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes mainly how much improvement needed and by when</td>
<td>Should be agreed by all participants</td>
<td>It is often written in the following format: Improve <em>(primary metric)</em> from <em>(baseline performance)</em> to <em>(desired future performance)</em> by <em>(desired date of completion)</em></td>
<td></td>
</tr>
<tr>
<td>Should start with a verb</td>
<td>Should have a measurable target</td>
<td>Avoid using technical language when writing a goal statement</td>
<td>Avoid suggesting or assuming a solution</td>
</tr>
</tbody>
</table>

**INSIGHTS**

- **Goal Statement**
  - It is often written in the following format:
    - Improve *(primary metric)* from *(baseline performance)* to *(desired future performance)* by *(desired date of completion)*
Example of a GOAL statement

Reduce oil losses of the manual refilling process of the forming machines in line #4 to less than 1% per drum by the 30th of October
How to Implement A3 Problem Solving – Analysis

The purpose of this stage is to dig into the problem and understand why it’s happening.

The aim is to reach to the root causes which can then lead to effective countermeasures.

The most common two tools that are used in this stage are 5 Whys and Fishbone Analysis.

Root cause analysis may be complex and require more advanced statistical tools.
A3 Thinking

How to Implement A3 Problem Solving – Analysis

Avoid jumping to the solution without having a deep understanding of the problem

Once the problem has been identified, it's time to find out a solution to the problem
A3 Thinking

How to Implement A3 Problem Solving – **Countermeasures**

Countermeasures are the actions to be taken to eliminate root causes or reduce their effects.

A solution is a set of countermeasures designed to resolve the identified root causes.

Brainstorm and evaluate possible countermeasures based on the analysis conducted earlier.

Cost, difficulty and time should also be assessed before deciding on which one to implement.

This stage also involves finding any needed quick wins, solving urgent issues and pilot testing.
## A3 Thinking

### How to Implement A3 Problem Solving – Implementation Plan

To achieve the target, develop a workable plan to implement the countermeasures.

The implementation plan consists mainly of the activity list, owners, and start and due dates.

Other information can be included such as the expenses, resources, and the status of activities.

A more detailed implementation plan could be attached to the A3 report.

Gantt charts are great ways to manage implementation plans very simply and easily.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Background</td>
</tr>
<tr>
<td>02</td>
<td>Current Situation</td>
</tr>
<tr>
<td>03</td>
<td>Target</td>
</tr>
<tr>
<td>04</td>
<td>Analysis</td>
</tr>
<tr>
<td>05</td>
<td>Countermeasures</td>
</tr>
<tr>
<td>06</td>
<td>Implementation Plan</td>
</tr>
<tr>
<td>07</td>
<td>Follow-up</td>
</tr>
</tbody>
</table>
Implement Your Plan

Once the action plan is **completed**, the team should begin working on the action items to implement the countermeasures.

A plan is useless without implementation.
A3 Thinking

How to Implement A3 Problem Solving – Implementation Plan

INSIGHTS

Discuss the implementation plan with all the affected parties and refine it as needed.

A dedicated project manager should be assigned to the project.

People need to have time aside from their work to focus on their action items.

Regular meetings should be held to oversee the progress and resolve project issues.

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How to Implement A3 Problem Solving – Follow-up

The final stage allows to evaluate the implemented plan and achievement of outcomes. Follow-up actions are important to ensure the benefits continue beyond the life of the project.

Changes and adaptations should be implemented as needed.

Controls measures should be in place to sustain the benefits (e.g., SOPs, mistake proofing, regular audits, SPC charts, and visual controls).
Constantly **update** the A3 report based on the progress and as new information becomes available
**A3 Thinking**

**A3 Template**

<table>
<thead>
<tr>
<th>A3 REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROJECT TITLE:</td>
</tr>
</tbody>
</table>

| 1. Background: | 5. Countermeasures: |
| Business case – extent of the problem – | Possible solutions – quick wins – pilot testing – |

| 2. Current Situation: | 6. Implementation Plan: |
| Problem statement – process map – Gemba – | List of activities |
| | Owners – start and due dates – resources |
| | Obtain approvals |
| | Implement the plan |

| 3. Target: | 7. Follow-Up: |
| Future state – expected benefits – scope – metrics – | Control measures – SOPs – continuous improvement – |

This is where the problem is identified and analyzed

This is where possible solutions are identified, and an action plan is prepared & implemented

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# A3 Thinking

## Useful Questions

## A3 REPORT

<table>
<thead>
<tr>
<th>PROJECT TITLE:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>1. Background:</th>
<th>5. Countermeasures:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the extent of the problem?</td>
<td>What are possible countermeasures for the problem?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Current Situation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where do things stand today?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Target:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is desired outcome you want to achieve?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Analysis:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the root causes of the problem?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Implementation Plan:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What activities will be required?</td>
</tr>
<tr>
<td>Who will be responsible for each activity?</td>
</tr>
<tr>
<td>When?</td>
</tr>
<tr>
<td>What resources and support will be required?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Follow-Up:</th>
</tr>
</thead>
<tbody>
<tr>
<td>When will the progress be reviewed and by whom?</td>
</tr>
</tbody>
</table>
A3 Thinking

Other information can be displayed on the A3 report

<table>
<thead>
<tr>
<th>A3 REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROJECT TITLE:</td>
</tr>
<tr>
<td>PROCESS NAME:</td>
</tr>
<tr>
<td>1-</td>
</tr>
<tr>
<td>2-</td>
</tr>
<tr>
<td>3-</td>
</tr>
<tr>
<td>4-</td>
</tr>
</tbody>
</table>

START DATE: ESTIMATED COMPLETION DATE: 
PROJECT TEAM: 

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A3 thinking is considered to be the *practical form* of the PDCA model.

<table>
<thead>
<tr>
<th>Plan</th>
<th>Background</th>
<th>Current situation</th>
<th>Target</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do</td>
<td>Develop and test countermeasures</td>
<td>Quick wins and urgent issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check</td>
<td>Check the effectiveness of the countermeasures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Act</td>
<td>Implementation plan</td>
<td>Follow-up</td>
<td>Standardize</td>
<td>Report &amp; Share</td>
</tr>
</tbody>
</table>
A3 Thinking

Further Information

Detailed documents are usually attached to the A3 report

- Graphics and drawings
- Before and after photos
- Technical documents
- Performance reports
- Detailed plans
- Advanced statistical analysis
- Team activity documents
- Lessons learned
A3 Thinking

Further Information

Avoid viewing the people as the problem