

# Supplier Quality, Workmanship, mistakes, and miracles

Dennis R. Owens

This paper describes objective technical results and analysis. Any subjective views or opinions that might be expressed in the paper do not necessarily represent the views of the U.S. Department of Energy or the United States Government.

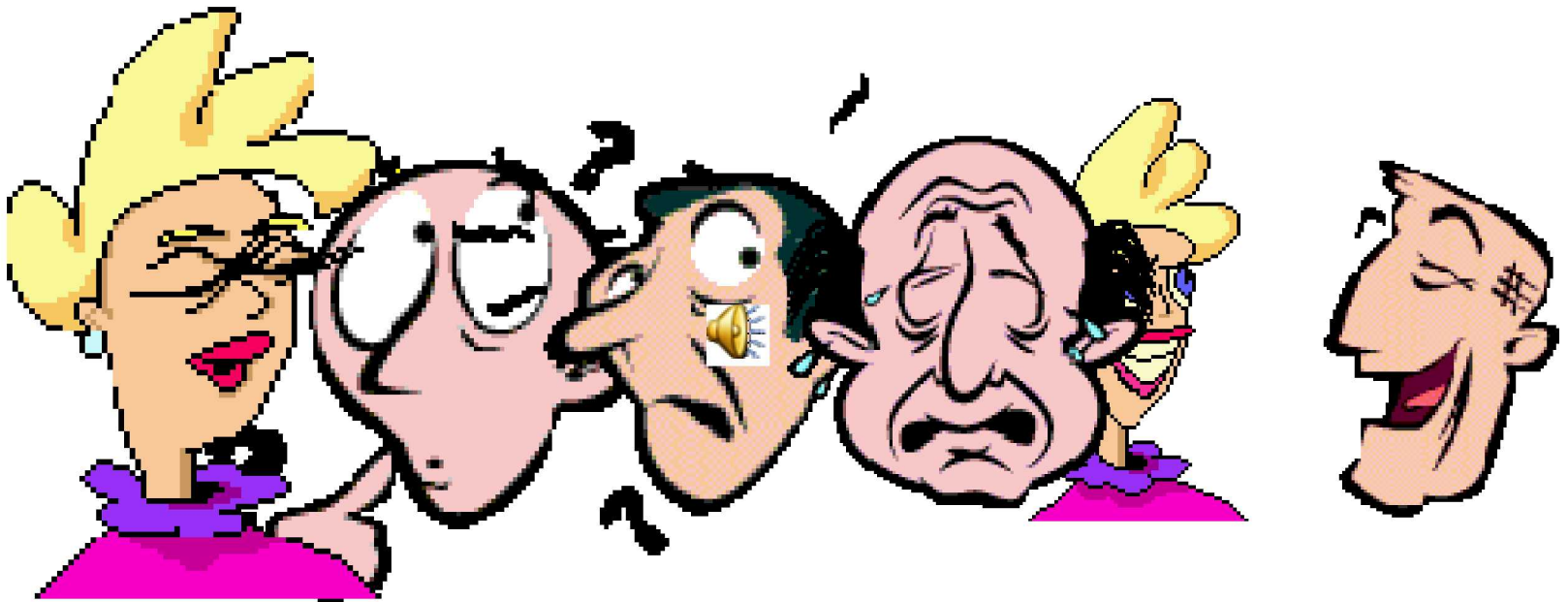
SAND2019-3366C



Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

Are you sure you're getting what you expect  
from your suppliers?

“it's a question of quality..... Really ?”



## Why is this story funny?

Expenses are ludicrous.

Reasoning is not sound.

We all get the joke because of our general knowledge about cars.

## Why is this story not funny?

- We all know someone who has been taken advantage of by a company who looked or sounded credible.
- This happens because of a lack of knowledge about vulnerabilities in what appears to be a simple situation.

**YOU need knowledge of supply chain risk, supplier quality, and its ecosystem, to effectively manage your suppliers.**

# Agenda

Quote For The Day

My Goal

Lets Get To It: The Circle of Supplier Quality; a though exercise

Systemic Problem Solving- borrowing from Ishikawa

An Example

Failure Modes

Let's Summarize What We Have Learned

Parting Thoughts

## Quote For The Day

*“As he thinketh in his heart, so is he.”*

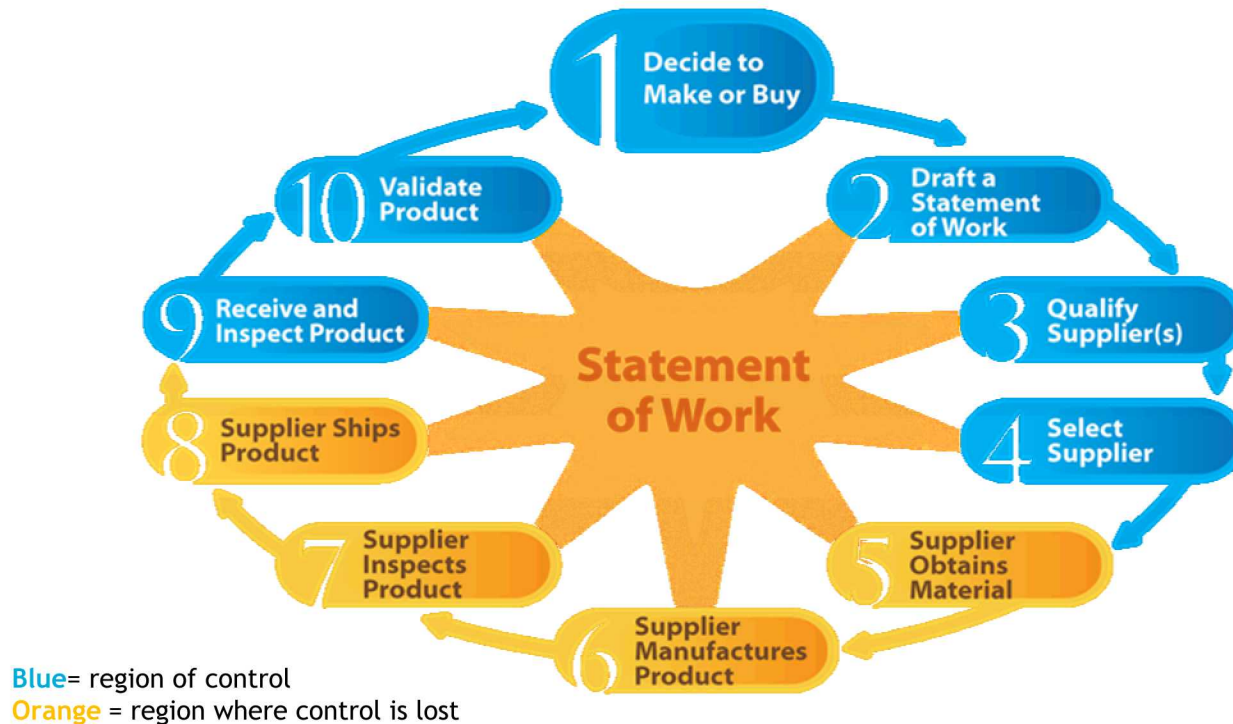
Proverbs 23:7 KJV

### My Goal

*To change the way you think about opportunities to solve complex supplier quality ecosystem problems*

*Give you a tool to help you influence the thinking of those who support you or those you support*

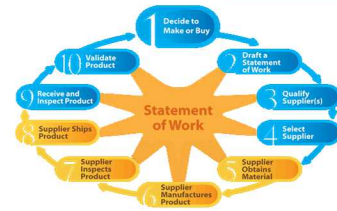
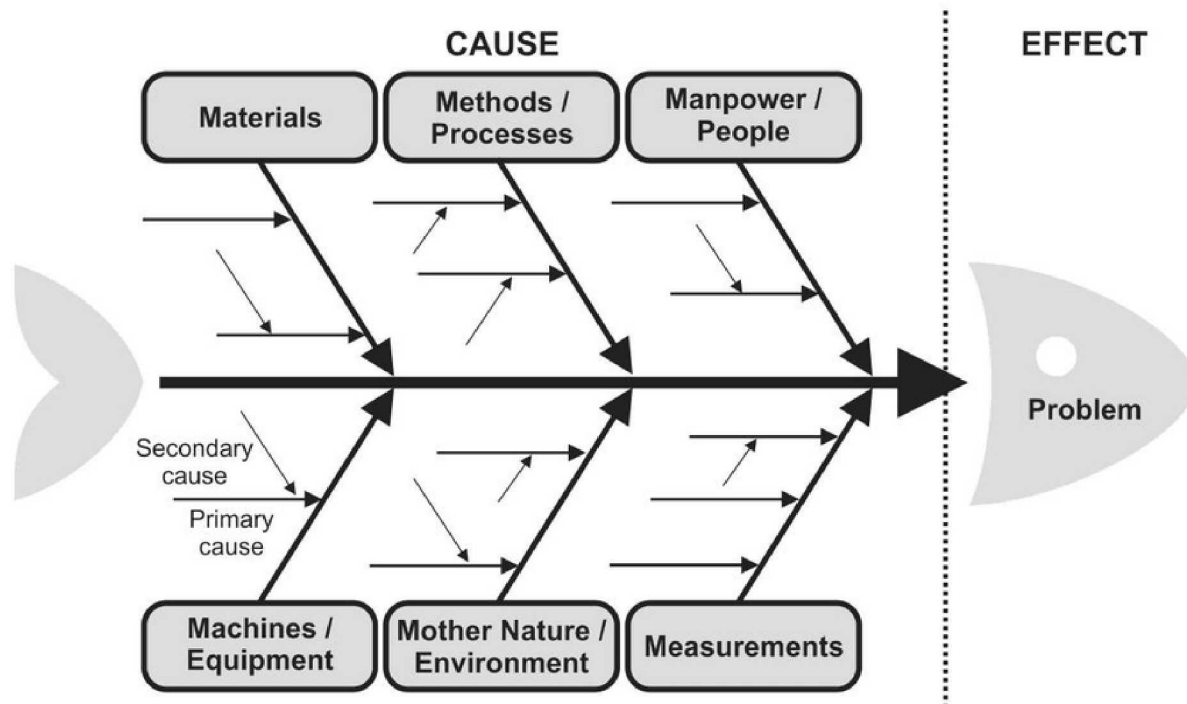
## The Circle of Supplier Quality- a tough exercise



We use this notional depiction to illustrate the ecosystem relationships, from a systemic perspective, and shape different ways of thinking

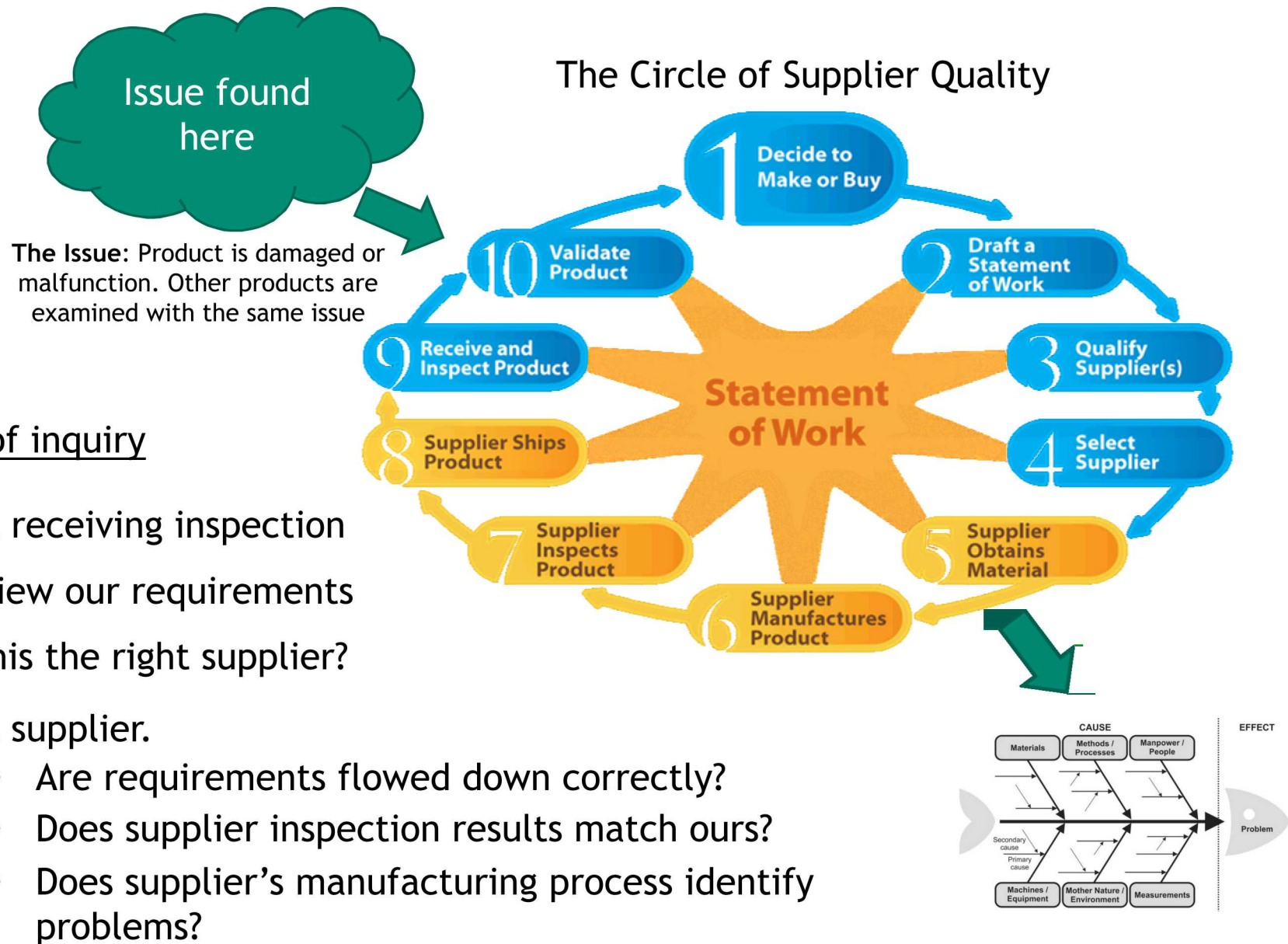


# Systemic Problem Solving- borrowing from Ishikawa



- If we apply Ishikawa to each segment of the Circle of Supplier Quality we create a systems thinking approach to uncovering solutions to complex problems
- If we can identify the (**cause**) of a problem based on the (**effects**) then why can't we build robust and resilient processes( **effects**) when we know the systemic (**causes**) of failure

# An Example

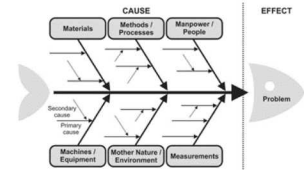




## 9 Failure Modes- Supplier Obtains Material (or Sub-tier suppliers)



### Example Failure Modes



**Materials:** no acceptance criteria, notional requirements, no testing requirements, critical requirements/activities outsourced

**Methods:** no defined/repeatable process for critical requirements, no programmatic requirements flow down

**Manpower (people):** employee training verification for critical requirements, equipment, processes or activities

**Machines/equipment:** identification, utilization, and maintenance of critical equipment and tools

**Mother Nature/environment:** no environmental controls defined, locations of vulnerability, supply base options vulnerability(Sole Source) of critical requirements, processes, or activities

**Measurements:** inadequate measurement capabilities or alternative practices.

Obviously, these are not all inclusive but it starts us down the right path for further investigation, analysis, and recommendation (or the place of influence)

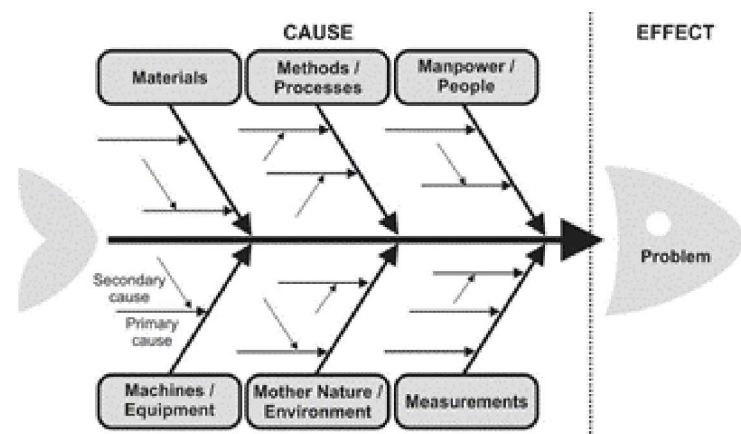
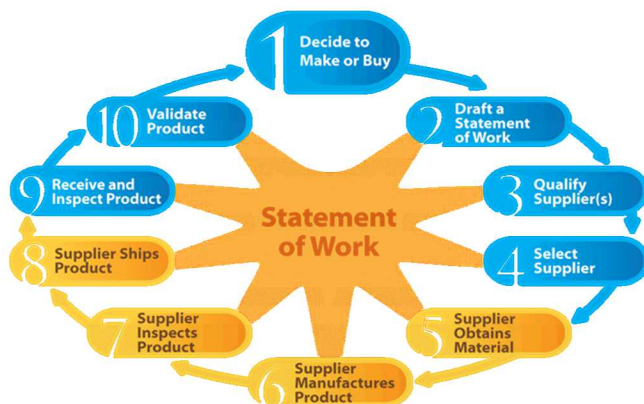
## Lets Summarize What We Have Learned

How we think influences what we see, how we understand, and what we do

Supply Chain (or Supplier) quality management is complex and requires systems thinking to understand and address a complex ecosystem

If we reverse our thinking about cause and effect to effect and cause we can build robust, repeatable, predictable, and resilience processes. **This is our influence value proposition to those who support us or those we support**

Lastly, tools other than Ishikawa can be used to further define problem solving





*“As he thinketh in his heart, so is he.”*

Proverbs 23:7 KJV

## Public Service Announcement

HOW TO IDENTIFY IF YOU HAVE A SUPPLY CHAIN PROBLEM

IF YOUR COW SOUNDS LIKE THIS



THEN FIRE UP THE BARBECUE !!

IF YOUR COW SOUNDS LIKE THIS



MAY WE SUGGEST THE FISH !!

Thank you for your time



Dennis R. Owens

Manager, R&D Science and Engineering

Supply Chain Engineering (09461)

Sandia National Laboratories

Email: [drowens@sandia.gov](mailto:drowens@sandia.gov)