Continuous Improvement and Assessing Quality Challenges

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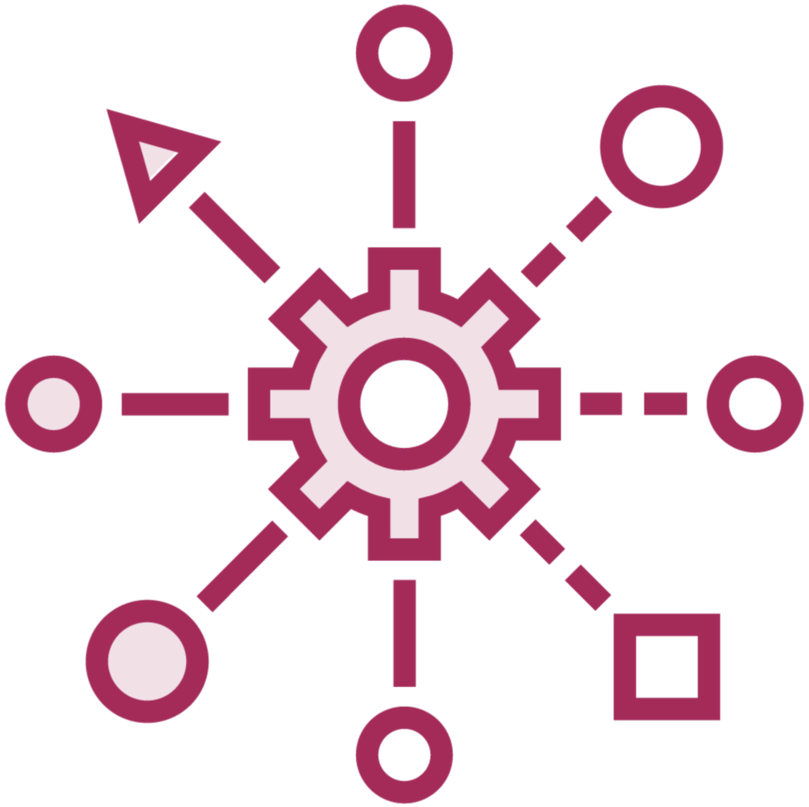
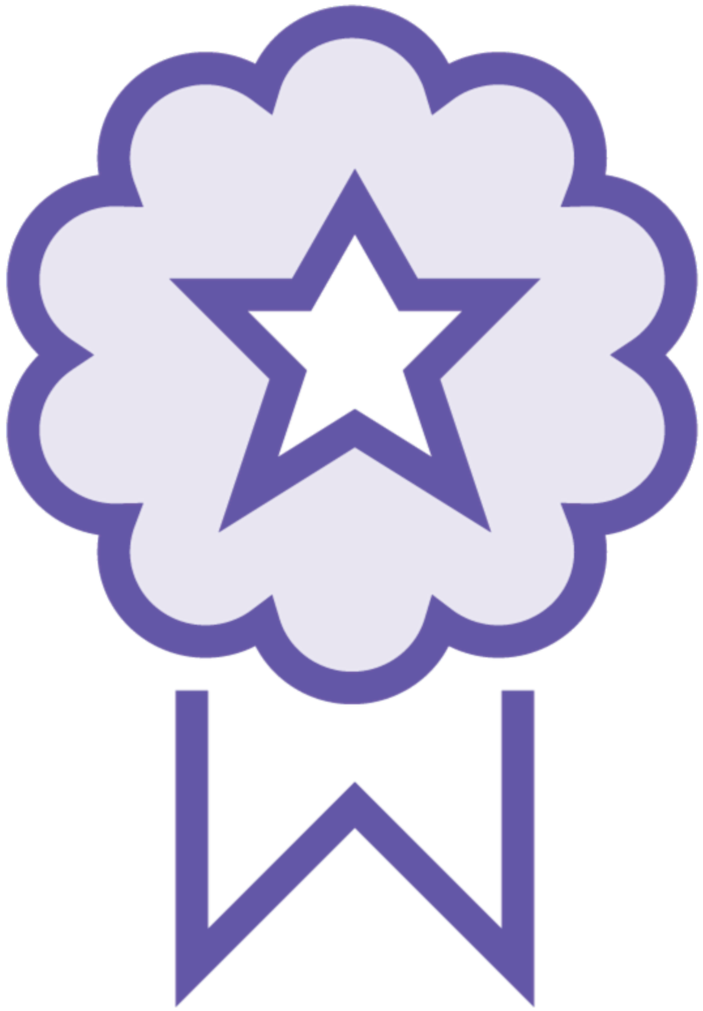


Managing Project Quality

Quality Visualization Methods

Quality Control in Project Initiatives

Continuous Improvement of Quality Management



Managing Project Quality

Managing Project Quality

Important for project manager to devise ways to measure performance

Information on project performance often comes from...

- Data sources
- Status reports
- Status meetings

Performance Dashboards

Often unwieldy to work with raw data sources

Creating **dashboards** can often help in determining areas of focus

Visual in nature; often uses colors to categorize performance information

Performance Dashboards

Sample Dashboard

•	Cost	Schedule	Requirements
Deliverable A			
Deliverable B			
Deliverable C			

Status Reports

Status reports share greater detail regarding progress than a dashboard can effectively capture

May be developed in lieu of – or for the purpose of – status meetings

Status Reports

Status reports typically include...

- Progress since last report
- Expected progress by next report
- Review of schedule, budget, and risk status
- Information on implemented and recommended changes
- Other pertinent information

Status Meetings

Status meetings allow project staff to coordinate and share information with project management

Status meetings including project sponsor, customer, and other key stakeholders also often helpful

Status Meetings

Particularly valuable in providing insight to issues that may not appear in data, or may not *yet* appear

Key opportunity to capture project issues for review and to discuss potential changes and additions

Status Meetings

Effective status meetings typically yield important items for follow-up

An **issues log** includes information about potential problems and risks

A list of **action items** indicates what should be followed up on after the meeting

Issues Log

Issue log should include...

- ID number
- Important dates
- Description of issue
- Reporter and owner names
- Impact rating
- Plan for action
- Current status

Key Performance Indicators

Essential to creation of effective dashboards and metrics

Must be measurable and relevant to project objectives

Key Performance Indicators

May measure cost, schedule or quality performance

May indicate how well project objectives are being met

Key Performance Indicators

Examples of quality KPIs:

Deliverables must vary from specifications by no more than +/- 5 millimeters

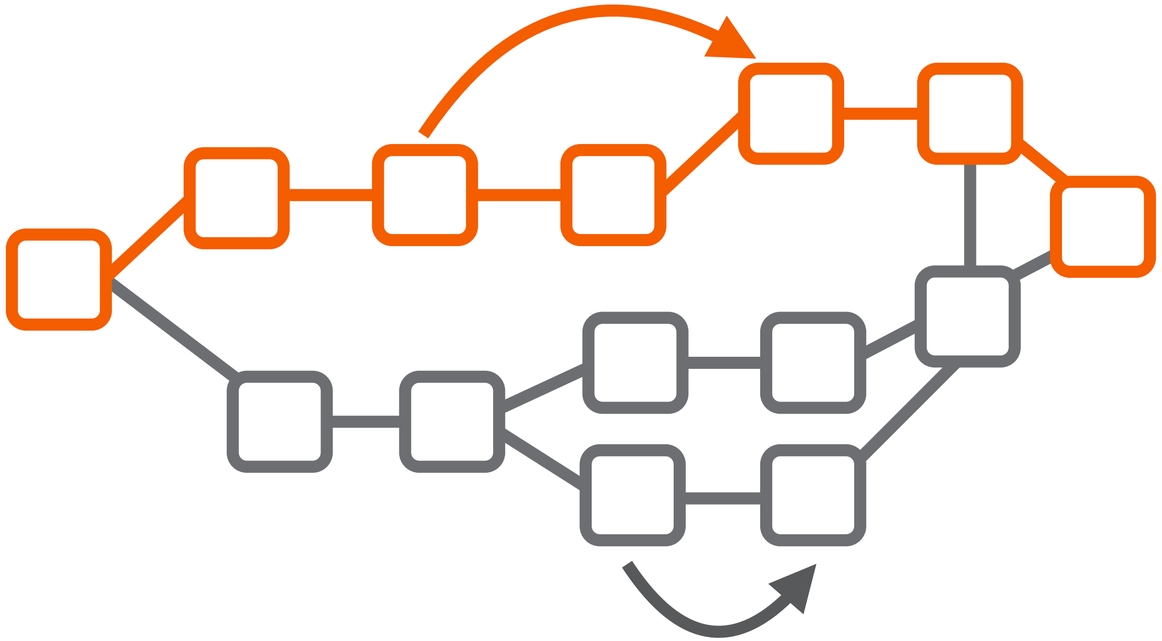
System uptime must exceed 99.9% over a 90 day test period

Quality Visualization Methods

Flowcharts/Process Maps

Displays sequence of steps and possibilities in a process or group of processes

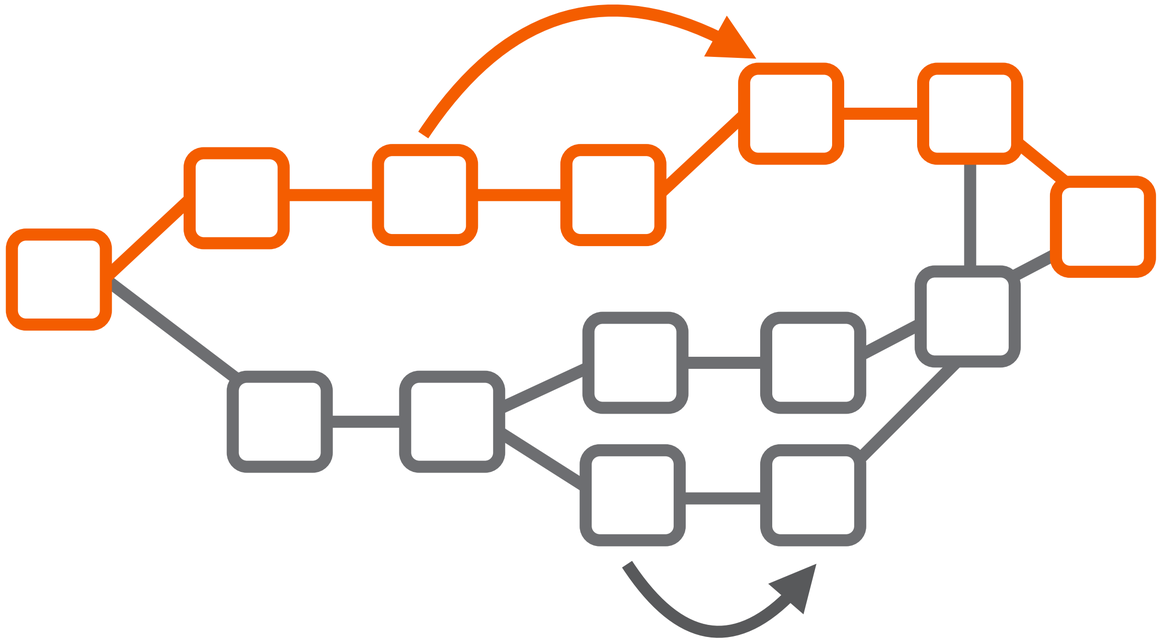
- Activities
- Decision points
- Branching loops
- Parallel paths



Flowcharts/Process Maps

Useful in...

- Understanding how work enfolds
- Estimating the cost of quality
- Determining where and how to measure quality



Logical Data Models

Visually represent data

Use business language to describe how data is accumulated, transformed, and utilized

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Matrix Diagrams

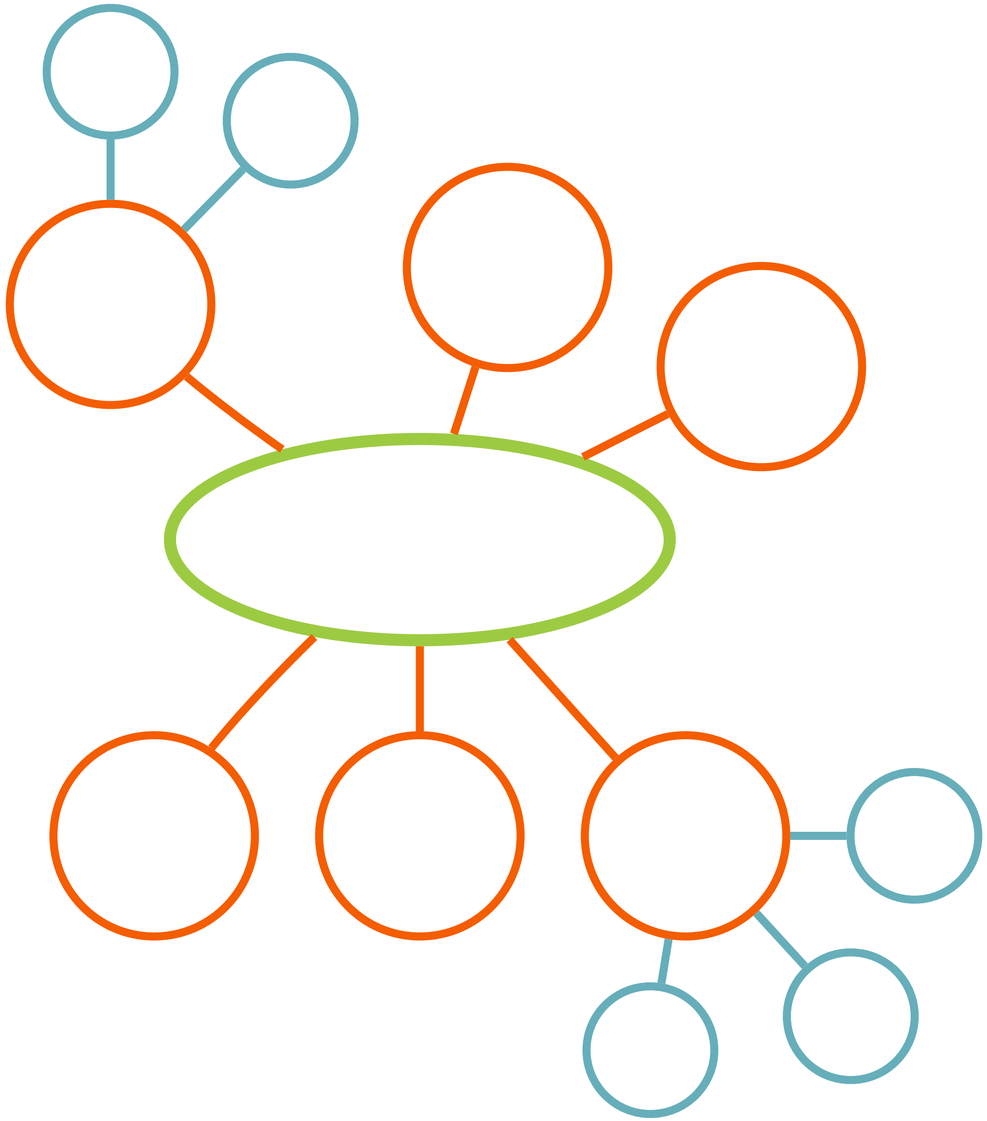
Express relationships between factors in a visual manner

May take a standard “L” or “T” shape, or may be more complex in nature

Mind Mapping

Visual method of organizing thoughts regarding a central idea

May assist in definition of quality requirements, constraints, dependencies, and relationships



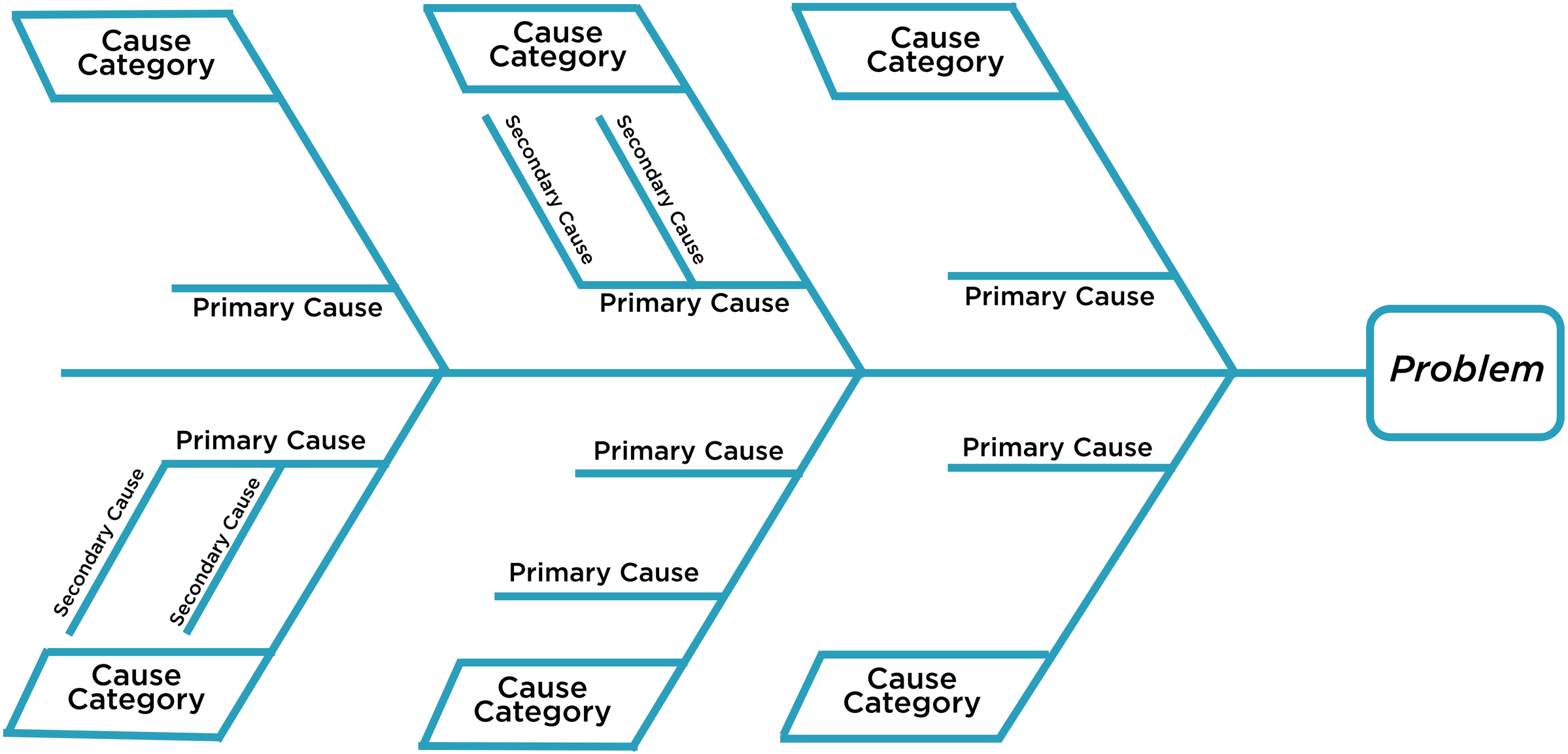
Fishbone Diagrams

Also known as cause and effect diagrams or Ishikawa diagrams

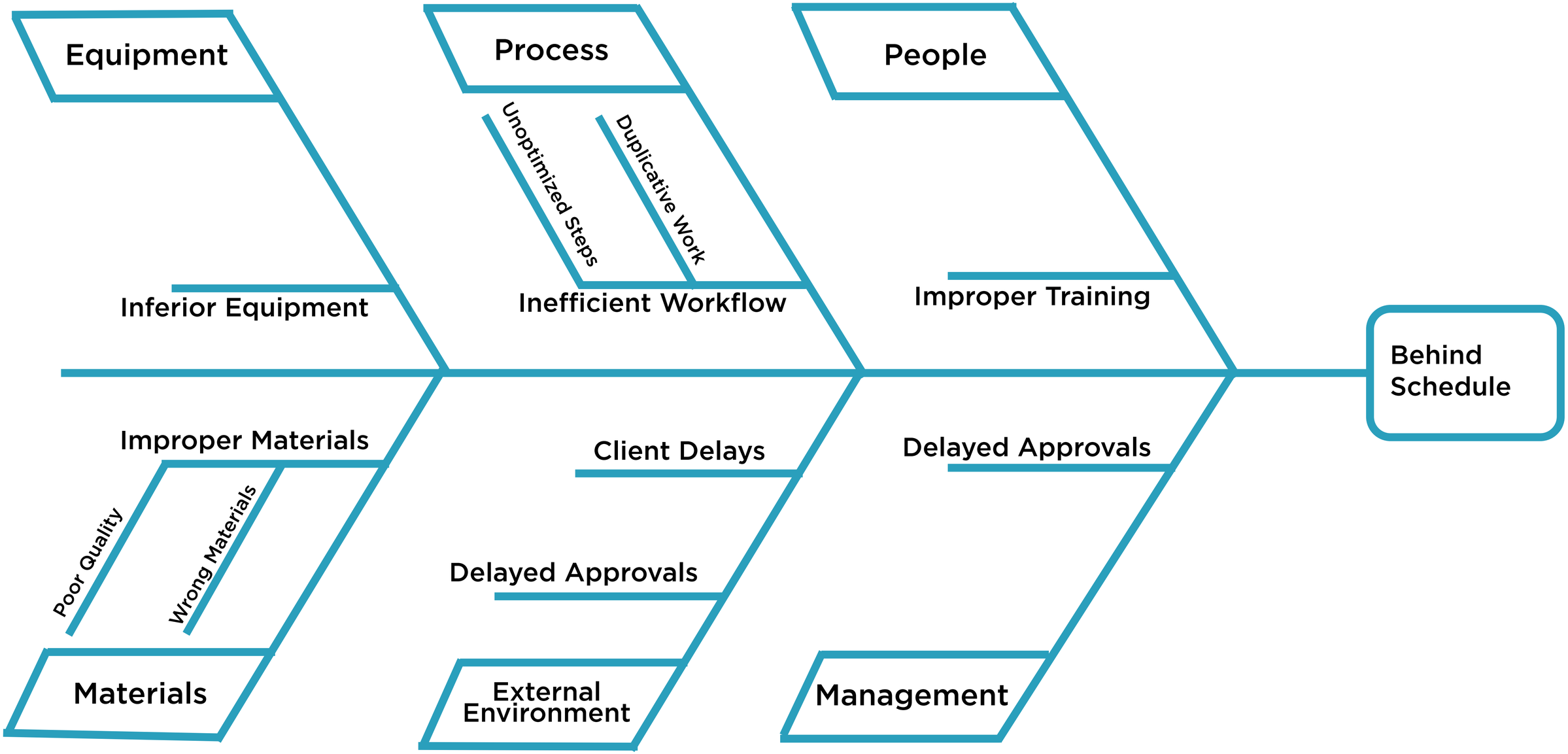
Traces problems back to the root cause

“Why? Why? Why?”

Fishbone Diagrams



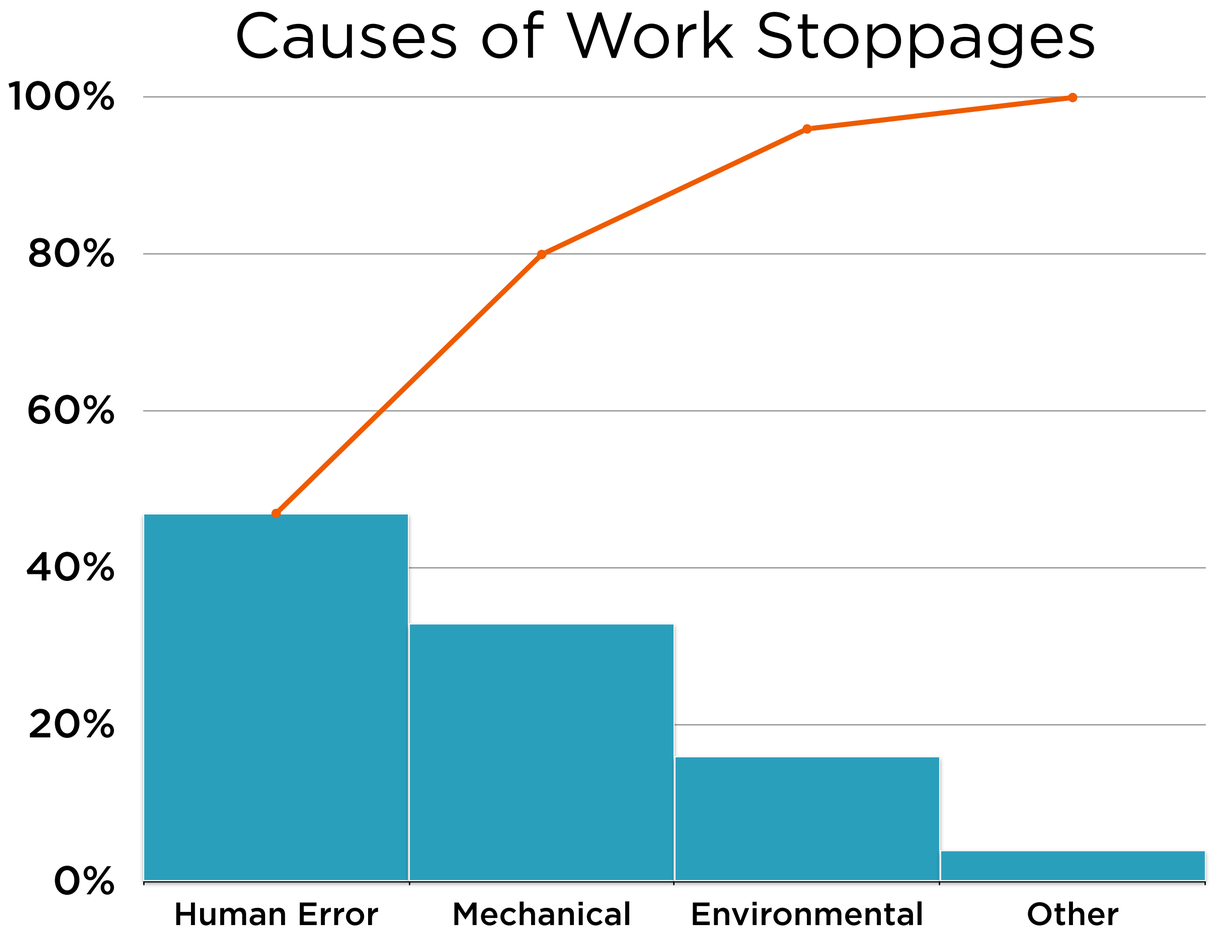
Fishbone Diagrams



Pareto Diagrams

The 80/20 rule identifies what sources account for most of a problem's causes

Helps identify which areas should be addressed

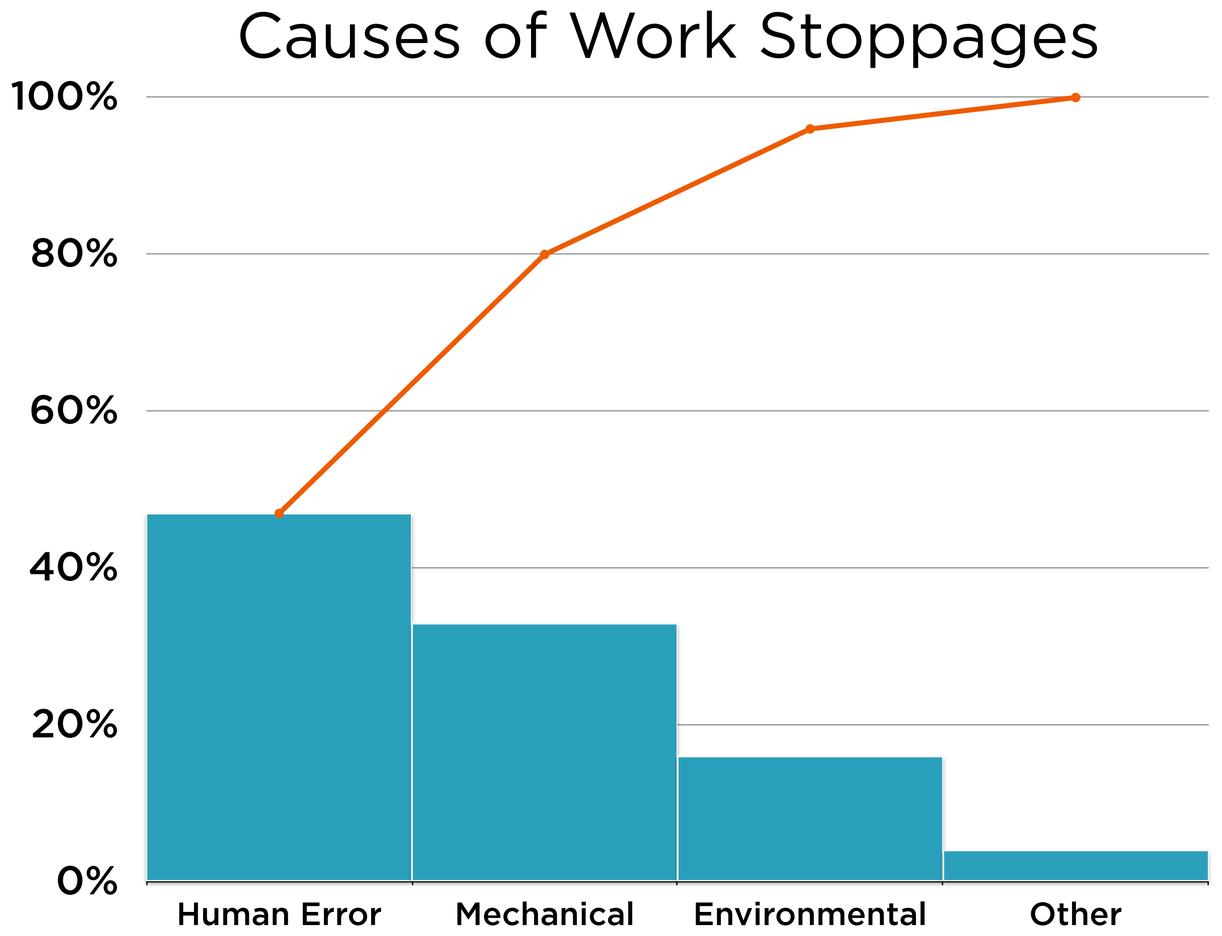


Pareto Diagrams

Special hybrid of bar and line chart

Bar graph: **Indicates proportion of individual causes to the problem**

Line graph: **Indicates cumulative proportion of causes to the problem**



Run Charts

Displays trends over time

Can be useful in judging project performance in a variety of respects

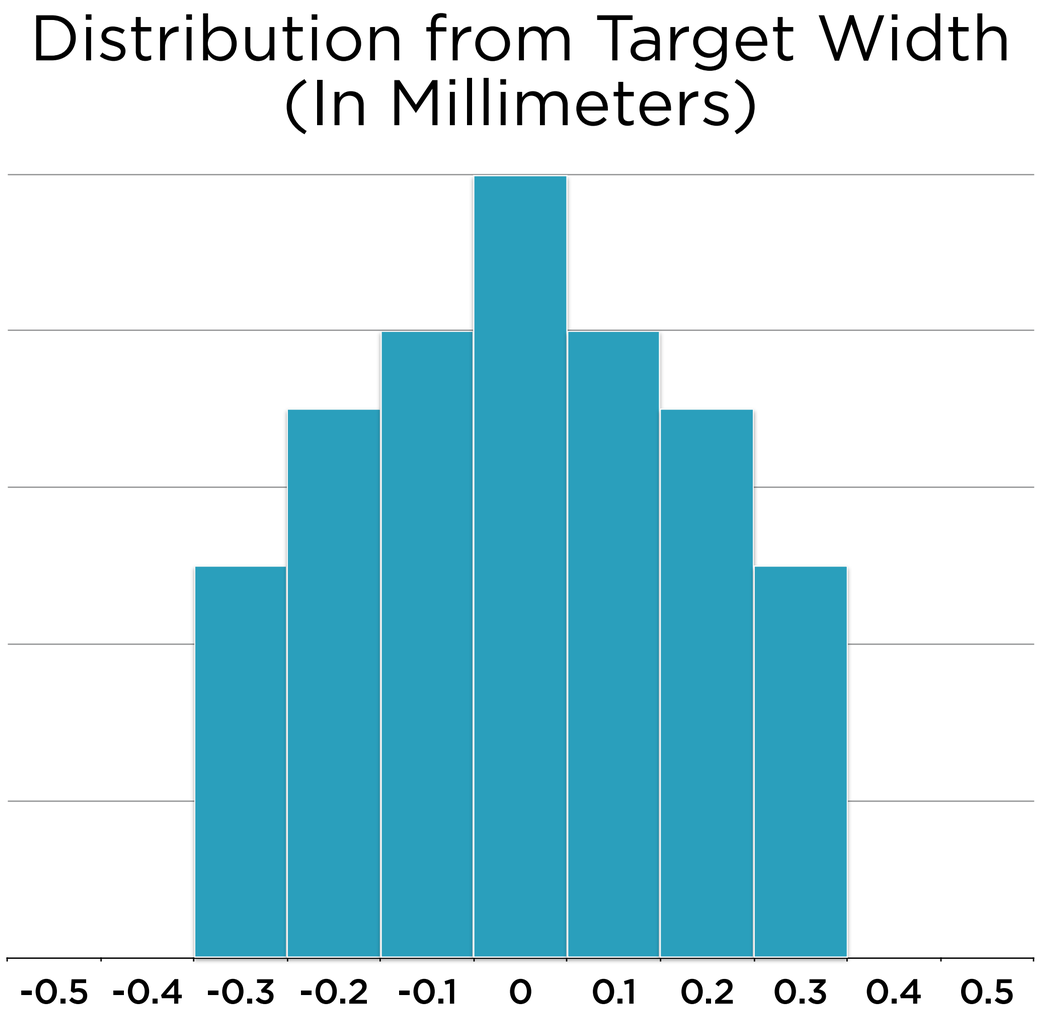
Histograms

Special form of bar chart

Represents a statistical distribution

Often broadly follows a bell curve

Useful in visualizing precision and accuracy, in particular

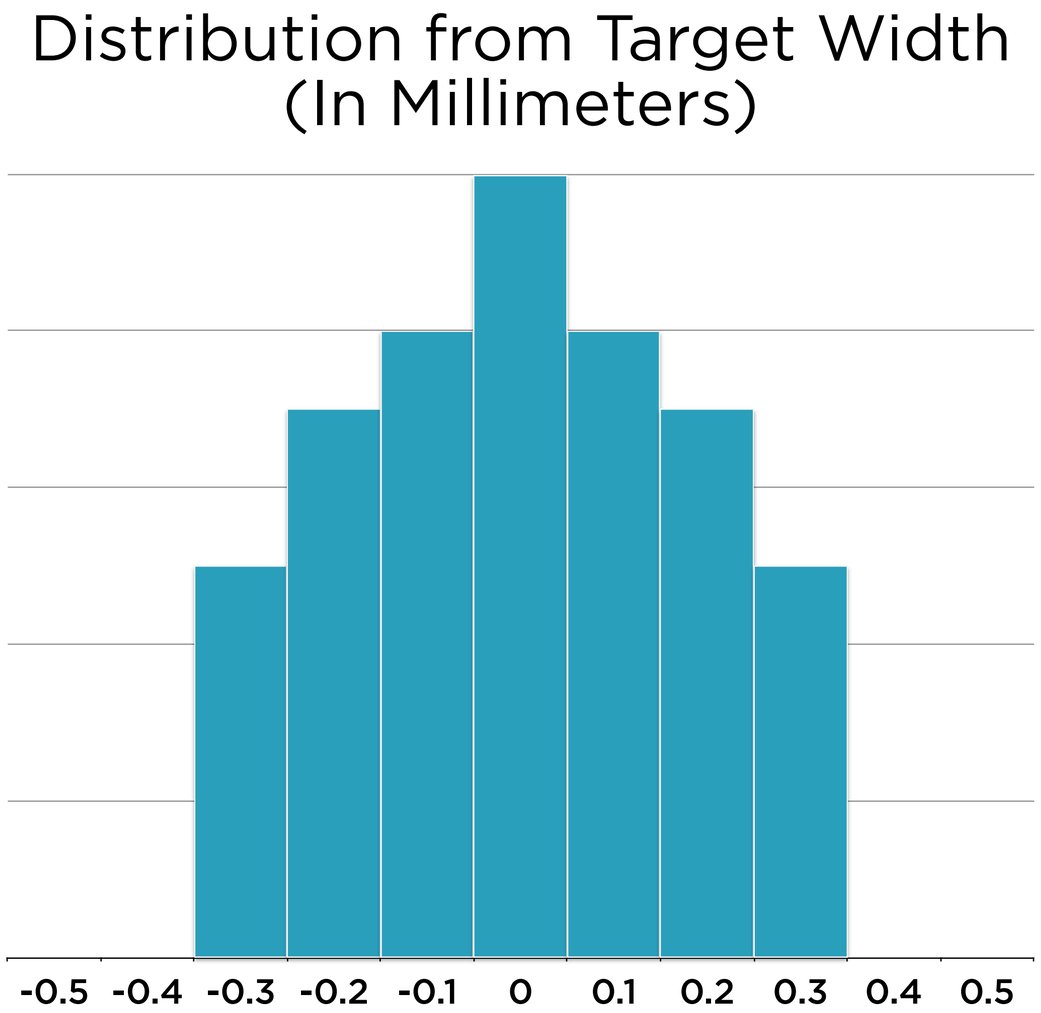


Histograms

Technical specifications:

-0.4 to +0.4 acceptable

Results within requirements, evenly distributed



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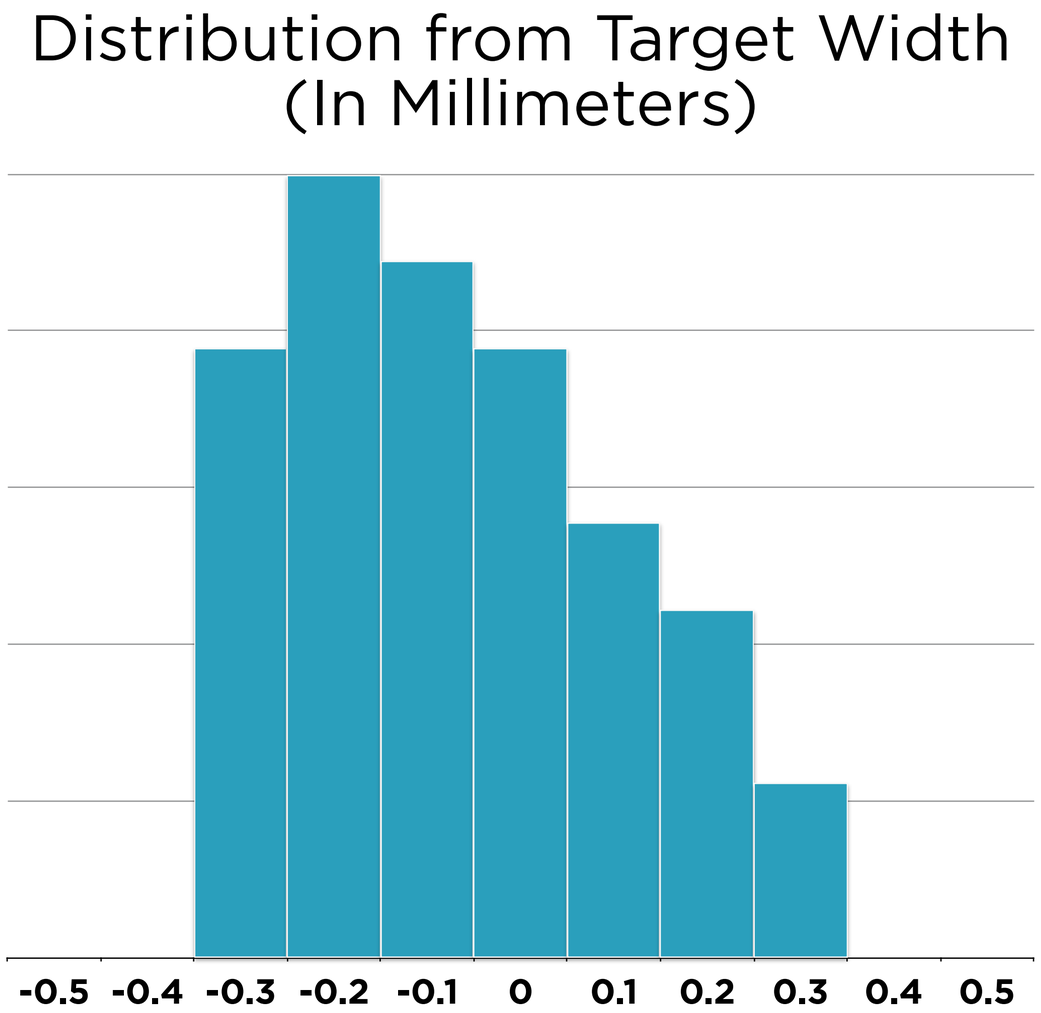
Results within requirements, should be investigated due to shape of distribution



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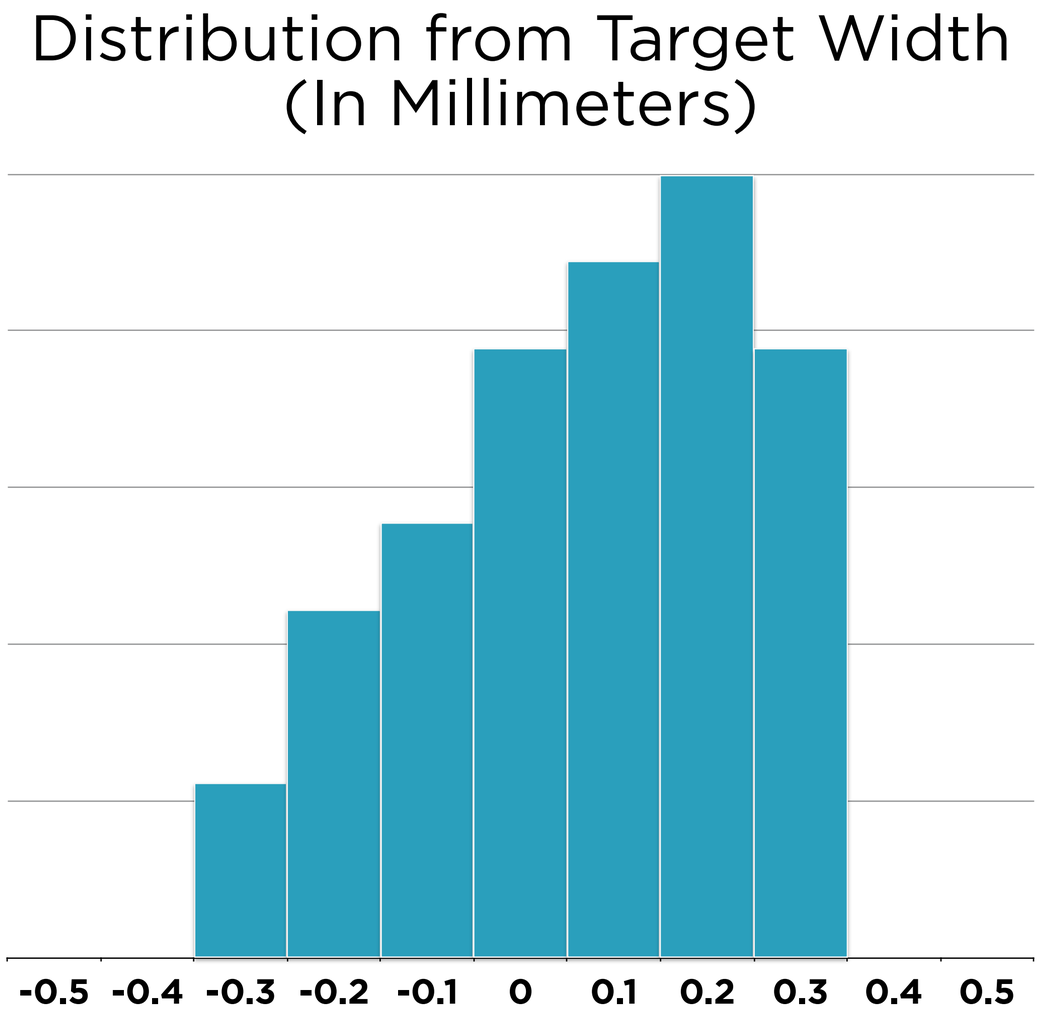
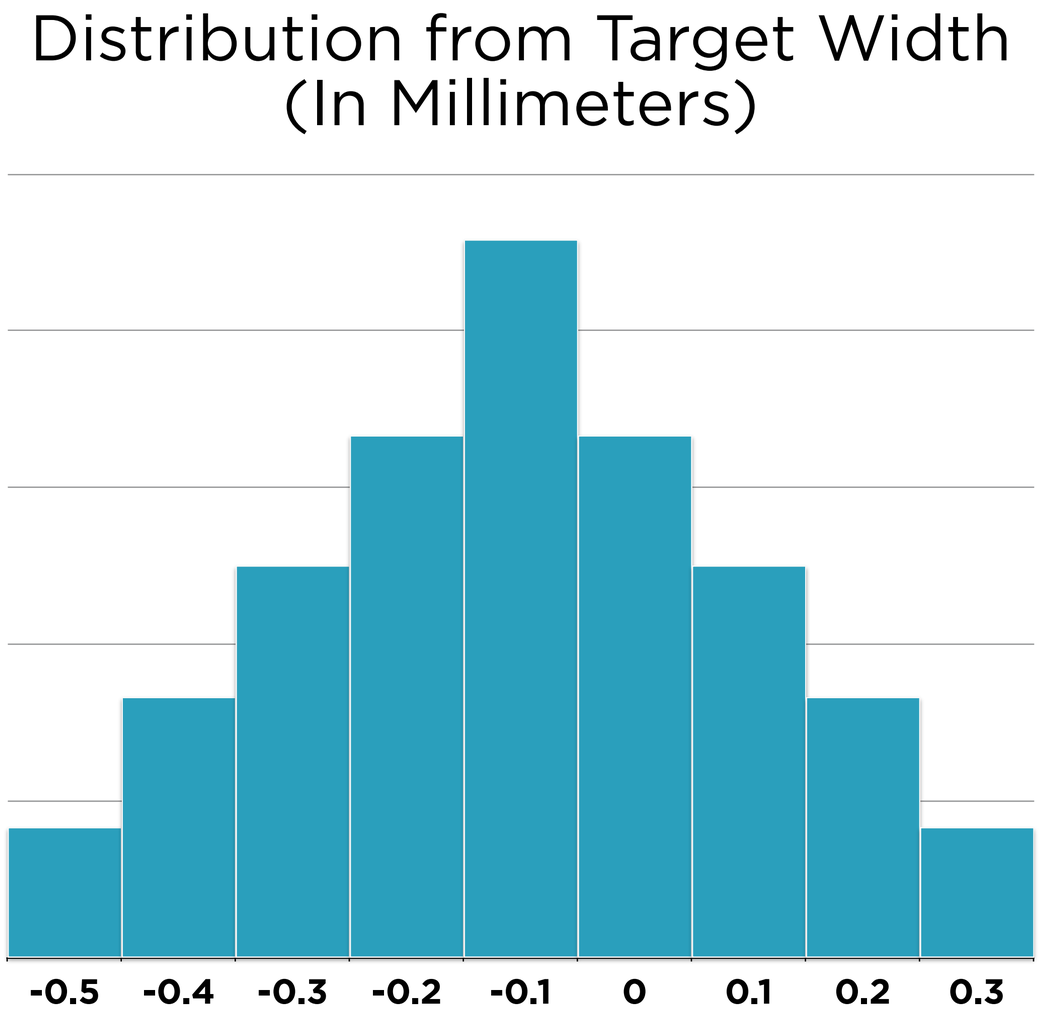


Histograms

Technical specifications:

-0.4 to +0.4 acceptable

Results outside of requirements, should be investigated despite normal distribution curve

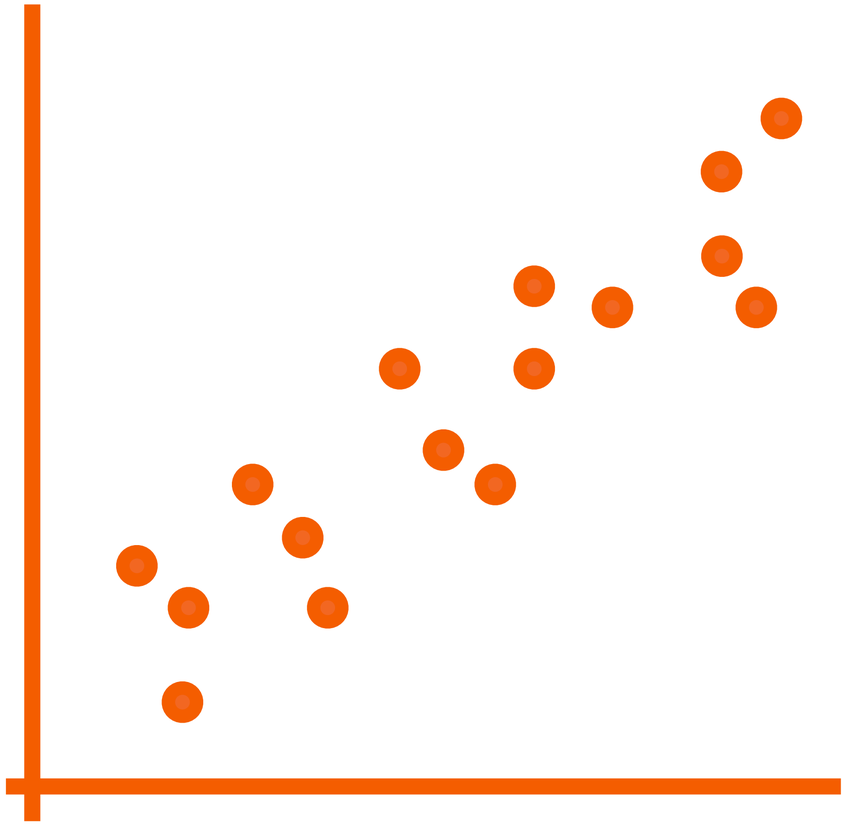


Scatter Diagrams

Also known as correlation charts

Measures how, and to what extent, two variables are related:

- Positive correlation
- Negative correlation
- No correlation



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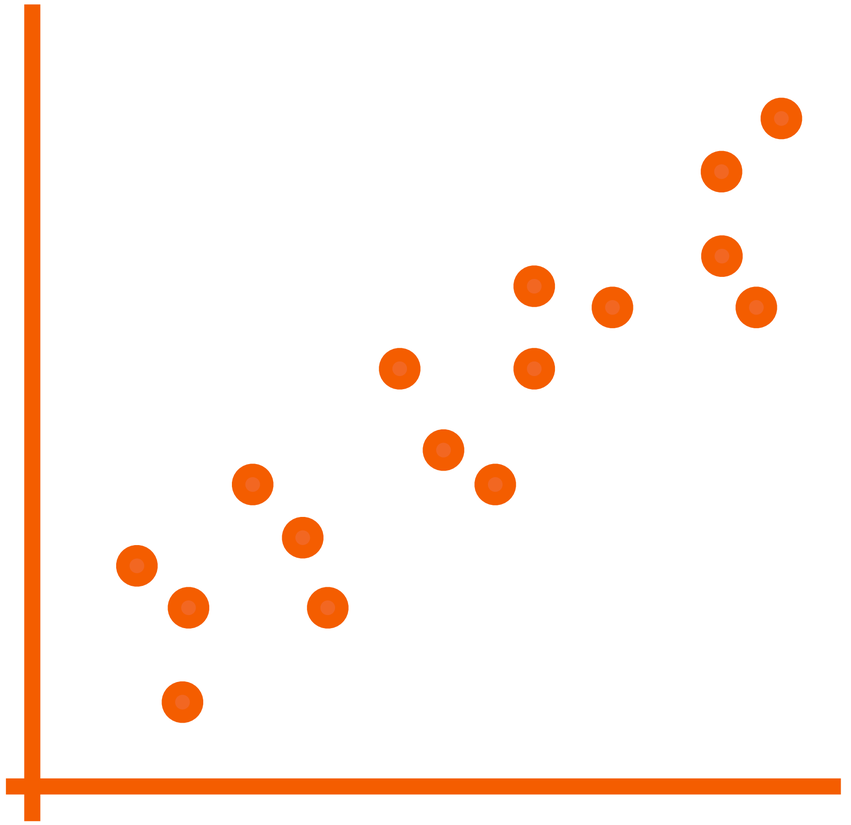

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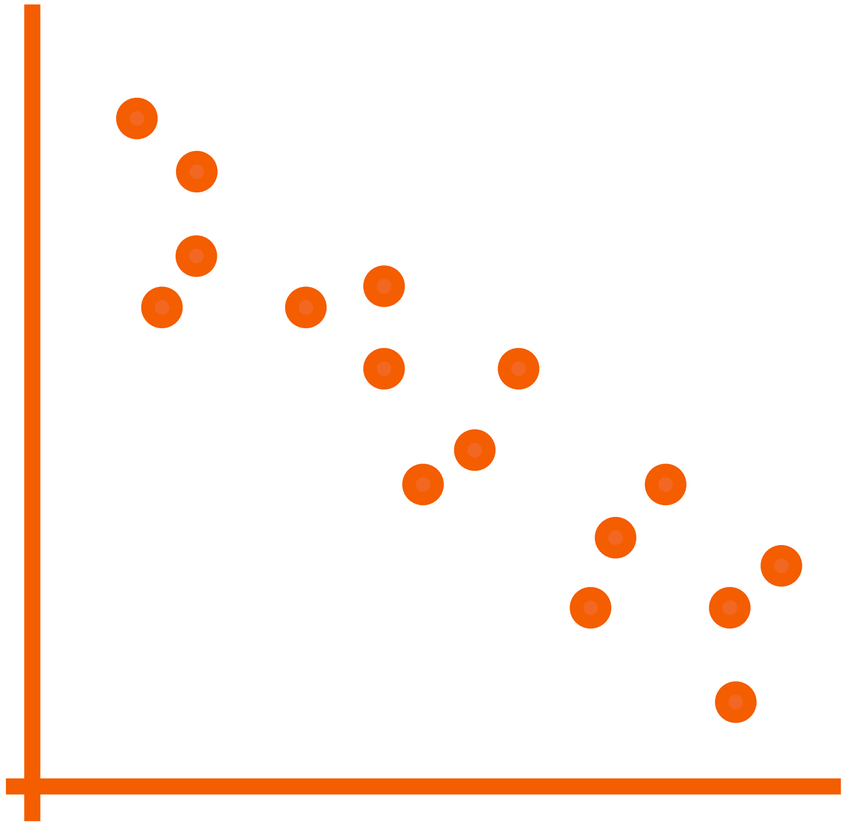

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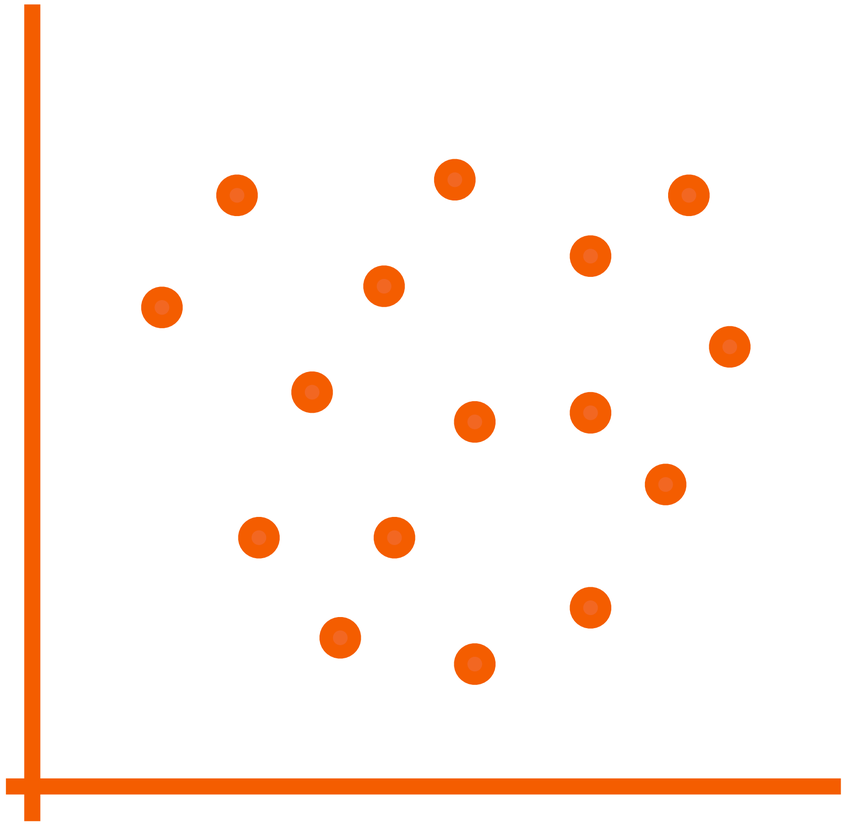
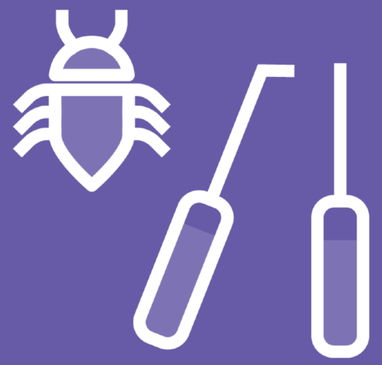


Quality Control in Project Initiatives

Quality Assurance

Helps keep problems from happening in the first place

Focuses on infusing a quality-focused mindset into project work



Quality Control

Roots out issues with quality that do occur

Validates that project deliverables meet quality requirements

The Language of Quality Control

Prevention

Keeps errors from occurring

vs.

Inspection

Finds errors that occurred

The Language of Quality Control

Attribute Sampling

Does or does not conform to standards

vs.

Variables Sampling

Conformance is rated on a continuous scale

The Language of Quality Control

Tolerances

Range of
acceptable results

vs.

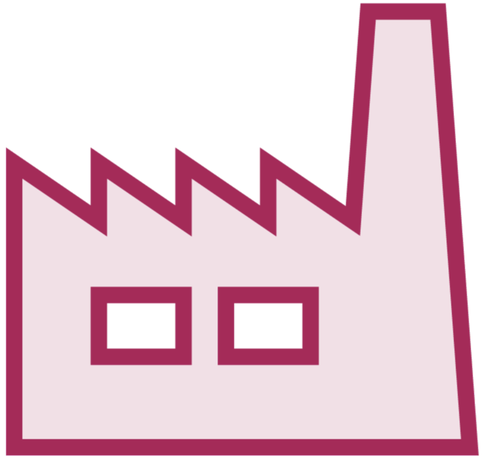
Control Limits

Typical statistical
range of variation

Audits and Quality Control

Identify gaps and nonconforming work

Capture best practices



Convey industry standards

Identify need for assistance

Checklists and Quality Control

Facilitate confirmation that...

Procedures have been followed

Requirements have been met

Checksheets and Quality Control

Also known as tally sheets

Used to catalog attributes data during inspections

Frequency and type of defects/issues found most typically cataloged

Statistical Sampling

Involves close inspection of a random subset of a population

example: *Inspecting 50 out of 1,000 identical parts*

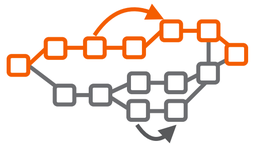
Balances time/cost realities with quality-related needs

Questionnaires and Surveys

Useful in learning about customer satisfaction after project components are delivered

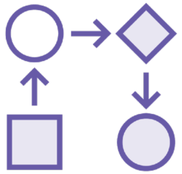
Valuable in guiding ongoing development efforts

Ensuring Solutions Meet Needs



Aforementioned techniques like fishbone diagrams may help identify problems and potential solutions

Solutions may be related to project processes or to nonconforming or inadequate results



Coherent change control processes help ensure efficiency and quality

Technical debt of poor quality may necessitate refactoring, more robust testing, and reconsidering the definition of done

Ensuring Solutions Meet Needs

Solution is delivering targeted value

Continuous improvement and refinement efforts

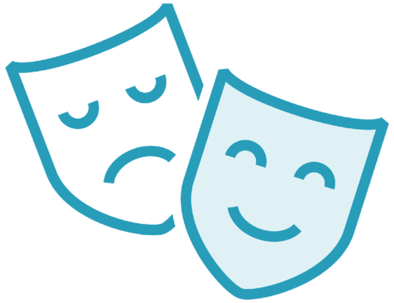
Reassess regularly

Solution is delivering insufficient value

Continue work
Make changes
Cancel work

Continuous Improvement of Quality Management

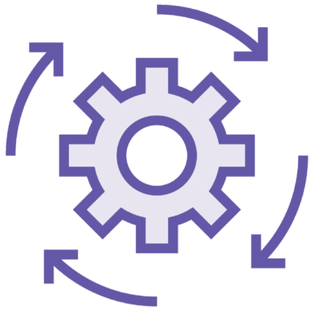
Continuous Improvement



Customer feedback: Definitive measure of success and also of usefulness of metrics

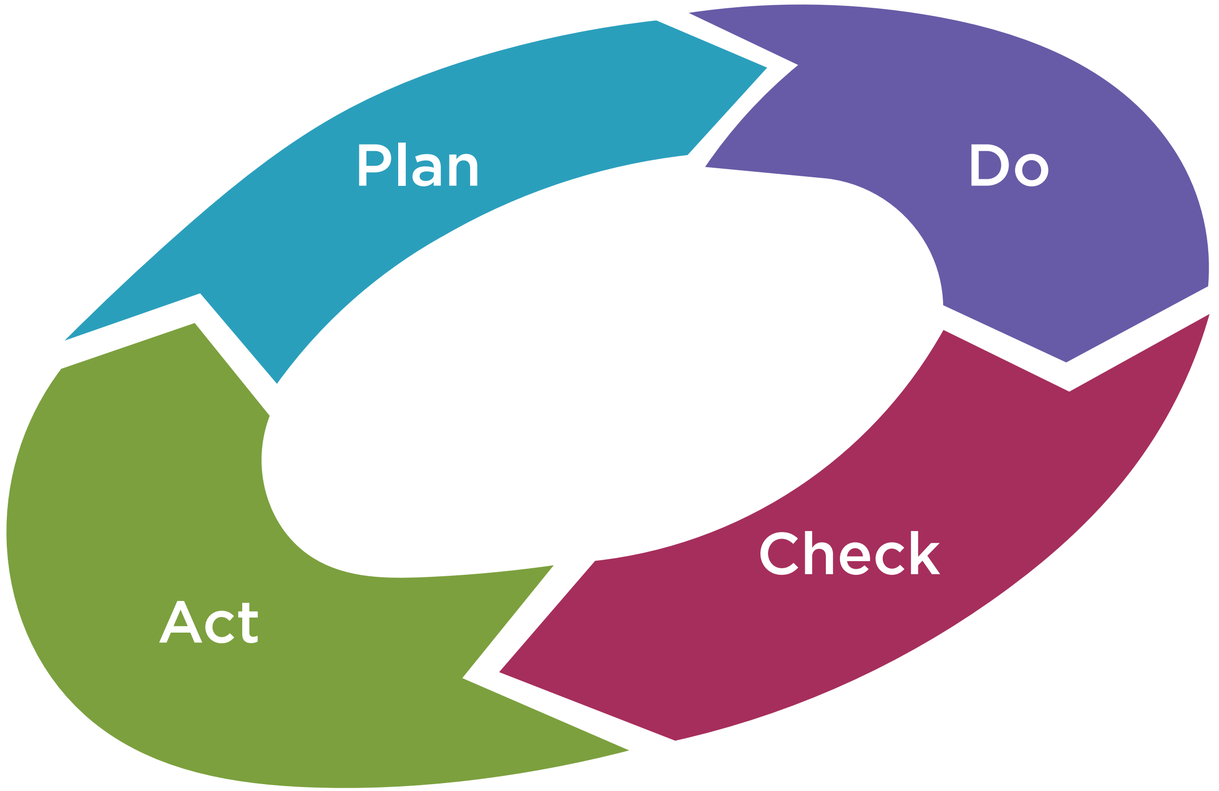
Team Commitment: Culture of commitment is essential to continuous improvement

Partner Relationships: Long-term, mutually beneficial partnerships nurture quality

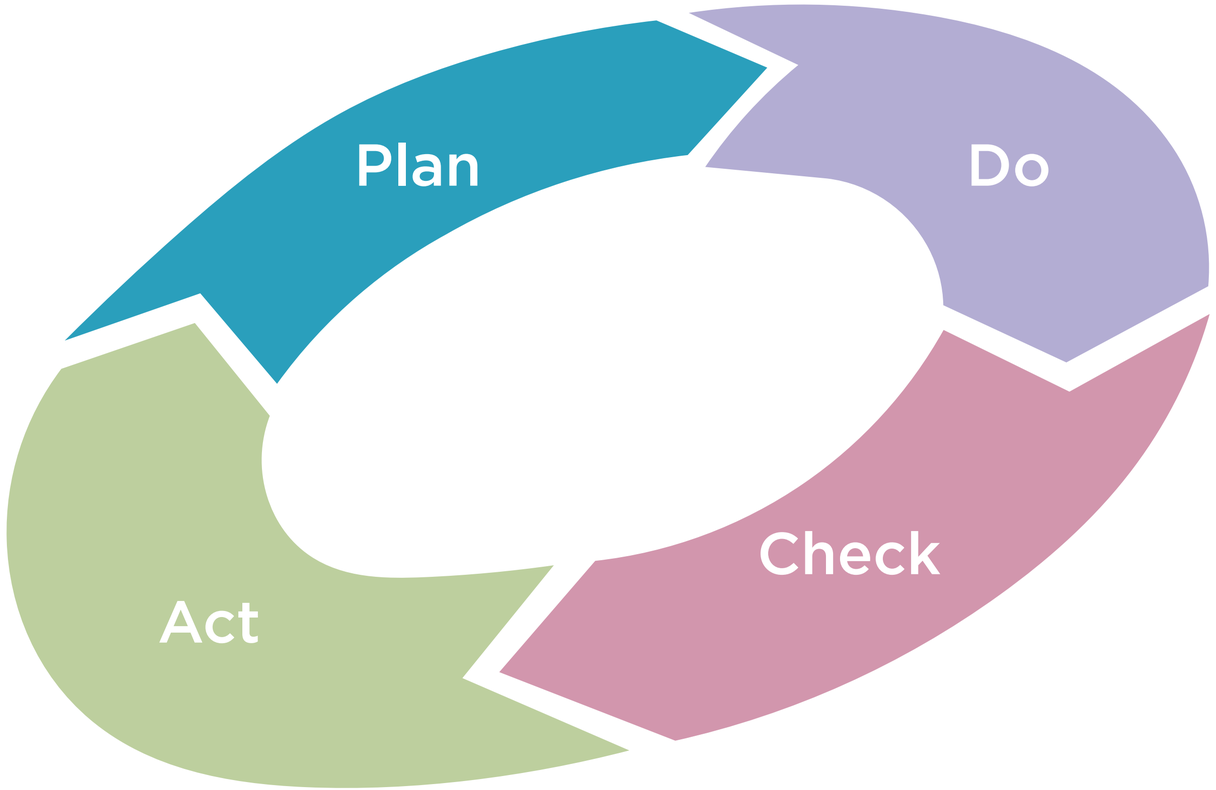


Improvement Initiatives: Six sigma, total quality management, and other methodologies facilitate improvement efforts

Continuous Improvement



Continuous Improvement

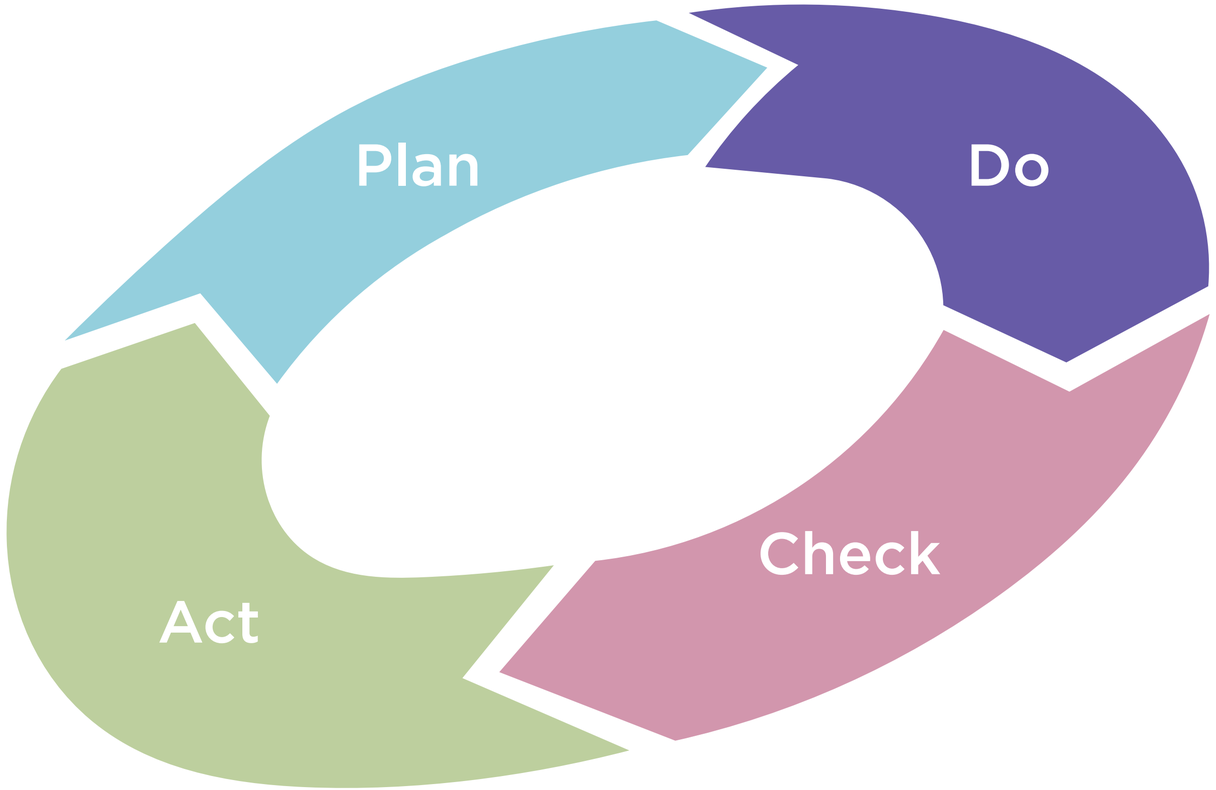


Plan project work

Determine project objectives and processes

Set expectations

Continuous Improvement

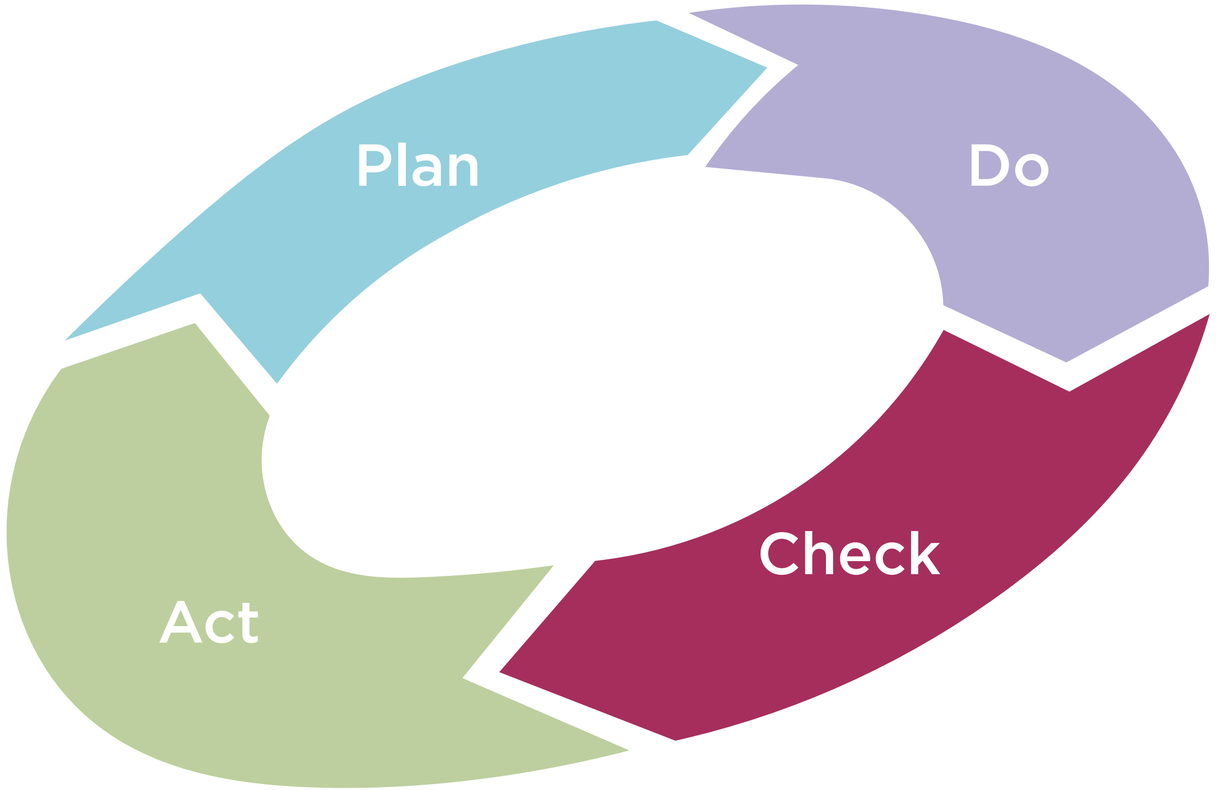


Do project work

Complete project objectives

Collect data along the way

Continuous Improvement

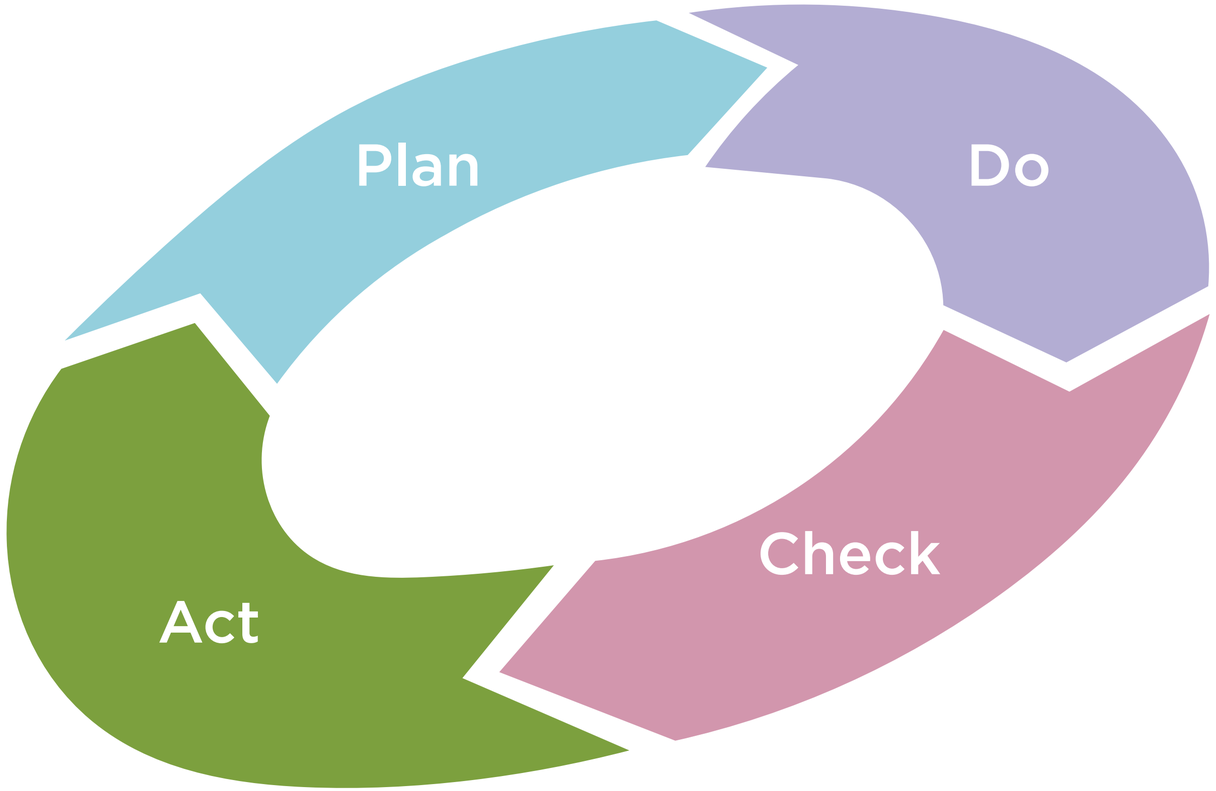


Check project work

Compare actual results to expectations

Determine if plan is effective in helping achieve objectives

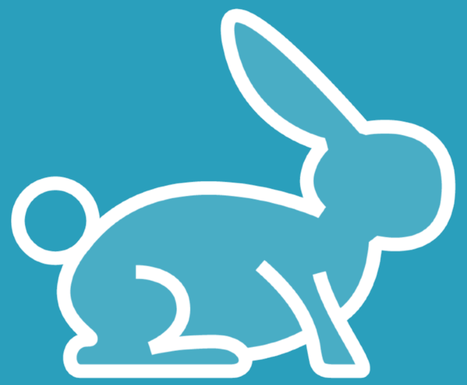
Continuous Improvement



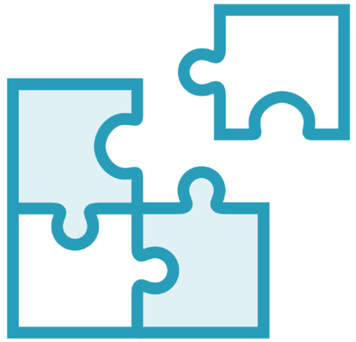
Act on your findings

If latest cycle is an improvement, it becomes the new baseline

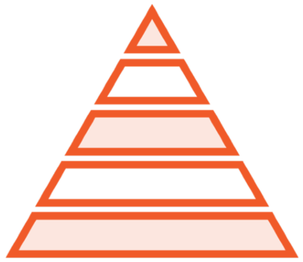
If latest cycle results in no change or a negative result, revert and correct baseline



Agile Quality Management

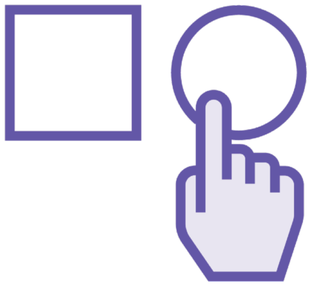


Integrate work often: Progress must be tested as part of the whole, not only on its own



Test at multiple levels: Analyze performance in a vacuum, within the solution, and more broadly

Test-driven development: Automated testing and predefined criteria facilitate ongoing quality assessment



Spikes and bakeoffs: Allow teams to intentionally pause to determine the best path forward

Takeaways

Dashboards and status reports ensure project leaders remain aware of performance and quality

Status meetings can alert leaders to quality issues not yet apparent in data

Issue logs and well-defined action items help ensure quality matters are addressed

Takeaways

Flowcharts, fishbone, and Pareto diagrams help identify where problems or risks impairing quality may exist

Data models, matrix diagrams, and mind maps help illustrate the relationship between various project components

Run charts, histograms, and scatter diagrams illustrate project performance

Takeaways

Quality control involves finding quality issues and validating deliverables meet requirements

Control efforts can lead to lessons learned and better processes

Regular reassessment is necessary for quality control to be effective

Takeaways

Customer feedback, team commitment, partner relationships, and various methodologies drive continuous improvement

Agile teams can verify quality results often through a variety of testing protocols

Congratulations!

Recommended Next Steps:

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Managing Risks in Project Environments

Agile Transformation for Leaders

Procurement Management in Project Environments

Agile Transformation for Team Members

Coordinating with Remote Teams

Casey Ayers
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Casey has experience leading projects, analyzing challenges, and designing solutions in many fields, including healthcare, digital media, mobile app development and education. He's always in pursuit of new knowledge and loves to share what he learns along the way with others. To inquire about...

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