Mike Harris

Enhance your performance tests and more with process behaviour charts

About Mike Harris

Mike has been working in testing for 20 years. He has been a member of a test team, a Solo Tester and a Test Lead. He has also worked as a part of waterfall, lean and agile teams.

He has set up and led a Testing Community of Practice and been part of a successful agile transition. He is also a Chartered Fellow of the British Computer Society and Vice-Chair and Programme Secretary of the British Computer Society's Specialist Interest Group in Software Testing.
He also contributed to the e-books Testing Stories and How Can I Test This?
LambdaTest publishes posts from Mike on: https://www.lambdatest.com/blog/author/mikeh105/

Mike has a blog at http://testandanalysis.home.blog/

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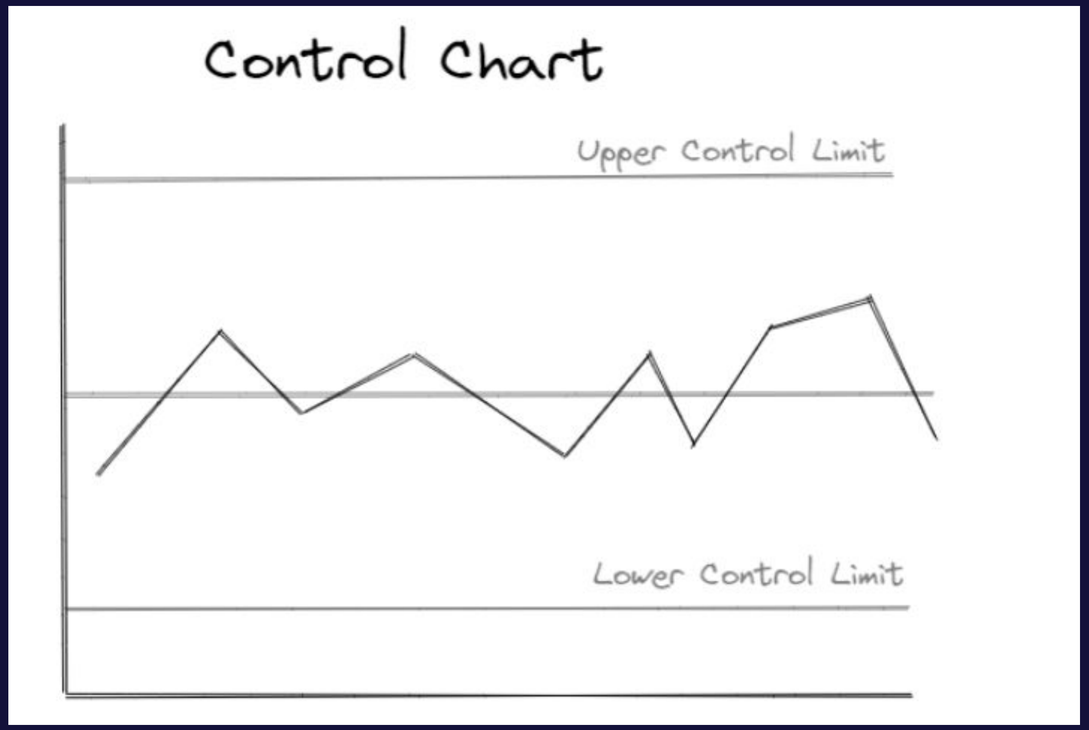
Control Charts



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Process Behavior Charts are the beginning of QA/QE/QC

- Shewhart gave his manager a memo recommending Statistical Process Control
- including a drawing of a Process Behaviour Chart

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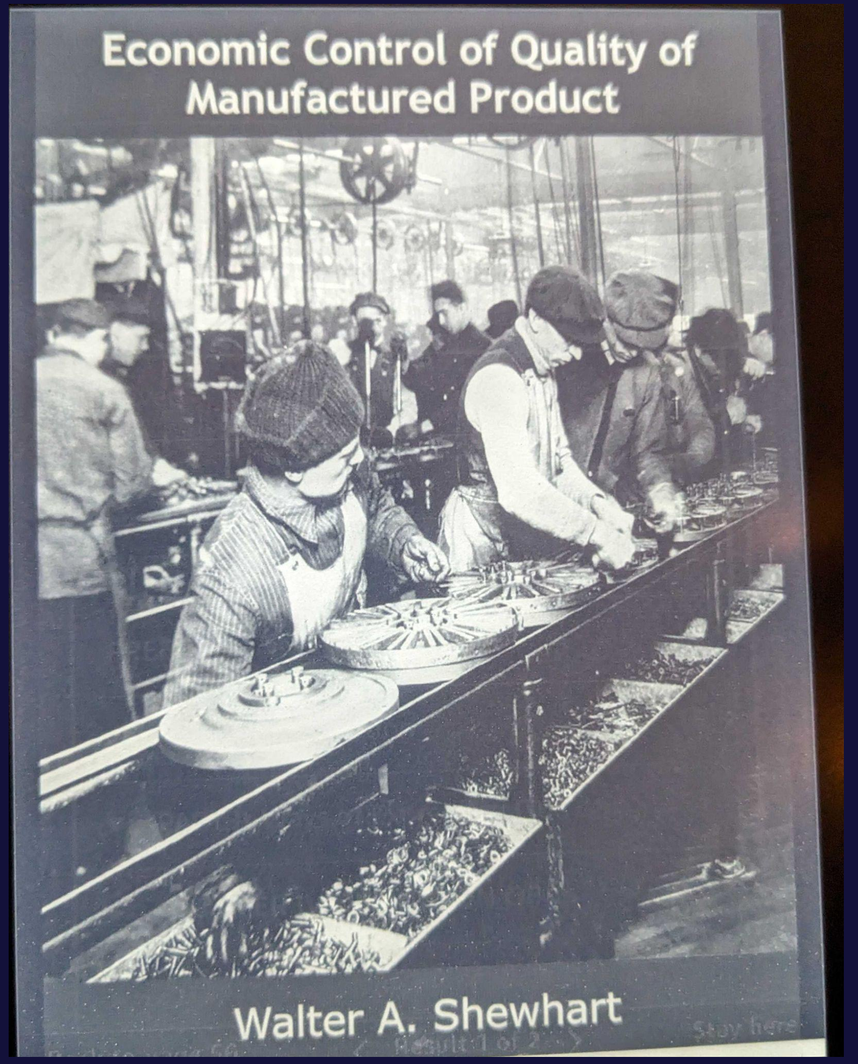
Qualities rather than quality



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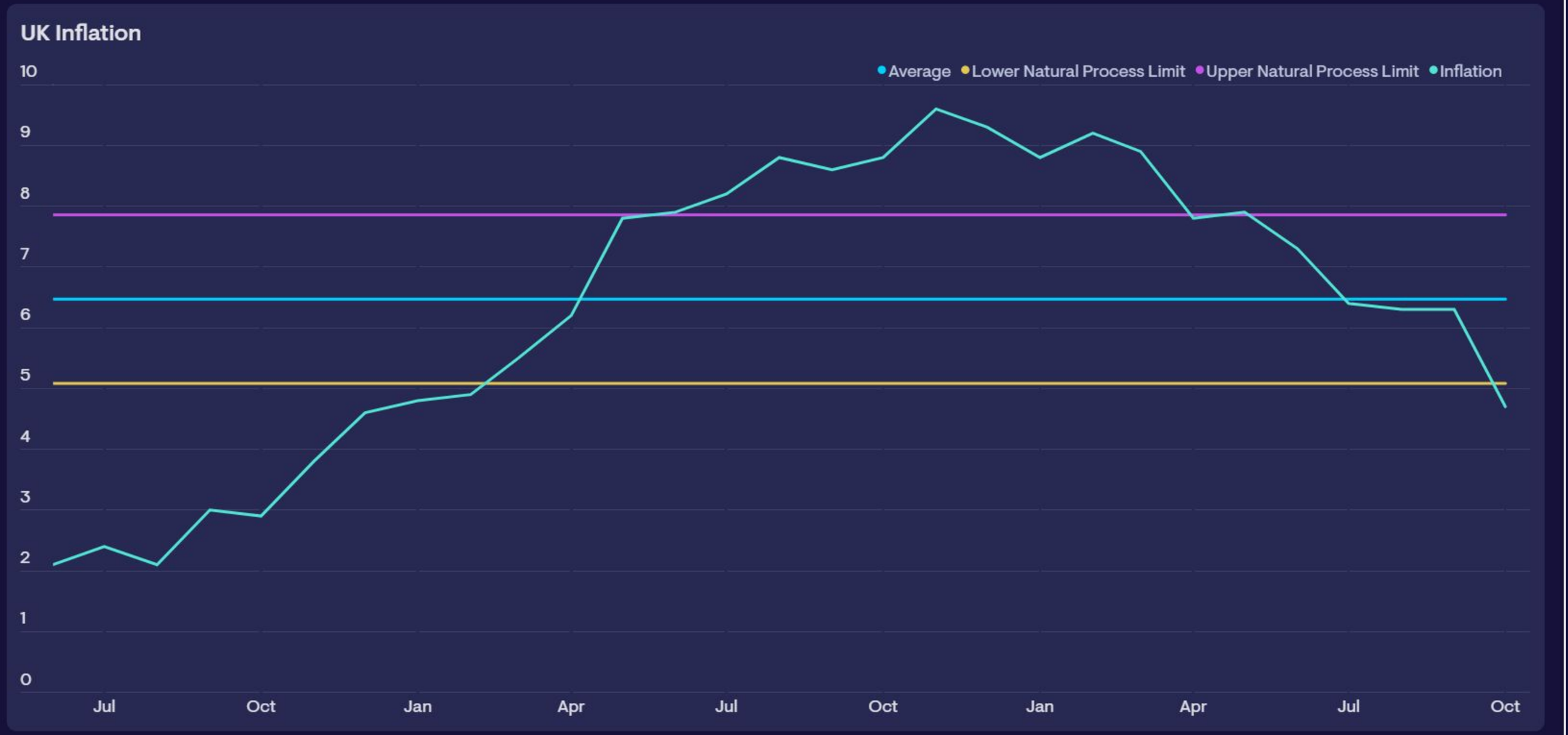

Inflation Control Chart

9 days left in trial 08:00

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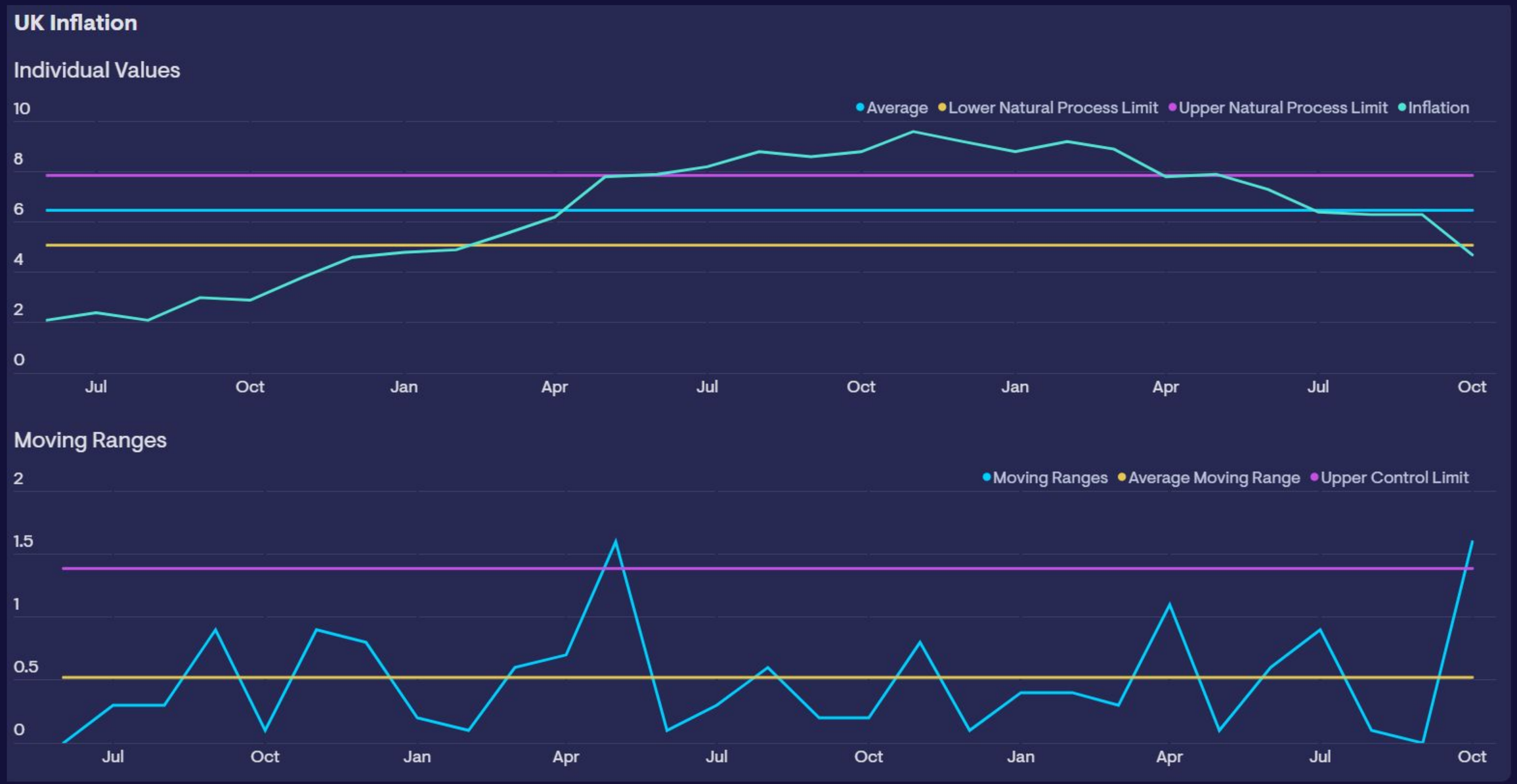
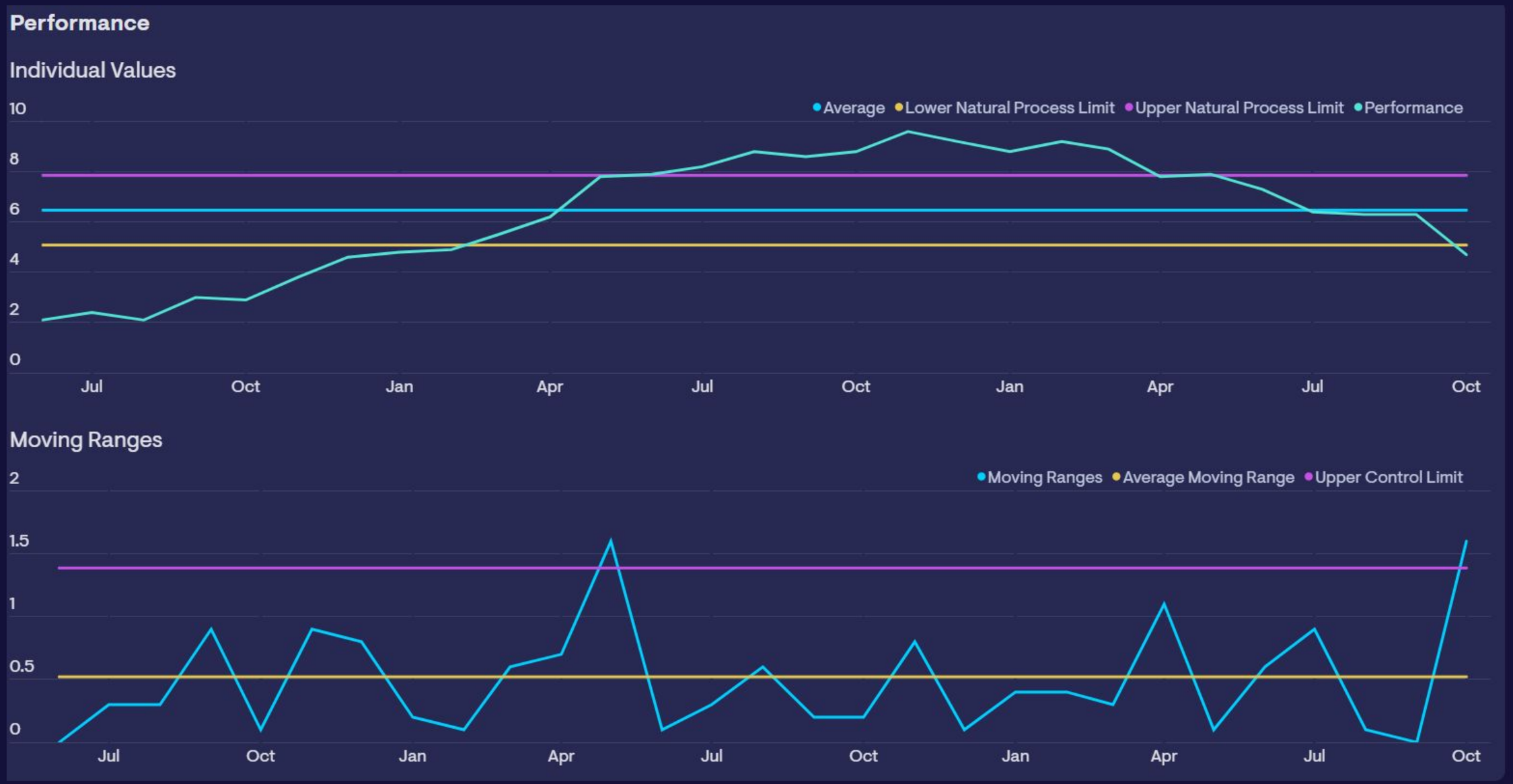


Enhance your analysis with Process Behaviour Charts



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Eight ‘Nelson Rules’

Rule 1

One point is more than 3 standard deviations from the mean.

Rule 2

Nine (or more) points in a row are on the same side of the mean.

Rule 3

Six (or more) points in a row are continually increasing (or decreasing).

Rule 4

Fourteen (or more) points in a row alternate in direction, increasing then decreasing.

Rule 5

Two (or three) out of three points in a row are more than 2 standard deviations from the mean in the same direction.

Rule 6

Four (or five) out of five points in a row are more than 1 standard deviation from the mean in the same direction.

Rule 7

Fifteen points in a row are all within 1 standard deviation of the mean on either side of the mean.

Rule 8

Eight points in a row exist, but none within 1 standard deviation of the mean, and the points are in both directions from the mean.

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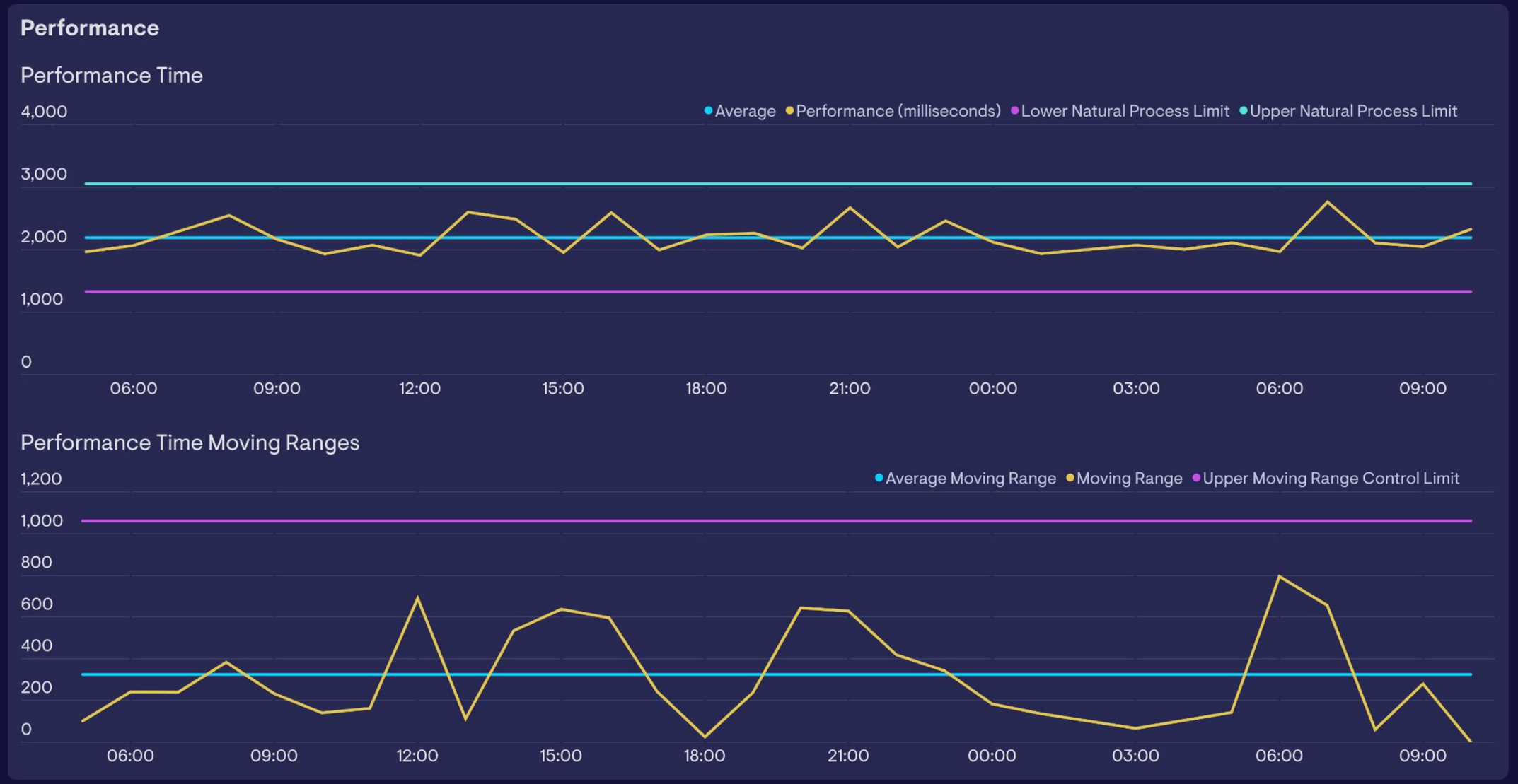
Performance testing - statistical control



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Rare Data

PerRare D

This is the only pear my pear tree produced this year

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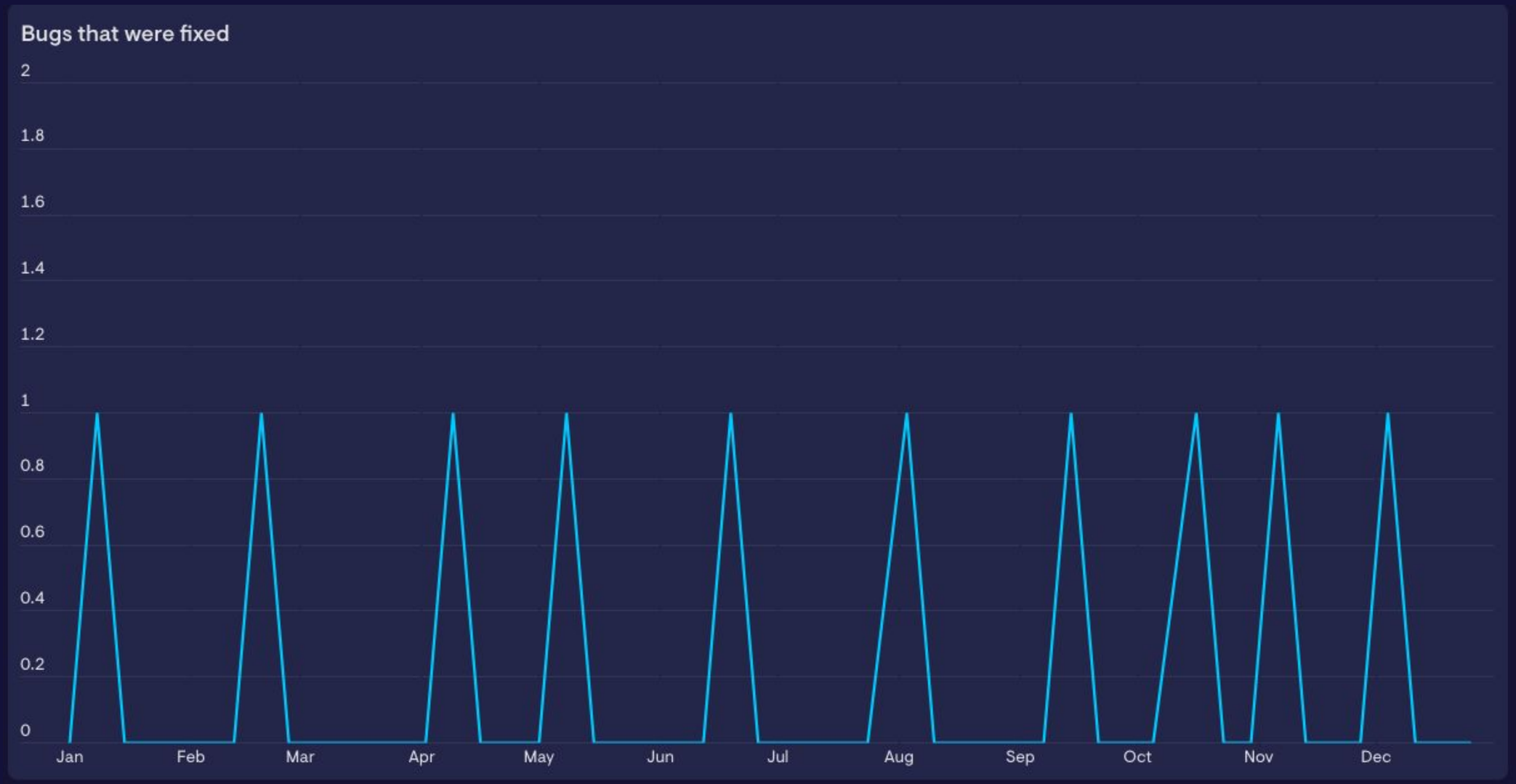

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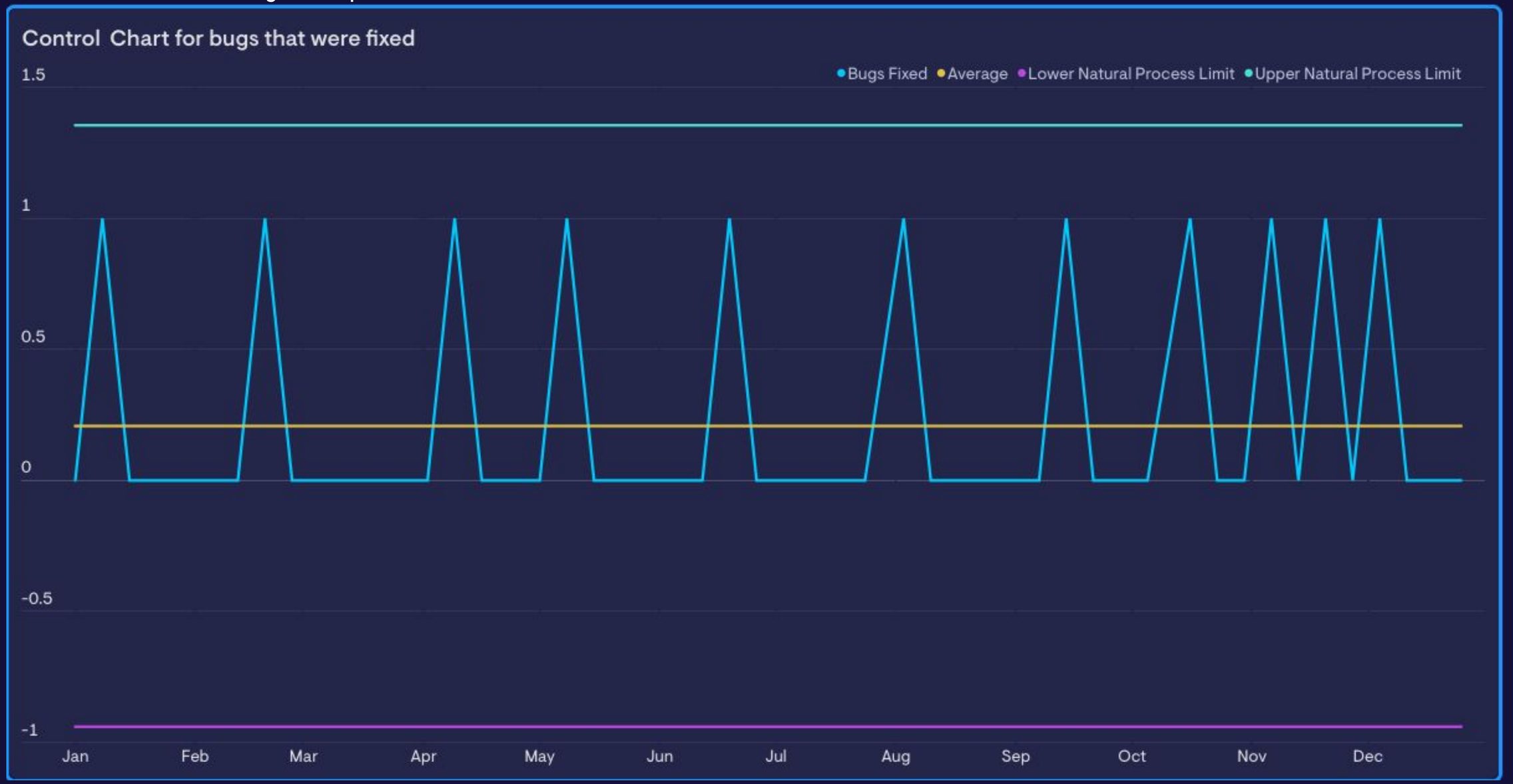

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Date of bug	8/1/2023	19/2/2023	9/4/2023	8/5/2023	19/6/2023	3/8/2023	14/9/2023	16/10/2023	6/11/2023	20/11/2023
Day of year	8	50	99	128	170	215	257	289	310	324
Days between bugs		42	49	29	42	45	42	21	21	14
Bugs per day		0.02380952381	0.02040816327	0.03448275862	0.02380952381	0.02222222222	0.02380952381	0.04761904762		0.05714285714
Bugs per month		0.612244898	0.5714285714	1.068965517	0.7142857143	0.6888888889	0.7142857143	1.476190476		1.771428571

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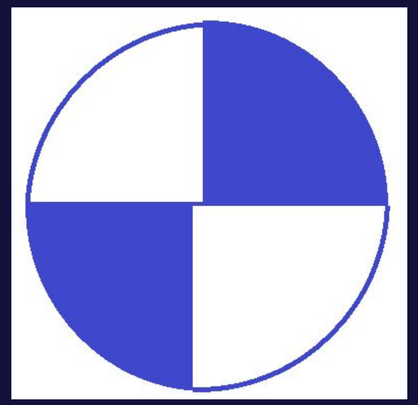
Use PDSA to fix the cause of errors



- Plan
- Do
- Study
- Act

What metrics can you use a Process Behaviour Charts for?

- Performance metrics
- Number of unit tests created per week
- Frequency of deployments
- Frequency of incidents
- And others..

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Metrics without Process Behaviour Charts can be like driving while looking in the rear view mirror

- image from https://www.istockphoto.com/

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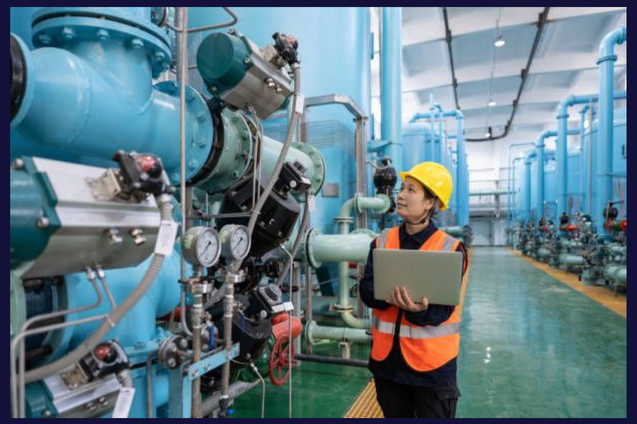
Powerful tool to create Psychological Safety

- Gave managers a tool to compare variation across workers and machines
- The more managers fixed causes of errors the more products fell within the tolerance limits
- A way to continually improve quality
- A way to manage uncertainty

- Demings Journey to Profound Knowledge by John Willis with Derek Lewis page 30

Enhance your analysis with Process Behaviour Charts

Process Behaviour Charts are widely used



- images from https://www.istockphoto.com/

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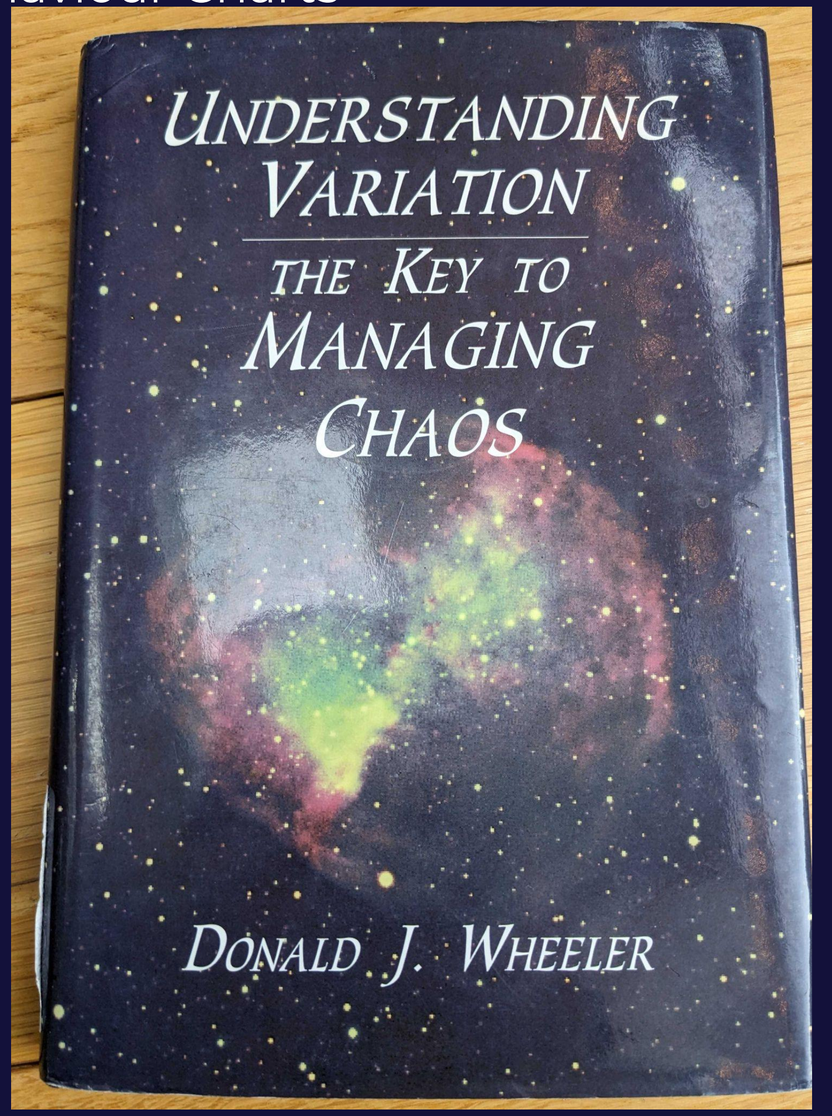
Make your own Process Behaviour Charts

- you can use a spreadsheet template
  - https://asq.org/quality-resources/control-chart
- use a book:
  - Understanding Variation: The Key to Managing Chaos by Donald Wheelers
- a video:
  - Deming Profound Book Club Control Charts by Dennis Sergent
    - https://www.youtube.com/watch?reload=9&v=eiREBemgTN4
- PBC Analyzer Pro from Christopher R. Chapman
- “Start where it is meaningful for you” Dennis Sergent



Conclusion

I hope that this introduction to Process Behaviour Charts encourages you to try them on your data. I am sure that you will gain insights

Thank you,

Mike Harris
Vice-Chair and Programme Secretary at BCS SIGiST
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