THE RELEVANCE OF PROBLEM-SOLVING IN INDUSTRY 4.0 AND AI

Harnessing Timeless Tools for Future Success

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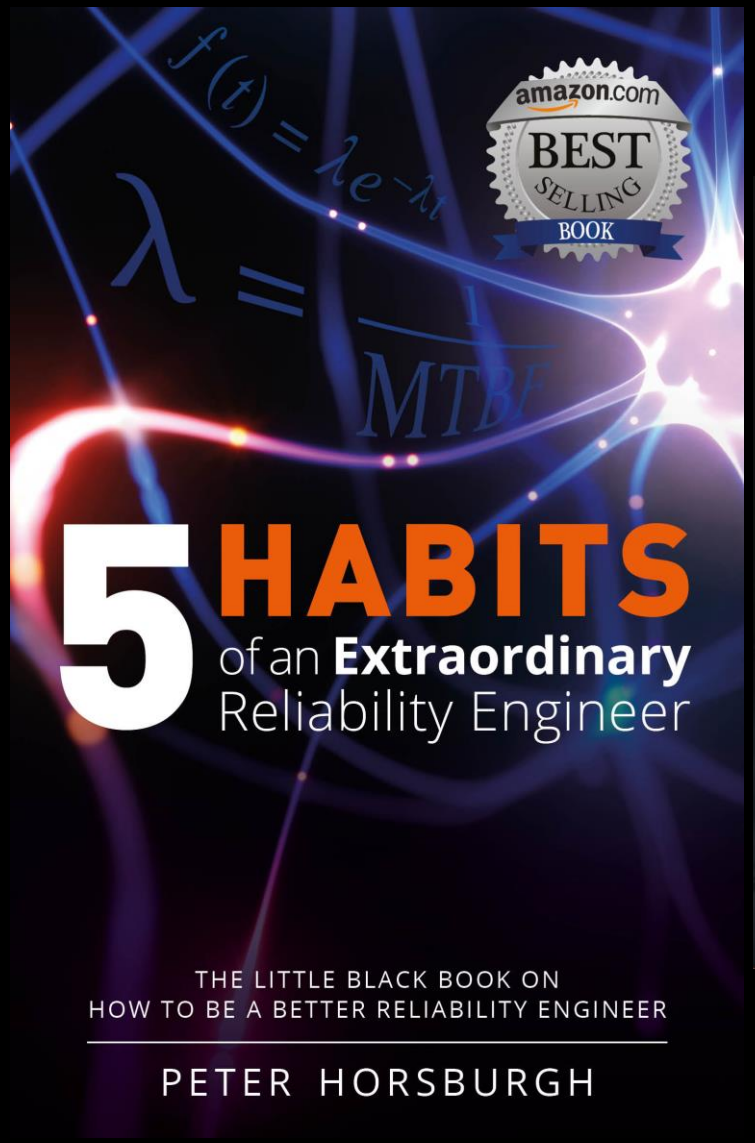
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7

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CREATE A WORLD OF SOLUTION-SEEKERS WITH THE ABILITY TO NAVIGATE UNCERTAINTY WITH CONFIDENCE!

AGENDA

- Current Challenges
- AI Enhancements
- Synergies with AI
- Advanced Problem-Solving Techniques

01

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BETTER THAN YES TER DAY

The 10 essential ways great organisations solve their most complex problems.

Solve problems
Reduce risk
Improve performance

Current Challenges

Despite Technological Advancements

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COMPLEX SYSTEMS

“Modern industrial systems are highly complex, with numerous interconnected components and processes.

This complexity can lead to unexpected failures and performance issues that require comprehensive problem-solving approaches to diagnose and resolve.”

INTEGRATION OF NEW TECHNOLOGIES

“The integration of advanced technologies such as IoT, AI, and robotics into existing systems can introduce new challenges, including compatibility issues, cybersecurity threats, and the need for upskilling the workforce

Effective problem-solving is essential to navigate these challenges and ensure seamless integration.”

DATA OVERLOAD

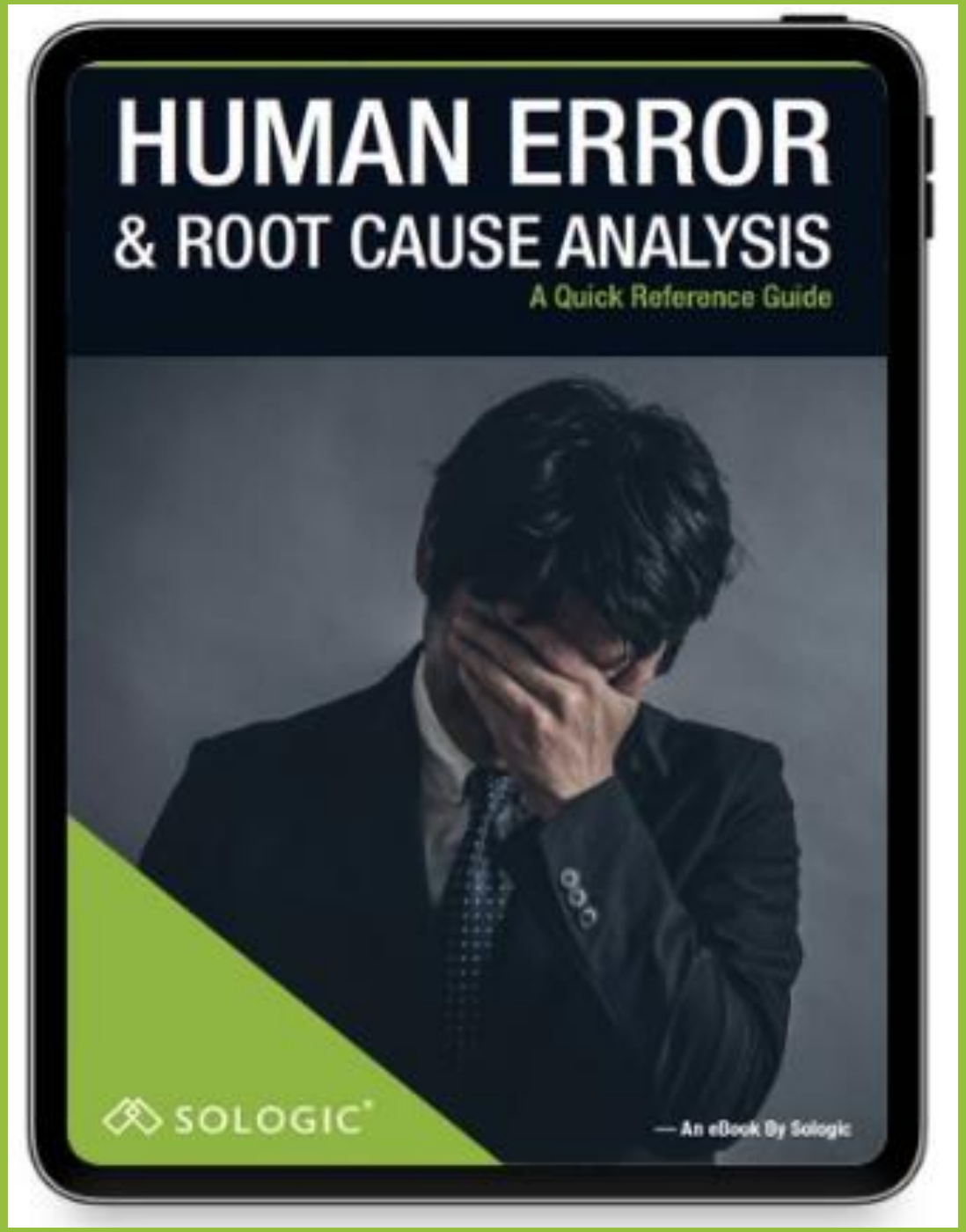
“The proliferation of data from IoT devices and other sources can be overwhelming.

While big data analytics can provide valuable insights, interpreting this data accurately and making informed decisions requires critical thinking and problem-solving skills. .”

HUMAN FACTORS

“Human error remains a significant factor in industrial incidents and inefficiencies.

Addressing human factors involves understanding the root causes of errors, implementing preventive measures, and fostering a culture of continuous improvement. ”


HUMAN ERROR
& ROOT CAUSE ANALYSIS
A Quick Reference Guide
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— An eBook By Sologic

How AI and Industry 4.0 Enhance Problem Solving Capabilities

DATA-DRIVEN INSIGHTS

IoT devices and sensors continuously collect vast amounts of data from various processes and machinery.

AI-driven analytics interpret this data to identify patterns, trends, and anomalies that indicate potential issues. This data-driven approach allows for more informed decision-making and precise problem identification.

PREDICTIVE MAINTENACE

Predictive maintenance uses AI algorithms to analyse historical and real-time data, predicting equipment failures before they occur.

AUTOMATED ROOT CAUSE ANALYSIS

AI can streamline Root Cause Analysis (RCA) by quickly sifting through data to identify the underlying causes of failures.

Machine learning algorithms can recognise complex relationships and correlations, speeding up the diagnostic process and suggesting potential solutions.

SIMULATION AND MODELLING

Advanced simulation tools and digital twins—virtual replicas of physical assets—allow engineers to test scenarios and solutions in a virtual environment. This reduces the risk and cost associated with implementing changes in the real world.

Synergies Between Human Problem-Solving Skills and AI Tools

CRITICAL THINKING AND CREATIVITY

Humans excel in critical thinking, creativity, and contextual understanding—skills that are challenging for AI to replicate.

When engineers and technicians interpret AI-generated insights, they can apply their domain knowledge to develop innovative solutions tailored to specific contexts.

COLLABORATIVE PROBLEM-SOLVING

Collaborative efforts between human teams and AI systems enhance problem-solving.

AI can handle data analysis and routine tasks, freeing up human experts to focus on strategic decision-making and creative problem-solving.

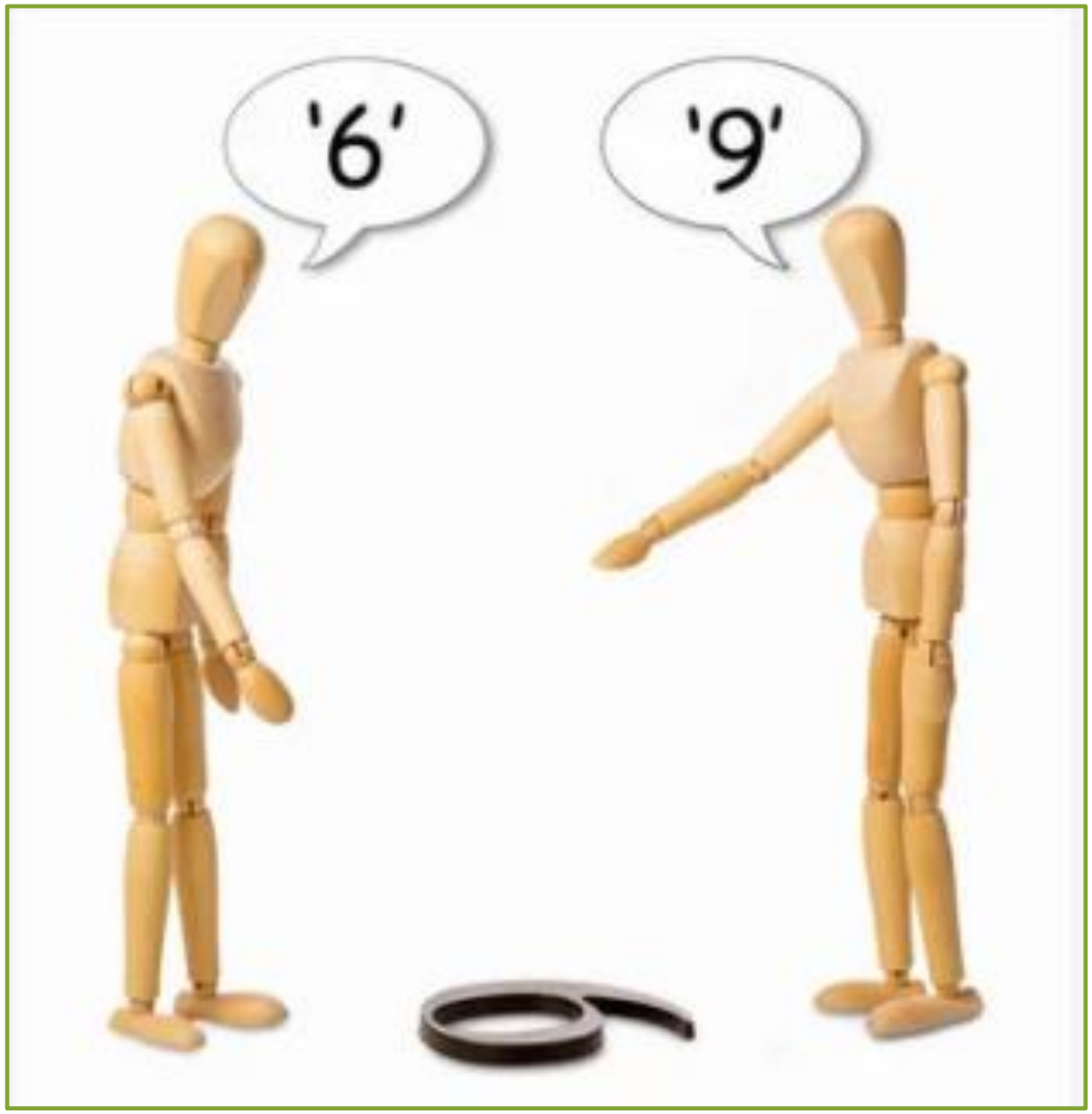
CONTEXTUAL ADAPTABILITY

Humans can adapt solutions to varying contexts and environments.

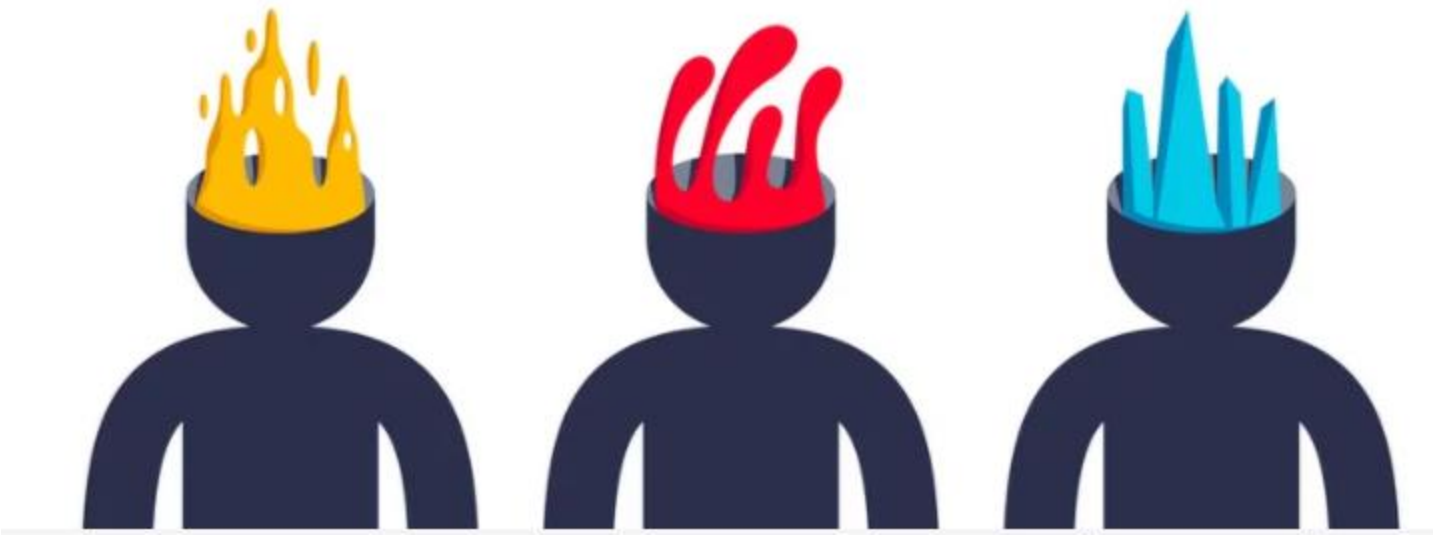
While AI can provide general recommendations, human problem-solvers can fine-tune these suggestions to suit the unique requirements of different industrial settings.

PERSPECTIVE

IT CHANGES HOW WE SEE THE PROBLEM

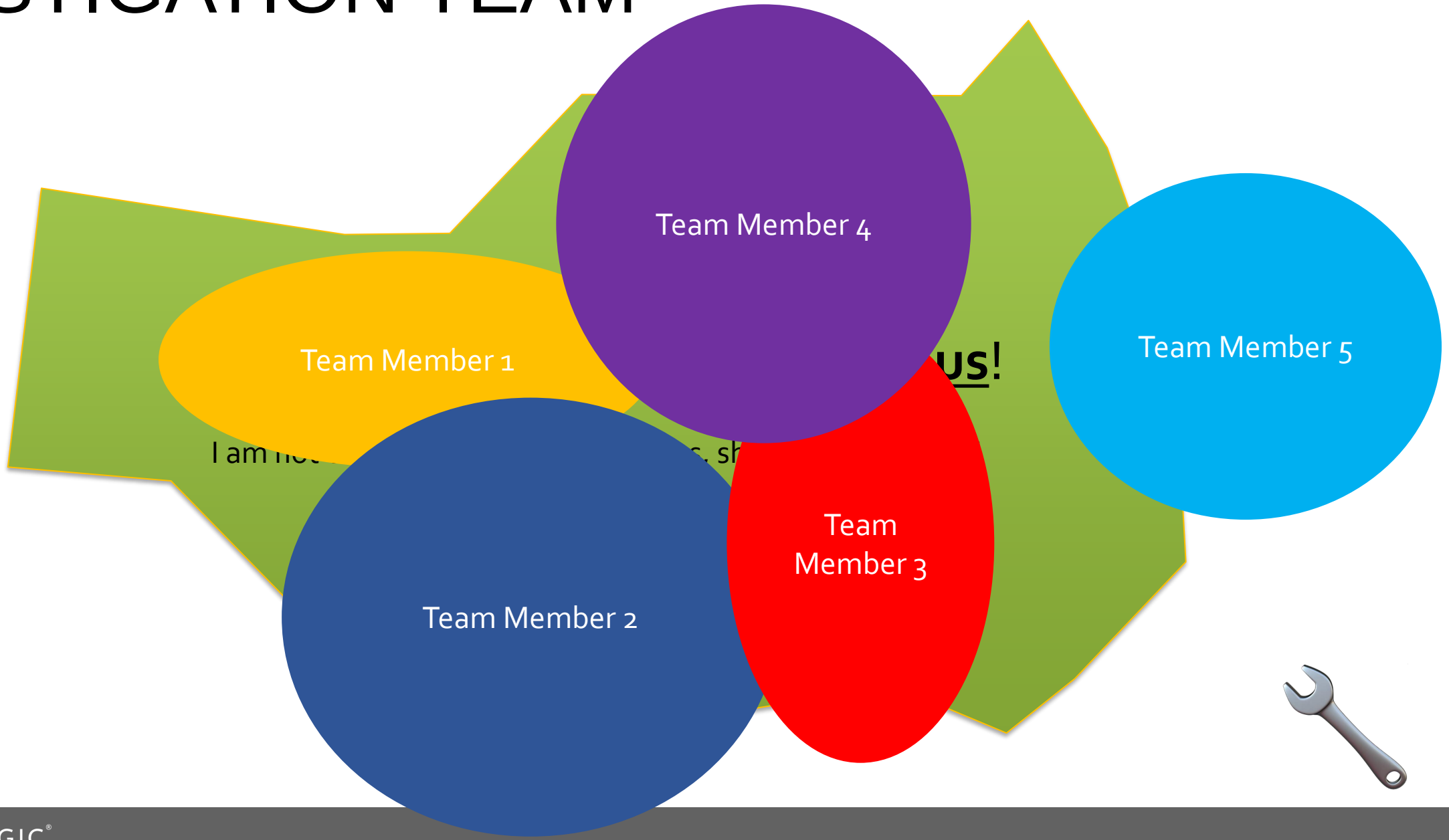


DIVERSITY IS BETTER



Diversity of knowledge, perspective, & experience
yields better problem-solving results

INVESTIGATION TEAM



Advanced Problem Solving Techniques


MY BOSS TOLD ME TO DO A
ROOT CAUSE ANALYSIS
NOW WHAT?
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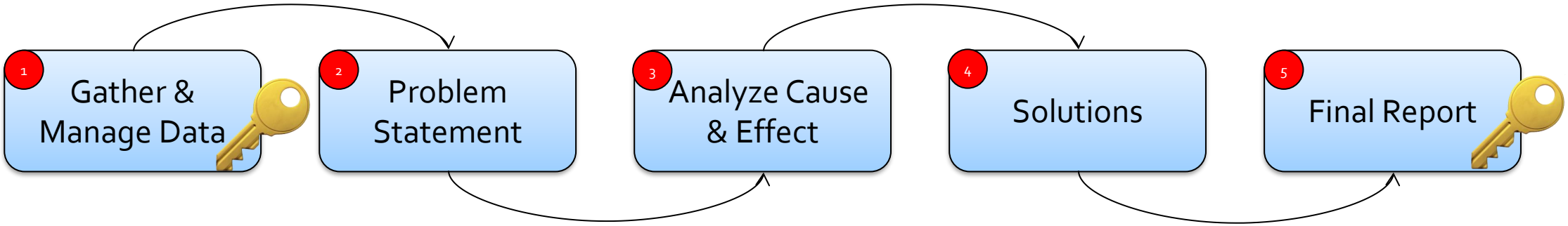
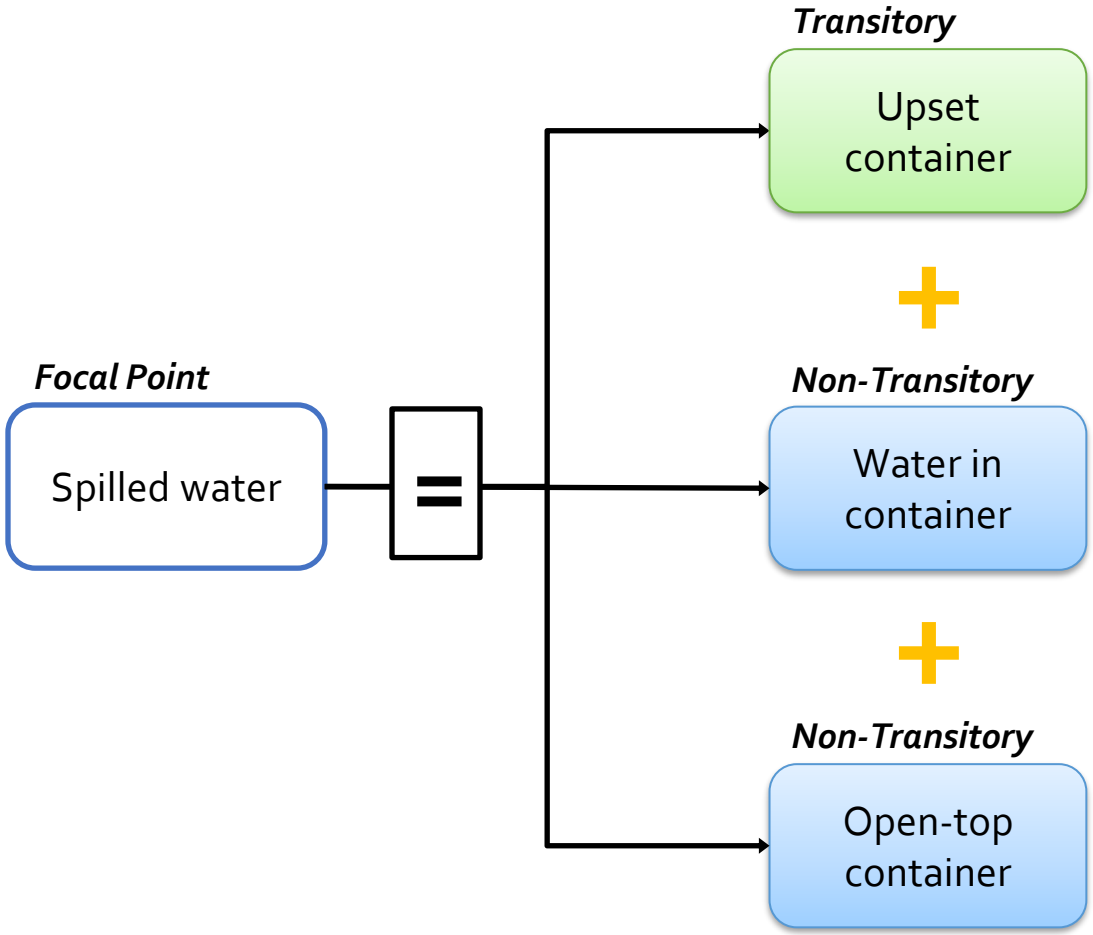
THE SOLOGIC RCA PROCESS

- The Sologic RCA Process contains five steps:
  1. Gather and Manage Data
  2. Create the Problem Statement
  3. Analyze Cause and Effect
  4. Generate Solutions
  5. Produce the Final Report



SPILLED WATER

WHAT ARE THE CAUSES OF SPILLED WATER?

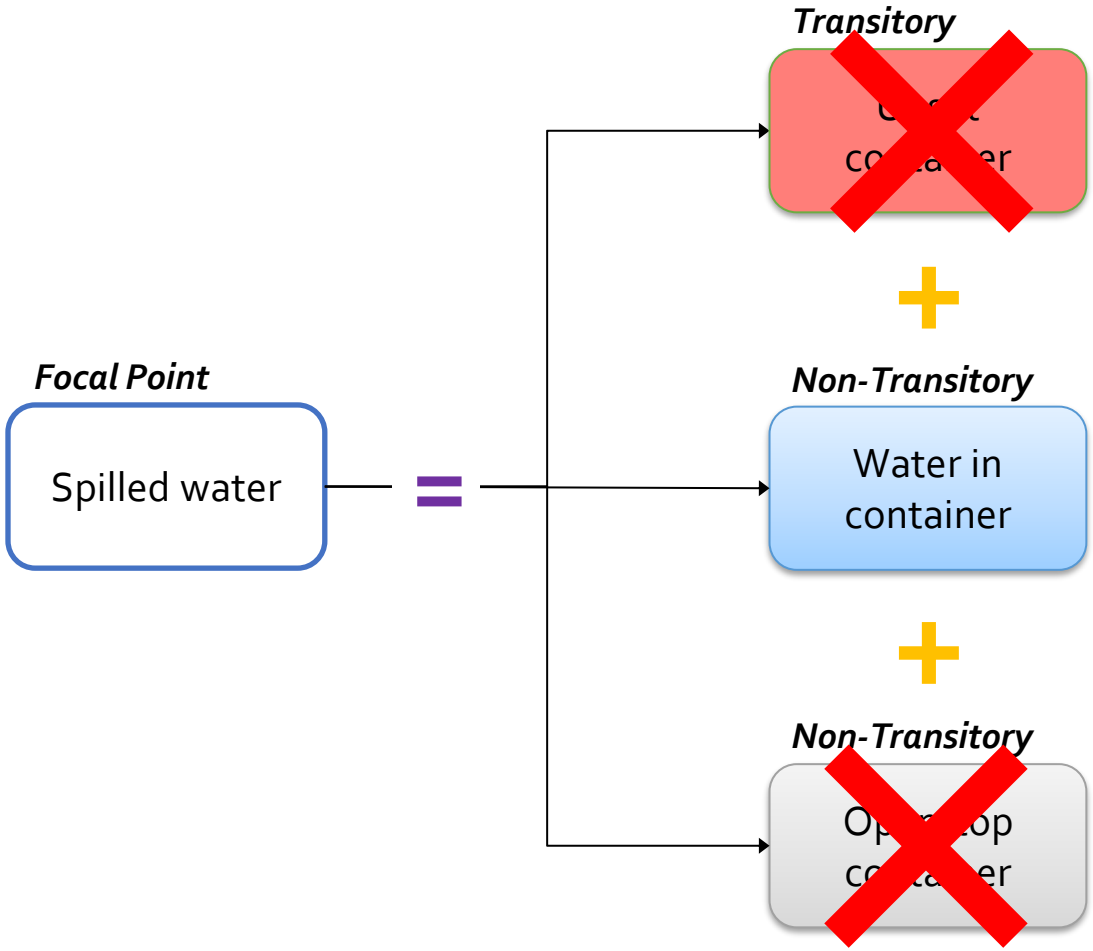


Transitory causes represent a ***point of change***. In this case, the water was not spilled until the container was upset. This represents a change from contained water to spilled water

Non-Transitory causes are the ***players in an event***. In this case, the water in the container represents a status of the container (and the water) at the time of the event. Status changes over time.

Non-Transitory The cause 'open-top container' is a non-transitory property of the container. Properties are generally stable and resist change.

BREAK THE CHAIN

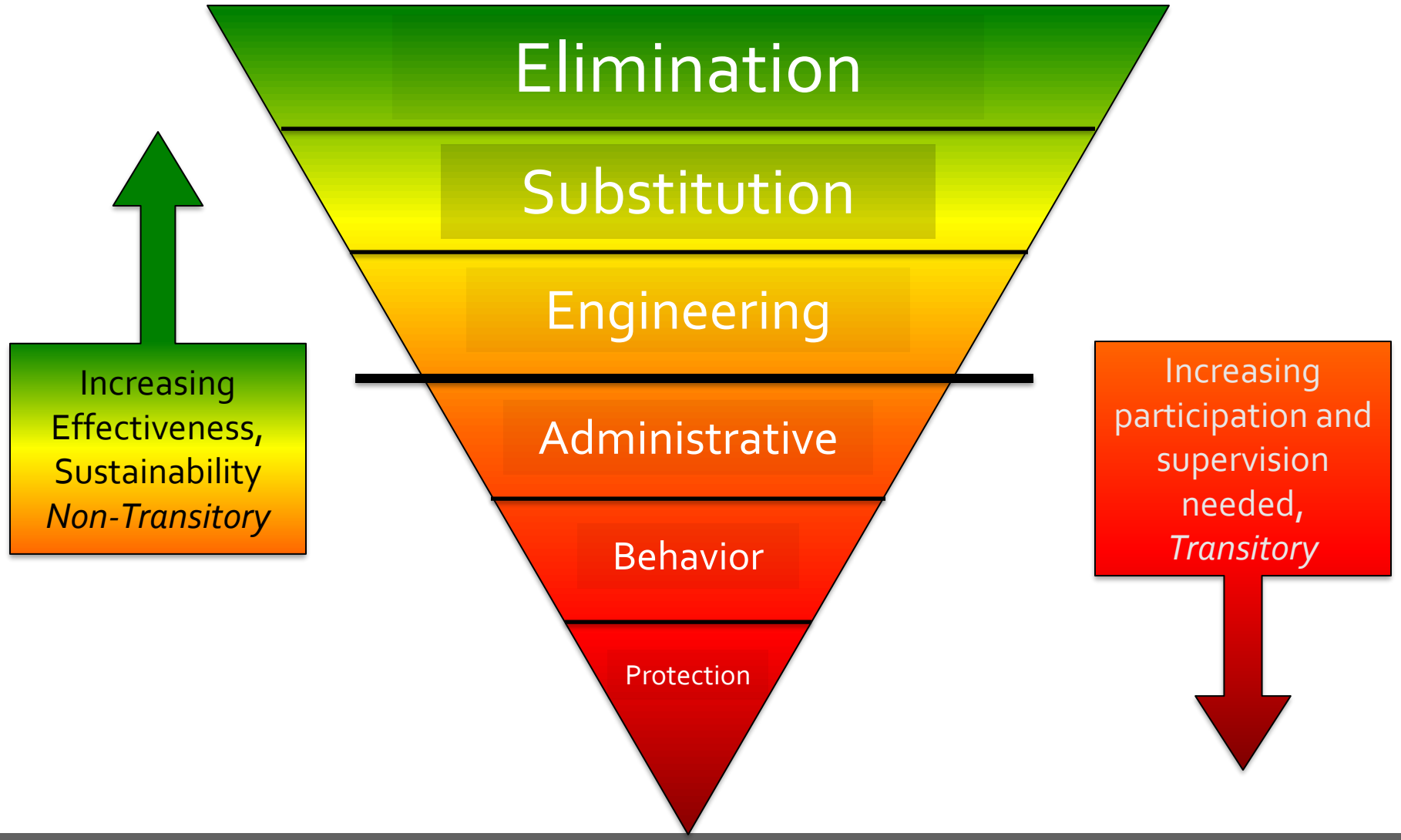


Transitory

Desired State

Non - Transitory

HIERARCHY OF CONTROLS

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ASK THE EXPERTS
HOW TO BUILD AN
RCA PROGRAM
(AND SUSTAIN IT)
insider tips for organizations looking to improve or rebuild their RCA program


6
STEP 1
Identify RCA PROGRAM Goals
An RCA program should support the broader goals and objectives of the organization. Leaders need to fully grasp how the program will help achieve those goals. Further, employees need to understand the drivers for RCA so that when the time comes, they understand why their participation is crucial and how their contributions will have a positive impact.
Action
Make a list of RCA goals. Global goals will be the same for everyone. Individual businesses will need to define their own specific local goals.
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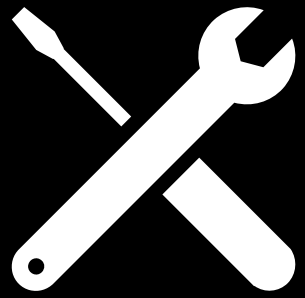
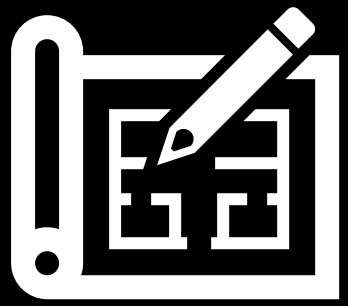
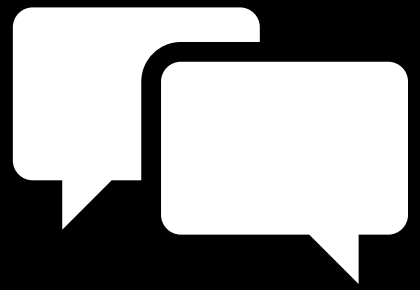
QUESTIONS ?



TOOLS



PROCESSES



PEOPLE