Choosing an Issue

- Focus on issues where your customer's expectations are not being met.
- Select those where you own the problem (or, form an inter-department teams)
- Choose the most serious issue, one which ties in with other departmental (or Divisional goals).

Issue Statement

The intended result of process intervention:

- It helps you avoid wandering off course.
- It will refer to the **process** and include a **quality indicator** and its **direction of change**.

SELECT ISSUE → WRITE ISSUE STATEMENT

Process Flow Chart

Shows a visual representation of the sequence of steps in a process and how the various sections are related. This can help to define a process so that a group will share the same picture and some early process improvements can be gained as a result.

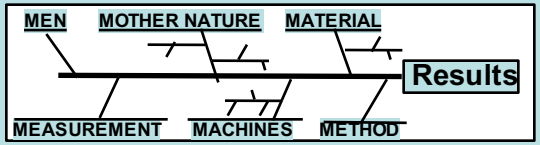
IDENTIFY PROCESS DRAW FLOW CHART

A

Process Performance Measures (PPMs)

Shows a visual representation of the sequence of steps in a process and how the various sections are related. This can help to define a process so that a group will share the same picture and some early process.

SELECT PPM



Fishbone Diagram

These provide a display of possible causes or factors influencing the quality of your process. They can help avoid oversights and allow everyone's suggestions to be noted. This can reduce the risk of rushing Into a possible false solution before the problem itself has been understood.

CAUSE & EFFECT ANALYSIS

TQC Tools

These tools are not a substitute for good judgement or process knowledge. They help deal with complexity, and convert data into information which can then be used to reach decisions. These are not the only tools available, they are just the ones most widely used.

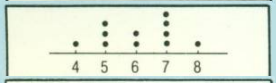
Data Collection Strategy

Always have an agreed and clear reason for any data you collect, and prepare in advance your strategy for collecting and analyzing that data. Some questions you might ask of any data collection proposal:

WHY? WHAT? WHERE? HOW MUCH? WHEN? HOW? WHO? HOW LONG?

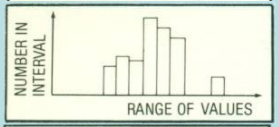
COLLECT/ANALYZE DATA

B



TALLY SHEETS

Once they have been thought out, these are one way of conveniently collecting data.



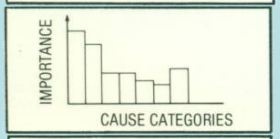
DOT DIAGRAMS

An easy and effective way of displaying just a few numbers.

HISTOGRAMS

The histogram can be useful for showing ranges of values measured. It is a special kind of bar chart.

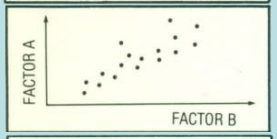
IDENTIFY MAJOR CAUSES / PLAN IMPROVEMENTS



PARETO ANALYSIS

Widely used in industry. A very useful procedure for ranking symptoms or causes of problems. The most frequent cause us usually the most important (but not always). Results are displayed as an ordered bar chart.

TAKE CORRECTIVE ACTION

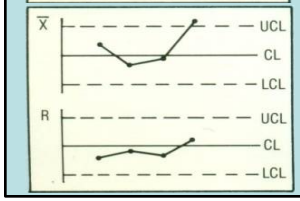


SCATTER DIAGRAMS

Highlights possible links between factors. Used to follow-up or give you hints and clues about what could be influencing your process.

COLLECT/ANALYZE DATA

GO TO A OR B AS REQUIRED



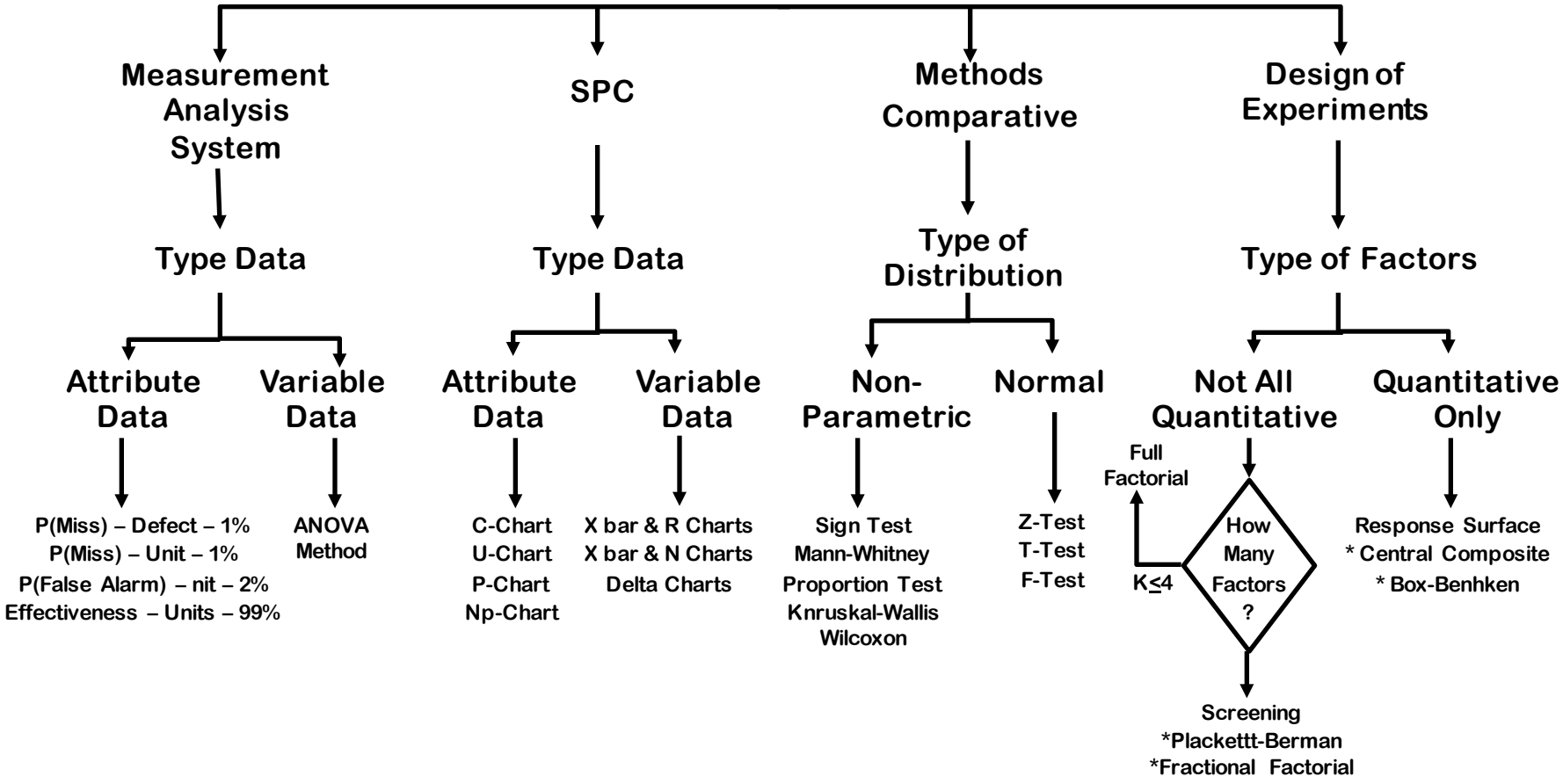
CONTROL CHARTS

A specialist tool, these require more training or study. Excellent where applicable for understanding whether or not a process is running as well as it might. Generally used for deciding when to adjust a repetitive process or when it is necessary to change the process itself, in order to achieve a specific performance.

ARE OBJECTIVES MET? — NO → GO TO A OR B AS REQUIRED

YES → DOCUMENT AND STANDARDIZE

Statistical Tools



1. Statistics

NIST SEMATECH

HANDBOOK CHAPTERS
- 1. Explore
- 2. Measure
- 3. Characterize
- 4. Model
- 5. Improve
- 6. Monitor
- 7. Compare
- 8. Reliability

HOW TO USE HANDBOOK

TOOLS & AIDS

SEARCH HANDBOOK

DETAILED CONTENTS

ACKNOWLEDGMENTS

- 1. Explore
- 2. Measure
- 3. Characterize
- 4. Model
- 5. Improve
- 6. Monitor
- 7. Compare
- 8. Reliability

HOW TO USE HANDBOOK

TOOLS & AIDS

SEARCH HANDBOOK

DETAILED CONTENTS

ACKNOWLEDGMENTS

Handbook Chapters

This table of contents presents the 8 handbook chapter headings and the highest-level section headings within each chapter.

1. Exploratory Data Analysis

1. Introduction
2. Assumptions
3. Techniques
4. Case Studies

2. Measurement Process Characterization

1. Characterization
2. Control
3. Calibration
4. Gauge R & R Studies
5. Uncertainty Analysis
6. Case Studies

3. Production Process Characterization

1. Introduction
2. Assumptions
3. Data Collection
4. Data Analysis
5. Case Studies

4. Process Modeling

1. Introduction
2. Assumptions
3. Data Collection
4. Data Analysis
5. Interpretation & Use
6. Case Studies

5. Process Improvement

1. Introduction
2. Assumptions
3. Choosing an Experiment Design
4. Analysis of DOE Data
5. Advanced Topics
6. Case Studies

6. Process or Product Monitoring and Control

1. Introduction
2. Test Product for Acceptability
3. Univariate and Multivariate Control Charts
4. Time Series Models
5. Tutorials
6. Case Studies

7. Product and Process Comparisons

1. Introduction
2. Comparisons: One Process
3. Comparisons: Two Processes
4. Comparisons: Three+ Processes

8. Assessing Product Reliability

1. Introduction
2. Assumptions/Prerequisites
3. Reliability Data Collection
4. Reliability Data Analysis

Detailed Handbook Table of Contents

Handbook References

1. Curve Fitting

Hundreds of curve-fitting models