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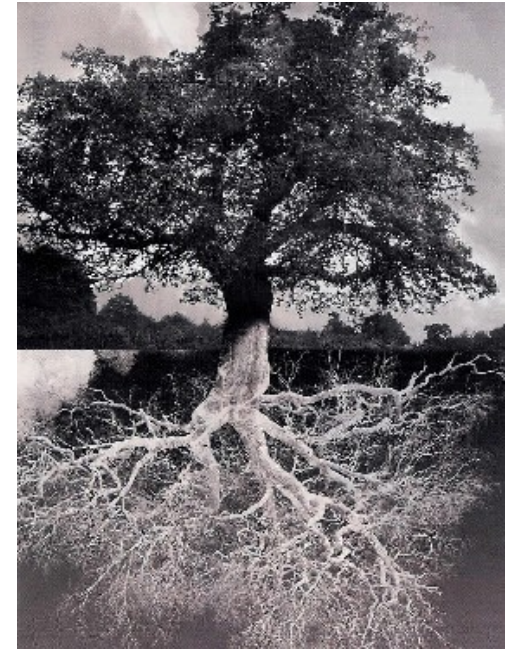293 Boston Post Road West * Marlborough, MA 01752
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Root Cause Analysis for TURA Planners

TURA Planner
Continuing Education Conference
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Presenter: Robert Pojasek, PhD
Senior Program Director

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About the Presenter

Robert (Bob) Pojasek, PhD
Senior Program Director

Bob has more than 30 years experience working in all aspects of the environmental, health and safety field with particular emphasis on the planning and implementation of sustainability programs at the corporate and facility level. He has extensive experience with the integration of management system standards including quality (ISO 9001), environment (ISO 14001, USEPA NEIC), occupational health and safety (OHSAS 18001, OSHA VPP), risk management (ISO 31000), corporate social responsibility (ISO 26000 and AS 8300), sustainability (BS 8900), involvement of people and sector-specific initiatives.

Bob has provided courses on integrated management systems, business excellence frameworks (e.g., Baldridge, EFQM), process improvement (e.g., LEAN Manufacturing, Six Sigma) and business sustainability (e.g., "Five Basics"). He has won numerous awards, authored several publications, and is an Adjunct Professor at Harvard University. Bob serves on numerous industry and government advisory boards as well as chairs the Board of Governors for the Corporate Responsibility Officers Association.

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Presentation Agenda

- Process Mapping

- Systems Approach and Tools

- Root Cause Analysis

- Creating a TURA Action Plan

- Root Cause Analysis Exercise

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Taking a Process Focus

- Identify the *mission* of the organization

- Identify the main process – supports mission

- Look for existing process documentation

- Search for related process information

- Understand the *system* within which it operates

Getting Started

- Determine the *perspective* of the process

- Determine the *boundaries* of the process

- Create a list of each work step in the *main process*

- Create a *top level* of 3 to 6 work steps

- Use boxes to depict the work steps by level

- Utilize lines to represent the flow of resources, activities and information

- Ensure sequence is from *left to right* (landscape format)

- Name work steps with a *verb phrase*

- Number the work steps in a hierarchical manner

Hierarchical Process Maps

Top Level

| 1 | → | 2 | → | 3 |

Second Level

2.1 → 2.2 → 2.3

Third Level

2.2.1 → 2.2.2 → 2.2.3 → 2.2.4

Fourth Level

2.2.2.1 → 2.2.2.2 → 2.2.2.3

Include all Processes

- Include all activities, products and services that can be controlled and influenced

- Planned or new developments or new or modified activities, products and services

- Routine and non-routine activities including start-up, shut-down, emergency situations and accidents

- Activities of all personnel having access to the workplace and site

- Core processes, supporting processes, infrastructure

- Suppliers as supporting processes

- Document the process and keep it up to date

Systems Approach Tools

- Statement of the problem/opportunity

- Root cause analysis – cause & effect diagram

- Alternative solutions – Brainwriting

- Prioritize alternatives – bubble sorting

- Implementation – draft action plan

Why Use These Tools?

- They offer the most *visibility*

- They are the most *interactive*

- Using the tools organizes documentation

- Do not appear to be culturally sensitive

- All tools are proven

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Systems Approach Steps

- Document the process as a system and verify

- Select *opportunities* for improving the process and assign employee teams

- Teams use *Systems Approach* tools to prepare a *draft* action plan

- Management approves the action plan, assigns resources to complete the work and reviews progress on a regular basis

- All projects operated on a benefits to exceed costs basis with full accountability

- Lessons learned drive future improvements

Opportunities to Improve Processes

- Management system opportunities
  - Significant Aspects
  - Significant Hazards and Risks
  - Customer Complaints
  - Supply Chain Issues
  - Stakeholder Interests

- Opportunities from the employees

- Process improvement program targets

- Management and business initiatives

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Selection of Teams

- Ideally *five* members

  - Operator familiar with the process

  - Supervisor of that process

  - Maintenance representative

  - Internal supplier or customer

  - Person with no experience with the process

  - Quality, environment, and OH&S support team

  - Management representative as a mentor

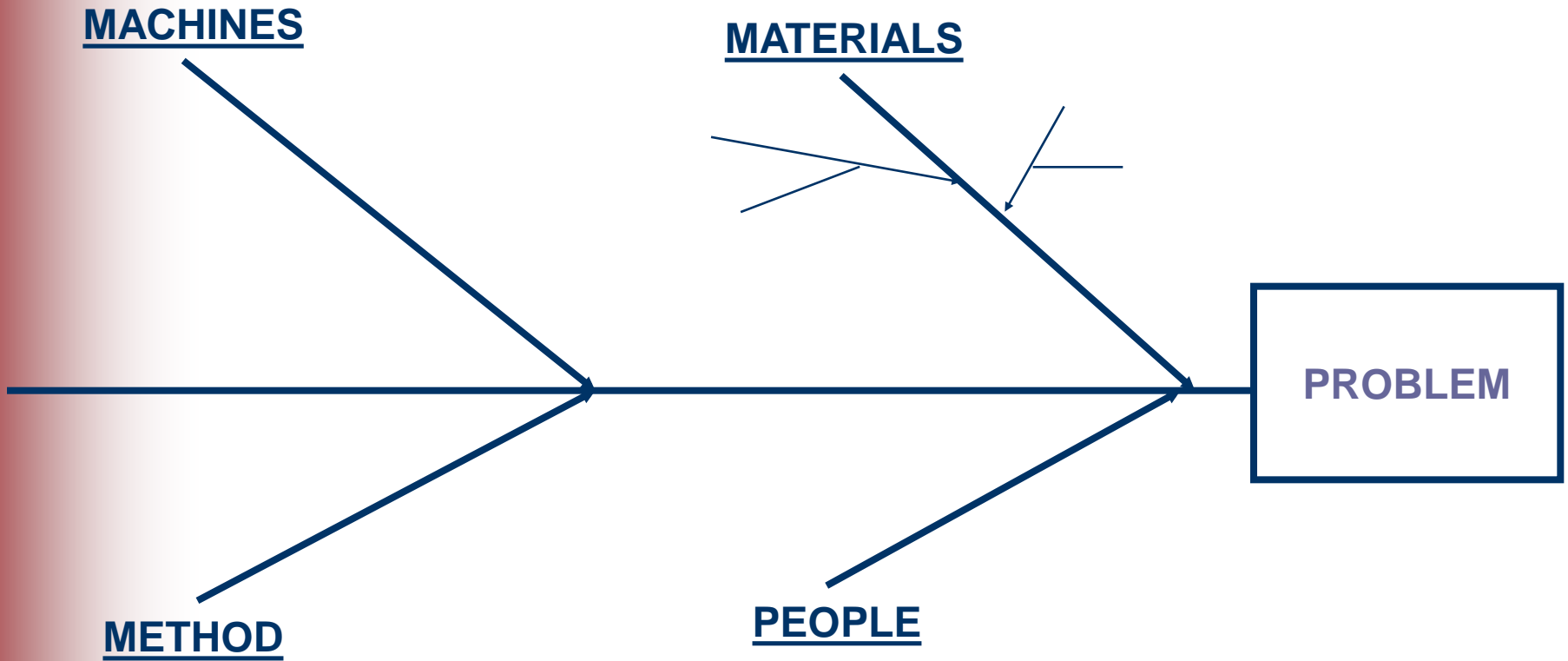- Work with experienced *Systems Approach* facilitator

Root Cause Analysis

- Team selects *cause categories*
  - Materials, Machines, Methods, People (Measurement)
  - Policies, Procedures, People, Place

- Using all available information, team lists items in each of the cause categories

- With help of the facilitator, the team states how each item helps to *cause* the problem

- The team discusses the causes and sometimes gathers more information on the relationship between the cause and the problem
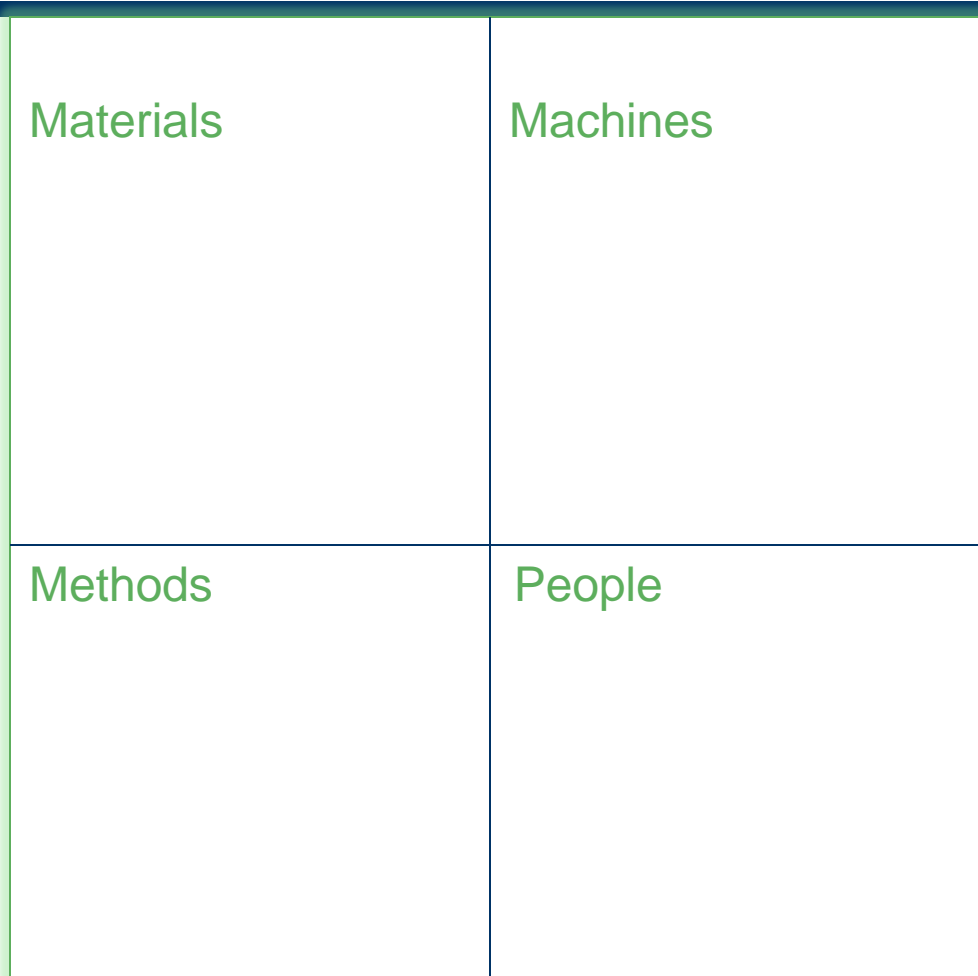
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Root Cause Definition

A controllable, solvable force
that explains why the resource
is used or why the loss exists.

Fishbone Diagram

MACHINES

MATERIALS

PROBLEM

METHOD

PEOPLE

Cause and Effect Diagram (Simplified)

Materials	Machines
Methods	People

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Brainstorm Causes

- Place each cause on the diagram

- Ask "What is it about _____ that causes the problem to occur?"

- Write the answer(s) indented below

- Some of the "causes" may not have an answer
  - Might not be a cause
  - Might not know enough about the cause

Brainwriting

- All information is made visible to team members

- Facilitator familiarizes team with this tool

- Team members understand the importance of **provocation** to the success of this tool

- Team conducts the brainwriting exercise

- Each team member makes sure that they understand all of the alternative solutions proposed by the other team members – open discussion is allowed during and after the exercise

Bubble-up/Bubble-down Tool

- All alternative solutions cut into squares

- Place two alternatives on the table

- Which is best?
  - Costs the least
  - Easier to implement
  - More effective at solving problem (less important)

- Place new alternative at the bottom of the list and continue sorting

- Prioritization is complete when there is majority agreement on the entire list

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Action Plan Format

Date:

Alternative Selected •Purpose •Project •Benefits				
Action	Responsible Person	Performance Standard	Completion Deadline	Resources Needed
1				
2				
3				
4				

Summary

- Understand the concept of sustainability

- Manage your responsibilities in full view of your stakeholders

- Use the "Five Basics" to make sustainability part of what every employee does every day

- Make sustainability part of every business decision

- Sustainability is simply "good business"

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Questions

For further assistance on TURA planning tools, please contact:

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For further TURA updates and information, follow us on Twitter:
http://twitter.com/capaccio_env

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