

GSFC Supplier Assessments

Analysis of Findings and Achieving Compliance

Charlie Robinson

*Quality Assurance and Risk
Management Services, Inc.*

Brenda K. Brunello

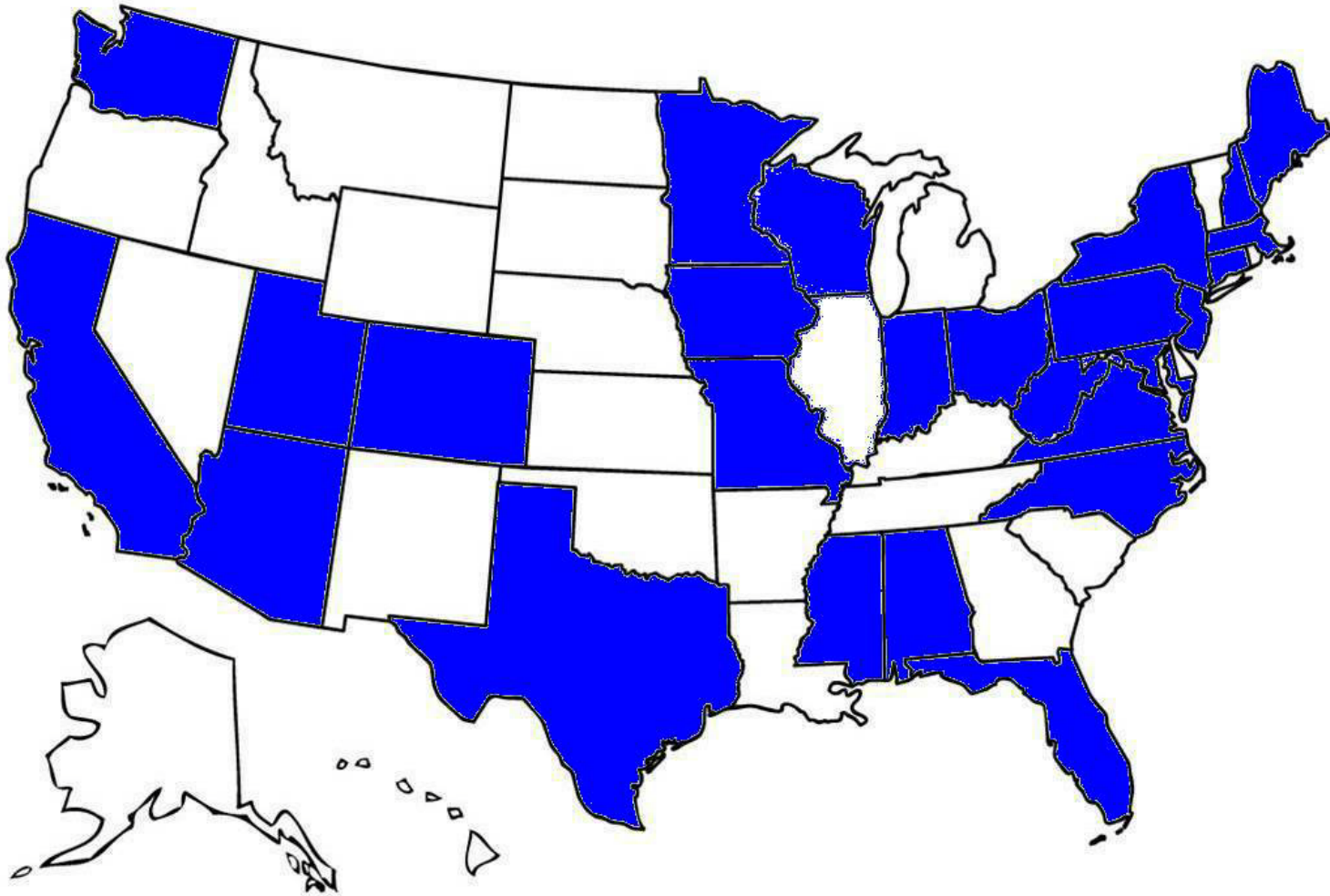
*Honeywell Technology
Solutions, Inc.*

October 20, 2010





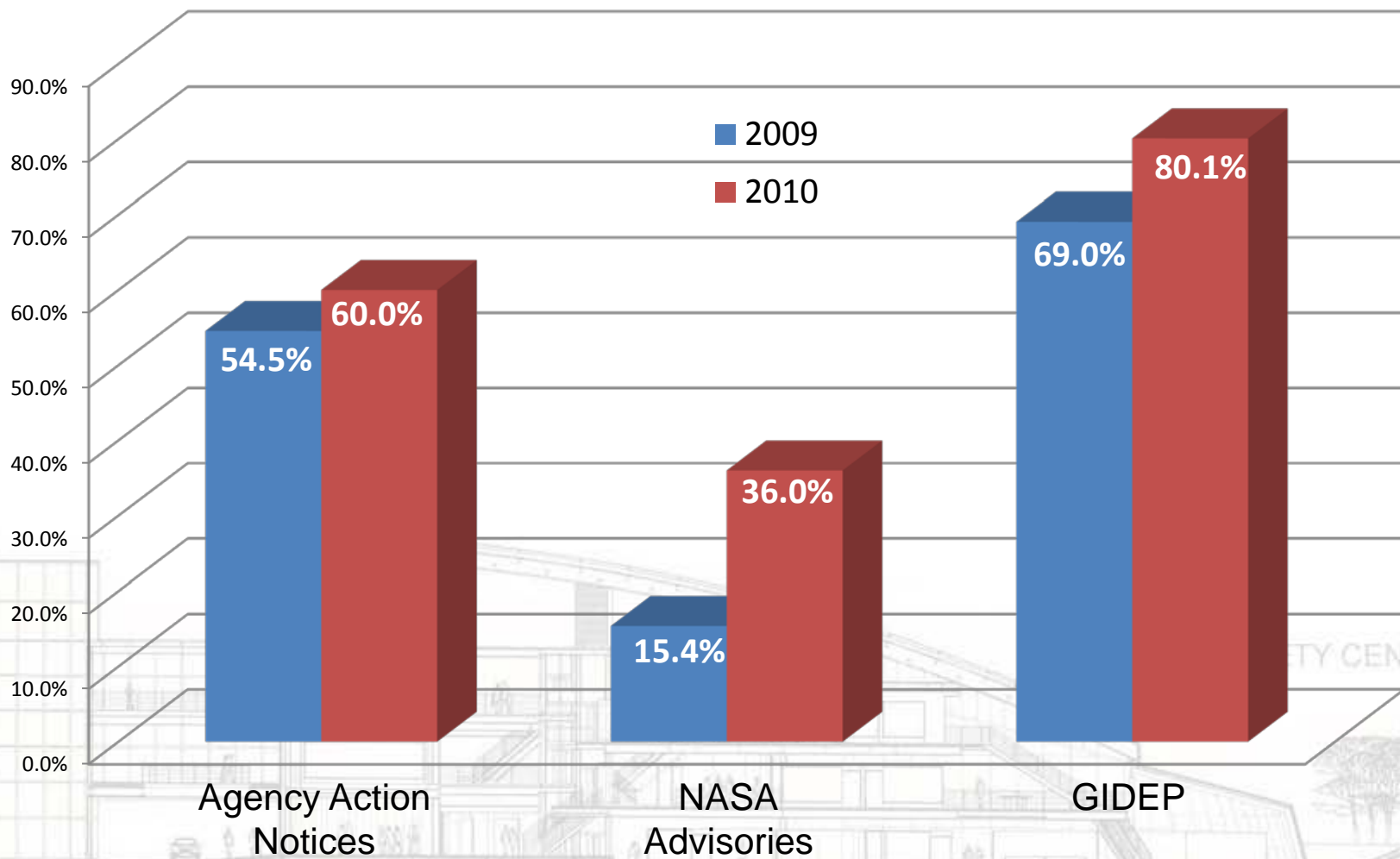
NASA Assessments using NCAS



NCAS Assessments in shaded states/countries

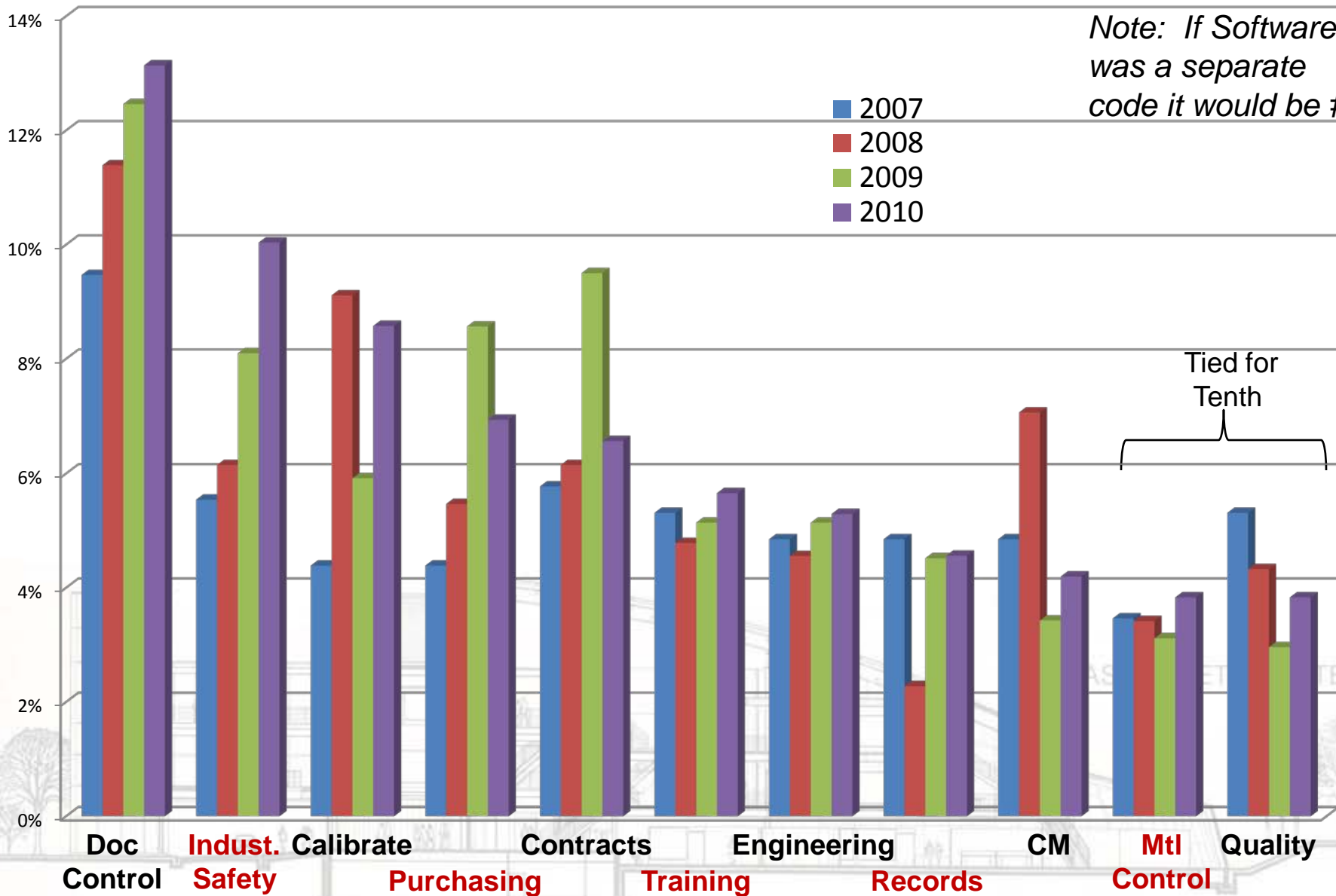


Improvement in GIDEP Compliance



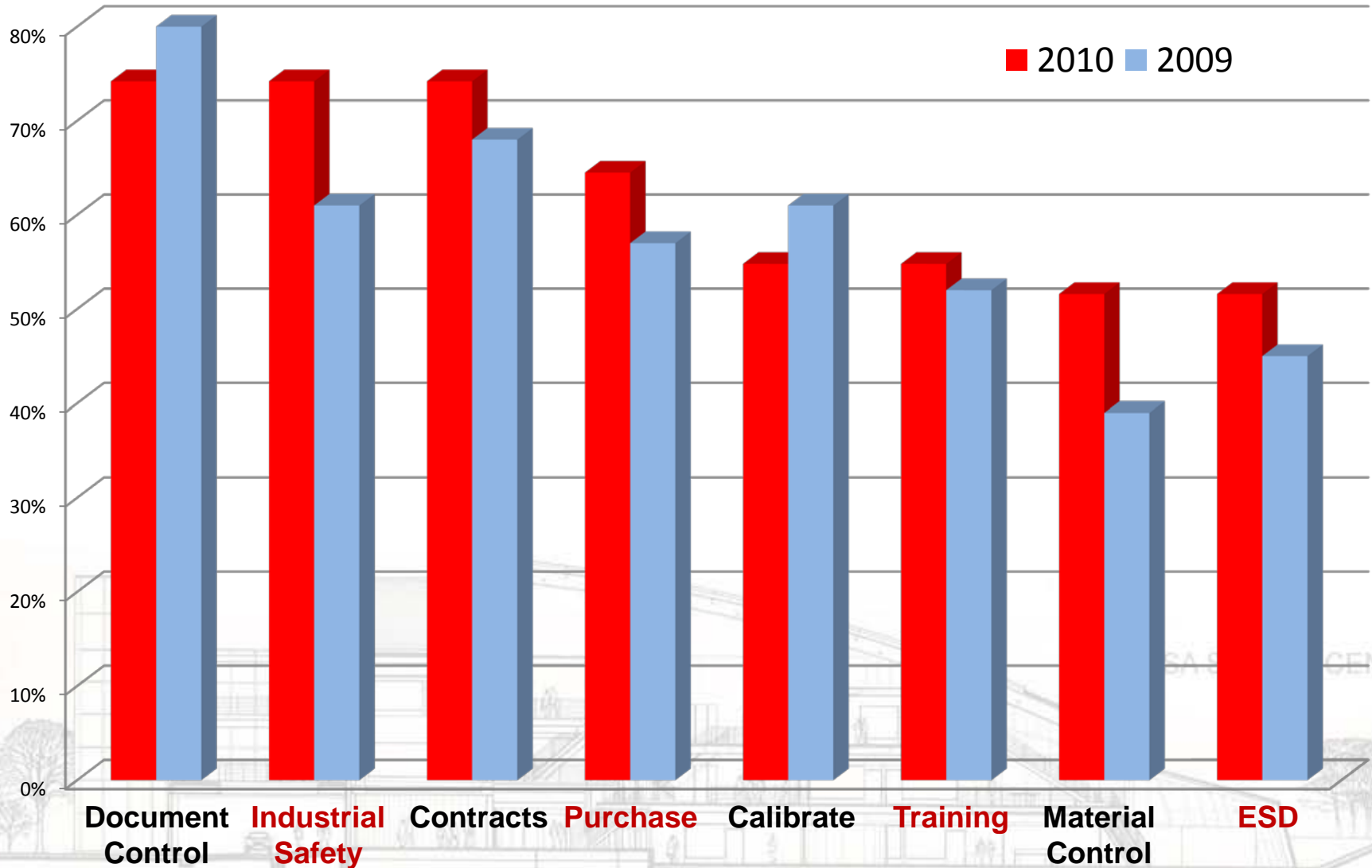


Top Ten (10) Issues by Quantity for 2010





Greater than 50% of the Assessments in 2010 Included the following Issues





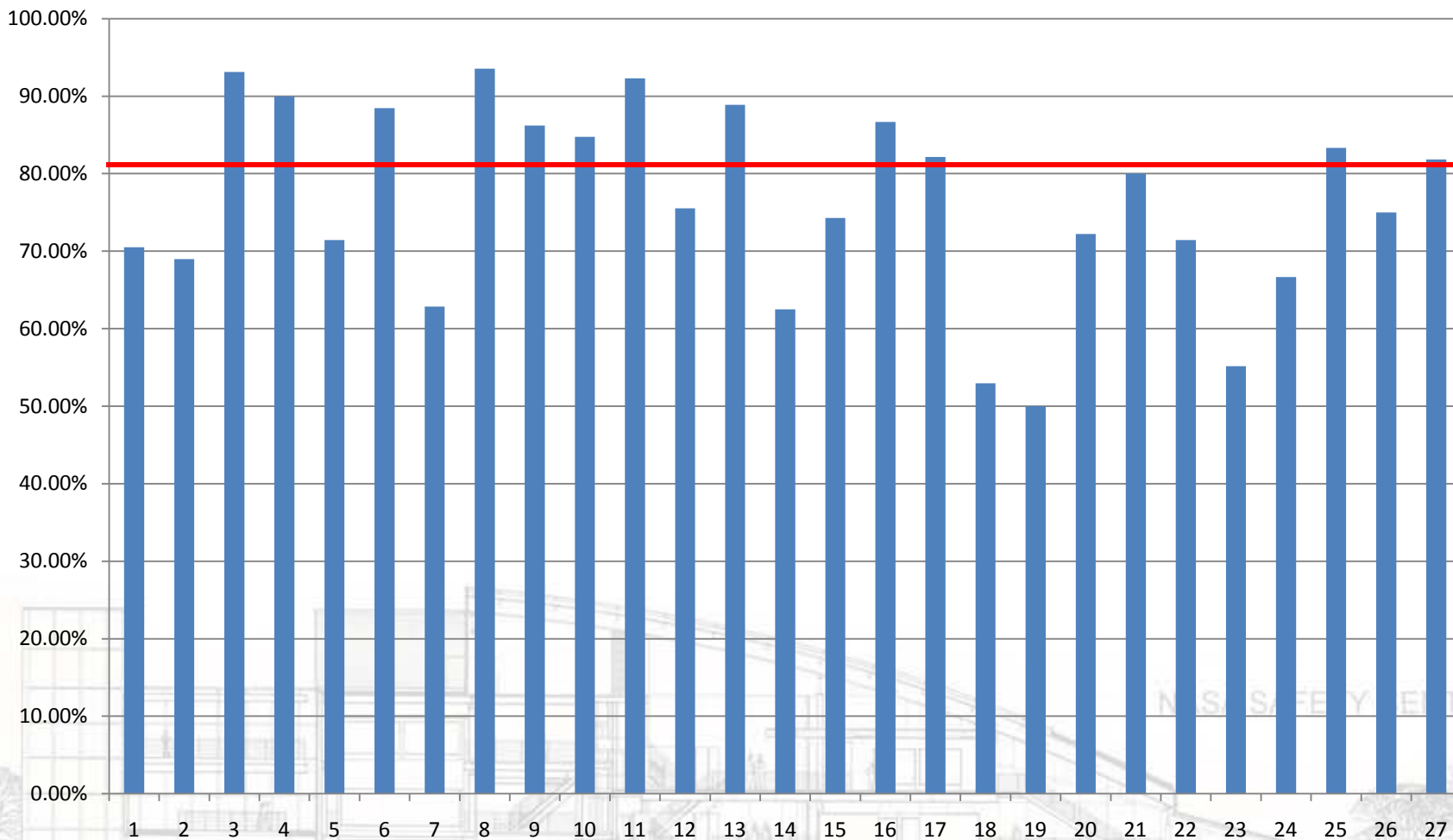
Greater than 50% of the Assessments in 2010 Included the following Issues



- **Document Control (74%)** – Using Draft procedures, Not current with actual practices, Wrong references, Procedures not approved
- **Industrial Safety (74%)** – Fire Extinguisher checks, Blocked electrical panels, Available eye-wash station, Storage of chemicals
- **Contracts (74%)** – Not communicated or understood by departments, SDRL's not managed,
- **Purchasing (65%)** – Contractual Requirements not on PO's, Source Inspection by uncertified personnel, Supplier approval / rating / monitoring
- **Calibration (55%)** – Limited calibration, Flow-down of requirements, Contract requirements not known internally
- **Training (55%)** – Authorization to use internal training, Expired training
- **Material Control (52%)** – Expired shelf-life-limited items
- **ESD (52%)** – Using wrong standard, ESD smocks not enforced, Expired certification, Even temperature & humidity control, Cluttered ESD benches

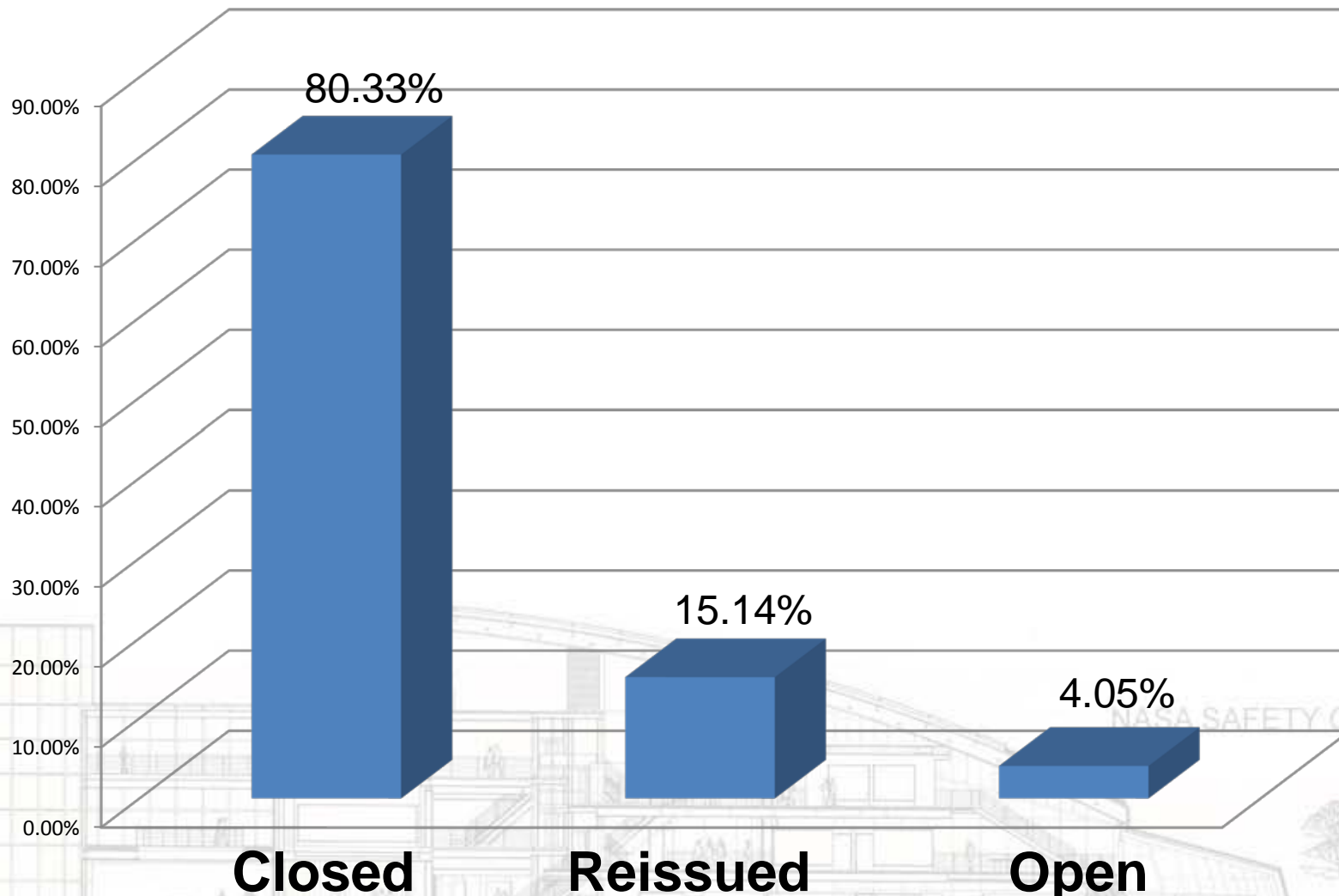


80.3 % of Assessment Cards Closed during a Follow-up Assessment





Percent of Assessment Cards Closed – Reissued – Open



ROOT CAUSE ANALYSIS



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To address this problem we must use root-cause analysis. I'll begin by saying it's not my fault.

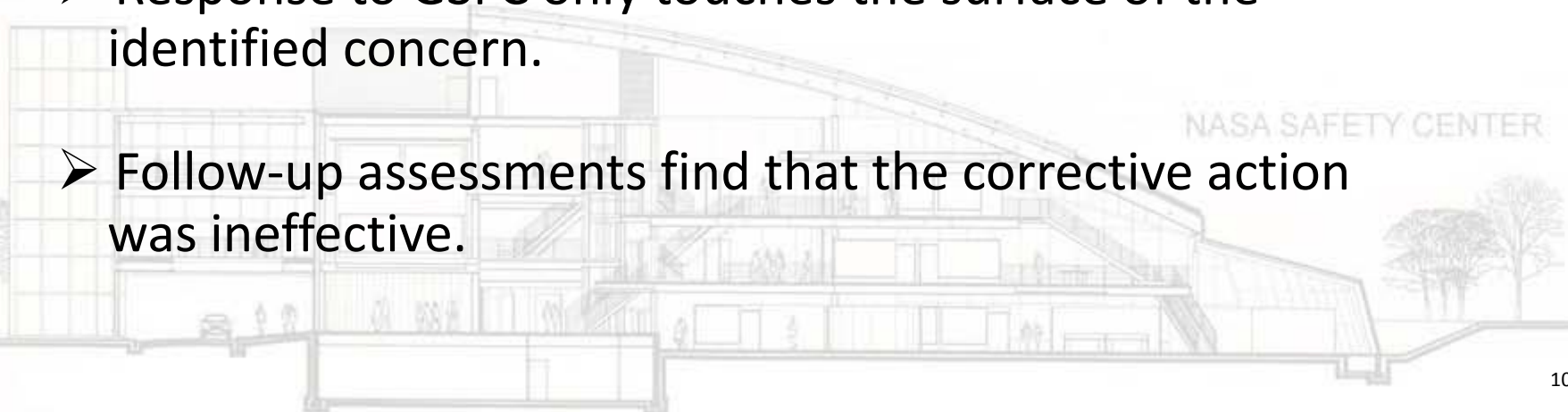


Corrective Actions



Often Incomplete.

- Root Cause Analysis efforts frequently do not go far enough to expose the actual root cause(s) of this issue.
- The underlying organizational factors of a problem (e.g. training, process, infrastructure, etc.) are often not addressed.
- Response to GSFC only touches the surface of the identified concern.
- Follow-up assessments find that the corrective action was ineffective.





**WHAT
WE
SEE
?**

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EXAMPLE # 1

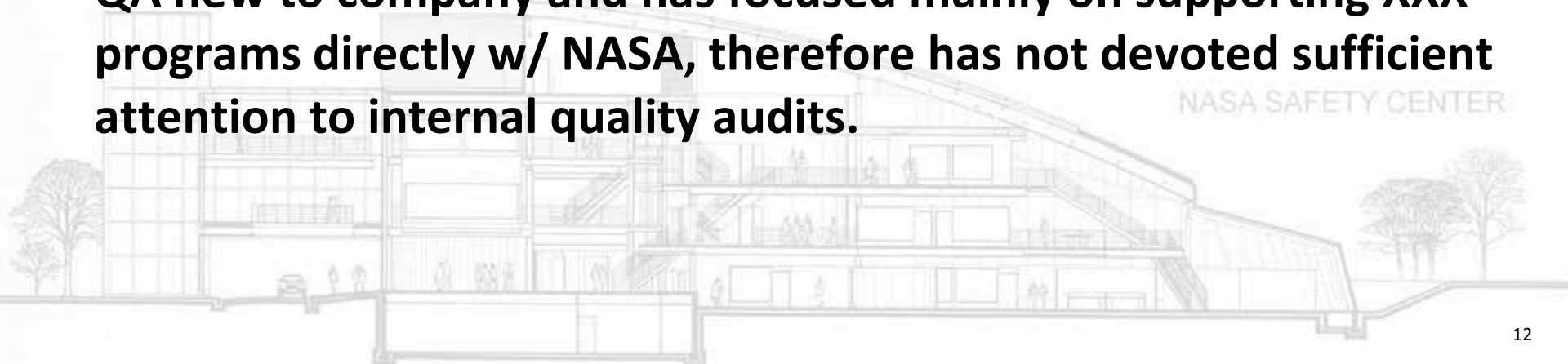


Non-conformance:

Internal auditing is not effectively implemented and maintained as required by the Quality Management System.

Root Cause:

QA new to company and has focused mainly on supporting XXX programs directly w/ NASA, therefore has not devoted sufficient attention to internal quality audits.





EXAMPLE # 2



Non-conformance:

XXX selected their metallic materials for the YYY program using an alternate methodology that has not been approved as contractually required.

Root Cause:

XXX has an established metallic materials list with space flight heritage for their standard product line.

Specific Corrective Action Taken to Prevent Re-occurrence:

N/A

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EXAMPLE # 3



Non-conformance:

Monthly GIDEP summary report not provided as required by XXXX contract; no evidence of review of GIDEP reports.

Root Cause:

Why 4 - Procedure deficient.

Why 3 - There is no requirement in XX-QC-XXXX to maintain a list of review activities.

Why 2 - XXX does not maintain objective evidence of impact analysis.

Why 1 - List not provided by PM to customer because no approved list is available to provide.



EXAMPLE # 4



Non-conformance:

XXX's electrostatic discharge control plan for spaceflight program lists ANSI/ESD S20.20-1999; current industry standard is ANSI/ESD S20.20-2007.

Root Cause:

None provided.

Corrective Action:

XXXX has been updated to reflect the ANSI/ESD S20.20-2007 version and is currently in the review/approval cycle.

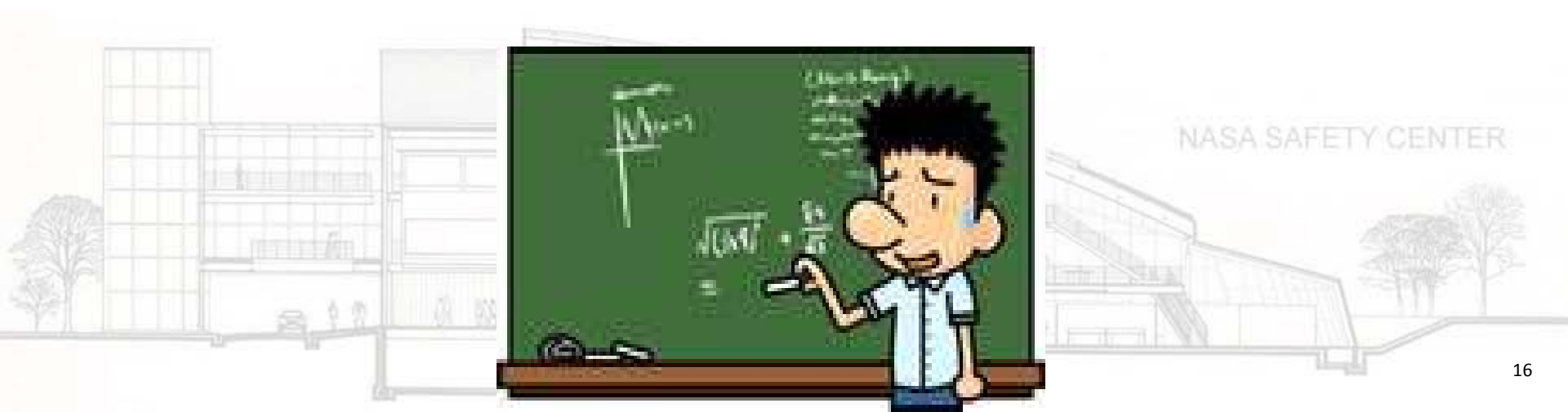
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Root Cause Analysis



- Root cause analysis (RCA) - a methodology for problem solving aimed at identifying the proximate (root) cause for an issue. (Wikipedia)
- “A structured evaluation method that identifies the root cause of an undesired outcome and the actions adequate to prevent recurrence.” (NASA GSFC)



- It is recognized that complete prevention of recurrence by a single intervention is not always possible/practical.
- Often there are secondary or contributing factors that should also be addressed.
- RCA is considered an iterative process, and is often viewed as a tool for on-going continuous improvement.





General Principles Root Cause Analysis



- Effective RCA is performed systematically, with conclusions and causes backed up by documented evidence.



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Identification of the Problem



Dr. Stephen Covey says,

“Begin With The End in Mind”

7 Habits of Highly Effective People

**A Clear,
Well Written
Problem Statement
is Fundamental
to Being Able to Get to The Essence
of**

ROOT CAUSE ANALYSIS

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- Assign responsibility for the Root Cause Analysis investigation based on:
 - Experience
 - Expertise
 - Understanding of RCA Analysis methods/techniques



We were having a communication gap with our IT partner on recent phishing threats. I asked my team to find a phishing expert to do root cause analysis.
Industry Week



Investigate What Happened & Why



- 5 Why's
- Apollo Root Cause Analysis
- Fault Tree Analysis
- Failure Mode and Effects Analysis
- Ishikawa Diagram
- Pareto Analysis
- Arrow Diagram
- Affinity Diagram
- Force Field Analysis
- Matrix Diagrams
- Relations Diagrams
- Scatter Diagrams
- Tree Diagram
- Data Stratification Analysis

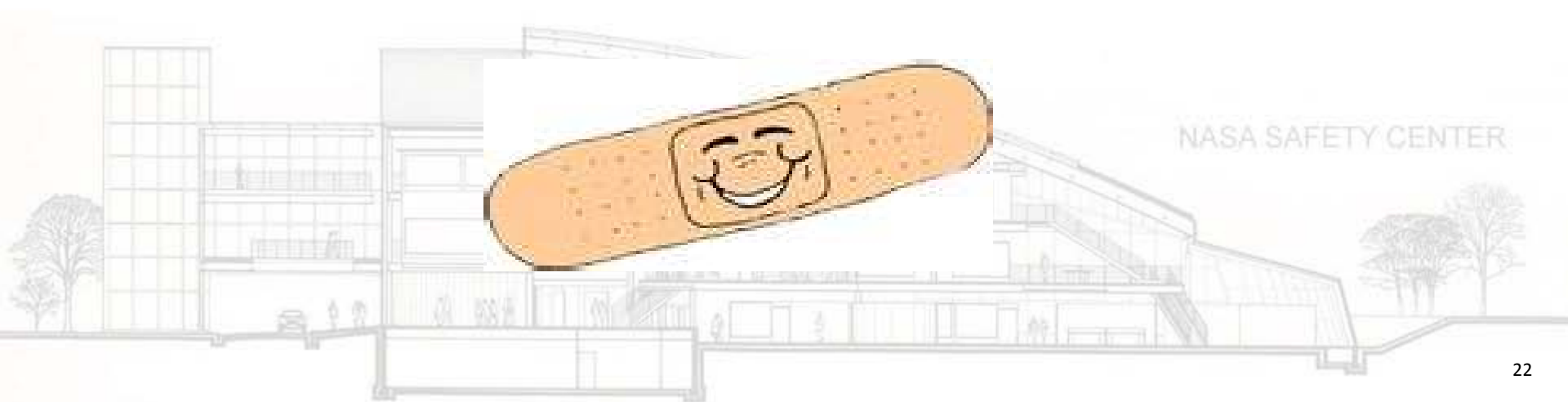




Initiate Short Term Containment



- DETERMINE ISOLATED vs. SYSTEMIC
 - SCOPE THE MAGNITUDE OF THE PROBLEM
- ISOLATE THE AFFECTED PRODUCT(S)/PROCESS
- DOCUMENT WHAT YOU HAVE FOUND
 - NOTIFY INTERNAL CUSTOMERS
 - NOTIFY EXTERNAL CUSTOMERS
- MITIGATE RISK

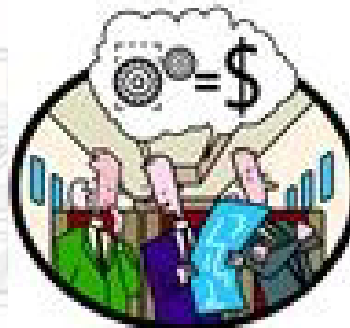




Analyze The Data



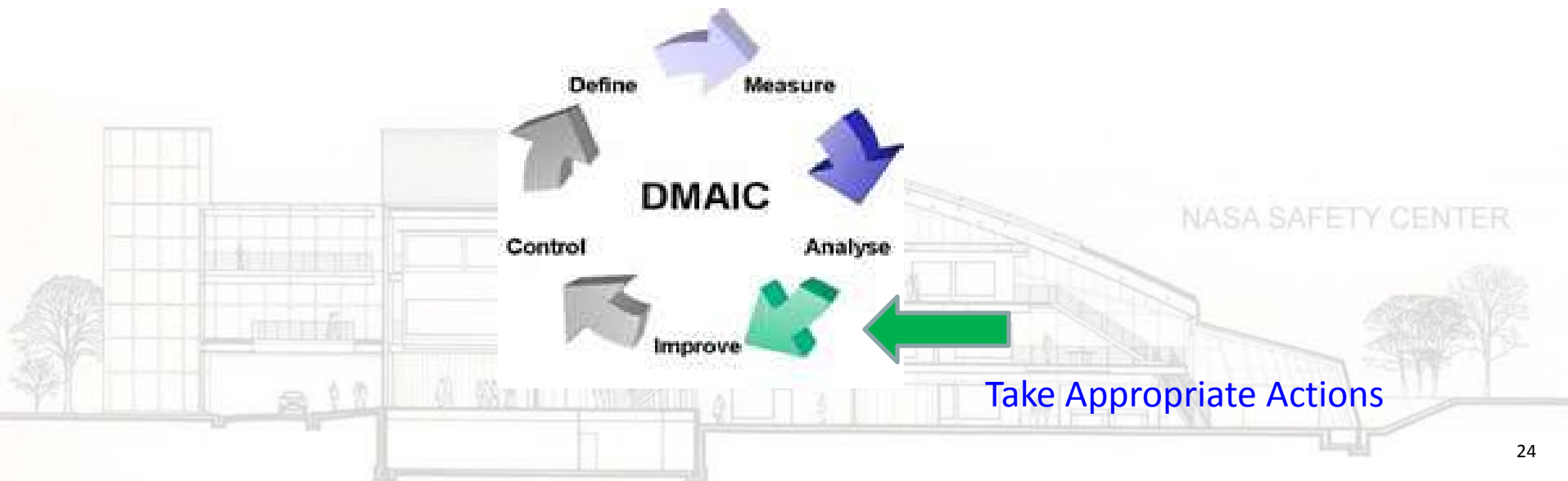
- Effective analysis establishes all known causal relationships between the root cause(s) and the defined problem.
 - Distal
 - Proximate Root Cause and
 - Secondary Cause(s)
- Test of Reasonableness
 - If I Do This (what ever this is) Will it Prevent the Recurrence of my Problem/Issue/Defect?????????



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- What action(s) will be taken?
- Who is responsible?
- When will they be done?
- Have I looked at the true scope of the issue?
 - Systemic/Isolated

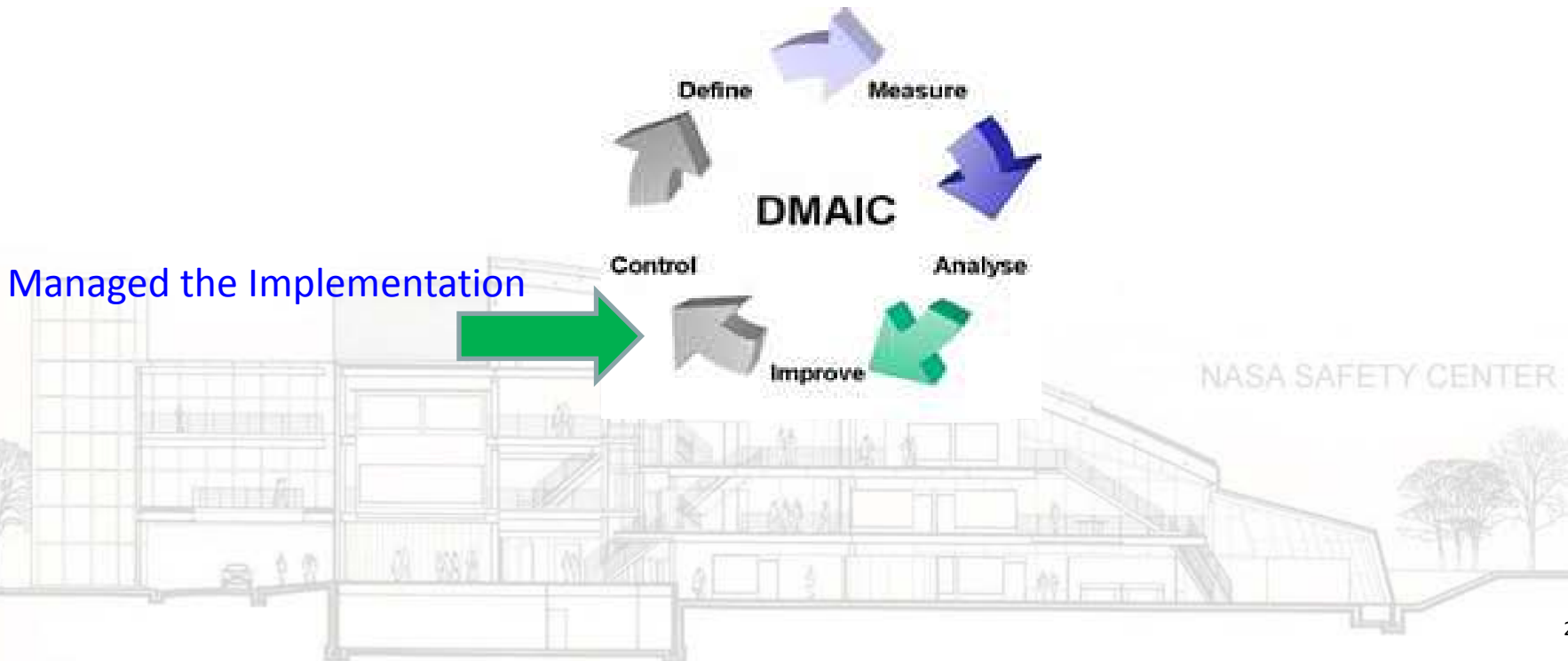




Implement the Corrective Action(s)



- Implement the Corrective Action(s)
 - Distal
 - Proximate Root Cause and
 - Secondary Cause(s)

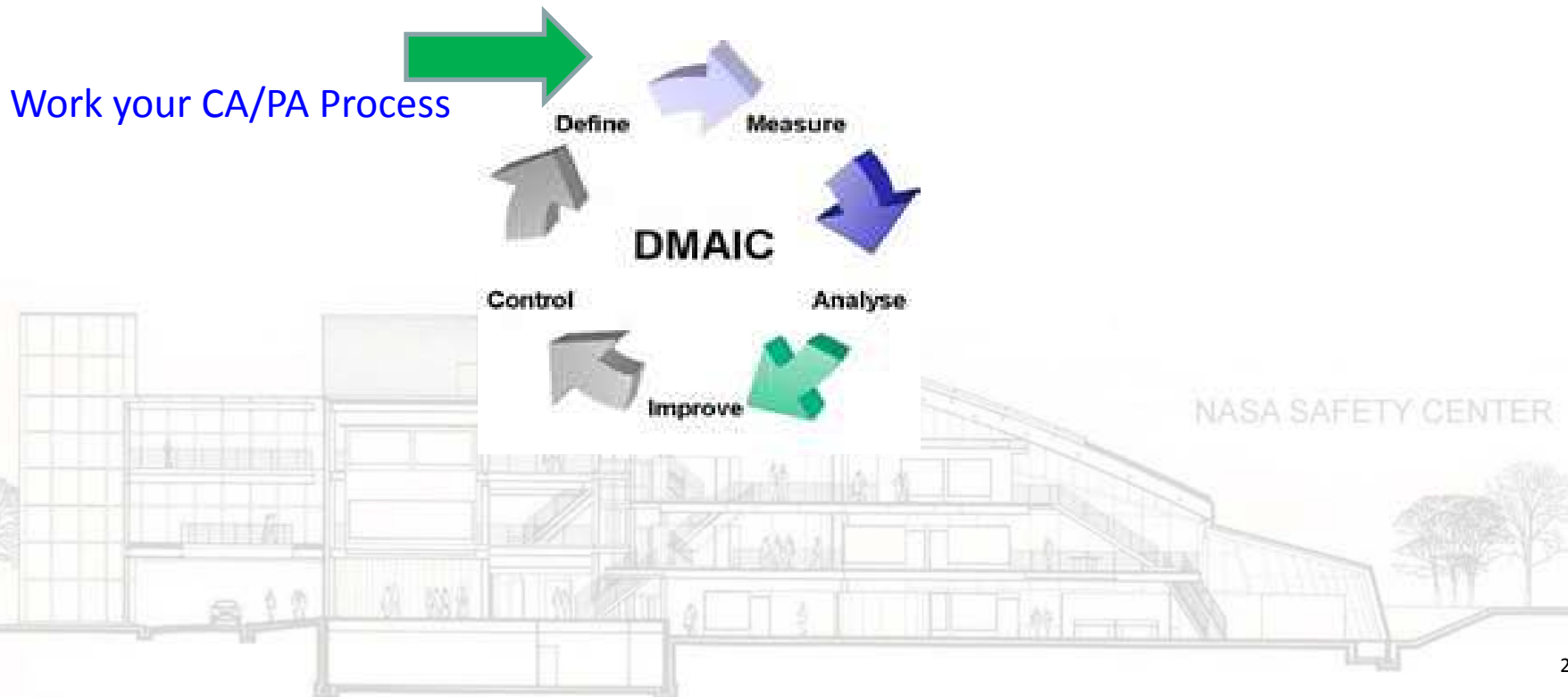




Implement the Corrective Action(s)



- Verify the Effectiveness of the Corrective/Preventive Actions
- Repeat the process if necessary.

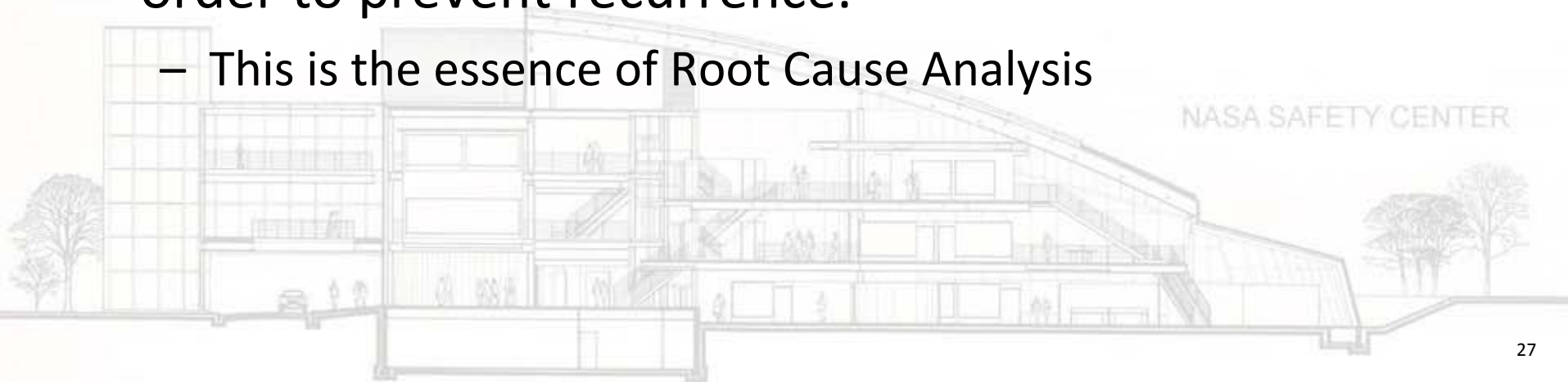




Where We Are



- GSFC and other NASA Centers are currently working on the Corrective Action Response module in SAARIS.
 - Increased focus on Root Cause Analysis in 2011.
- For those that are ISO 9001 or AS9100, section 8.5.2 has always required that, “The organization shall take action to eliminate the cause of nonconformities in order to prevent recurrence.”
 - This is the essence of Root Cause Analysis





What GSFC would like to see from Suppliers



CONTAINMENT by Supplier

The action planned or taken to correct the specific individual problem or condition that was found noncompliant.

Submitted By:		Scheduled Completion Date	
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ROOT CAUSE by Supplier

Analysis Method Employed:

Proximate Root Cause and Secondary/Contributing Causes:

Determine the cause(s) leading to the problem or noncompliant condition. (Root causes are those that if eliminated would prevent the reoccurrence).

Submitted By:		Scheduled Completion Date	
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CORRECTIVE ACTION(S) PROPOSED by Supplier

Based on the cause(s) identified develop plan and actions that address the full scope (systemic or isolated incident) of the problem or noncompliant condition. This includes evaluating related work and/or other processes for similar problems.

Submitted By:		Scheduled Completion Date	
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SUMMARY



- **Supplier's attention to and analysis of non-compliances is an indicator of commitment to their internal Quality Management System.**
- **GSFC is committed to:**
 - a robust supplier assessment process,
 - ensuring compliance of the supplier to NASA contractual requirements, and
 - continuous improvement in support of the success of our Missions.
- **We encourage each organization at this conference to do the same.**





SAFETY AND MISSION ASSURANCE (SMA) CODE 300

THANK YOU

TOGETHER WE CONTINUE TO SUPPORT SUCCESSFUL NASA MISSIONS

