MY BOSS TOLD ME TO DO A
ROOT CAUSE ANALYSIS
NOW WHAT?

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The "Request"

Maybe it's an email, a phone call, or perhaps even a visit to your desk. It doesn't matter because the message is the same...

Boss: "Hey! I'm going to need you to pull together a root cause analysis report for that problem that happened yesterday."

You: "Well, I certainly thank you for that vote of confidence – but I've never done anything like that before."

Boss: "I'm sure you'll figure it out... why don't you look for an eBook or something. Is next week too soon to expect a report?"

You: (In your mind, panicking): "Oh no – I have no idea what that is, and I'm completely buried with work. How will I get this done?"

You: (what comes cheerfully out of your mouth): "Oh sure – no problem!"

Example scenarios:

What do we mean by "problem?" Depending on who you are, it could include:

- Injury (from first-aid to fatality), or high-risk near-miss
- Reportable environmental release
- Quality assurance issue with a product or service
- Loss of system or equipment availability
- Significant operational disruption or unplanned expense
- An audit that failed to meet quality standards
- A repeating problem (of any type)
- Project overspend
- Or anything else you would like to understand better... problems can be found everywhere and root cause analysis can be applied to any of them

Key Point

A root cause analysis will help you understand why and/or how any event happened, not just those listed above.

Start with the Basics

What is a root cause analysis?

First, let's drop the full name and use the acronym "RCA." An RCA…

- Is an investigation into how or why something happened
- Results in a list of solutions which eliminate causes
- Delivers a final report that can be shared with others

Are there different RCA methods?

Yes, there are a variety of methods available. Some are quick and easy – others are longer and more complicated. The RCA method described in this eBook is simple, logical, and scalable. It is also universal in that it can be applied to any type of problem.

Who typically leads an RCA and what do they do?

- Anyone can lead an RCA – especially if they are using the right method and tools
- Subject matter expertise in the area being investigated is not required
- The RCA facilitator gathers information from a variety of sources. They then use the information to determine what happened, how it happened, and what is required to fix the problem

Benefits of Conducting a Root Cause Analysis

- Incorporates multiple perspectives
- Ensures a common and complete understanding of the problem
- Documents the impact of the problem
- Visually communicates the causes of the problem and their interrelationships
- Mitigates politics and hidden agendas
- Helps separate facts from supposition by including supporting evidence
- Generates evidence-based solutions that eliminate specific causes
- Produces a report to communicate findings to a broader audience
- Identifies broader systemic improvement opportunities

Key Point

The rapid pace of change will continue to generate unique, complex problems. Root cause analysis solves these problems, a capability the World Economic Forum predicts will be the most important skill requirement to succeed in the new economy.

Five Steps in an RCA

1 Gather Evidence

An RCA investigation should be based on facts – making sure the RCA is evidence-based helps ensure accuracy.

2 Create the Problem Statement

An RCA should clearly state the problem, when it occurred, where it occurred, and document the impact.

3 Analyze the Causes

What were the causes? How/why did the problem happen?

4 Generate Solutions

Solutions control causes to prevent problem recurrence.

5 Report Findings

The results of the RCA should be documented and shared.

Step 1. Gather Evidence

First, get the evidence!

High-quality evidence helps ensure your RCA is based on facts, not supposition.

Evidence tips

- Evidence originates from a variety of sources
- Be sure to act quickly – evidence can disappear or change before you have a chance to capture and examine it
- Consider creating a timeline/sequence of events to help understand how the event played out
- Protect evidence - ensure it is available to the RCA
- For large events, consult with your legal team

Examples of high-quality evidence:

- Documentation, such as procedures, drawings, equipment manuals, product documentation, and diagrams
- Physical evidence, such as broken components or product samples
- Measurements from calibrated instruments

- Results from a qualified laboratory
- Pictures, video, and audio recordings
- Computer log files
- Process data
- Corroborated statements from witnesses and experts

People	Documents
Witnesses	Procedures
Knowledgeable workers	Diagrams & schematics
System experts	Training records
Suppliers/contractors	Photos & Video

Physical	Environment
Hardware	Weather/season
Software	Working conditions
Systems	Business climate
Materials	Relational/employee

Figure 1: Look for evidence in each of these quadrants.

Key Point

Expert statements are critical to the RCA, but try not to rely on them alone. Experts are only human, and as such are fallible.

Step 2. Create The Problem Statement

A Problem Statement consists of a Focal Point and a description of When, Where, and the Impact of the problem.

Focal Point

- A simple, one-sentence statement of the problem you are analyzing
- The undesirable effect you do not want to repeat

Examples

Area	Specific Focal Point Examples
Safety	Recordable injury – sprained left ankle
Safety	Near miss – electrical arc near employee
Environmental	Reportable release – stack emissions exceeded air permit
Quality	Quality escape – shipped off-spec product to customer
Quality	Audit quality did not meet required standard
Quality	Service – Call Center targets missed repeatedly
Operations	Operational disruption – production line shut down for three hours, $3,000,000 lost sales
Cost/Expense	Unplanned cost – excessive overtime required to complete project, $300,000 additional costs
Frequency	6th customer complaint in Quarter 1

Table 1: Example Focal Points

These are just a few examples. Need help defining a Focal Point? Contact us for advice. Or review the many examples available on our website.

When:

Document the time, date (or date range)

Where:

Document exactly where the problem occurred

Impact:

Document the impact of the problem. Consider the following areas (all that apply):

- Safety
- Environmental
- Quality
- Compliance & Regulatory

- Production/Revenue
- Cost
- Customer Service
- Frequency

Key Point

Be sure to include Actual as well as Potential impact. Potential impact documents how bad the problem could have been. Investigate problems with low actual impact, but high potential impact to reduce risk and prevent future problems. Often, the causes are the same!

Step 3. Cause and Effect Analysis

Now that you have clearly defined the problem, you need to discover the causes.

Proceed with caution

- Do not jump to conclusions! Things are often different than they appear, and the complete picture is never clear at the beginning of the process.
- Do not jump to solutions! We often want to get to the "right" answer as soon as possible, but resist this. Your initial inclinations may be correct, but let the analysis prove this out. There are no extra points for speed that outweigh the risks of being wrong.
- Maintain a degree of professional skepticism. Mitigate the risk of confirmation bias by demanding high-quality evidence.
- Resist the urge to focus only on people! A root cause analysis is fact-finding, not fault-finding. People play a role in most events, but people should not be your only focus.
- Diversity of perspective is extremely valuable! No single person knows as much as a diverse group of qualified experts. Get your information from a variety of sources.

What is causal analysis?

- Causal analysis is conducted by building a cause and effect chart. A cause and effect chart is a logic diagram that shows the causes and how they relate to each other.
- The cause and effect chart is a terrific tool to help you organize input from diverse sources.
- A cause and effect chart is particularly important when the problem is complicated.

Start with the Focal Point

The Focal Point is the beginning of the cause and effect analysis. Write the Focal Point on a post-it note and stick it to a dry erase board. If you are using *Causelink* software the Focal Point automatically matches the Problem Statement.

Ask two questions:
Question 1: What caused the effect?
Question 2: Every time this cause occurs, does it always result in this effect?
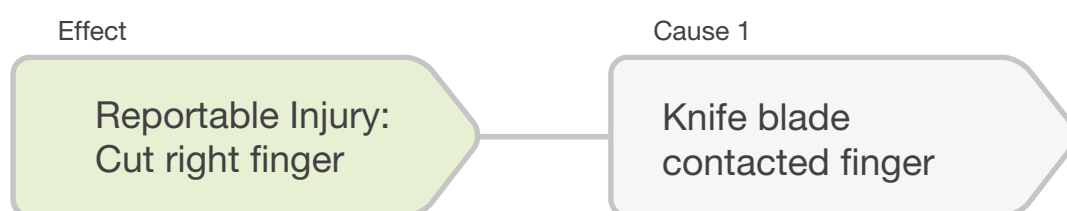
What caused the effect?

Figure 2: The knife contacting the finger is a cause of the cut.

Step 3. Cause and Effect Analysis

Every time the cause occurs, does it result in the effect?

Cause 1

Effect

Knife blade contacted finger

Reportable Injury: Cut right finger
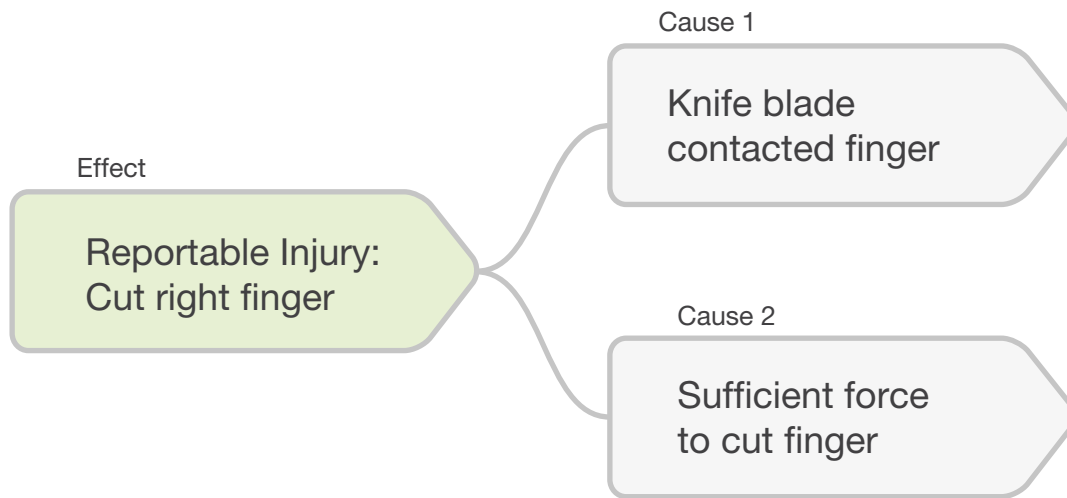
Cause 2

Sufficient force to cut finger

Figure 3: Contact with a knife blade is not enough to result in a cut finger... sufficient force is also required. Together, these causes result in the injury.
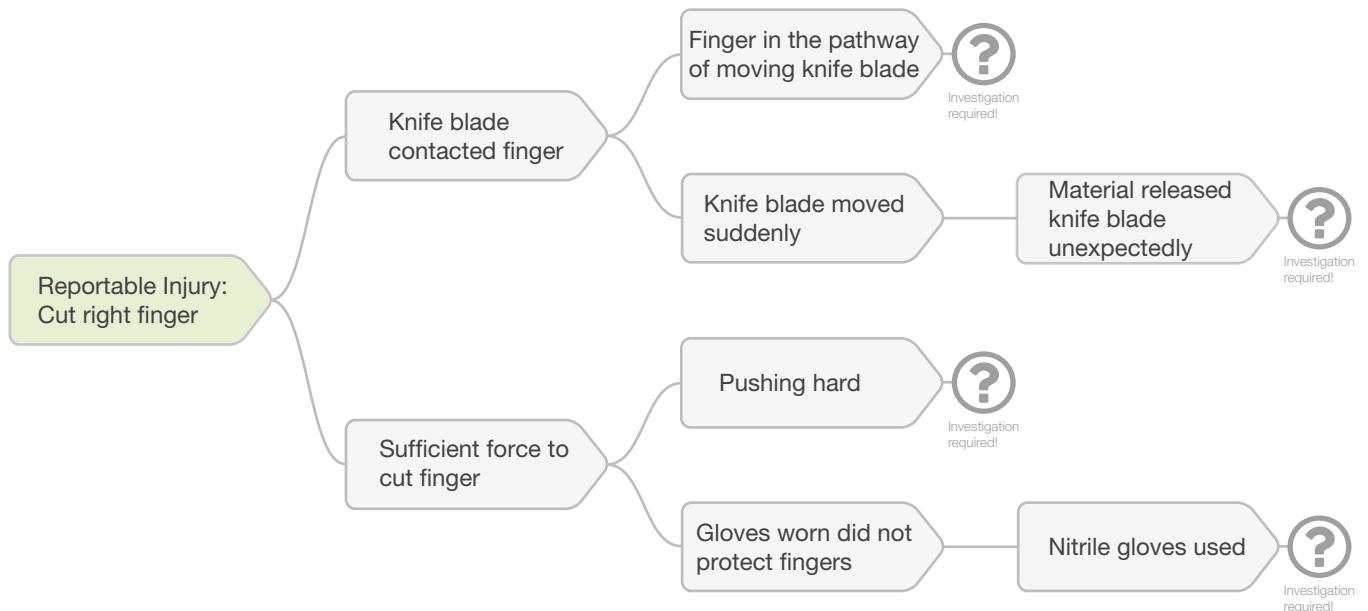
Now repeat for each cause.

Finger in the pathway of moving knife blade

Investigation required!

Knife blade contacted finger

Knife blade moved suddenly

Material released knife blade unexpectedly

Investigation required!

Reportable Injury: Cut right finger

Pushing hard

Investigation required!

Sufficient force to cut finger

Gloves worn did not protect fingers

Nitrile gloves used

Investigation required!

Figure 4: Causes work together to create effects. The pattern repeats. A cause and effect chart helps the analyst create a map of how the problem happened.

Watch a detailed cause & effect charting video at sologic.com.

Step 4. Generate Solutions

Solutions control causes to prevent problem recurrence.

The solution process consists of five steps:

1. **Identify possible solutions:** Brainstorm creative ways of controlling each of the causes. Examine all the causes. Do not be overly analytical.
2. **Narrow your list with solution criteria:** Be sure the solutions identified will be effective, can be implemented, have a positive return on investment, and won't cause other problems.
3. **Select solutions for recommendation:** Of those solutions that pass the criteria, which do you want to recommend? Be prepared to explain why you think these are the best solutions!
4. **Implement approved solutions:** Develop an implementation plan and make sure they are completed!
5. **Validate for solution effectiveness:** Check to make sure the solutions are working. Do you need to adjust or modify? Are the solutions sustainable? Would they be applicable elsewhere?
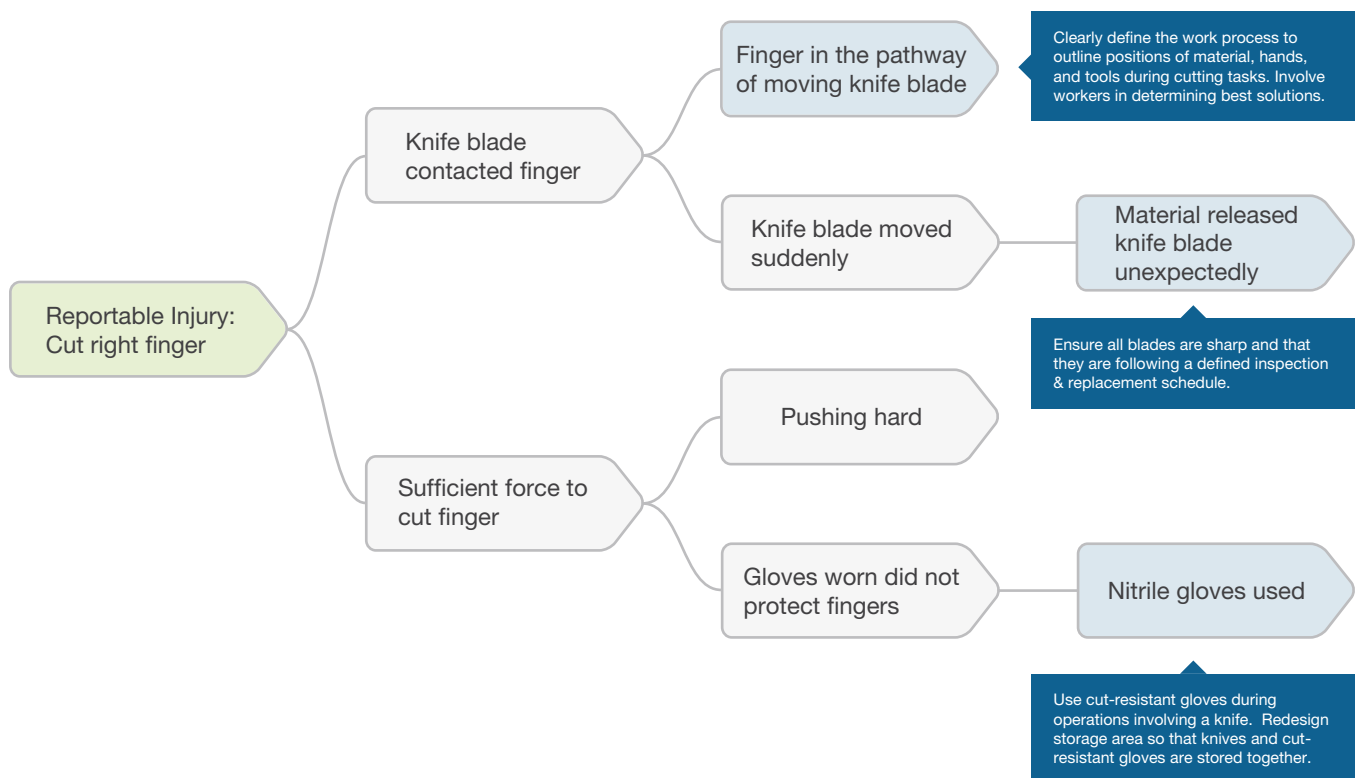
Figure 5: Solutions control specific causes. Do not look for single solutions to a problem. Instead, look for a group of solutions that, together, reduce risk of recurrence.

Key Point

There are no single root causes for any problem! Risk is best controlled by controlling/eliminating several causes with multiple solutions. Resist the urge to only identify a single solution.

Step 5. Write the Report

Once your RCA is completed, you need to report your findings.

RCA report elements:

- **Problem Statement** – Try to limit to one page
- **Summary Statement** – Explain the event by using the cause and effect chart as an outline
- **Solutions** – What solutions did you identify to fix the problem? List them, along with the causes they control, due dates, and person responsible for implementing
- **Team Members** – Who did you work with to complete the RCA?
- **Evidence** – Provide a list of evidence supporting your RCA
- **Cause and Effect Chart** – Include a copy of the cause and effect chart

Visit **sologic.com** for example reports.

Causelink produces a detailed and complete RCA report.

In Conclusion

We hope this simple guide has been helpful to you! The truth is everyone experiences problems at some point. Sometimes those problems need to be solved. When problems are complicated and impactful, it always helps to follow this structured root cause analysis process. This helps you develop a complete and accurate understanding of the problem. It also helps you identify a list of evidence-based solutions that will prevent the problem from happening again.

Even though we used a safety example in this e-book, this method works on all types of problems!

Want access to Causelink?

Causelink helps you follow the RCA steps described in this eBook. Try the free trial or contact us to learn about Enterprise licensing.
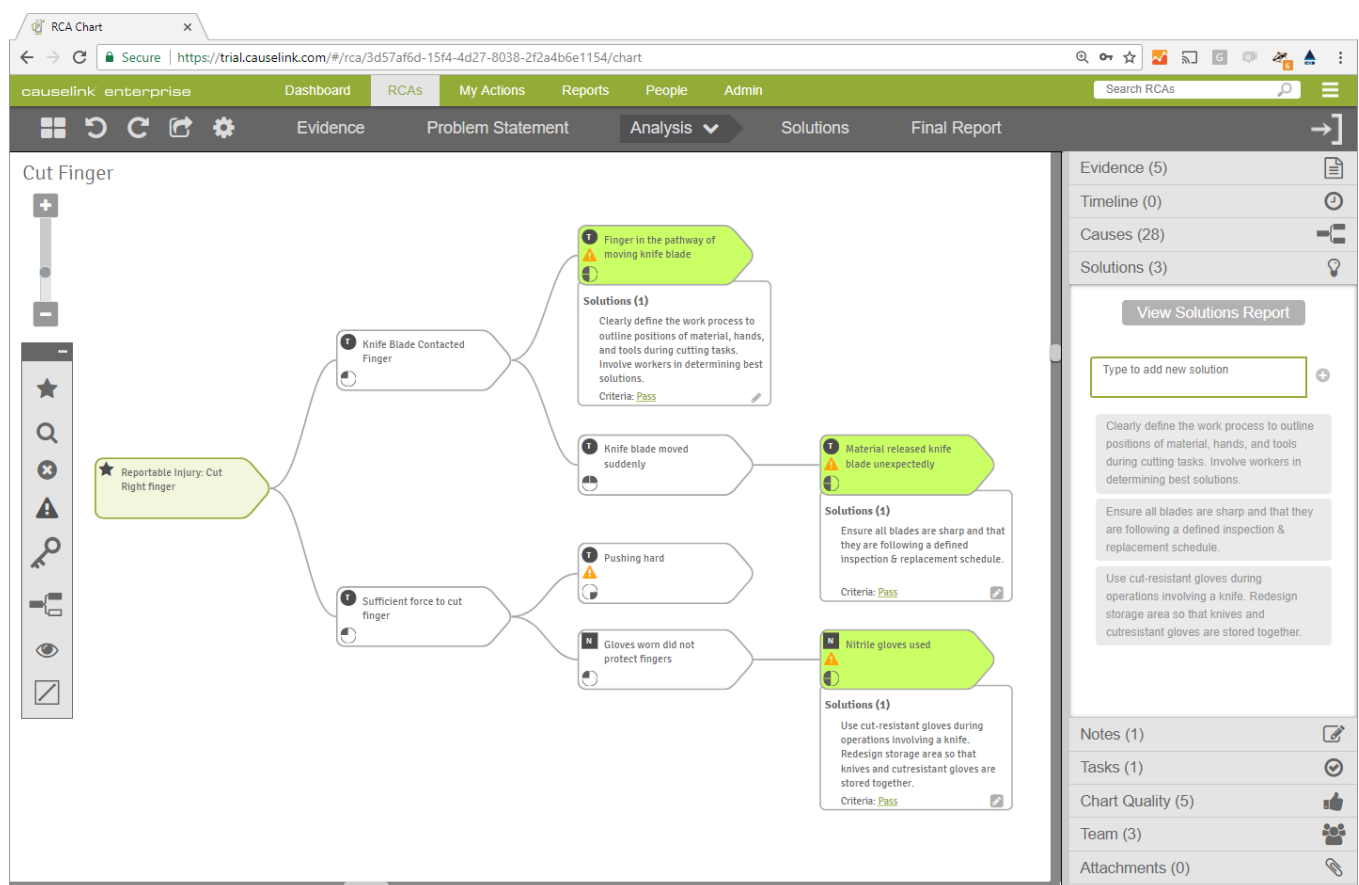
Want to learn more?

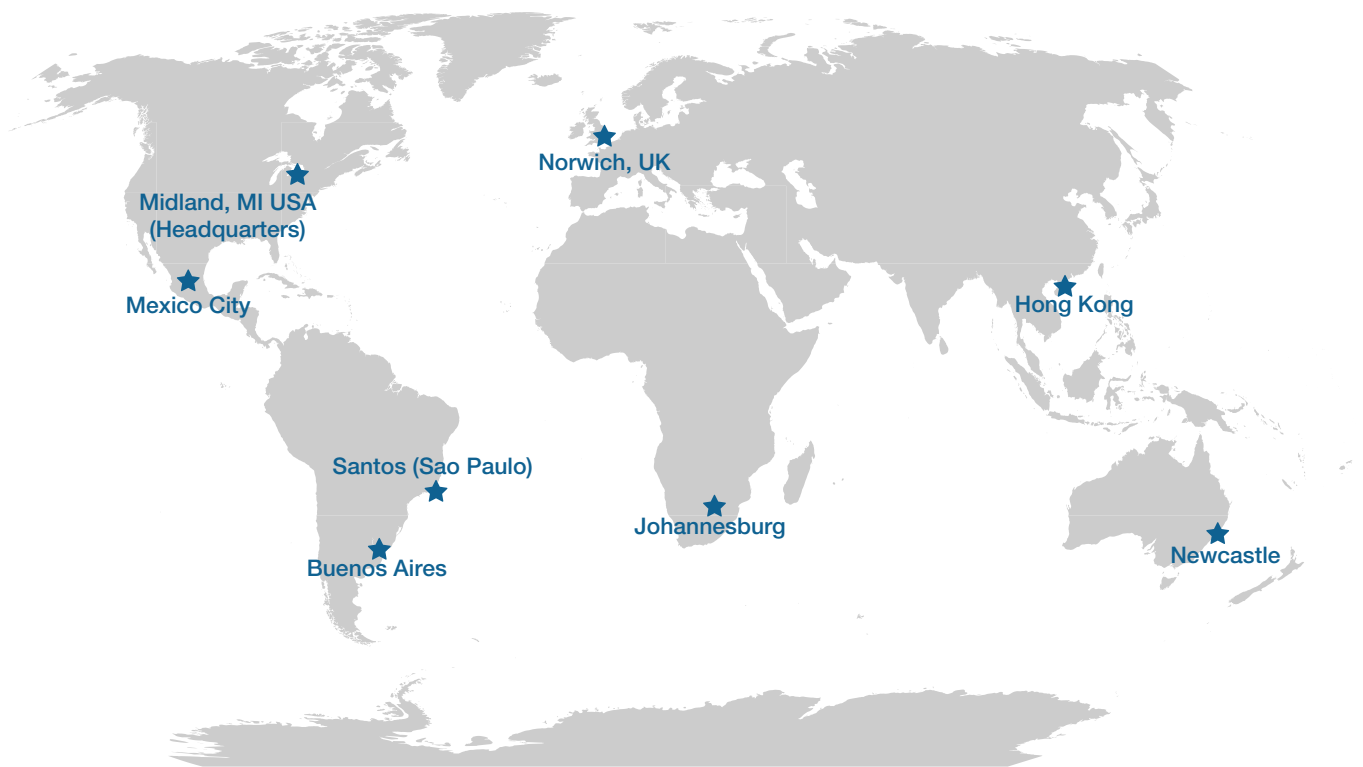Training   Examples   Webinars   Videos

Need help now?

Sologic will run your investigation for you. We investigate problems of all sizes. Investigations can be conducted in-person or virtually. Contact us to learn more.

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