



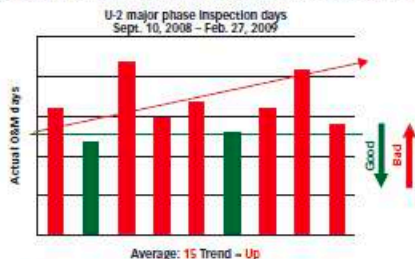
A3 Problem Solving



Example of completed problem-solving A3 / ONLINE FIGURE 1

1. Clarify and validate the problem.

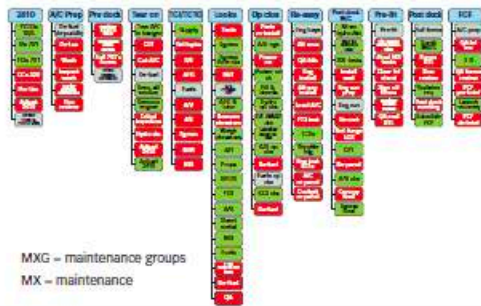
The U-2 major phase inspection is averaging 15 days, exceeding the 13-day inspection target, and it cannot efficiently sustain worldwide U-2 aircraft operational requirements.



O&M – operations and maintenance

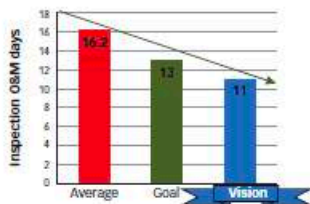
2. Break down the problem/identify performance gaps.

- Lack of communication and schedule between phase and MXG results in personnel availability.
- Ancillary tasks reduce maintainer availability.
- Current work procedures, attention to detail drive excess MX and inefficiencies.



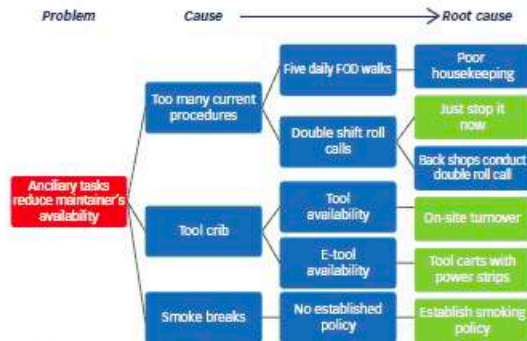
3. Set improvement target.

Achieve 13-day major phase by July 31, 2010.



O&M – operations and maintenance

4. Determine root cause.



FOD – foreign object damage

5. Develop countermeasures.

Action	POC	Start	End	Status	Remarks	Do-It
Spaghetti diagram and process time for A/C tear down	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Spaghetti diagram and process time for TCI/TCTO process	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Spaghetti diagram and process time for Looks	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Spaghetti diagram and process time for Ops checks	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Spaghetti diagram and process time for reassembly	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Spaghetti diagram and process time for post dock work cards	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Time in motion study	Mr. Harrington Mr. Rowan	Jan. 23	Jan. 26			X
Quality assurance pass rates	TSgt Bernard	Jan. 15	Jan. 21			X
Phase roll out stats	Mr. Rowan	Jan. 15	Jan. 15			X
Paper doll	Mr. Rowan	Jan. 15	Jan. 15			X
Consumable usage data for kitting					C/W	

A/C – aircraft
TCI – time change item
TCTO – time compliance technical order
POC – point of contact
Ops – operations
C/W – complied with

6. See countermeasures through.

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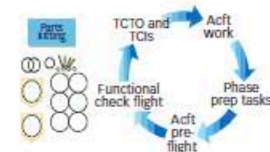
7. Confirm results and process.



VSA – value stream analysis
A/C – aircraft

8. Standardize successful processes.

- Implemented in-house training manager and plan.
- Created standard inspection task flowchart.
- Established biannual ancillary block training week.
- Realign critical inspection tasks to proper shift.
- Reassigned aircraft phase prep tasks among AMXS and MXS.
- A/cft refuel and defuel in hangar.
- Standardized parts kits.
- Event A3 uploaded to CPI-MT.



AMXS – aircraft maintenance squadron
MXS – maintenance squadron
CPI-MT – continuous process improvement-management tool
Acft – aircraft
TCTO – time compliance technical order
TCI – time change item

A3 Problem Solving Background & History

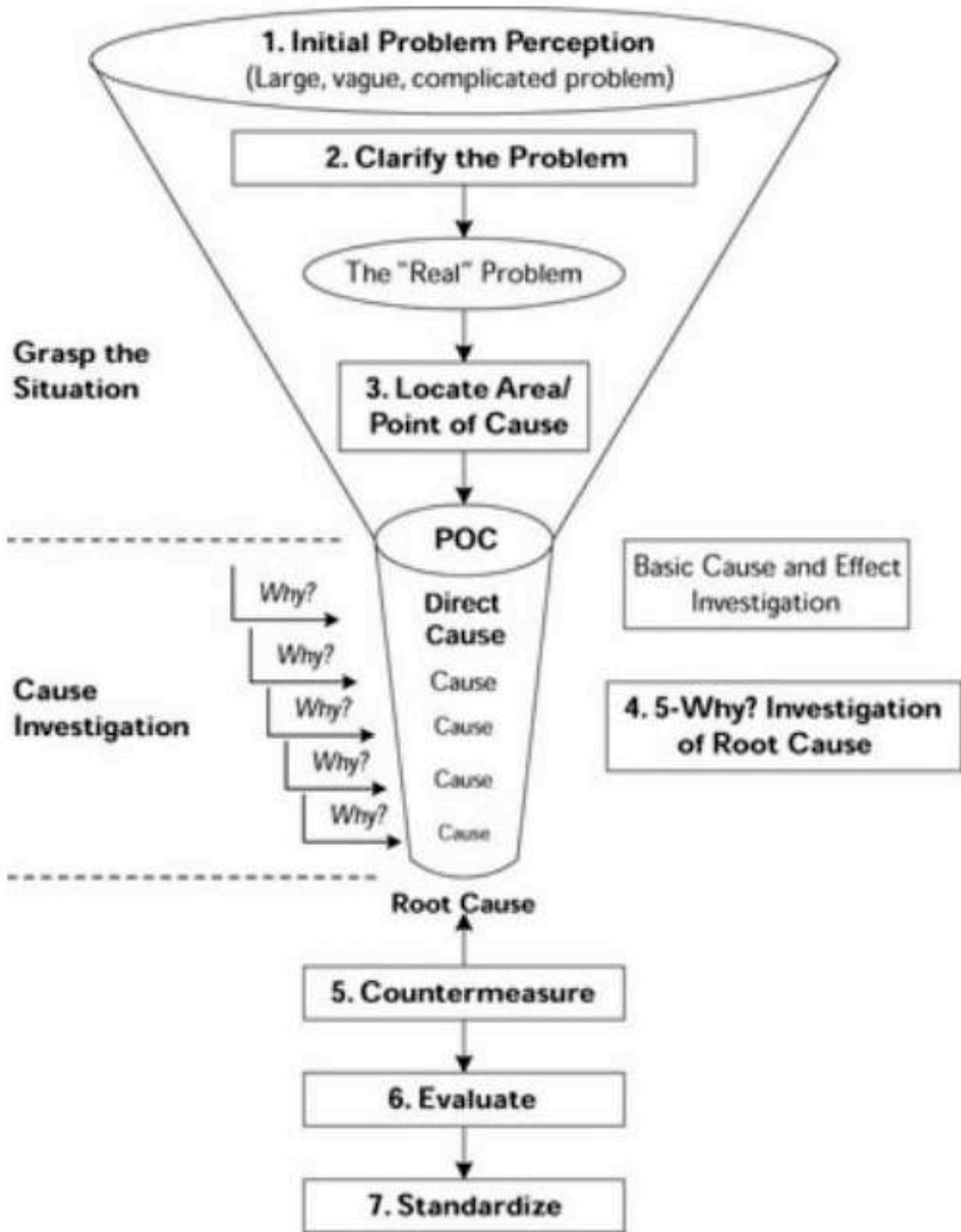
“It takes a different kind of thinking to solve a problem than the kind of thinking that produced the problem”

Albert Einstein

What is A3 Problem Solving

What is A3 Thinking

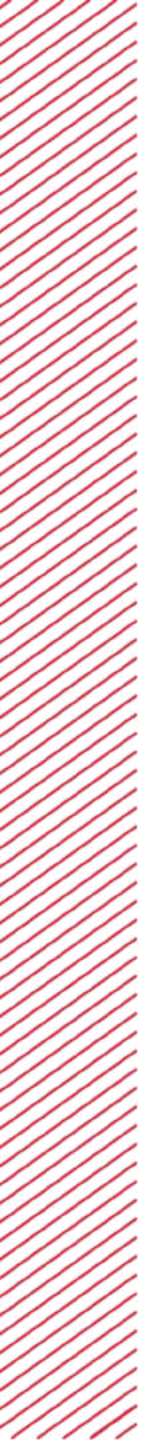
- Logical Thinking
- Present Information Objectively
- Process & Results
- Focus on Essential Data & Information
- Actions are consistent with company goals
- Maintain a consistent perspective
- Use a single structured approach



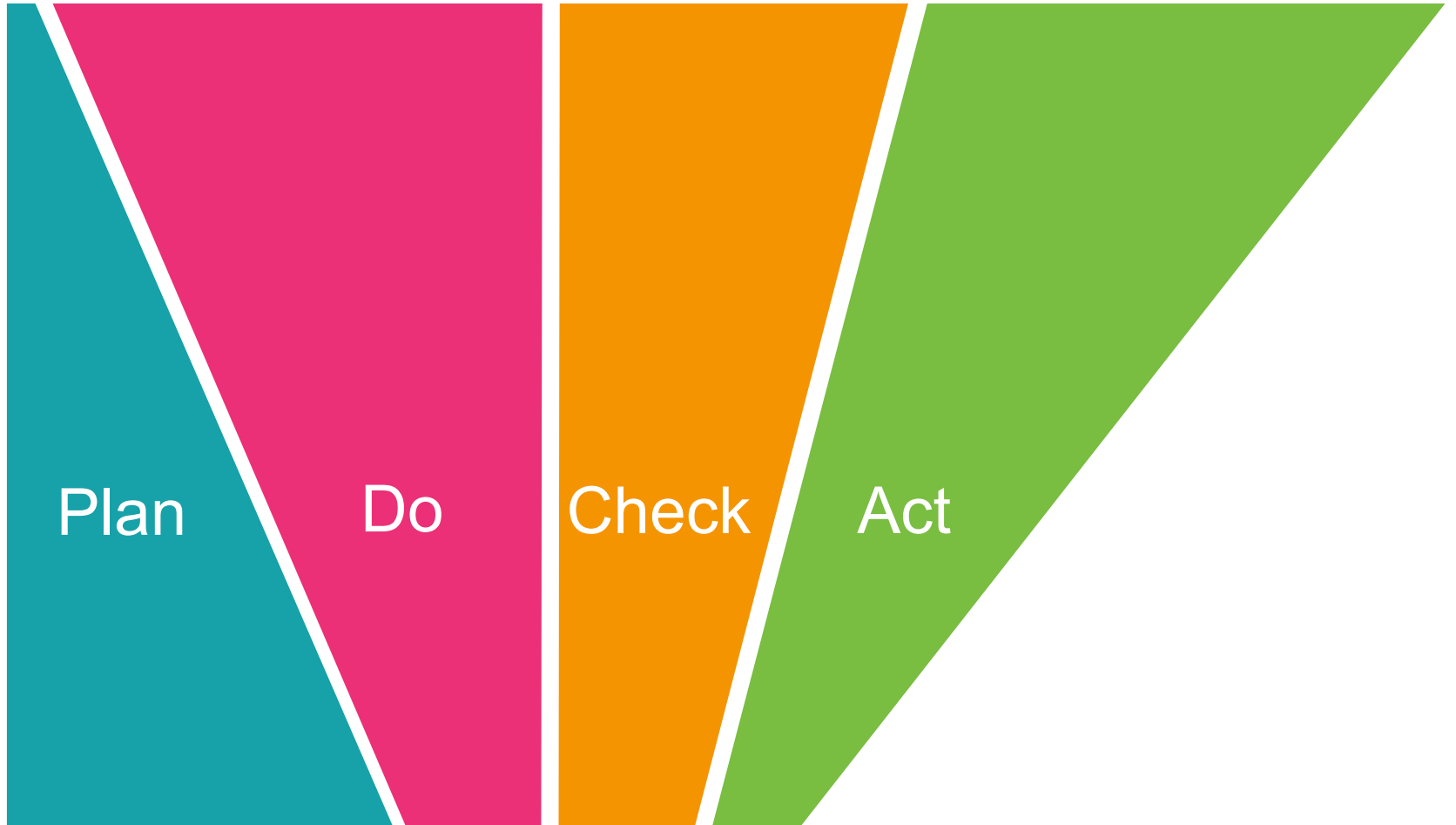
What is A3

- A common Format
- A single sheet
- 7 Blocks
- Based on PDCA Cycle
- Focus on understanding
- Advantage of planning





Project Leadtime



Plan

Do

Check

Act

Project Leadtime



Why is A3 Problem Solving used

Advantages of Format

- A3 Model is consistent
- Information on just 1 page
- Keeps everything concise
- Uses Visual Charts and Graphics
- Encourages consensus & collaboration

Why use A3

- Encourages collaboration and team involvement
- Promotes information sharing
- Encourages learning
- Reinforces commitment to common goals

A3 Report Name

1. Background

- Importance
- Context

2. Current Situation

- Problem Statement
- Process Mapping

3. Set targets/goals

- Desired Outcome
- Success Metrics

4. Root Cause Analysis

- 5 Whys
- Dig Deeper
- Find Initial Problem

5. Countermeasures

- Possible Solutions
- Go Back to Goals and Add Details If Needed

6. Implementation

- List of Actions
- Assign Responsible Individuals

7. Follow-Up

- Report Results
- Standardize or Modify

Project Leader:

Team Members:

Department:

Date:

A3 & PDCA Cycle

Background & Support Data
(PLAN)

Describe the Current state
What are we trying to solve.
(PLAN)

Set Goals and Targets.
Define what success looks like
(PLAN)

Perform Root Cause Analysis
(PLAN)

Design Counter Measures
(PLAN)

Implement the Countermeasures
(DO)

Follow UP (Check)

Follow UP (Act)

When should we use A3

When should we use A3

- More than “Just Do It”
- A3 Model
- DMAIC Cycle

How to create an A3 Storyboard

Roles in A3 Process

- Mentor or Coach
- Problem Owner
- A3 Task Team
- Rotating Facilitator for A3 Sessions
- Stakeholders

Stages in Creation of A3

- Describe the Background / Clarify the Problem
- What is the “Current State”
- Set a Target / Goal Statement
- Perform Root Cause Analysis
- Design Counter Measures
- Implement Action Plan
- Verify success & Follow UP

A3 & PDCA Cycle

A3 & PDCA Cycle

Background & Support Data
(PLAN)

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(PLAN)

Implement the Countermeasures
(DO)

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(DO)

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Follow UP (Act)

Formats of A3

A3 & PDCA Cycle

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Define what success looks
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Perform Root Cause
Analysis
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Design Counter Measures
(PLAN)

Implement the
Countermeasures
(DO)

Follow UP (Check)

Follow UP (Act)

A3 & PDCA Cycle

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Follow UP (Check)

Follow UP (Act)

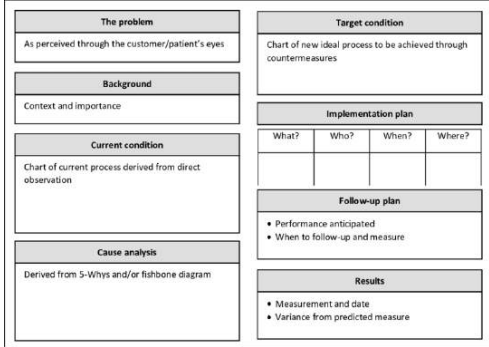
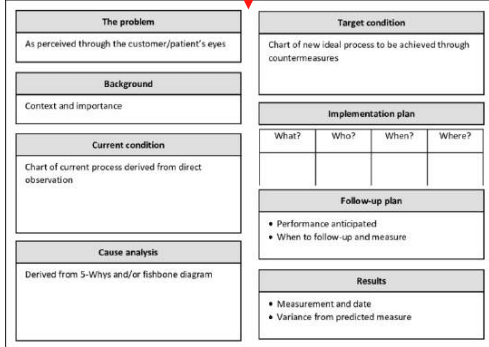
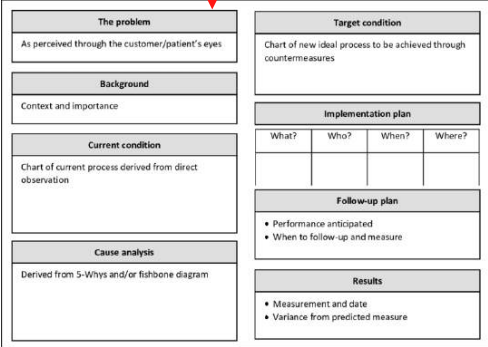
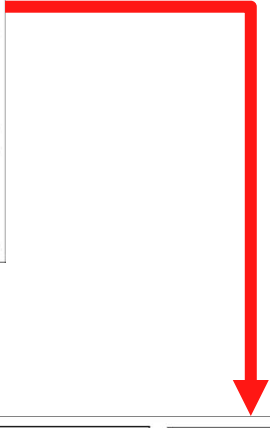
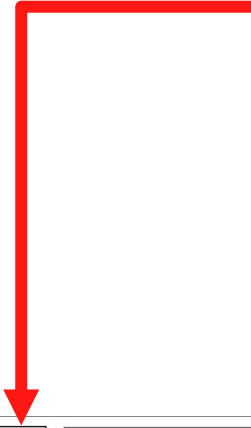
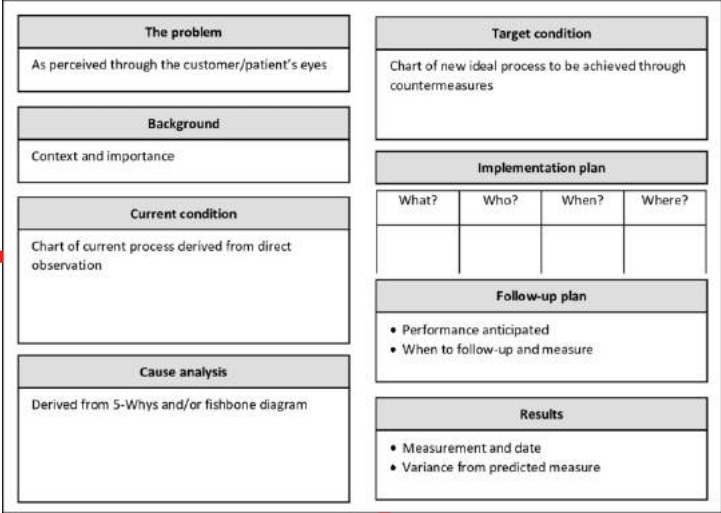
Further applications of an A3

Further uses of A3 Format

- Not only for Problem solving
- Can be used to justify a Capital Investment
- To evaluate ROI
- To justify recruitment or expansion
- To develop a business or marketing strategy

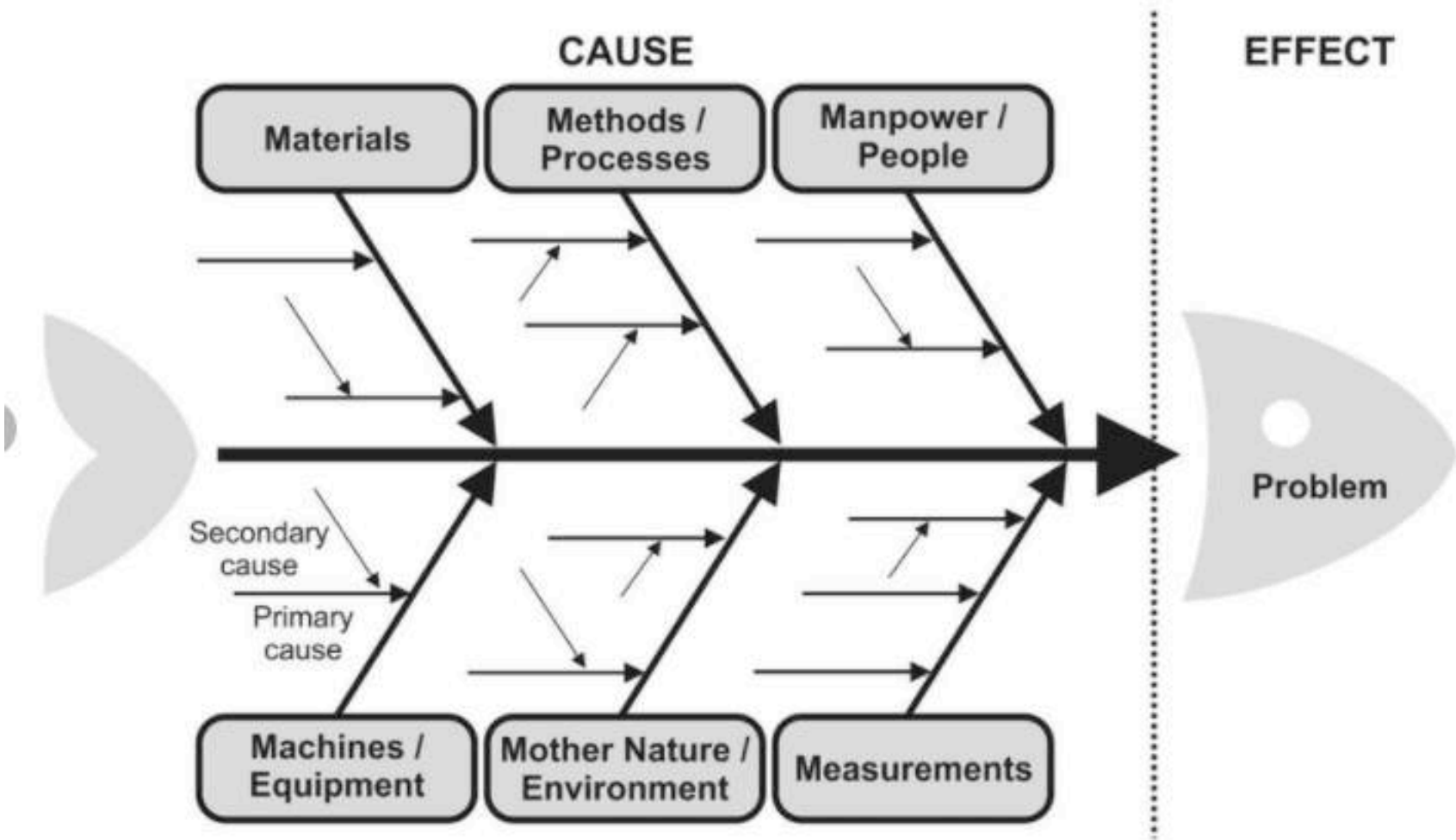
Parent Child Use

- If a problem is Too Complex for a single A3
- Example: Improve our customer scorecards
 - Delivery
 - Leadtime
 - Costs
 - Technology
- Then we can use a Parent & Child Approach



Root Cause Analysis Approaches





Brainstorming Strategies

- 1) Analytical
- 2) Quiet Brainstorming
- 3) Role Play Brainstorming
- 4) Supported Brainstorming
- 5) Radically Creative Brainstorming

Analytical

- Mindmapping
- Reverse Brainstorming
- Gap Filling
- Drivers Analysis
- SWOT Analysis
- 5 Whys
- Starbursting

Quiet Brainstorming

- Brain Netting
- Brainwriting
- Collaborative Brainwriting

Role Play Brainstorming

- Role Storming
- Reverse Thinking
- Figure storming

Supported Brainstorming

- Stepladder Brainstorming
- Round Robin Brainstorming
- Rapid Ideation
- Trigger Storming

Radically Creative Brainstorming

- Charrette
- “What If”

Barriers to Problem Solving

Barriers to Problem solving

- Confirmation Bias
- Rigid Mentality
- Functional Fixedness
- Unnecessary constraints
- Irrelevant Information

Problem Solving Strategies

Problem Solving strategies

■ 6 Hats

■ 5 Whys

dcm THE
LEARNING
EXPERTS