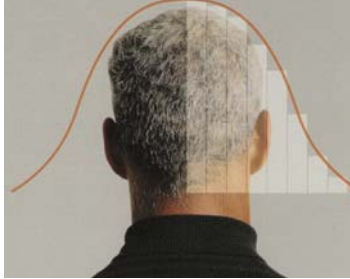


SPC for Right-Brain Thinkers™



PMI – NYC, April 15, 2009

SPC for Right-Brain Thinkers™



Presented by
Lon Roberts, Ph.D.
Roberts & Roberts Associates



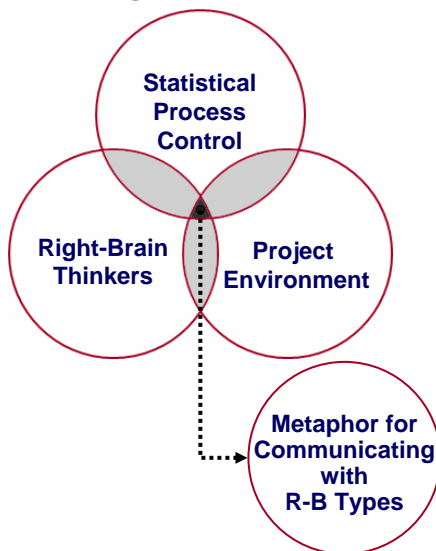
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The Journey

For Right-Brain Thinkers



For Left-Brain Thinkers

How SPC can be applied to projects and service processes

- Special adaptations that are necessary in order to use SPC
- Critical distinctions between manufacturing & non-manufacturing
- The human factor in project and service environments

What analytical-types need to know about right-brain thinkers

- Understanding how right-brain thinkers think
- Communicating analytical concepts to right-brain thinkers

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True or False ... or I Haven't a Clue

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Bonus: _____

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Panorama of SPC Applied to PM

Project

Detect/Correct Problems

Collect/Analyze Data

ID SPC Opportunities

Construct SPC Charts

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SPC Charting Tools Useful in a Project Environment

XmR Charts

Monitor variance of individual values in relation to their means and control limits

Run Charts

When control limits can't be established

Pre-Control Charts

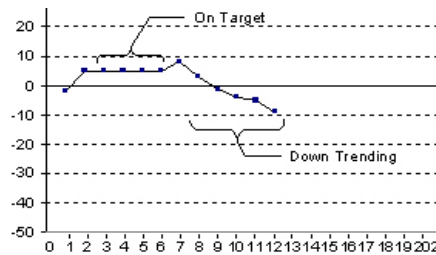
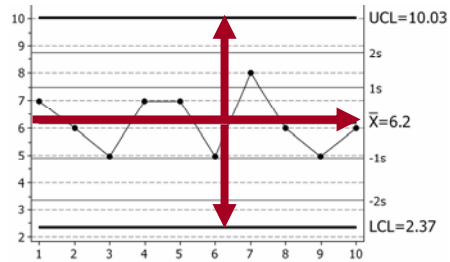
Monitor metrics WRT spec limits rather than control limits—effective, easy to use

CuSum Charts

To detect/track gradual shifts in metrics

Scatter Diagrams

To observe correlation, if any, between variables



Traditional PM Metrics vis-à-vis SPC

Point-indicators (such as BCWP, ACWP, BCWS) are beneficial in answering such questions as . . .

- Where are we relative to the plan?
- What are the ETCs?

Statistical Process Control can expand the value of point-indicators to help answer such questions as . . .

- Is the gap between the plan and the actuals cause for concern?
- How do we detect and interpret trends and patterns?
- What other metrics should we pay attention to?

Project Metrics

Progress Metrics . . .

Reveal something about where you are versus where you should be

Work-Product Metrics . . .

Reveal something about the quality of the work products

Process Metrics . . .

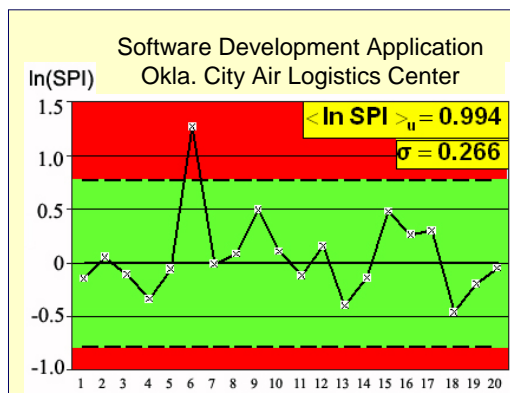
Reveal something about the inner workings of the process that leads to the work products

Productivity Metrics . . .

Reveal something about the productivity of an individual or a team

PM Applications of SPC

- Monitoring changes in EV indices, such as SPI and CPI
- Monitoring consumption of project buffers and management reserves
- Monitoring critical success factors, in addition to time and costs
- Monitoring within-process variables, i.e., leading indicators of problems





Challenges of Applying SPC in a Project Environment

- Measuring things that matter most
- Slow-moving data streams
- Obtaining data that's "normally distributed"
- Establishing control limits & centerlines
- Interpreting chart results and patterns
- Gaming the numbers; unintended consequences; Heisenberg's Uncertainty Principle
- Getting started → training PMs; educating stakeholders → making the tool useful and understandable to non-statisticians



The Human Side of Projects & Service Processes

Even in high-tech companies, many stakeholders are apt to be "right-brain thinkers" – i.e., right-hemisphere dominant

- **External:** _____ (*people influencing my projects*)
- **Internal:** _____ (*people supporting my projects*)

Brain Hemispheric-Dominance Distinctions:

Left-Dominant

Verbal
Linear, logical reasoning
Analytical and deductive
Process symbols, numbers, equations

Right-Dominant

Visual
Non-linear, lateral reasoning
Intuitive and inductive
Process images, patterns, stories

Debunking the Math Myth:



Brain Dominance and the Project Environment

Risk Analysis

- **Left Dominant:** Comprehensive analysis of risk factors and weights
- **Right Dominant:** Fast and Frugal Heuristics (bounded rationality)

Risk Taking

- **Left Dominant:** Influenced by probabilities
- **Right Dominant:** Influenced by consequences

Source Data to Inform Decisions

- **Left Dominant:** Quantitative; data samples; point-value probabilities
- **Right Dominant:** Qualitative; anecdotal; probability over a range

Problem Solving

- **Left Dominant:** Identify and eliminate root causes – i.e. decompose
- **Right Dominant:** Devise and deploy work-arounds – i.e. synthesize



A Tool Well-Suited for Right-Brain

As a tool SPC ...

- Is helpful in visualizing patterns and trends
- Doesn't require end-users to be knowledge of theoretical underpinnings
- Is useful in monitoring attributes and variables
- Doesn't impose itself on the user...nor is the data collection process onerous
- Can be adapted to projects...with certain restrictions and caveats

SPC for Right-Brain Thinkers™



Engaging Project Stakeholders in Setting Up and Using SPC

Why ...

- Project stakeholders likely know best what's important to measure and monitor ... relevant to them and the project
- Involvement encourages "investment" and use on the job

Roles ...

- Determining what's important to observe and measure
- Establishing SPC target values and control limits
- Deciding who will collect data and how often
- Defining what constitutes an anomaly in each phase
- Determining actions when an anomaly is detected
- Clarifying the "lifecycle" for each SPC metric

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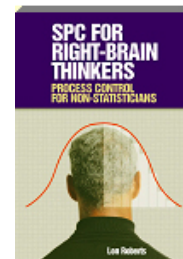
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SPC Resources Website
<http://www.r2assoc.com/SPC.HTM>