Creating a Control Chart

Data Science for Quality Management: Process Control and Control Charts

with **Wendy Martin**

Learning objectives:

Describe the 7 step process to create a control chart

Explain rational subgrouping

1. **Identify the Variable / Characteristic To Be Assessed / Monitored**
    - Establish requirements (Customer input or Business)
    - Measurable
        - Perform Measurement System Studies

1. **Identify the Variable / Characteristic To Be Assessed / Monitored**
   - Determine whether the measurement process is generating Attribute or Variables Data

2. Design the Sampling Plan

- Who Collects the Data?
- How?
- Where?
- How Often?
- Sample Size?

Who Will Collect the Data?

- Operator, Technician, or Other Process Owner
- One Shift or All Shifts
- One Station or All Stations
- Sampling and Measurement Plan
- Training
- Clear Responsibility

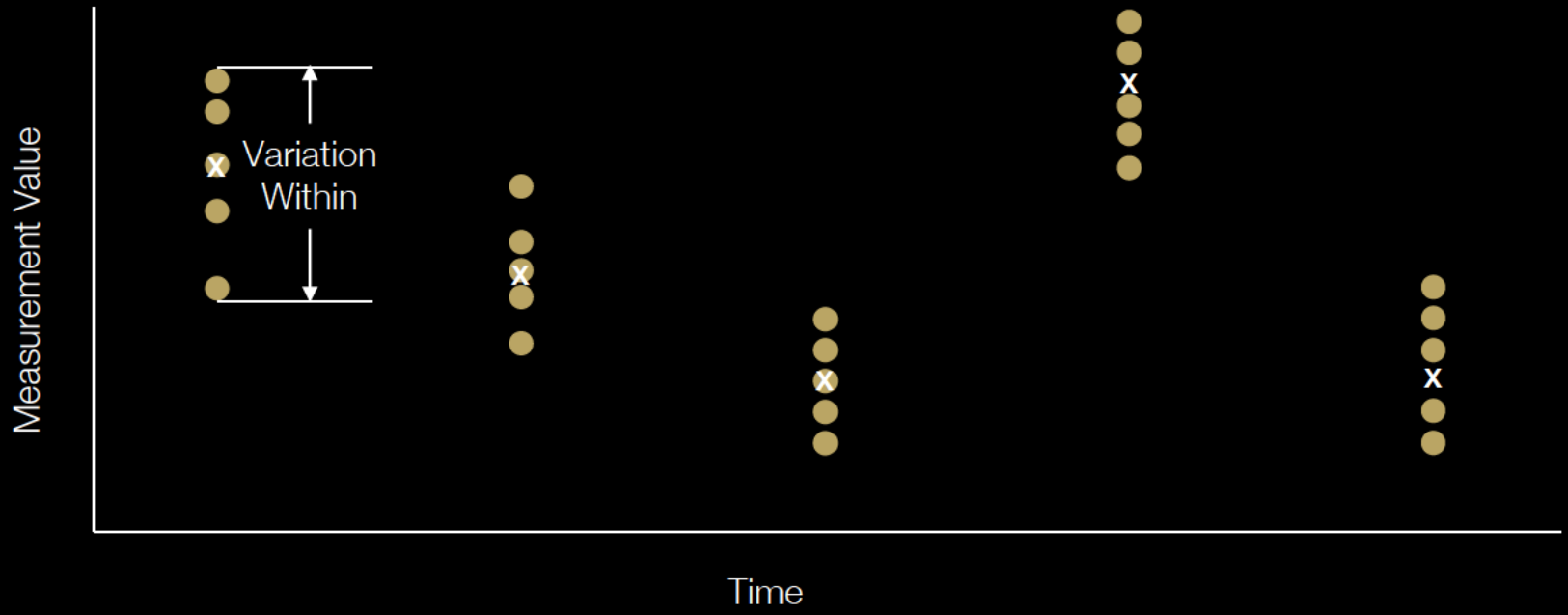
How Should the Data Be Collected?

- Rational Subgroup
  - Independent specimens sampled from the same process

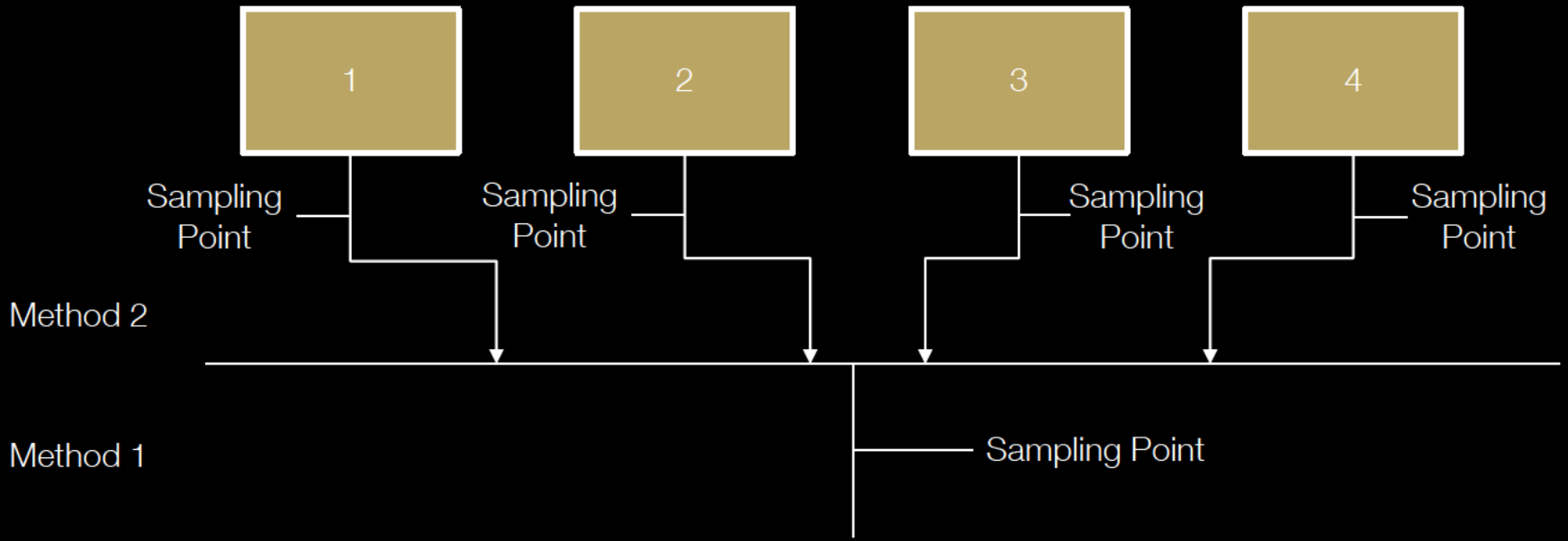
How Should the Data Be Collected?

- Within subgroup (common-cause) variation is used to determine expected between subgroup variation when the process is stable

Rational Subgrouping



Rational Subgrouping

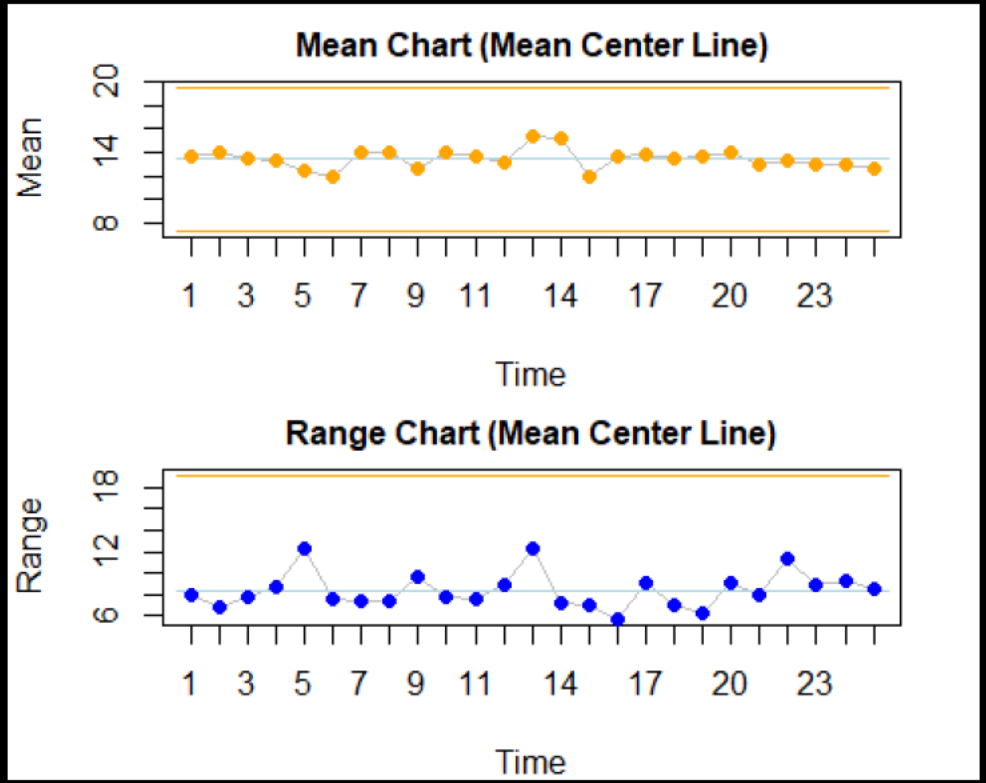


Process Stream Effect Activity

- Method 1 – Data File is Example 1 Method 1

- Method 2 - Data File is Example 1 Method 2

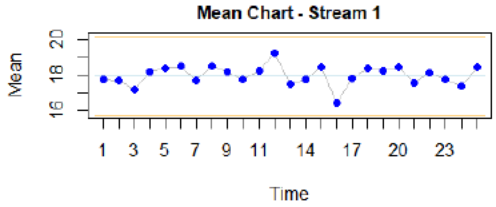
Example 1, Method 1

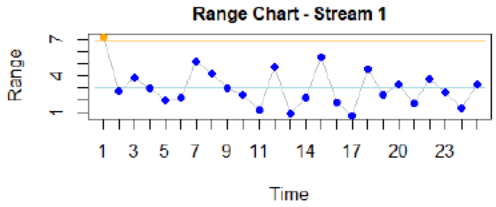


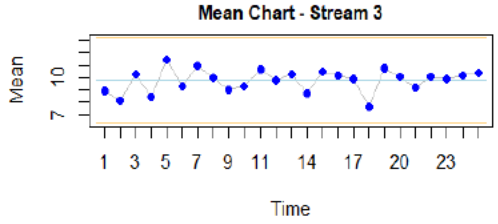
Example 1, Method 2

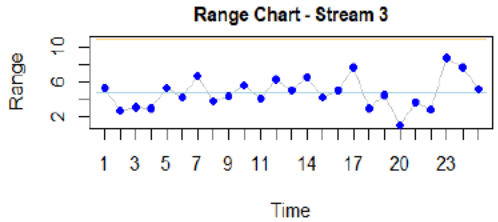
- Subgroup consists of measurements from only each stream separately

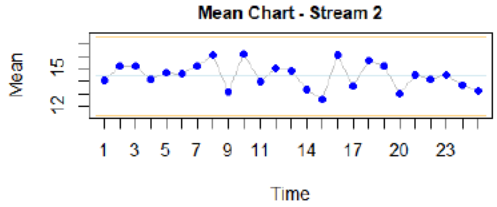
Example 1, Method 2

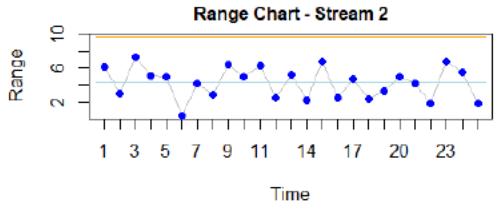


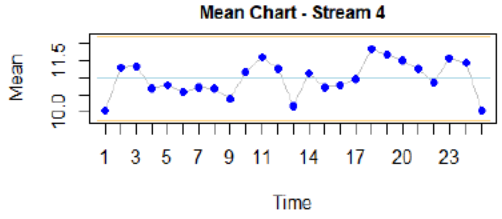


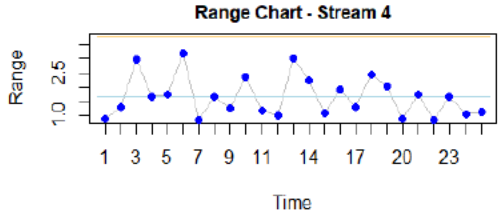












Sources

The material used in the PowerPoint presentations associated with this course was drawn from a number of sources. Specifically, much of the content included was adopted or adapted from the following previously-published material:

- Luftig, J. An Introduction to Statistical Process Control & Capability. Luftig & Associates, Inc. Farmington Hills, MI, 1982
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- Ouellette, S. Six Sigma Champion Training, ROI Alliance, LLC & Luftig & Warren, International, Southfield, MI 2005