SAPPMA

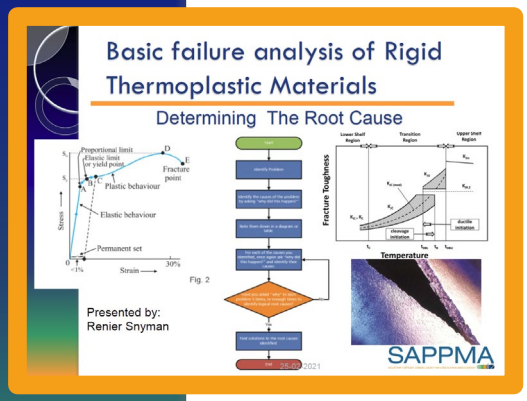
southern african plastic pipe manufacturers association

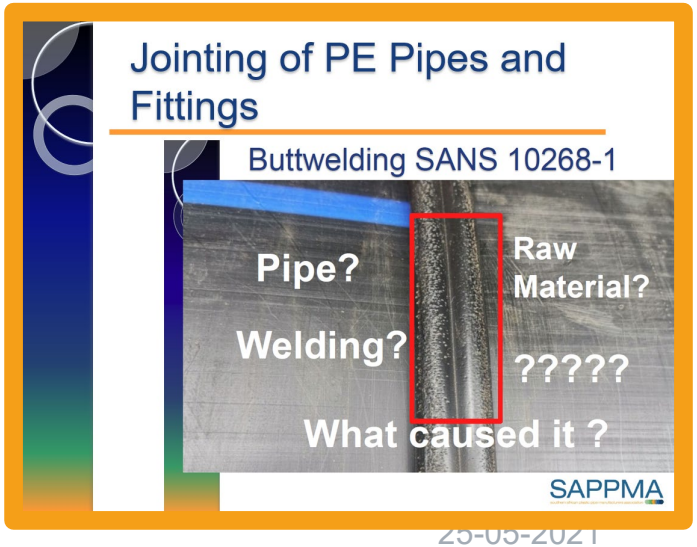
WEBINAR IV

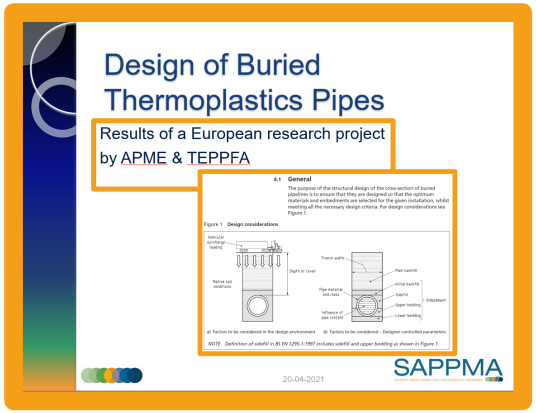
May 2021

25-05-2021

SAPPMA Webinar I & III on SAPPMA Web site







SAPPMA
southern african plastic pipe manufacturers association

Webinar through the IMESA Platform 13-05-2021

SAPPMA
southern african plastic pipe manufacturers association

We hope you enjoyed the webinar.

If you would like to re-watch or share the webinar, you can access the live-recording here via the Infrastructure News Channel:

https://www.gotostage.com/channel/8f714a3070274de8ad5e7ef9c809fed9

You can also click on the video attached to this email.

Please send your questions, comments and feedback to: webinars@3smedia.co.za.

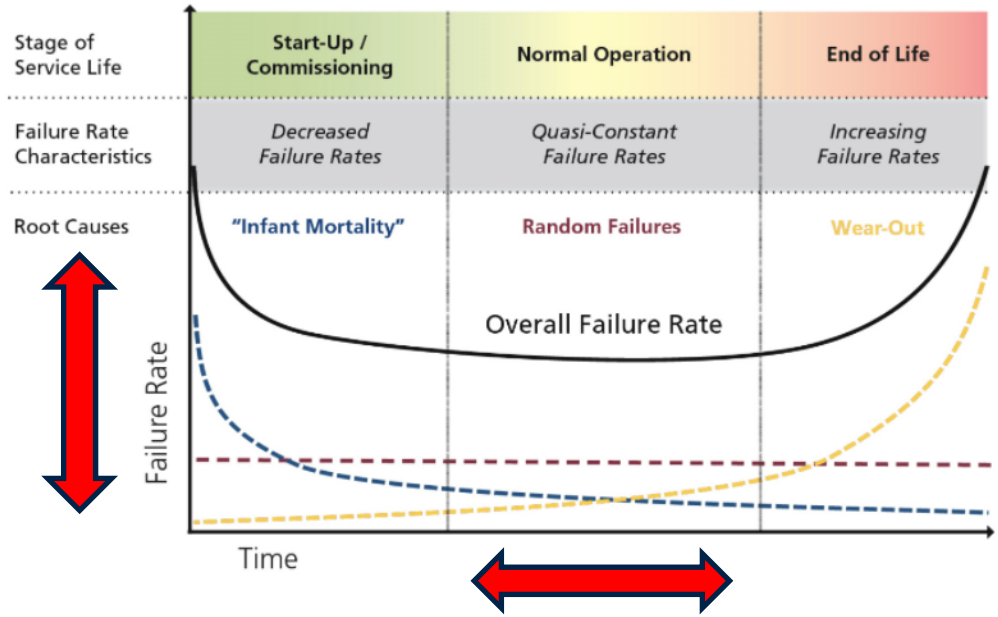
Watch Recording

You decide when you run out of options

How and when does your product and processes start failing ?

Universally accepted by systems engineers conducting lifecycle management in products in all industries, this visual representation describes failure probability across three phases:

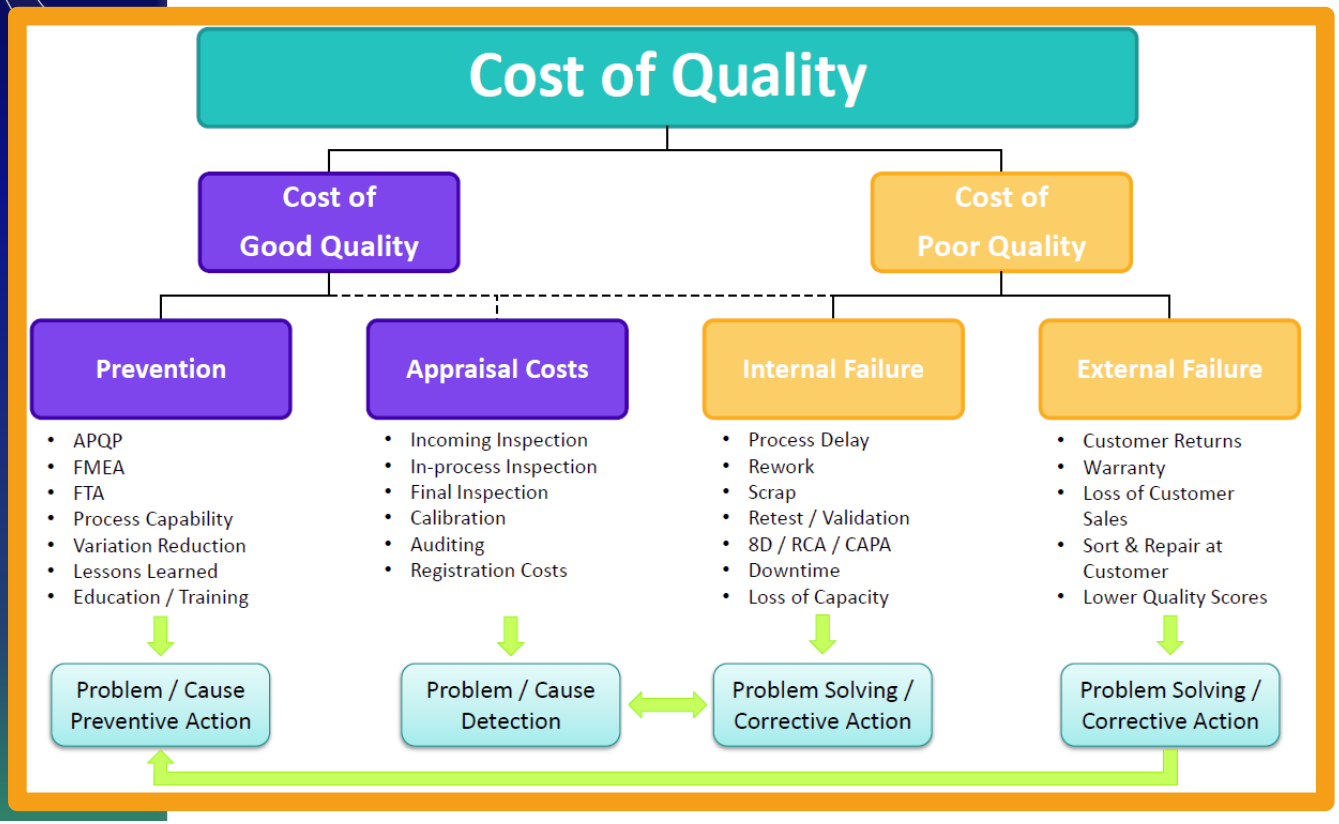
Infant Mortality: Higher probability for early failures upon first use and burn-in period
Random: Flat or constant failure rate due to arbitrary causes of failure
Wear Out: Probability for failure increases due to expiration of design lifetime



The 'Bathtub Curve' timeline of failure *Hazard function (black solid line) incorporates rates of early failure (blue dotted line) with end of life wear-out failure (yellow dotted line), and continuous, unchanging random failure rates (red dotted line)*

SAPPMA
southern african plastic pipe manufacturers association

Do you really understand your running costs?

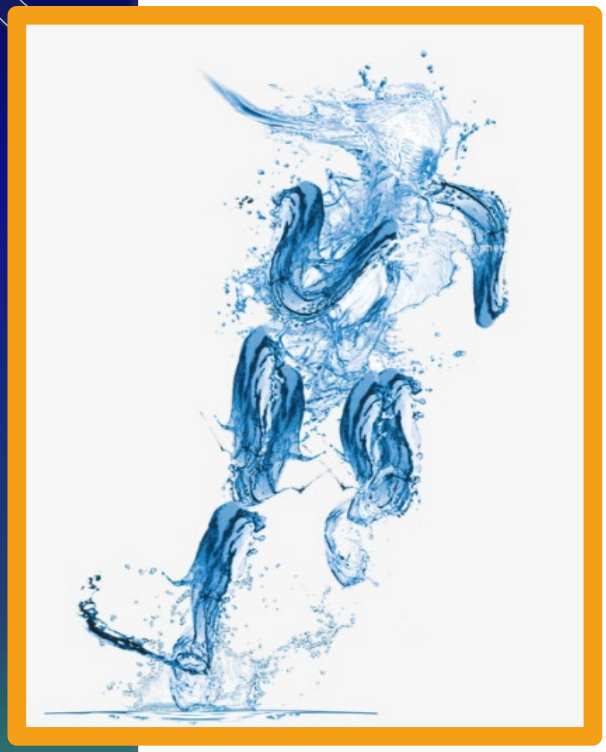


Advanced Product Quality Planning (**APQP**) is a structured process aimed at ensuring customer satisfaction with new products or processes.

A Fault Tree Analysis (**FTA**) is a Risk Management tool

SAPPMA
southern african plastic pipe manufacturers association

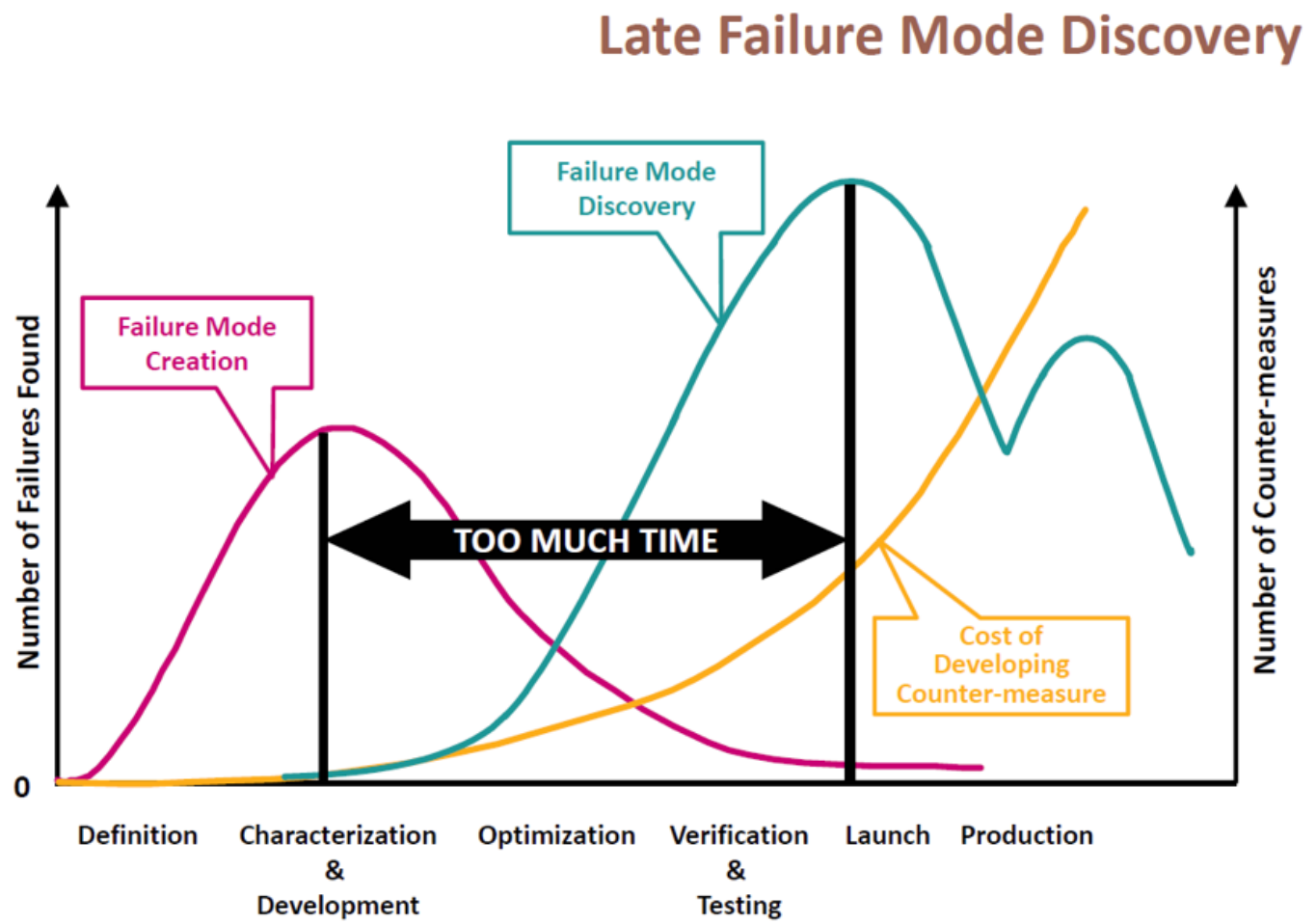
Who can you run to?



PDCA	DMAIC	8D
Plan	Define	**D0**-Plan
		D1- Create a Team
	Measure	**D2-** Define and describe problem
		D3- Define Containment Actions
	Analyse	**D4-** RCA & any escape points
		D5- Define Possible Corrective Actions
Do	Improve	**D6-** Implement and Validate CAs
Check	Control	**D7-** Implement Preventive Measures
Act		**D8-** Congratulate Your Team

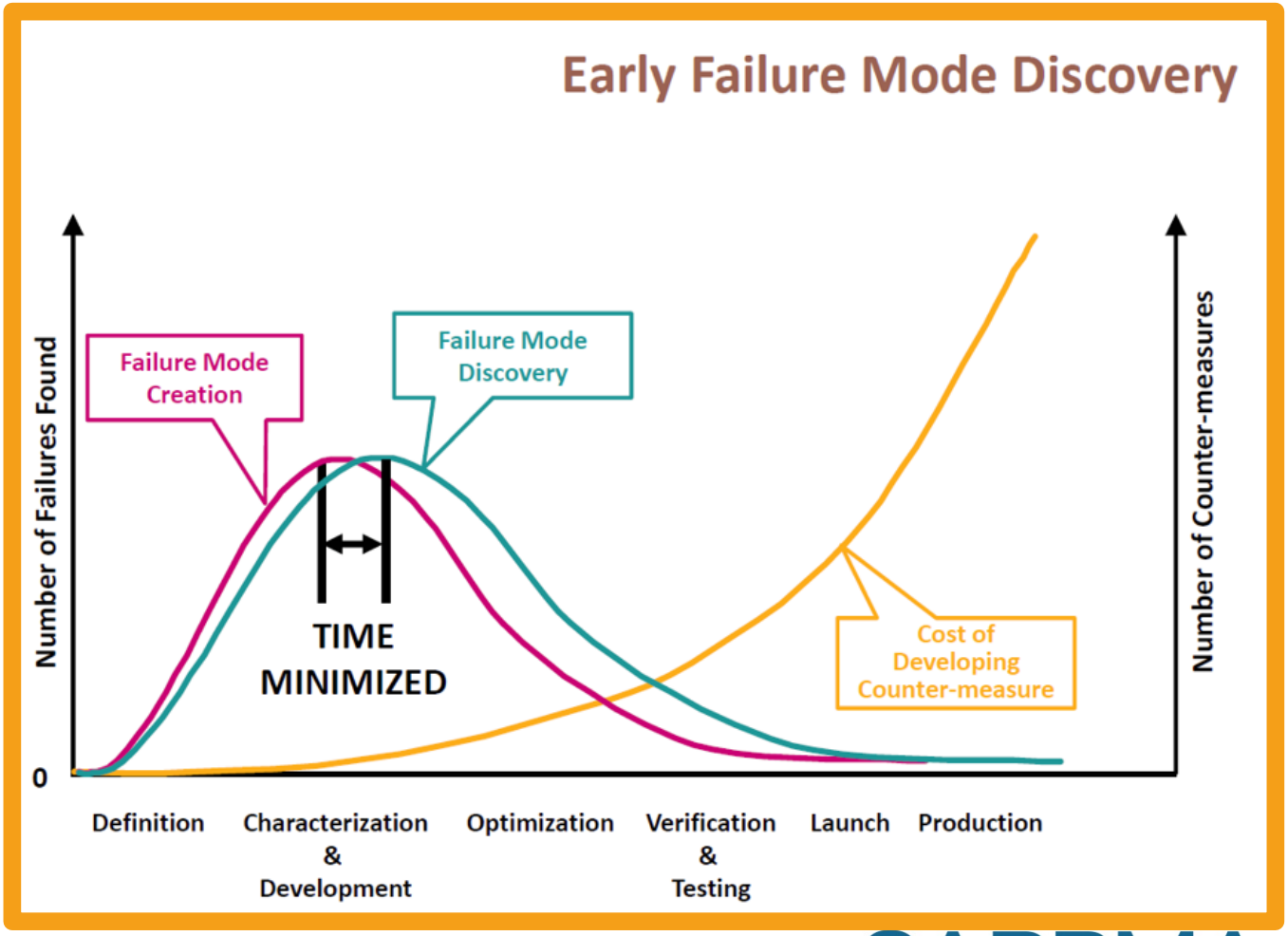
RCA- Root Cause Analysis

Are you running a risk?



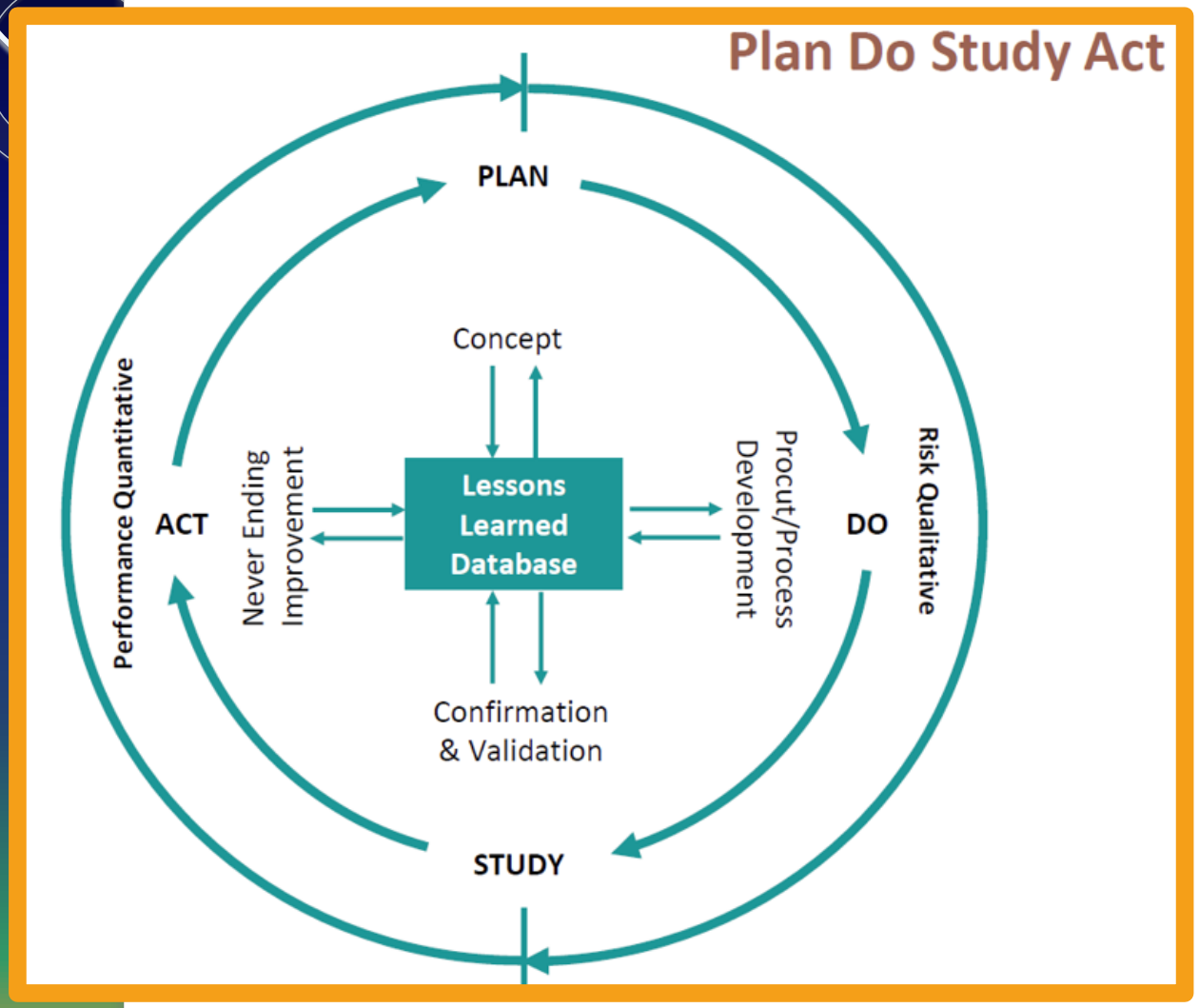
SAPPMA
southern african plastic pipe manufacturers association

When do you want to find out if it is running as planned?



SAPPMA
southern african plastic pipe manufacturers association

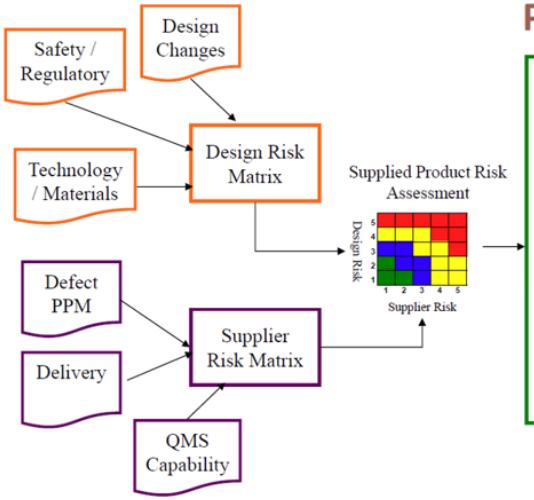
Make sure you run the full circle



SAPPMA
southern african plastic pipe manufacturers association

Stop Running the risk

Product Part Approval Process



PPAP Level Selection

Define Level of Control

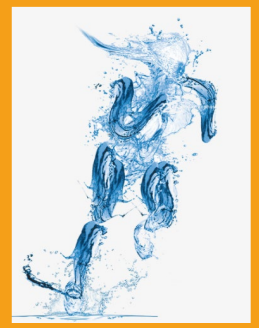
- **Level 1 High Risk**
  - APQP/Quality System Mentoring
  - Level 5 PPAP / PSO
- **Level 2 Med Risk**
  - Limited APQP/Quality System Mentoring
  - Level 3 PPAP with High Scrutiny
- **Level 3 Moderate Risk**
  - Level 4 PPAP with Med Scrutiny
- **Level 4 Low Risk**
  - Level 1or 2 PPAP with Low Scrutiny

PPM-parts per million

Process Sign-Off is a method to verify that a Supplier's quality planning **processes** have been successfully executed and that its production **processes** are capable of producing quality parts in sufficient quantity for production.

A **QMS** integrates the various internal **processes** within the organization and intends to provide a **process** approach for project execution. A **process** based **QMS** enables the organizations to identify, measure, control and improve the various core business **processes** that will ultimately lead to improved business performance.



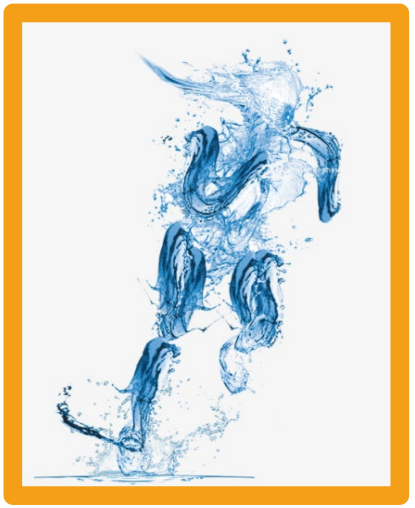



SAPPMA
southern african plastic pipe manufacturers association

Will process and product quality control keep you running?

5W and 1H
Of Product Quality Control

Who?	What?	Where?
Who will develop detailed product specifications? Who will conduct applicable testing? Who will coordinate corrective action & continuous improvement efforts? Who will manage supplier partnerships?	What testing is required in various markets? What information is required to develop technical specifications? What is the benefit of evaluating quality inspection reports and trending data over time? What are the benefits of evaluating a supplier's performance? What do you evaluate? What are the benefits of ensuring social responsibility & sustainability?	Where should you look for suppliers? Where do you need local resources to ensure quality on-site? Where do issues in the manufacturing process occur, and how do you resolve them?
When?	**Why?**	**How?**
When should you audit the supplier? (How often?) When is corrective active required, and what is the process?	Why is it necessary to maintain documentation related to process and management? Why do I need to collect data on suppliers to evaluate performance effectively? Why is an inspection plan a necessary component of an effective quality system?	How should documentation be maintained per standard QMS requirements? How do you select the right suppliers? How often should you inspect? How do you avoid shipment delays?



Presenter

25 May 2021

Saravanan Babu

SAPPMA

southern african plastic pipe manufacturers association

PLASCO LTD

LIFELINES FOR THE NATION

Manufacturers of
PVC-U and HDPE Pipes

SAPPMA Webinar IV
Synergistic potential of combining Risk Management, Cost of Quality and QMS (Quality Management Systems)
25th May 2021

SAPPMA
southern african plastic pipe manufacturers association

Professional Summary

Master's degree in Quality Management from Birla Institute of Technology, Pilani, India.

Bachelor's degree in Polymer Technology from Kamaraj University, Tamilnadu, India.

Certified lead auditor of ISO 9001:2015 standard.

Over 17 years of experience in Plastics processing industries, mainly focusing Quality control and Quality assurance management activities.

Member of American Society for Quality (ASQ).

Member of Technical Committee for Tanzania Bureuau of Standards (TBS) - Plastics and Plastic products division.

Trained SAP Business One administrator.

PLASCO LTD.

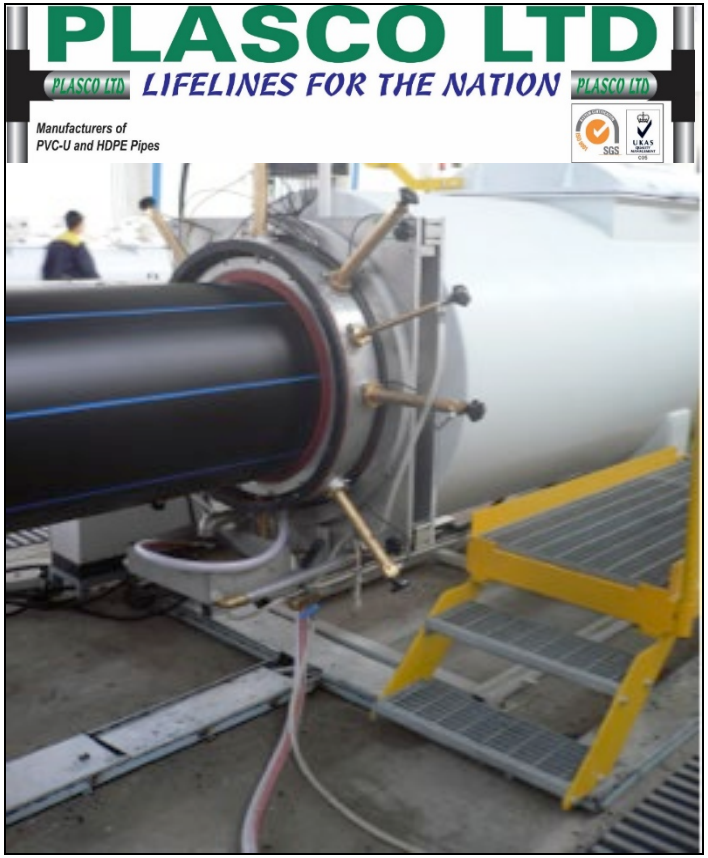
SAPPMA
southern african plastic pipe manufacturers association

PLASCO LTD. – Company Summary

Tanzanian Company based in Dar-es-salaam

Also producing **WEHOLITE HDPE Structured Wall Pipes** up to 2200mm dia. under license from Uponor Infra Oy, Finland

Producing high quality HDPE pipes up to 630mm dia. and uPVC pipes up to 315mm dia.



Technical project advice and Field Services to support Engineers and Contractors

WEHOLITE

Manufacture of special fittings

ISO 9001:2015 SGS/UKAS certified

Member of SAPPMA

TBS & Kiwa Gastec certified products

HDPE Pipes manufactured to ISO4427 and ISO4437 Standard

kiwa
Partner for progress

Weholite pipes manufactured to ISO 21138-2 Standard

TANZANIA BUREAU OF STANDARDS tbs

PVC Pipes manufactured to ISO1452 Standard

PLASCO LTD.

ISO 9001 SGS UKAS MANAGEMENT SYSTEMS 005

SAPPMA
southern african plastic pipe manufacturers association

Topics

Quality Management Systems (QMS)

- Evolution of Quality
- Introduction to ISO 9001:2015
- PDCA, Risk Based Thinking and Process Approach Concepts

Risk Management

- Introduction
- Risk Management – Principles, Framework and Process
- Risk Assessment and Techniques

Cost of Quality

- The Total Cost of Quality & the 4 Quality Cost Categories
- The Quality Cost data collection methods for each category
- The reporting and interpreting of Quality Cost results
- The COQ Benefits & Limitations

Combining Risk Management and CoQ with QMS process

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Quality Management Systems

A formalized system that documents processes, procedures, and responsibilities for achieving quality policies and objectives.

Helps coordinate and direct an organization's activities to meet customer and regulatory requirements and improve its effectiveness and efficiency on a continuous basis.

75 YEARS ASQ

celebrate asq.org

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

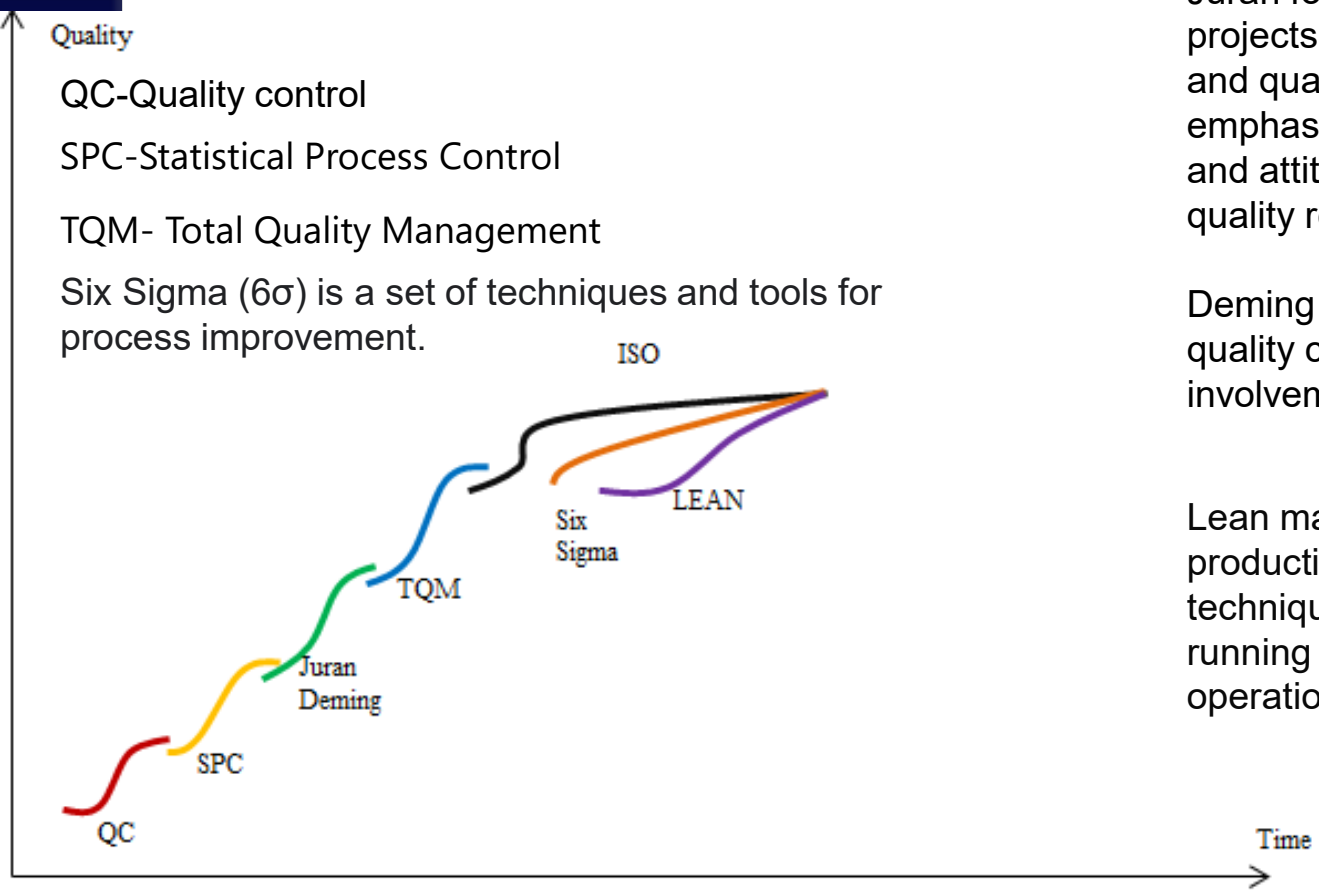
Evolution of Quality

QC-Quality control

SPC-Statistical Process Control

TQM- Total Quality Management

Six Sigma (6σ) is a set of techniques and tools for process improvement.



Juran focuses on breakthrough projects, measurement and control, and quality planning; and Crosby emphasizes zero defects, motivation and attitude change, and cost of quality reporting.

Deming emphasizes statistical quality control and shop-floor involvement;

Lean manufacturing, or lean production, is a system of techniques and activities for running a manufacturing or service operation.

Development of quality management system from 1900 to 2013(Evans, 2008, pp.6-15)

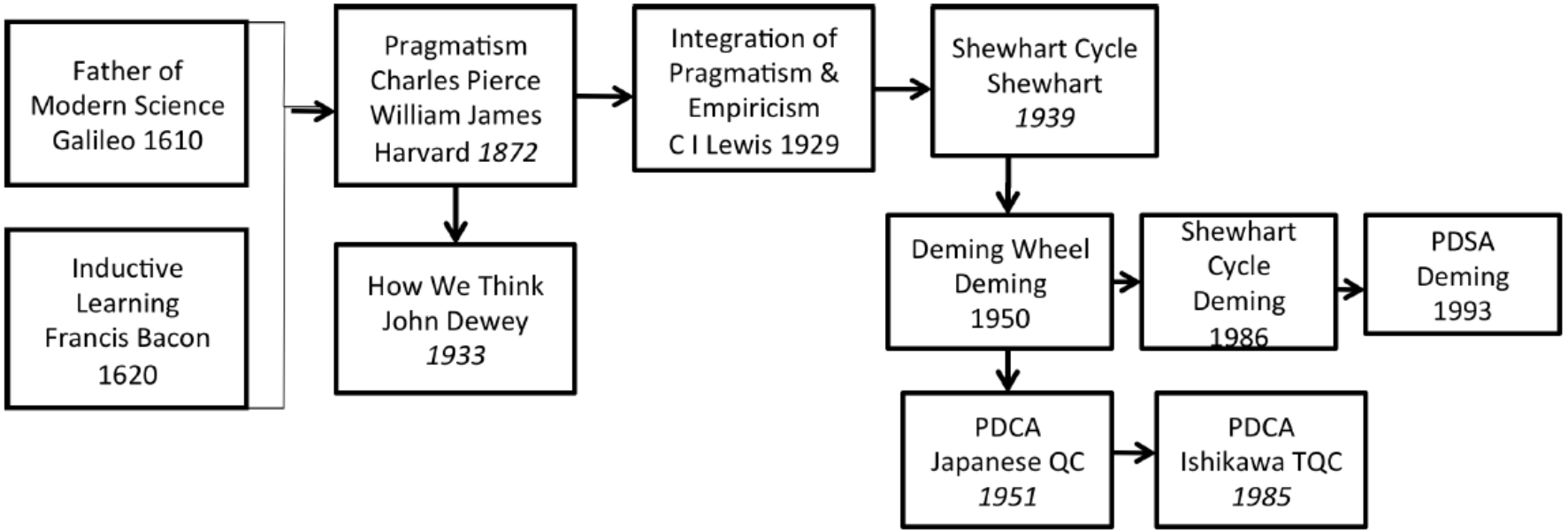
PLASCO LTD.

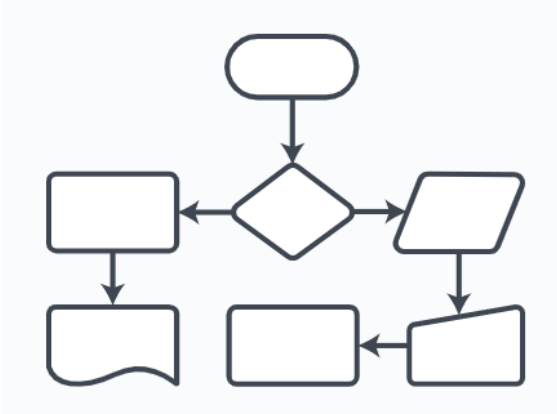
SAPPMA
southern african plastic pipe manufacturers association

Evolution of Quality

- Quality has become more and more popular and nearly every organization has to declare its position concerning their quality.
- The tough economic and competitive markets have made organizations to turn their attention to quality.
- The three most used quality management systems at the moment are:
  - ISO 9000,
  - Six Sigma, and
  - Lean manufacturing.
- The three quality management systems differ from the methods but also from their way it functions.
- Six Sigma and Lean manufacturing were founded by Motorola and Toyota respectively.
- ISO 9000 was founded by a group of engineering experts.

Evolution of Quality

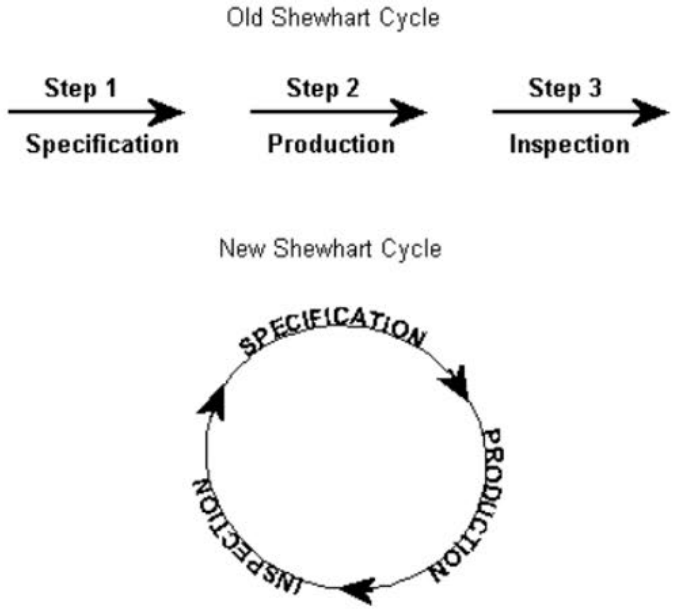




PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Evolution of Quality



PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

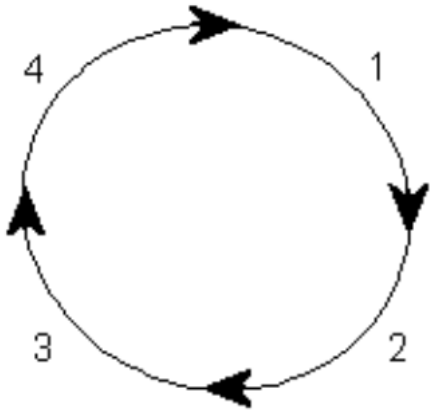
Evolution of Quality

Deming Wheel, 1950.

- Design the product (with appropriate tests).
- Make it; test it in the production line and in the laboratory.
- Put it on the market.
- Test it in service, through market research, find out what the user thinks of it, and why the non-user has not bought it.

Re-design the product, in the light of consumer reactions to quality and price.

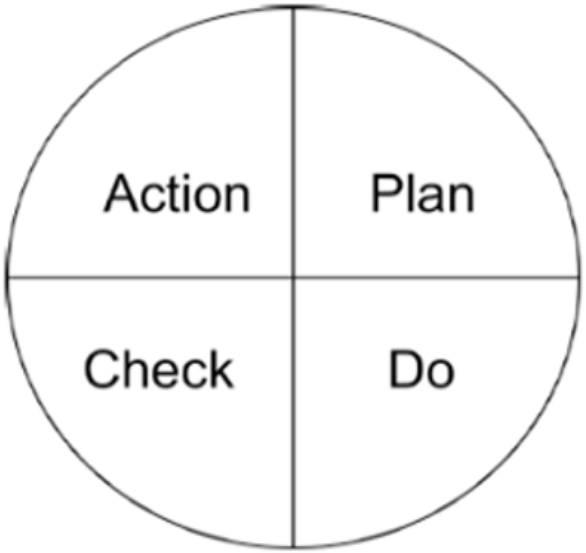
Continue around and around the cycle.



PLASCO LTD.

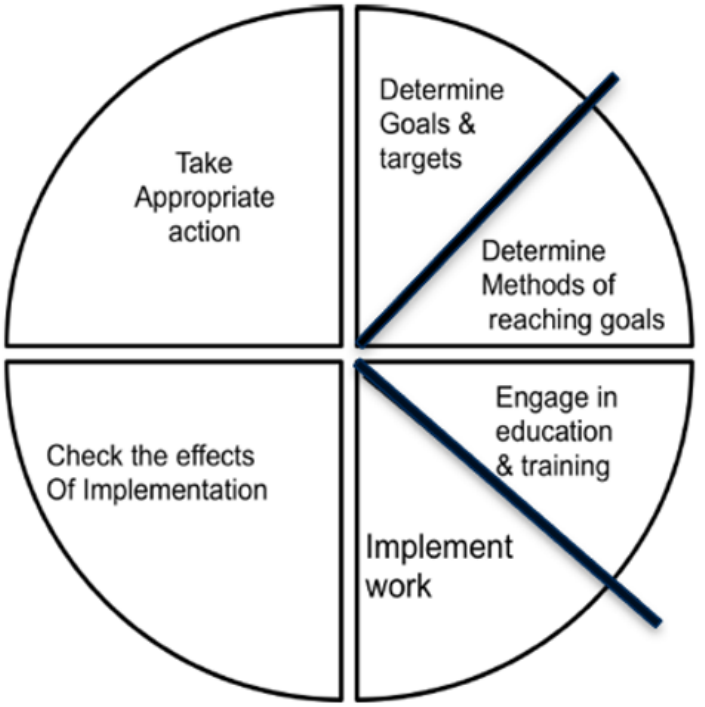
SAPPMA
southern african plastic pipe manufacturers association

Evolution of Quality



Japanese PDCA Cycle, 1951

Japanese PDCA Cycle, 1983.

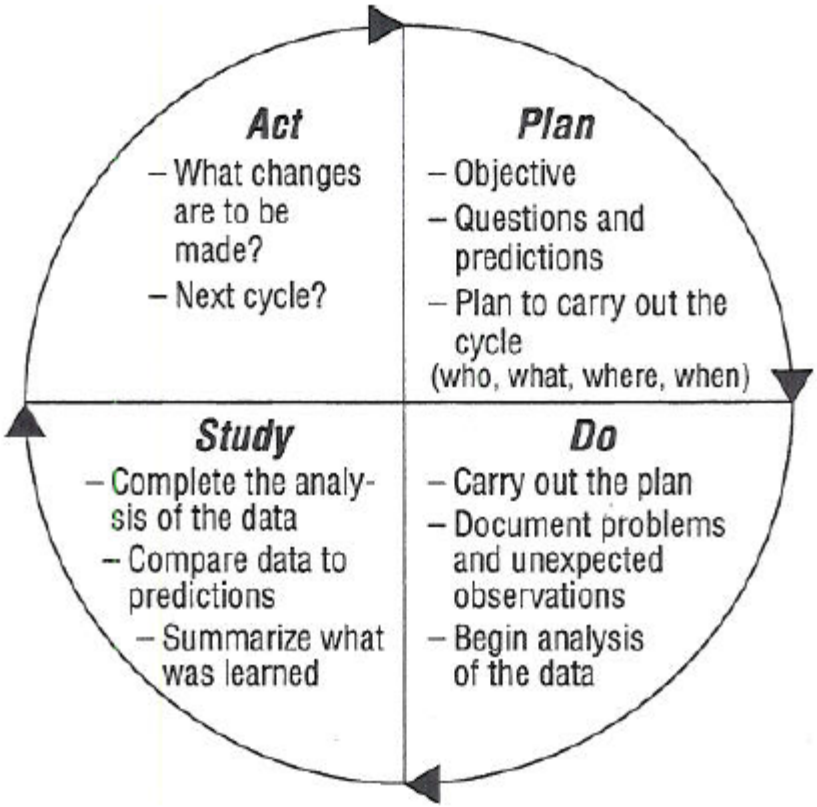


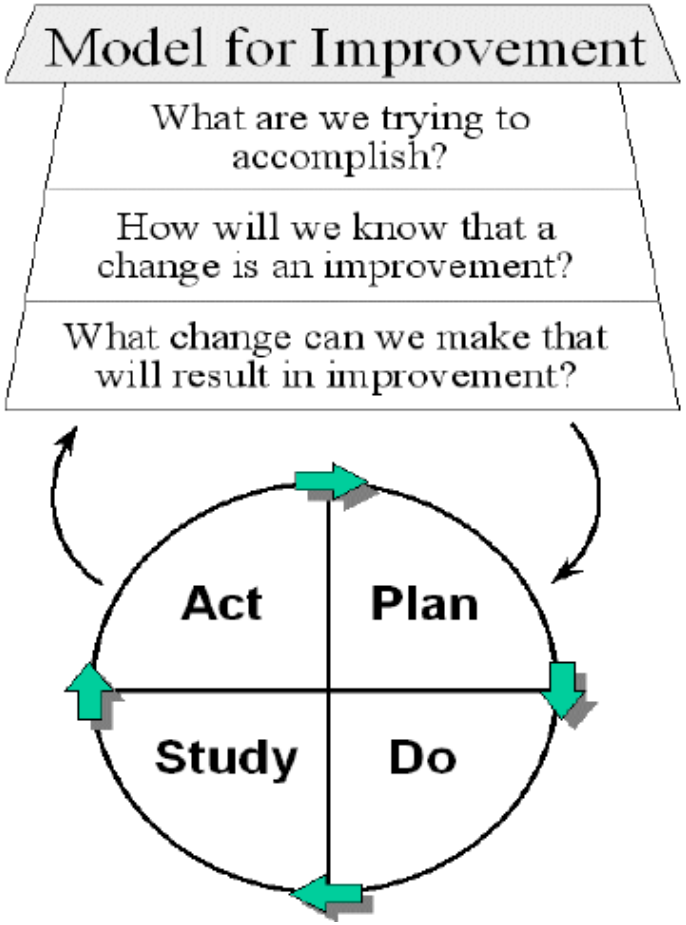
PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Evolution of Quality

- PDSA Cycle and Model for Improvement, 1991,1994.





PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

ISO 9000 series

Three standards in the series:

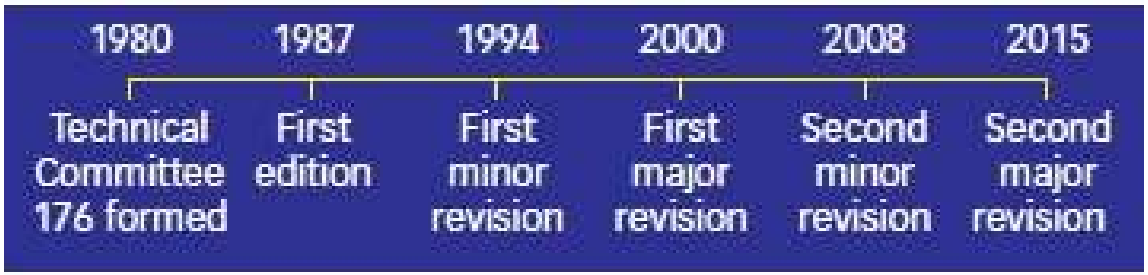
ISO 9000

ISO 9001

ISO 9004

New Revisions released together in 2015

Revised in 2018

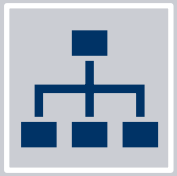


Timeline for ISO 9001

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Introduction to ISO 9001:2015 Standards



ISO 9001:2015, the international standard specifying requirements for quality management systems, is the most prominent approach to quality management systems.

Meeting the customer’s requirements, which helps to instill confidence in the organization, in turn leading to more customers, more sales, and more repeat business.

Meeting the organization's requirements, which ensures compliance with regulations and provision of products and services in the most cost- and resource-efficient manner, creating room for expansion, growth, and profit.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Introduction to ISO 9001:2015 Standards

- Advantages of Implementing the QMS:
  - Defining, improving, and controlling processes
  - Reducing waste
  - Preventing mistakes
  - Lowering costs
  - Facilitating and identifying training opportunities
  - Engaging staff
  - Setting organization-wide direction
  - Communicating a readiness to produce consistent results

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Elements and Principles of QMS

The organization's quality policy and quality objectives	Quality manual
Procedures, instructions, and records	Data management
Internal processes	Customer satisfaction from product quality
Improvement opportunities	Quality analysis

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Based Thinking

Risk means "effect of uncertainty on objectives" - "uncertainty" is not about how things will happen but is more about our state of knowledge . It is more about our lack of knowledge" about how things will turn out.

Events will happen, we just don't know,

- Which, How and When

Risk = the deviation from the expected, due to our ignorance, of objectives

Risk-based thinking refers to a coordinated set of activities and methods that organizations use to manage and control the many risks that affect its ability to achieve objectives.

Risk-based thinking replaces what the old standard used to call preventive action.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Based Thinking

By considering risk throughout the system and all processes,

- the likelihood of achieving stated objectives is improved,
- output is more consistent, and
- customers can be confident that they will receive the expected product or service.

Risk-based thinking:

- improves governance
- establishes a proactive culture of improvement
- assists with statutory and regulatory compliance
- assures consistency of quality of products and services
- improves customer confidence and satisfaction

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Based Thinking vs Risk Management

So, if risk-based thinking aligns so well with risk management, why not just call it that?

ISO 9001:2015 risk-based thinking requirements center on incorporating risk into decision-making, without formalizing exactly how to do it.

ISO 9001:2015 doesn't require any sort of formal risk assessment, nor does it require you to maintain a Risk Register.

Presumably, it's because the organization (ISO) wants to provide more flexibility in how companies across varying industries satisfy the standard requirements.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Based Thinking in ISO 9001:2015

Introduction - the concept of risk-based thinking is explained

Clause 4 - organization is required to determine its QMS processes and address its risks and opportunities

Clause 5 – top management is required to Promote awareness of risk-based thinking

Determine and address risks and opportunities that can affect product /service conformity

Clause 6 - organization is required to identify risks and opportunities related to QMS performance and take appropriate actions to address them

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Based Thinking in ISO 9001:2015

Clause 7 – organization is required to determine and provide necessary resources

Clause 8 - organization is required to manage its operational processes

Clause 9 - organization is required to monitor, measure, analyse and evaluate the effectiveness of actions taken to address risks and opportunities

Clause 10 - organization is required to correct, prevent or reduce undesired effects and improve the QMS and update risks and opportunities

SAPPMA
southern african plastic pipe manufacturers association

Process Approach

The systematic management of processes and their interactions to achieve intended results

All organizations use processes to:

set interrelated or interacting activities	transform inputs into outputs	build in checks to meet objectives and promote continuous improvement

The process approach integrates processes into a complete system to achieve strategic and operational objectives.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Process Approach & Risk Based Thinking

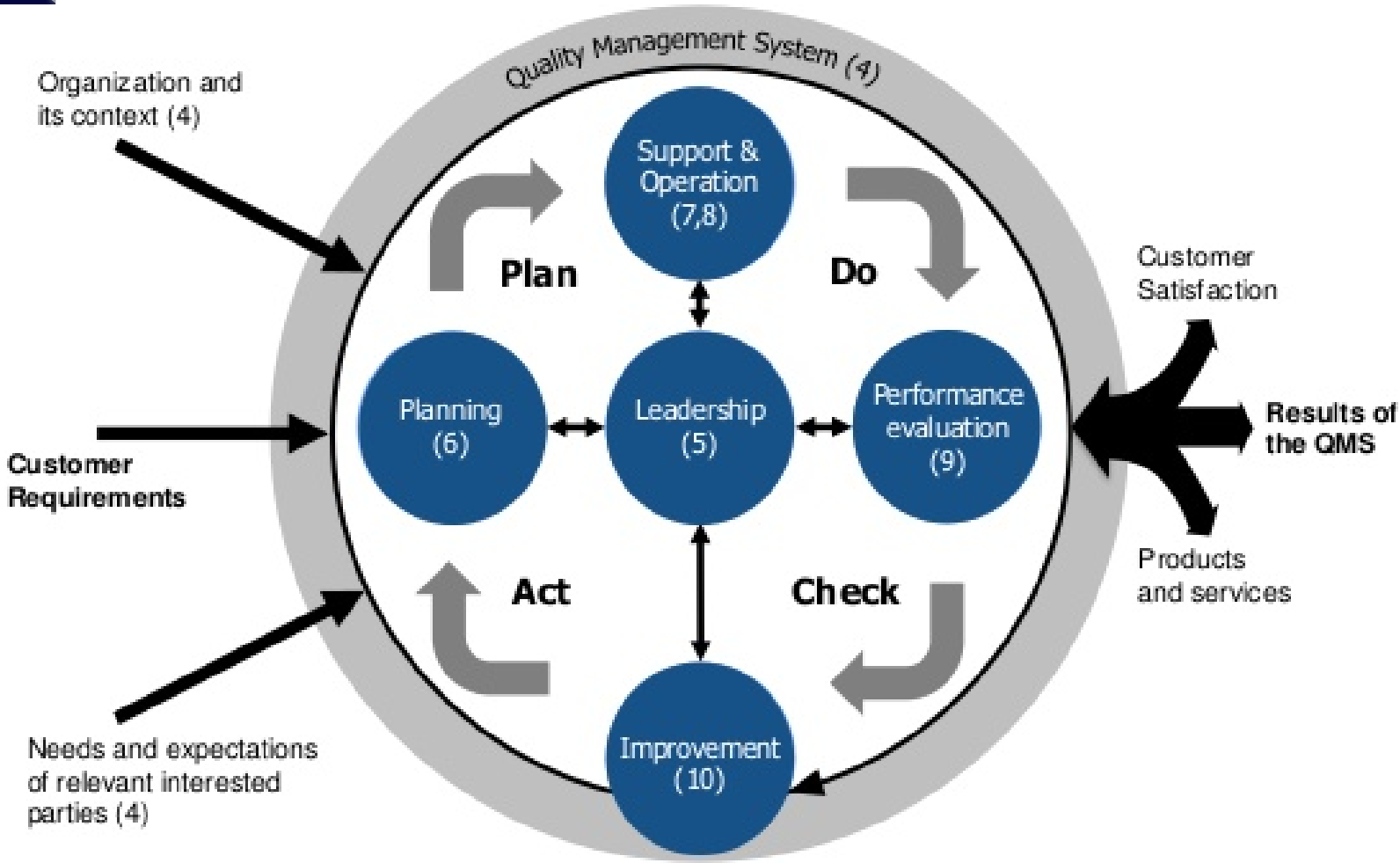
The process approach incorporates risk-based thinking.

Risk-based thinking ensures risk is considered when establishing, implementing and maintaining a management system, each process and each activity.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

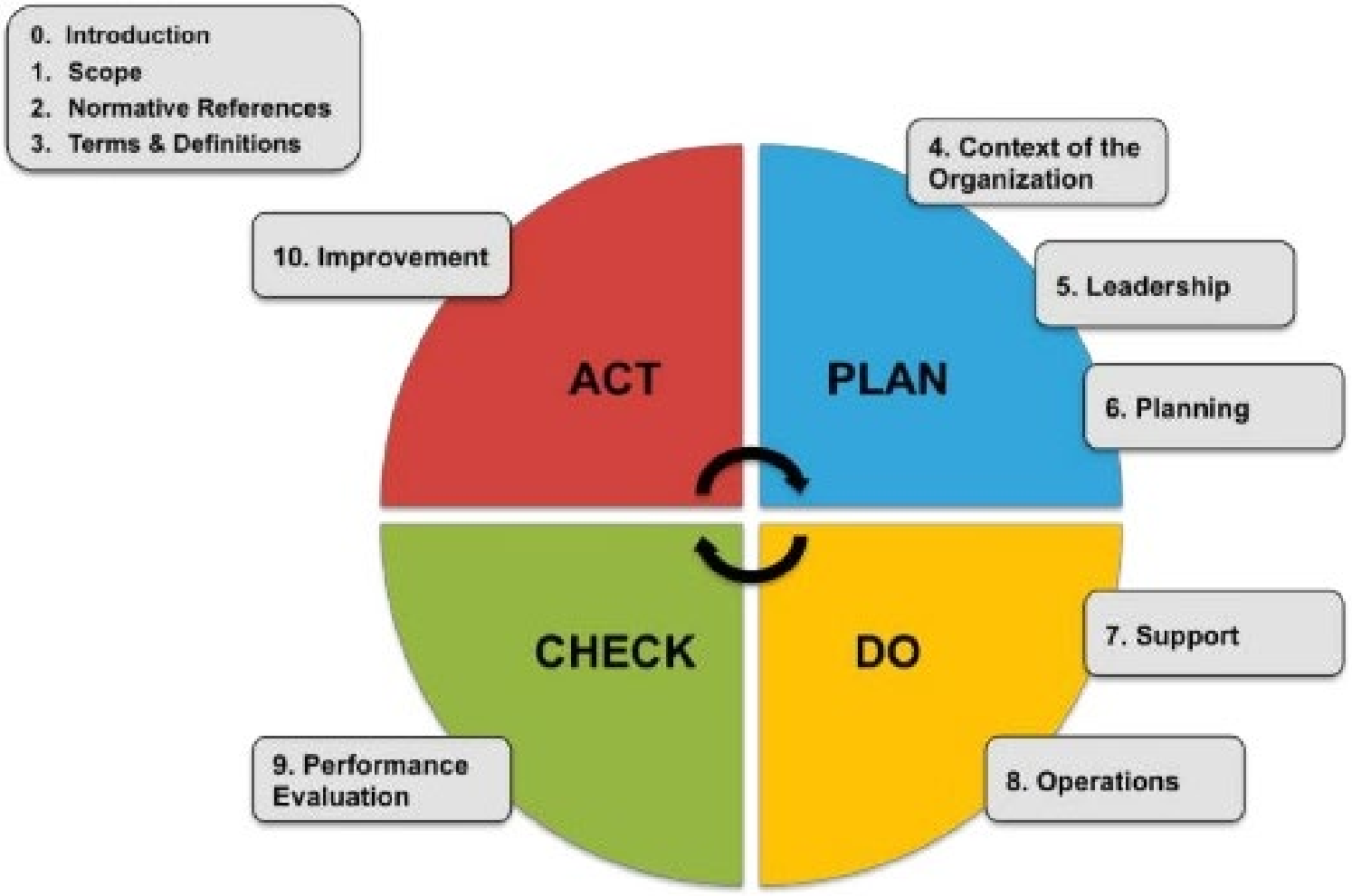
Process Approach in ISO 9001:2015



PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

PDCA and Clauses of ISO 9001:2015



PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

PDCA – When to use?

Starting a new improvement project

Developing a new or improved design of a process, product, or service

Defining a repetitive work process

Planning data collection and analysis in order to verify and prioritize problems or root causes

Implementing any change

Working toward continuous improvement

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

PDCA and Continual Improvement

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Management

An attempt to erect the World's Largest Popsicle in New York City ended with a scene straight out of a disaster film, but much stickier.

The 25-foot-tall, 17½-ton treat of frozen juice melted faster than expected, flooding Union Square in downtown Manhattan with kiwi-strawberry–flavored fluid.

Bicyclists wiped out in the stream of goo. Pedestrians slipped. Traffic was, well, frozen. Firefighters closed off several streets and used hoses to wash away the thick, sweet slime.

The Snapple Company, a leading maker of soft beverages, had been trying to promote a new line of frozen treats by setting a record for the World's Largest Popsicle, but called off the stunt before the frozen giant was pulled fully upright by a construction crane.

Authorities said they were worried the 2½-story popsicle would collapse.

© Brian Smith/Zuma Press, Inc.

Organizers were not sure why it melted so quickly. "We planned for it. We just didn't expect for it to happen so fast," said Snapple spokeswoman Lauren Radcliffe. She said the company would offer to pay the city for the clean-up costs.

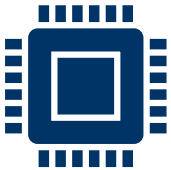
* Associated Press, June 23, 2005.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Management

Coordinated activities to direct and control an organization with regard to risk.



Risk is a necessary part of doing business, and in a world where enormous amounts of data are being processed at increasingly rapid rates, identifying and mitigating risks is a challenge for any Organization.

Risk management involves understanding, analyzing and addressing risk to make sure organizations achieve their objectives. So it must be proportionate to the complexity and type of organization involved.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Management

ISO 31000 family

- ISO 31000:2018 Risk management Principles and guidelines
- ISO/CD 31000 Risk management Principles and guidelines
- ISO/TR 31004:2013 Risk management Guidance for the implementation of ISO 31000
- IEC 31010:2009 Risk management Risk assessment techniques
- ISO/NP 31020 Risk Management Managing Disruption Related Risk
- ISO/AWI 31021 Managing Supply Chain Risk A Compilation of Best Practices
- ISO/AWI 31022 Guidelines for Implementation of Enterprise Legal Risk Management

A number of standards have been developed worldwide to help organizations to implement risk management systematically and effectively.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Management - Benefits

Risk management

- identifies as many risk events as possible (what can go wrong),
- minimizes their impact (what can be done about the event before the project begins),
- manages responses to those events that do materialize (contingency plans), and
- provides contingency funds to cover risk events that actually materialize.

Assists organizations in setting strategy, achieving objectives and making informed decisions.

Forms a part of governance and leadership, and is fundamental to how the organization is managed at all levels

Contributes to the improvement of management systems

Helps to protect Organization's people, value, systems and processes

Helps in allocation of resources.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

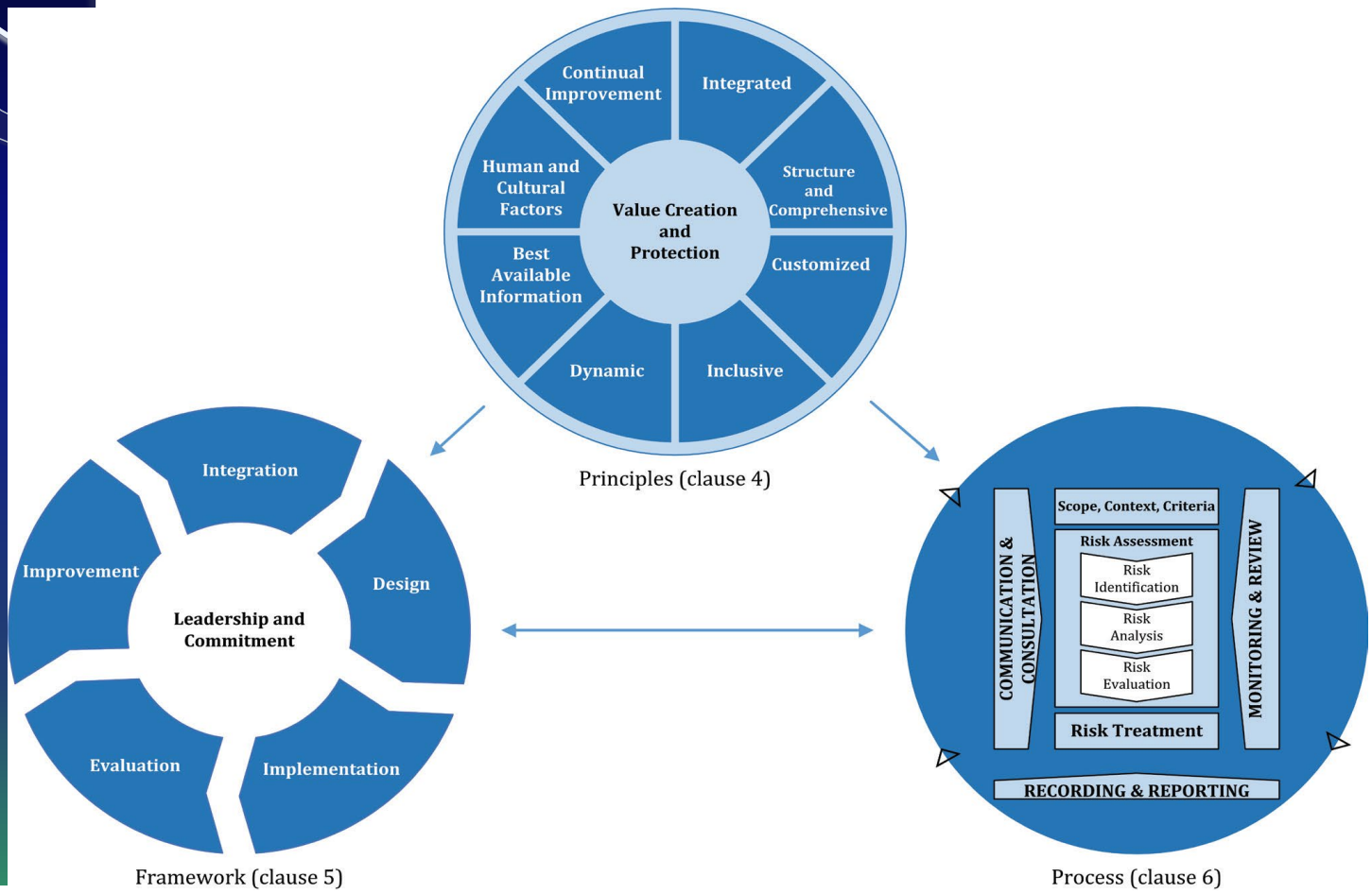
ISO 31000 - Summary

- ISO 31000 is a generic risk management standard, defines a set of guidelines.
- We refer to them as guidelines because they're voluntary. They are not requirements or contractual obligations.
- These risk management guidelines are discussed in the following sections of ISO 31000:2018 Standard:
  - Clause 4. Risk Management Principles
  - Clause 5. Risk Management Framework
  - Clause 6. Risk Management Process

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

ISO 31000 – Principles, Framework & Process

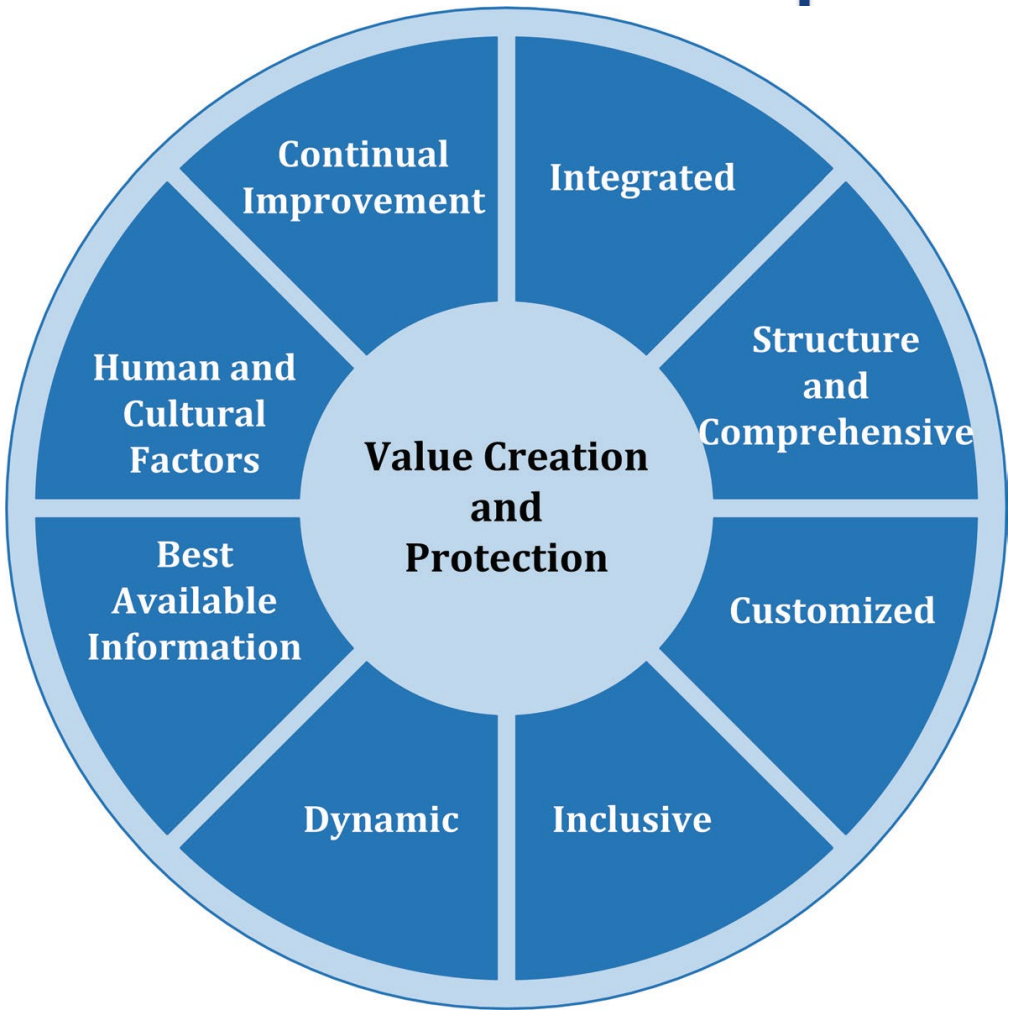


Source: ISO 31000:2018

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

ISO 31000 – Principles



Source: ISO 31000:2018

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

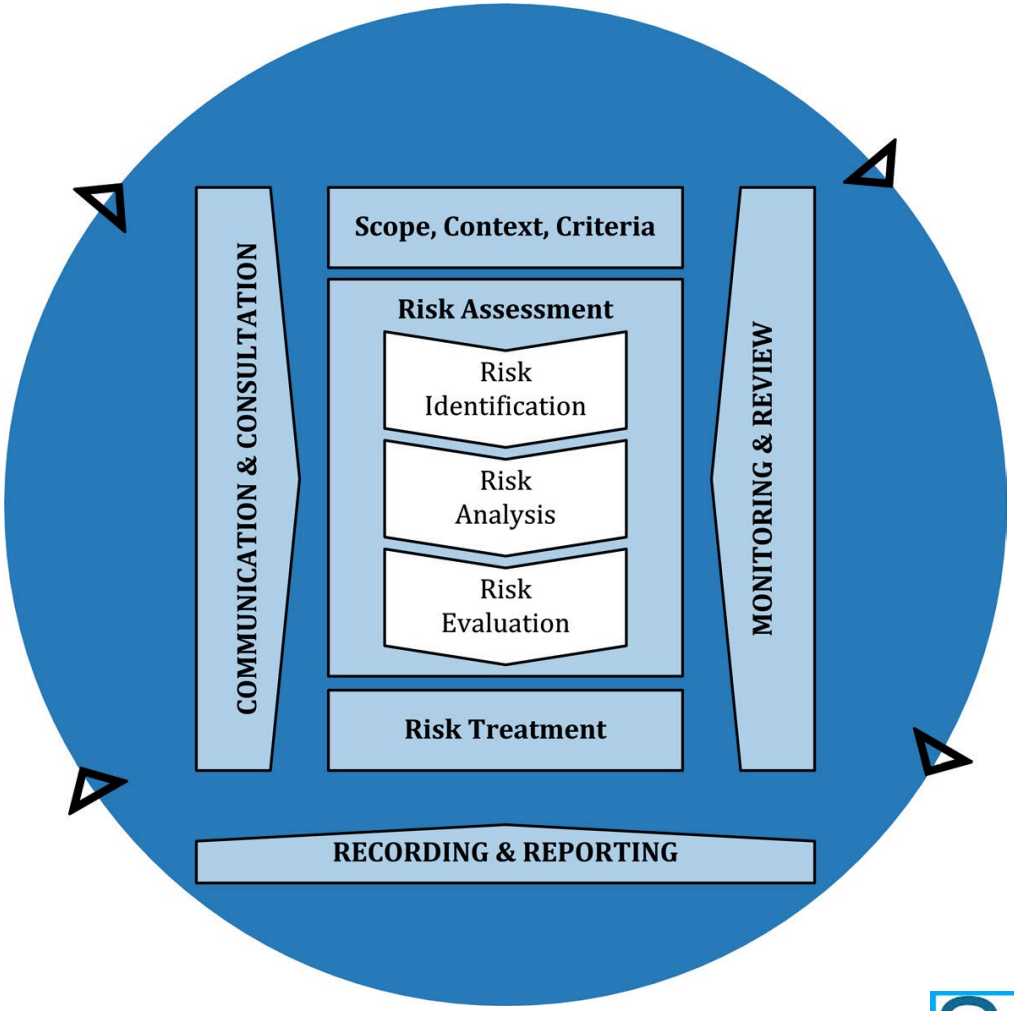
ISO 31000 – Framework

Source: ISO 31000:2018

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

ISO 31000 – Risk Management Process



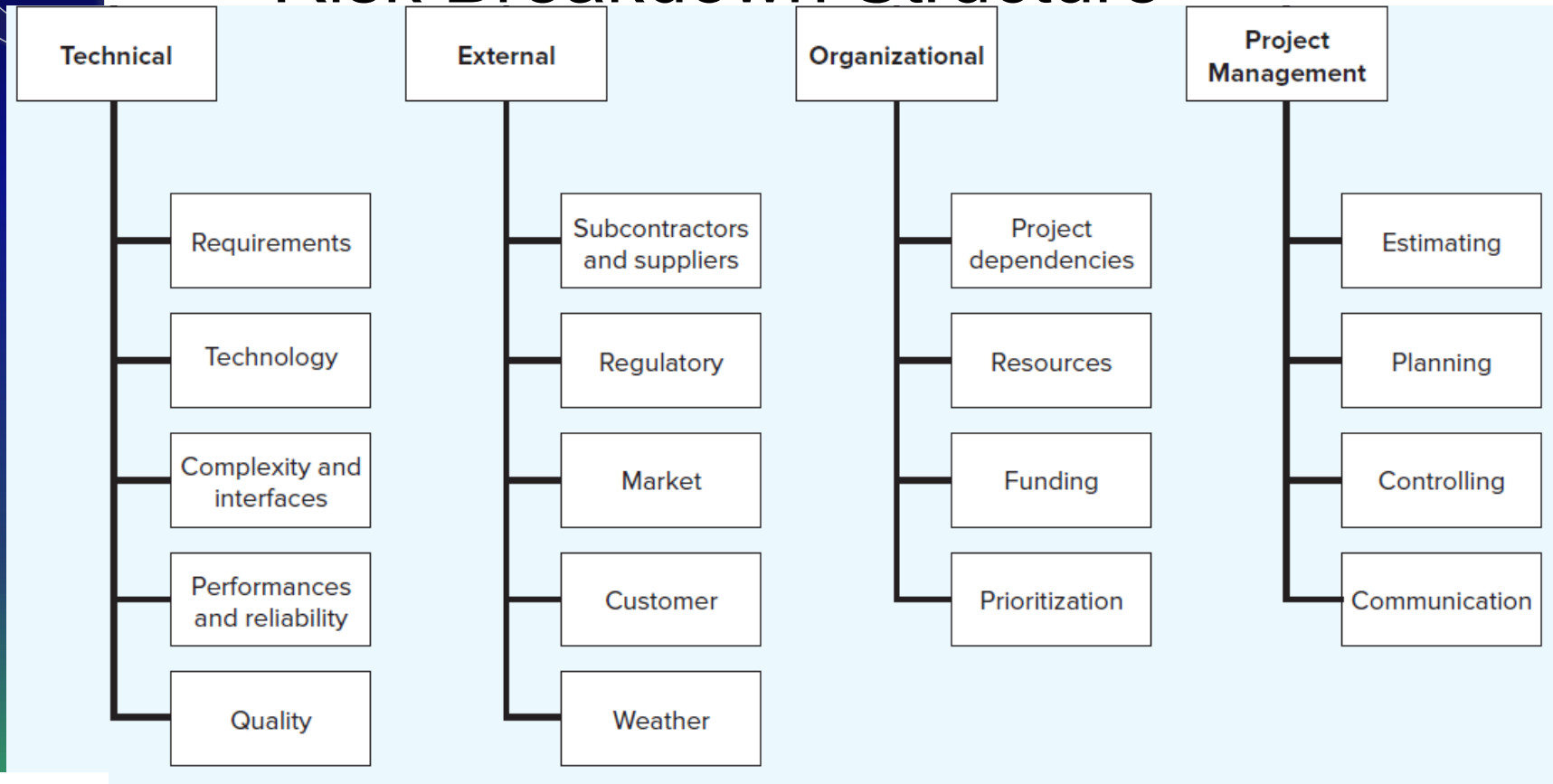
Source: ISO 31000:2018

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Identification Techniques

- Risk Breakdown Structure

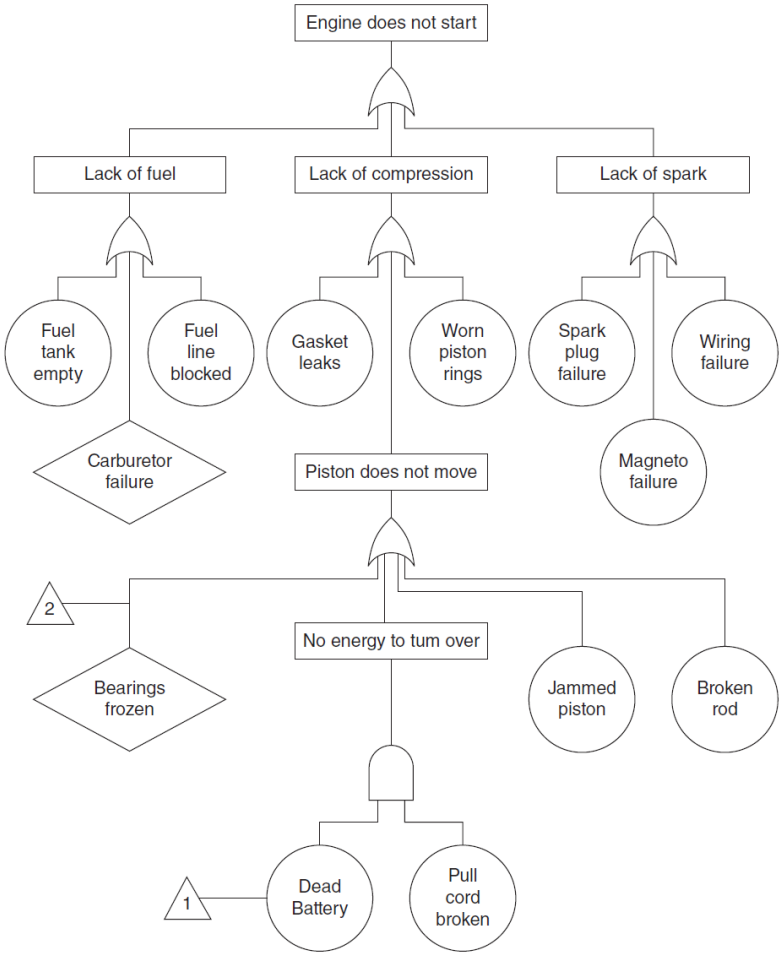


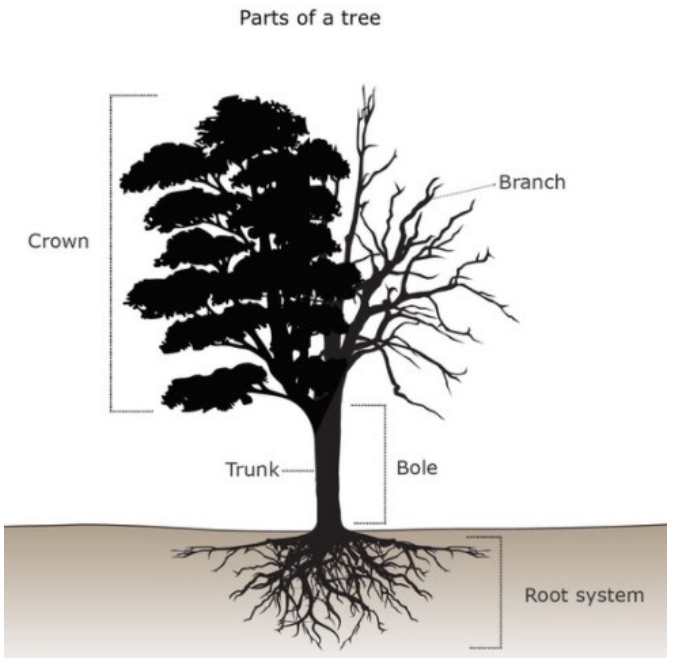
PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Identification Techniques

- Fault Tree Analysis





PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Analysis & Evaluation Techniques

- Failure Mode & Effects Analysis (FMEA)
- Assess the Risk Priority Number (RPN) by including ease of detection in the equation:
  - Severity × Occurrence × Detection = RPN

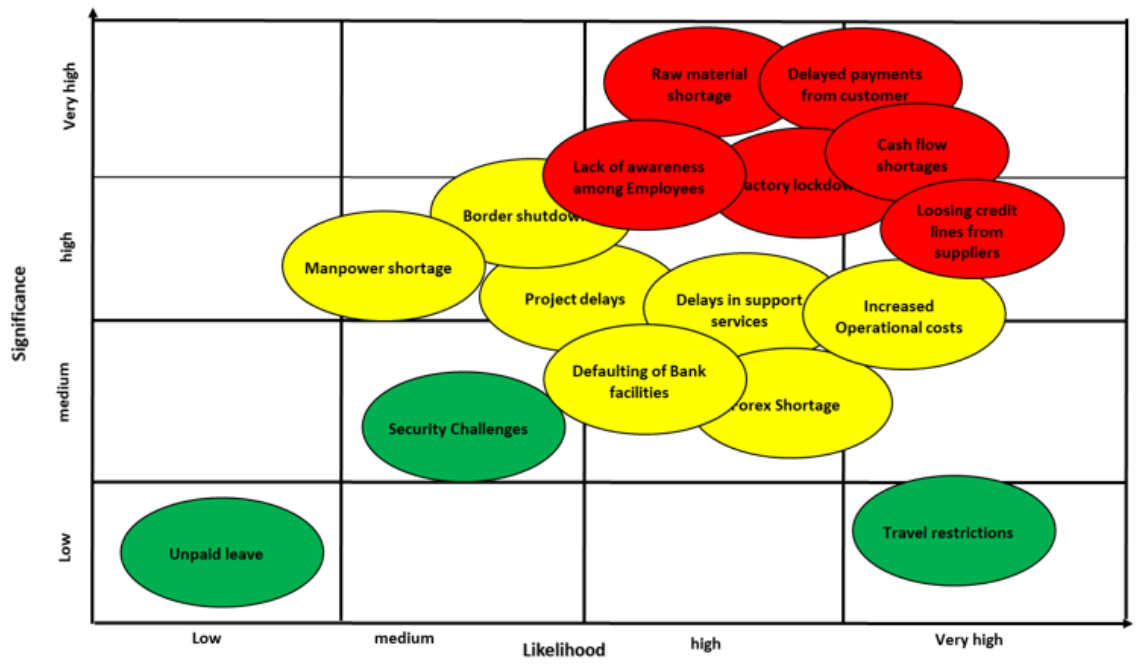
Results of a FMEA Analysis

Failure Mode	Severity	Occurrence	Detection	RPN
A	3	4	10	120
B	9	4	1	36
C	3	9	3	81

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Analysis & Evaluation Techniques



- Risk Severity Matrix
- Provides a basis for prioritizing which risks to address.
- Red zone risks receive first priority followed by yellow zone risks.
- Green zone risks are typically considered inconsequential and ignored unless their status changes.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Risk Treatment Techniques

Risk Mitigation

There are basically two strategies for mitigating risk:

- reduce the likelihood that the event will occur and/or
- reduce the impact that the adverse event would have on the product/project.

Avoiding Risk

Risk avoidance is to take necessary steps/actions to eliminate the risk or condition.

Although it is impossible to eliminate all risk events, some specific risks may be avoided.

Transferring Risk

Passing risk to another party is common; this transfer does not change risk.

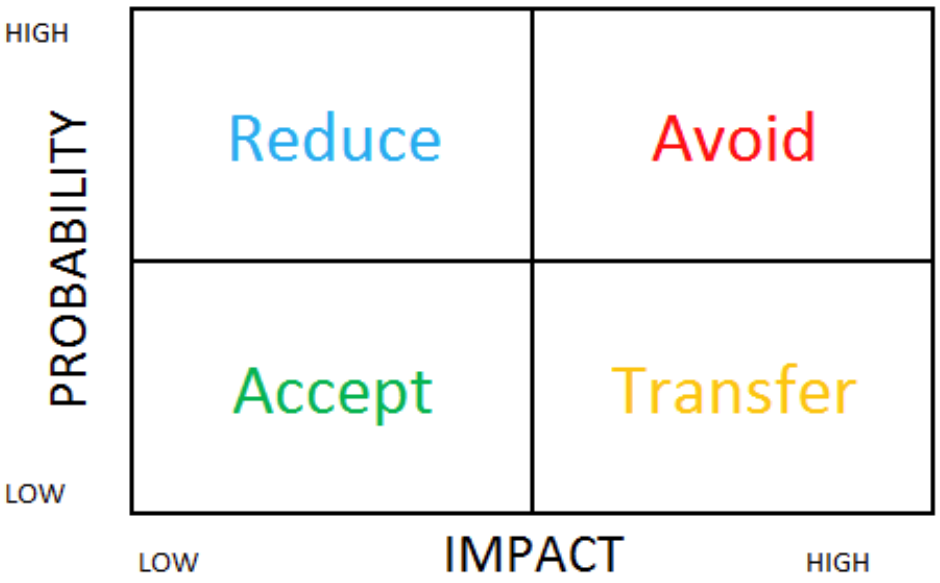
Passing risk to another party almost always results in paying a premium for this exemption.

Accept Risk

In some cases a conscious decision is made to accept the risk of an event occurring.

Some risks are so large it is not feasible to consider transferring or reducing the event (e.g., an earthquake or flood).

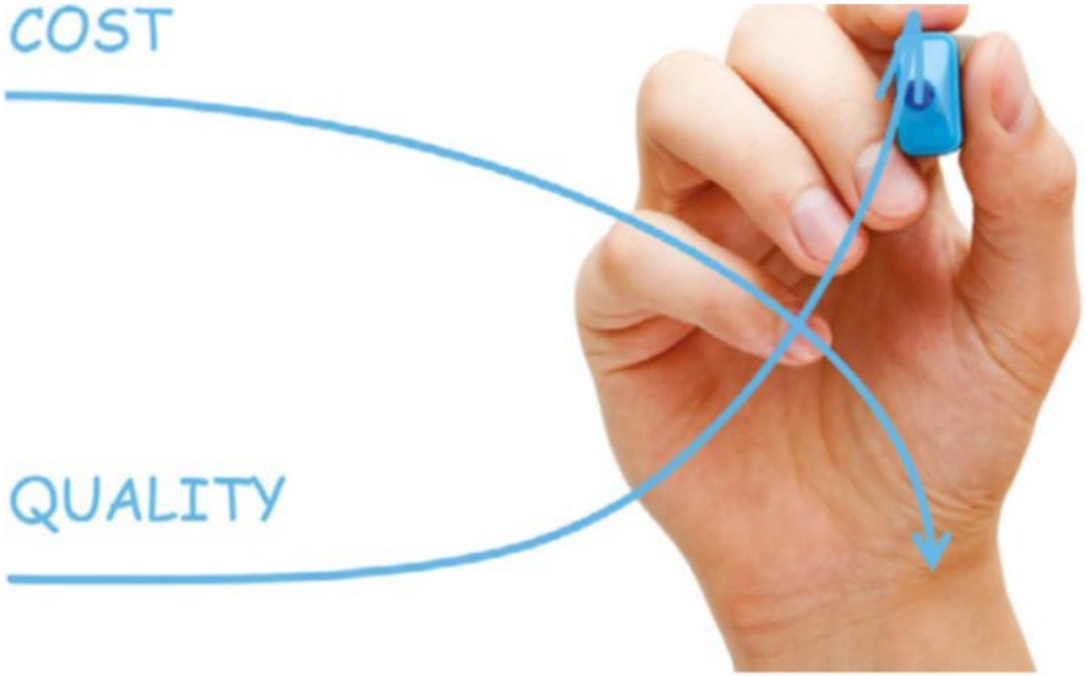
Develop Contingency Plans.



PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Cost of Quality (CoQ)



- In order to improve quality, an organization must take into account the costs associated with achieving quality since the objective of continuous improvement programs is not only to meet customer requirements, but also to do it at the lowest, possible, cost.
- The ever more challenging environment of industry requires absolute control of all costs, and Cost of Quality is one of the key indicators for company performance.
- As a tool to achieve Quality Excellence.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

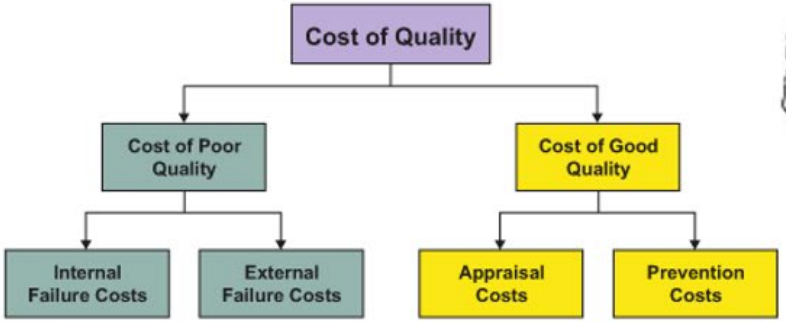
Cost of Quality (CoQ)

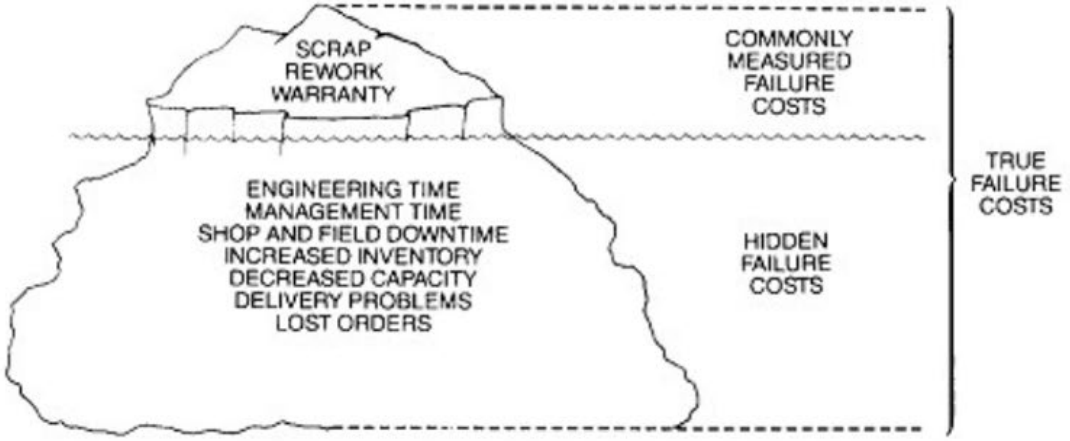
- Cost of Quality is the total expenses incurred by an organization in achieving and maintaining good quality as well as in managing poor quality throughout its line of operations with an aim of attaining the highest level of customer satisfaction.
- Effective use and implementation of Cost of Quality methodology enables an organization to:
  - accurately measure the amount of resources being used for Cost of Good Quality and Cost of Poor Quality.
  - determine where to allocate resources to improve product quality and the bottom line – Cost optimization.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Cost of Quality (CoQ) Parameters



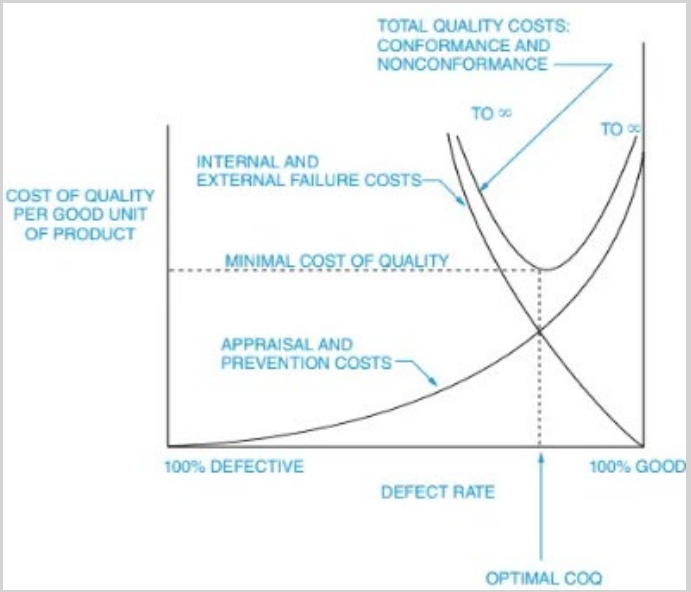


PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Prevention Costs

- costs incurred from activities intended to keep failures to a minimum. It is one of the investments of an organization to do things right, the first time.
  - Product Specifications, Standards etc.
  - Training
  - Equipment Calibration
  - Design Software
  - Procurement QC equipment
  - Risk Management
  - CAPA (Corrective and preventive action)



PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Appraisal Costs

- Costs that are associated with measuring and monitoring activities related to quality. These costs are associated with the suppliers' and customers' evaluation of purchased materials, processes, products, and services to ensure that they conform to specifications.
  - Product License/Test Reports from external laboratories
  - Quality Audits
  - Administrative expenses for QC Personnel
  - Maintenance cost of QC equipment
  - Test Samples

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Internal Failure Costs

Internal failure costs are incurred to remedy defects discovered before the product or service is delivered to the customer.

These costs occur when the results of work fail to reach designed quality standards and are detected before they are transferred to the customer.

Scrap/Rejects due to test failures

Rework/Rectification & Re-test costs

Machine breakdown due to improper maintenance

Costs associated with failure analysis & Corrective measures taken.

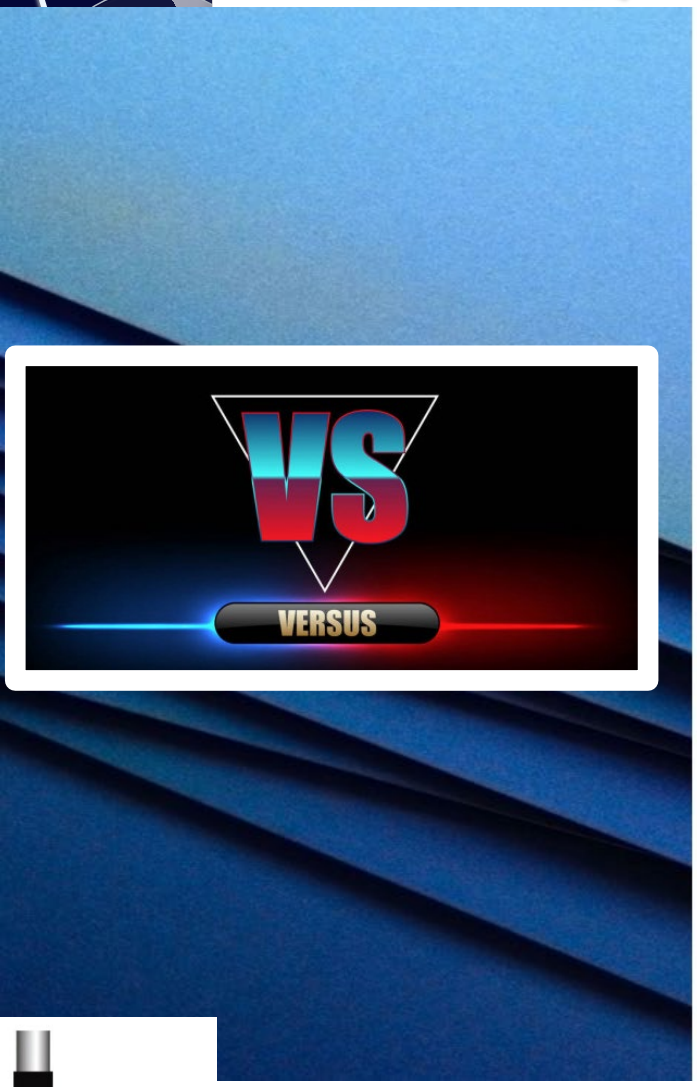
PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

External Failure Costs

- Costs associated with defects found after the customer receives the product or service.
  - Repairs and servicing: Of both returned products and those in the field
  - Warranty claims: Failed products that are replaced or services that are re-performed under a guarantee
  - Complaints: All work and costs associated with handling and servicing customers' complaints
  - Returns: Handling and investigation of rejected or recalled products, including transport costs.

CoPQ Cost of Poor-Quality Vs CoGQ Cost of Good Quality



Investments in preventive activities offer the best return: this is because the associated cost of poor quality increases exponentially as products move from manufacturing, to distribution and then to the end customer.

Cost of an error increases as we move ahead in manufacturing process.

A general rule of thumb to remember is 1/10/100, meaning that when compared to prevention activities costing, poor quality is:

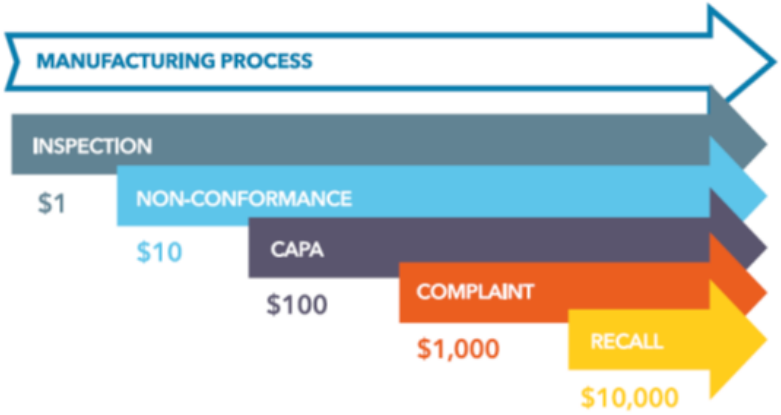
- 10 times costlier when identified during appraisal activities and internal failure
- 100 (and more) times costlier when identified after the product has shipped.

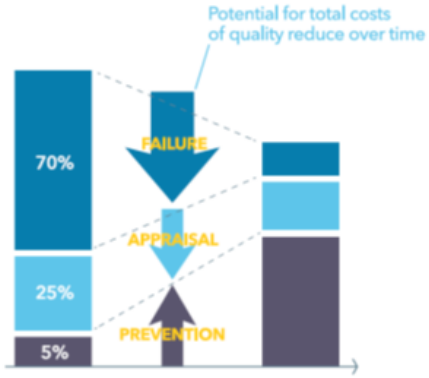
It always costs less to detect a fault at an earlier stage.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

CoPQ Vs CoGQ





- To reduce total Cost of Quality, the first reflex is often to reinforce appraisal costs. However, according to the 1/10/100 rule, 1 dollar spent on prevention is worth 10 spent for appraisal.
- In other words, it would be better to invest in prevention, as it costs less (even if Return on investment takes more time).
- So, investing in prevention saves money.

CAPA –Corrective and Preventative Action

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

CoQ Management

Define the Cost of Quality framework CoQ - Identify management and business needs (what do they want? What do they need?).

Define the Cost of Quality strategy:

First objective: Balance prevention and appraisal costs.

Second objective: Monitor impact of prevention costs on the total cost of quality to avoid falling into over-quality.

Define KPIs. Identify the Cost of Quality data you must collect. Select Cost of Quality tools (for analysis and visualization).

Design a robust organization. Clearly define a task force (*R&R).

Collect the data - Automatize and standardize data collection. Adapt frequency of data collection.

Clean the data - Define the right unity. Validate analyzed data. Compare data to reality and adjust.

Key Performance Indicator (KPI)
R & R- Number of units of Resource /Robustness of resource
*Design and Analysis of Robust and Adaptive Organizations

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

CoQ Management

Aggregate	Aggregate the data & Visualize - Define granularity. Ensure the data is meaningful. Provide a clear data overview (for executive and business levels).
Analyze	Analyze the data - Analyze across organizational levels from shop floor to senior management. Transform data to information.
Propose	Propose actions - Empower business and shop floor levels for action proposals.
Influence	Influence strategic or operational decisions - Include Cost of Quality metrics in business scorecard and project charters. Connect Cost of Quality metric to budget.
Measure	Measure Cost of Quality evolution (globally and in detail).
Improve	Continuously improve the process – Consider the global results of Cost of Quality. Disseminate Cost of Quality information to all levels in the organization.
Review	Regularly review implemented actions showing impacts on Cost of Quality model (from reactive to preventive).

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

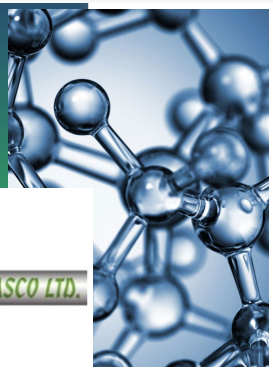
CoQ Analysis and Interpretation

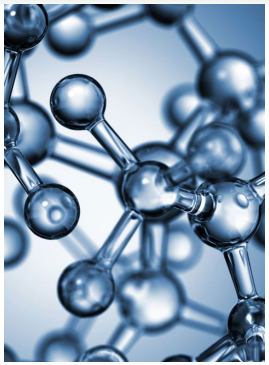
For top management, quality costs per sales turnover may be an attractive index. However, is not a good measure for short-term analysis, but they assist in making strategic decisions, which in turn, focuses on long-term outlook.

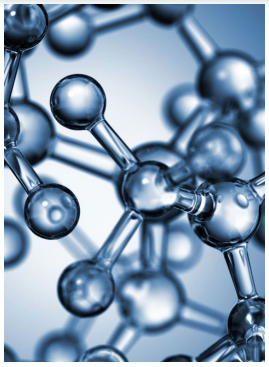
Sales values lag behind the production and are subject to seasonal variations. These variations prove to have an impact in the short run. However, they smooth out over longer periods of time. Also, a change in the selling price also affects this index significantly.

The index based on the Sales units are helpful to analyze against the quality costs. The following are a few examples as Sales based index:

- CoQ per Unit Sales tonnage
- % CoQ per Sales turnover







CoQ Benefits and Limitations

- Cost of Quality Management makes it possible to:
  - Persuade top management to initiate improvement projects (top management is more influenced by data expressed in monetary terms rather than technical data such as defect rates)
  - Incorporate all the separate quality activities into an overarching quality system and monitor performance across the organization
  - Provide a communicating bridge between line and top management
  - Identify the need for action to decrease costs of poor quality
  - Improve managerial planning, control and decision-making.

- CoQ analysis doesn't include the hidden costs that are related to Customer dis-satisfaction. Such costs may prove to be critical which needs further investment to collect and analyze.

PLASCO LTD.

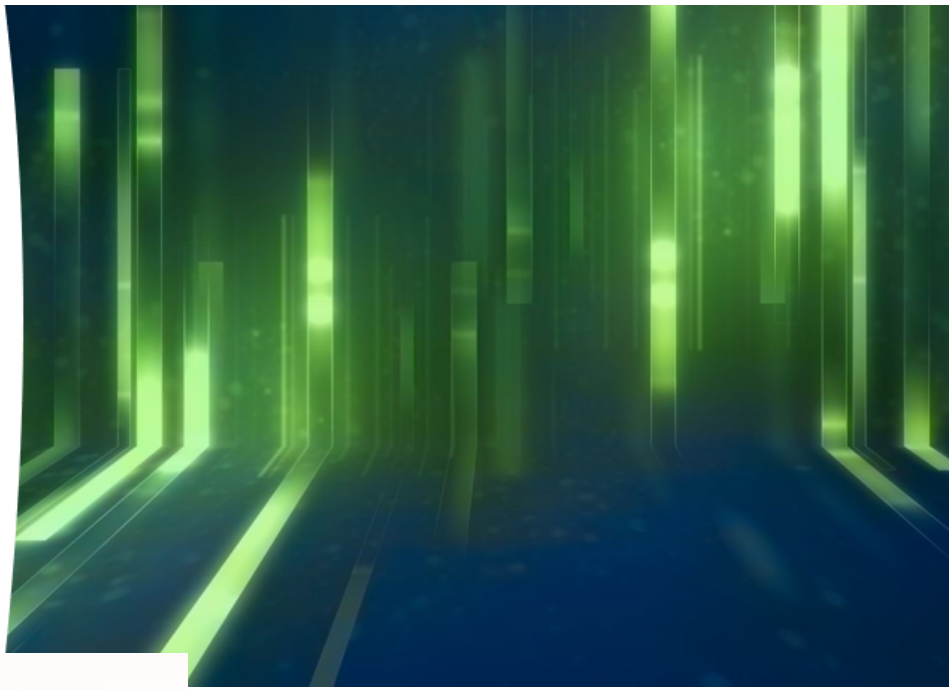
SAPPMA
southern african plastic pipe manufacturers association

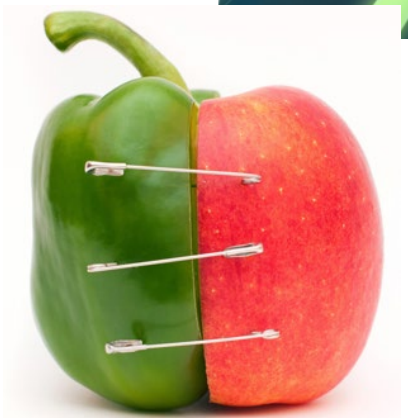
Combining Risk Management with QMS

The core of the new approach is the consideration of risk management as key activity, associated to all decisions, the goal being to prevent negative risks and exploit opportunities at all levels - from strategic management and change projects, to support and basic processes.

Such a system has proactive and systematic tools of identification, assessment and control of organization's quality problems and has as its purpose the continuous improvement of quality / performance.

It can be said that the integration of risk management methodology contributes to increasing the effectiveness of quality management, by emphasizing on the preventive nature of the decisions regarding strategies and measures for improvement.





PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Combining Risk Management with QMS

Risk management is done at all levels of QMS, at the organization's level, of processes and of change projects;

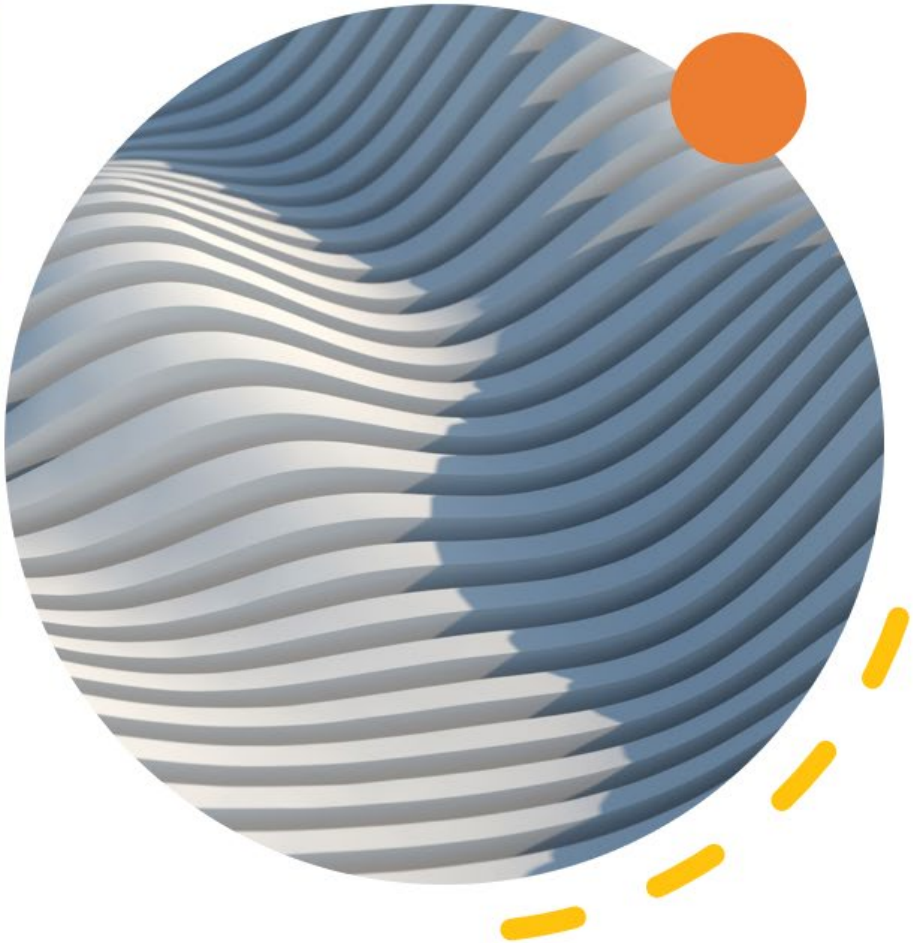
At the organization's level, responsibility for quality assurance and risk control is assigned to top management, for each of the two areas structures must be created / distinct functions appropriate to the organization's particularity;

Encouragement of teamwork is essential for solving complex problems of integrated quality-risk management; the teams include representatives of the processes analyzed and specialists in quality management and risk management;

At all levels, addressing risk is based on risk management methodology, which includes the following sequences:

- Establish the context; Risk assessment - risk identification, analysis, evaluation and prioritization; Risk treatment;

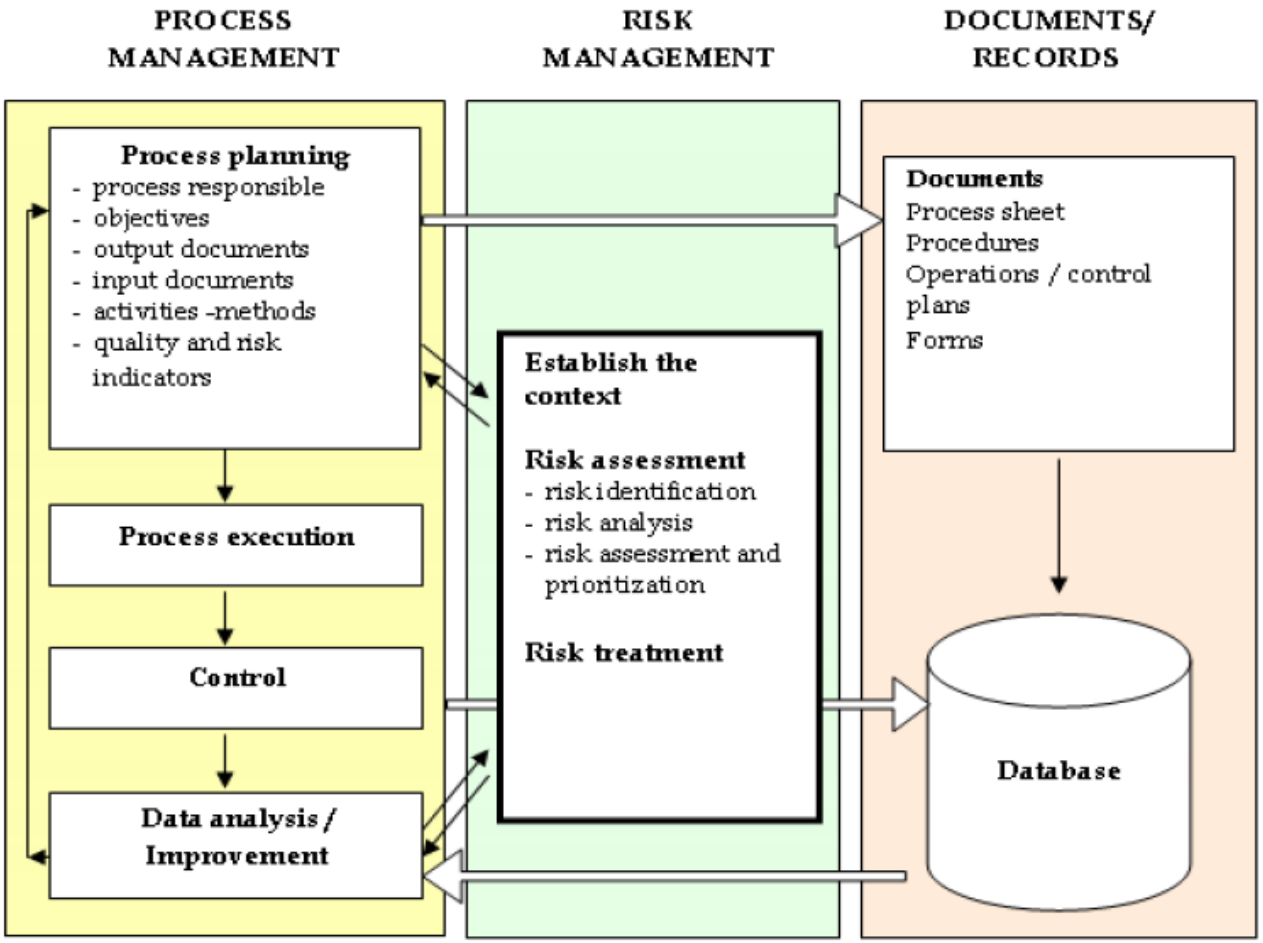
Applying the methodology is in connection with the activities' cycle of planning, execution, control and quality improvement (PDCA cycle or Deming's wheel), specific to quality management.



PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

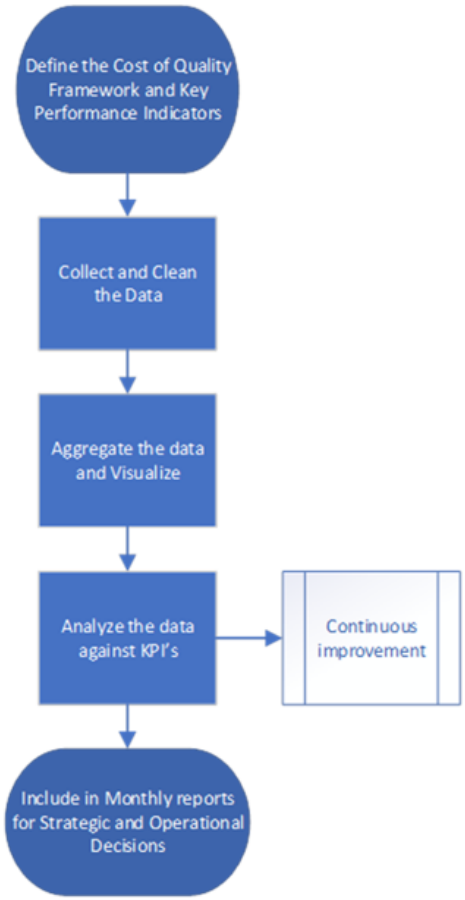
Combining Risk Management with QMS



PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Combining Cost of Quality with QMS



- Tackling the cost of quality goes beyond reducing the number of defects. It involves evaluating the entire quality management system.
- The implementation of quality costs calculation lead to exposure of the internal costs of discordance as well as evaluate the functioning of quality management system's efficiency in the Organization.
- The intention of implementing the Cost of Quality technique is to improve product quality while reducing cost.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Conclusive Remarks

- The integrated quality-risk approach represents a development axis for organization management that responds simultaneously to improvement requirements in the performance of quality management systems and successful implementation of risk management.
- CoQ reporting is beneficial at both the corporate and operational level.
- At the corporate level it gets management's attention and provides a benchmark against which financial improvement can be measured over time.
- At the operational level it helps to identify, prioritize, and select projects; provide financial benefits of process improvement and monitor project improvements.

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Conclusive Remarks – Synergies

PLASCO LTD.

SAPPMA
southern african plastic pipe manufacturers association

Questions and Answers

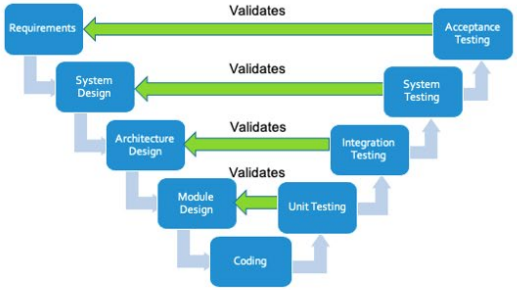
Saravanan Babu

25-05-2021

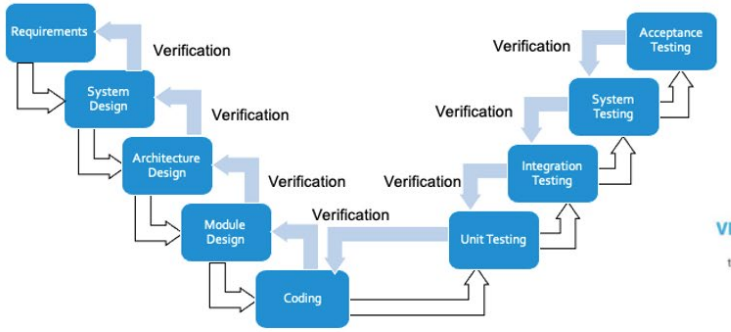
SAPPMA
southern african plastic pipe manufacturers association

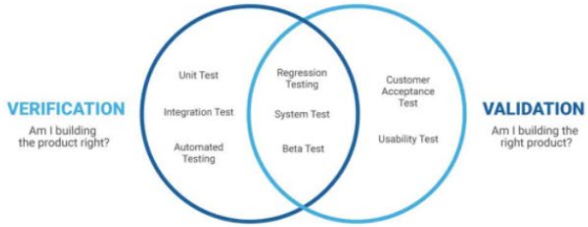
You Verify and Validate the flow

Verification	Validation
• Product meets the given requirements or not ? • Internal process; Done by Quality control dept. • Done in Control Quality Process. • If product meets requirements, it doesnt matter if it is not suitable for customer needs.	• Product meets the customer needs or not ? • External Process; Done by the customer • Done in Validate Scope process • Suitability to customer needs is important.



Verification, on the other hand, ensures that each stage is complete and done properly:





SAPPMA
southern african plastic pipe manufacturers association

SAPPMA
southern african plastic pipe manufacturers association

Participants
Audience
& Organizers

Questions and Answers

ian@sappma.co.za
admin@sappma.co.za

SAPPMA
southern african plastic pipe manufacturers association