Agile Alliance® PRESENTS

Agile ORLANDO 2023

JULY 24-28

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#AGILE2023

Check Out My Flow

Agile Metrics For Smooth Delivery

Juan Carlos Rivera

Tommy Norman

Agile Nashville

Music City Agile

O'Reilly Online Learning

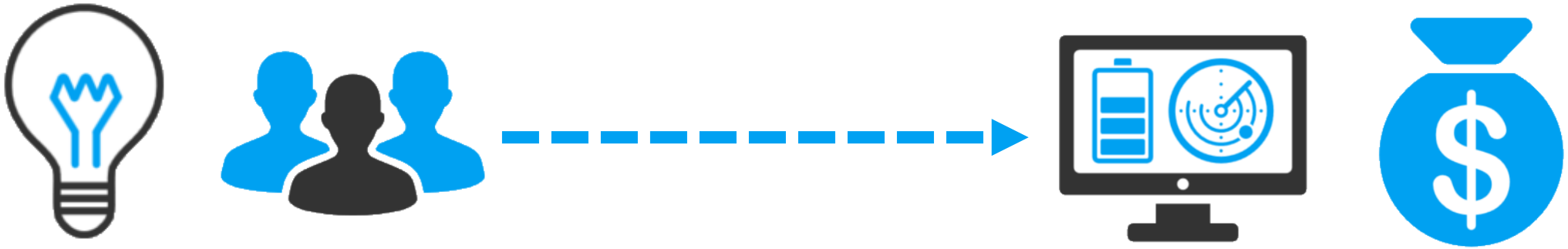
Agenda

- Why We Measure
- Defining A Metric
- 4 Types Of Data Analytics
- Maximizing Flow
- Culture of Continuous Improvement

Why do we measure?

Why We Measure

Concept To Cash



Speed to Market

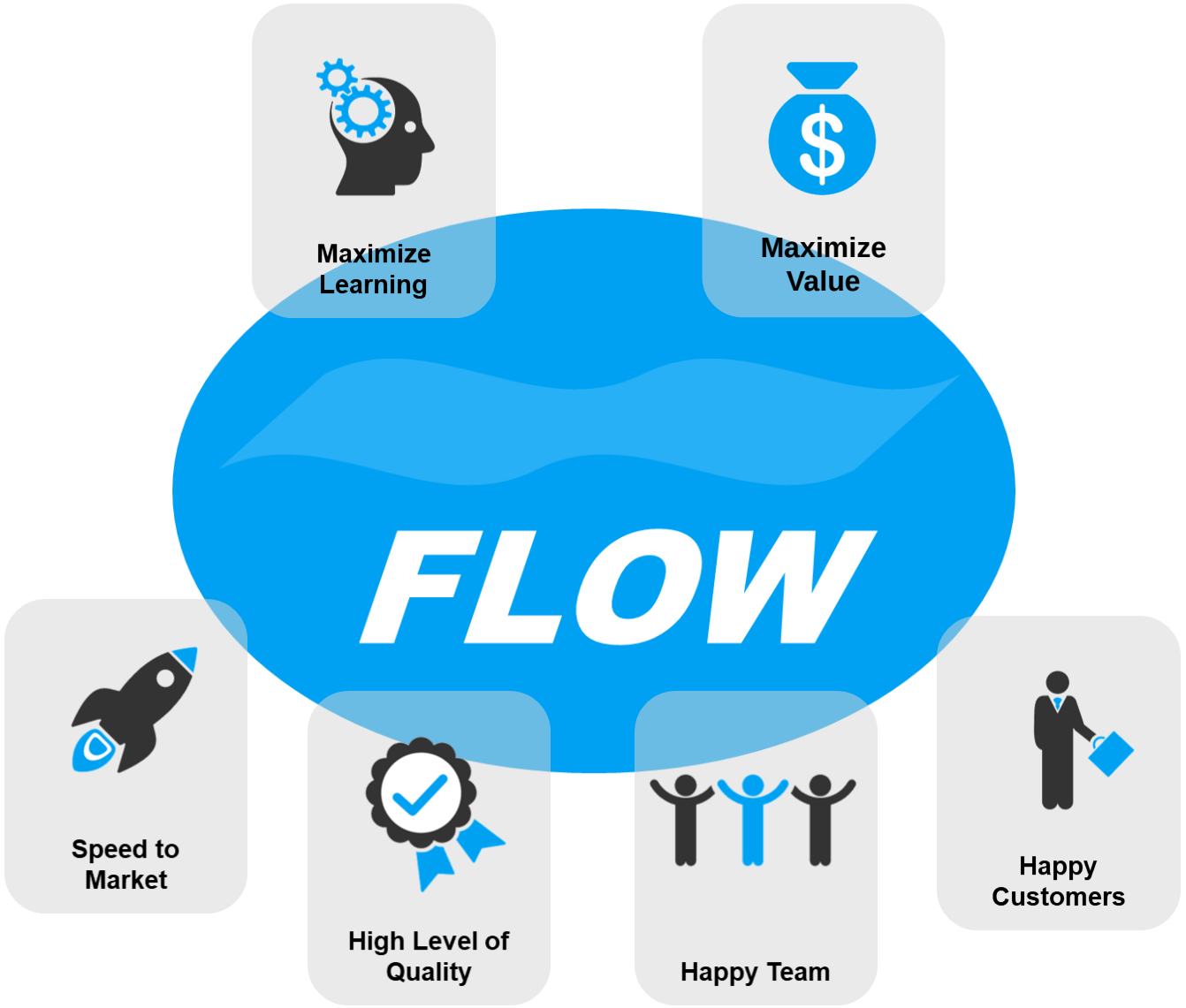
High Level of Quality

Happy Team

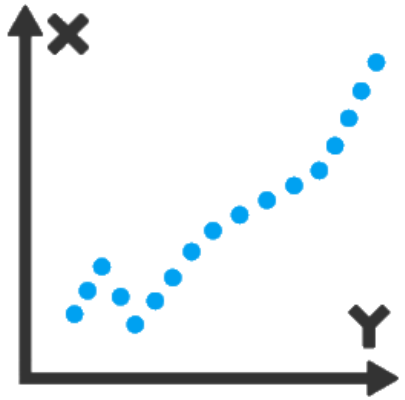
Happy Customers

Maximize Learning

Flow


Maximize Learning
Maximize Value
FLOW
Speed to Market
High Level of Quality
Happy Team
Happy Customers

Data Informed Decisions



“Highly data-driven organizations are three times more likely to report significant improvements in decision-making compared to those who rely less on data.”

https://online.hbs.edu/blog/post/data-driven-decision-making

Metrics Are About Value

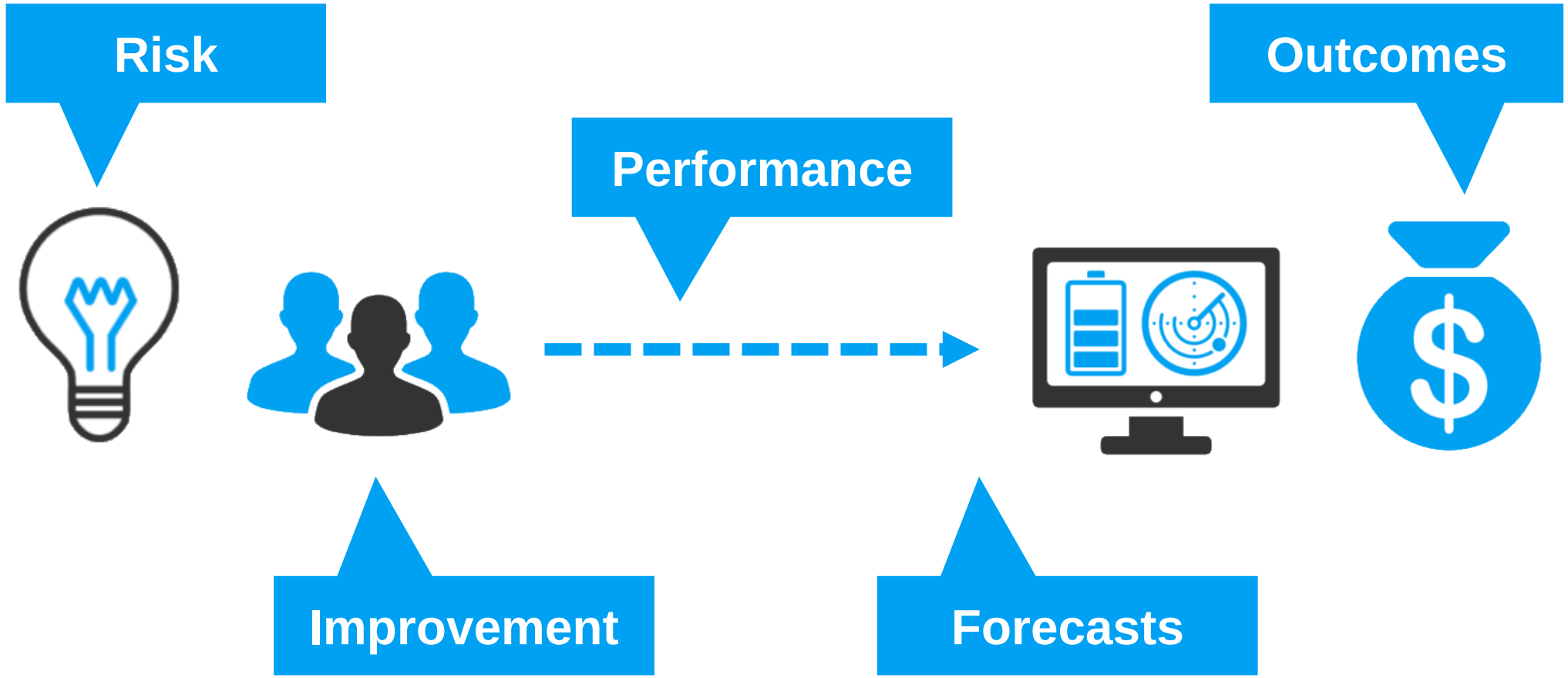
Increase Revenue

Protect Revenue

Decrease Cost

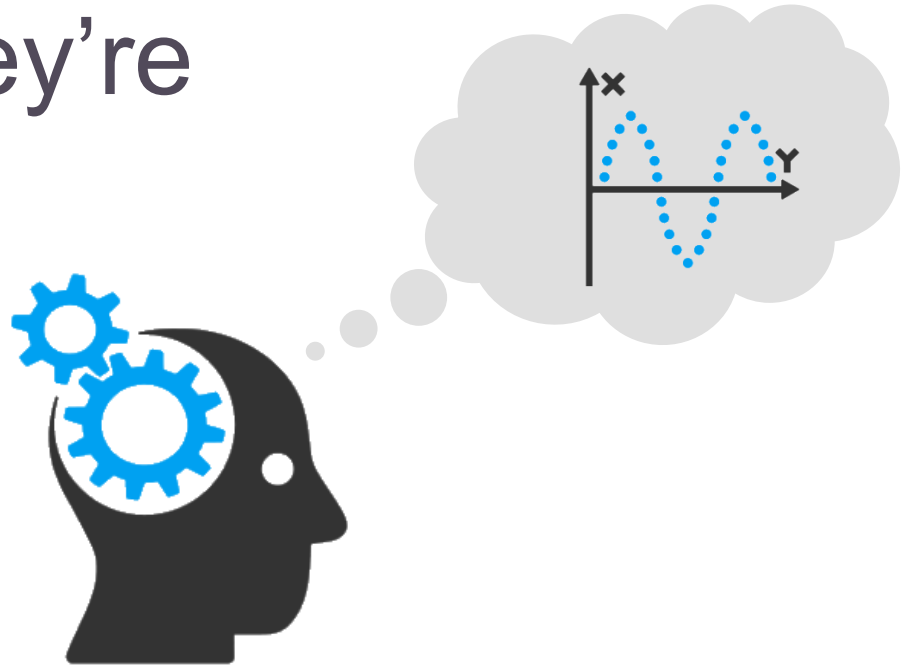
Avoid Costs

Metrics Are About Learning



Metrics Are About Behavior

"Human beings adjust behavior based on the metrics they're held against."

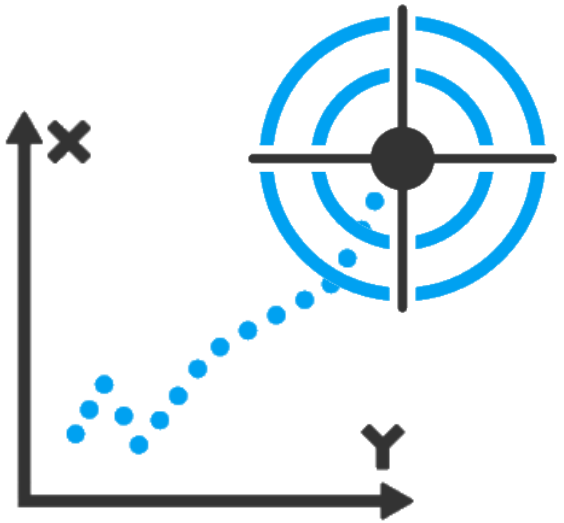


https://hbr.org/2010/06/column-you-are-what-you-measure

Metrics Are About Behavior

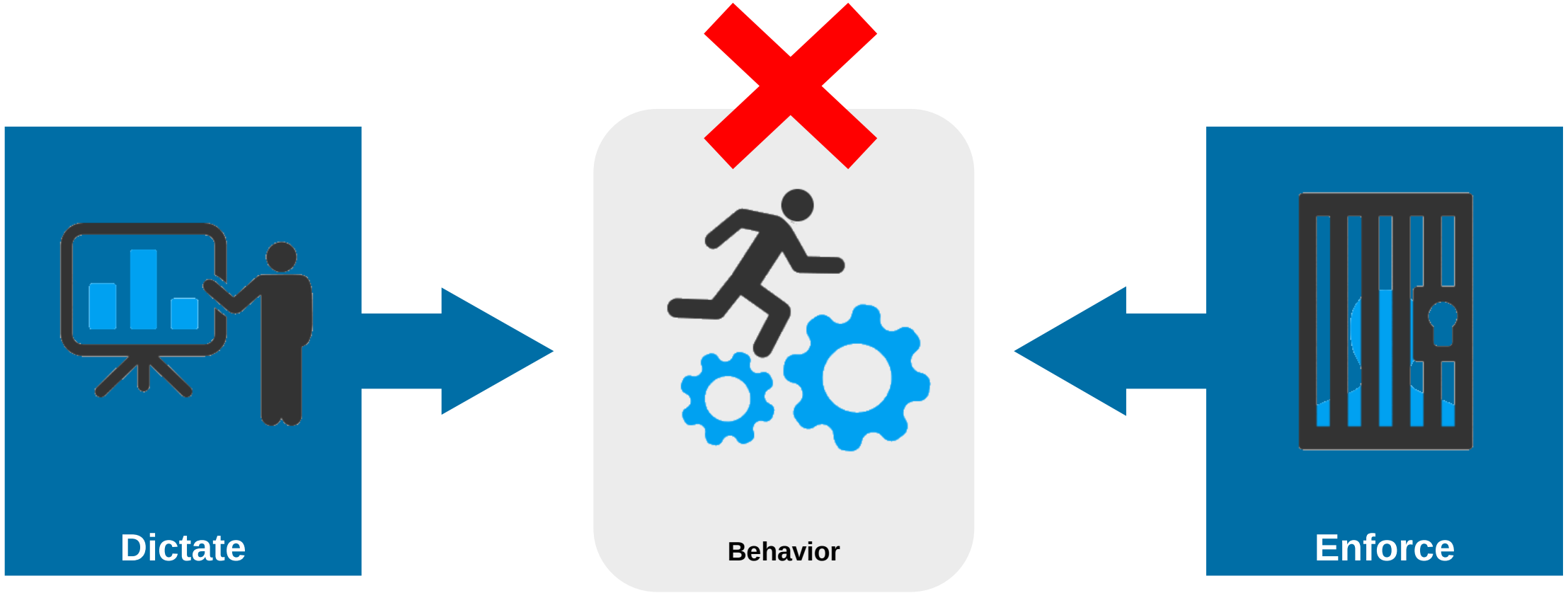
Goodhart's Law

"When a measure becomes a target, it ceases to be a good measure."

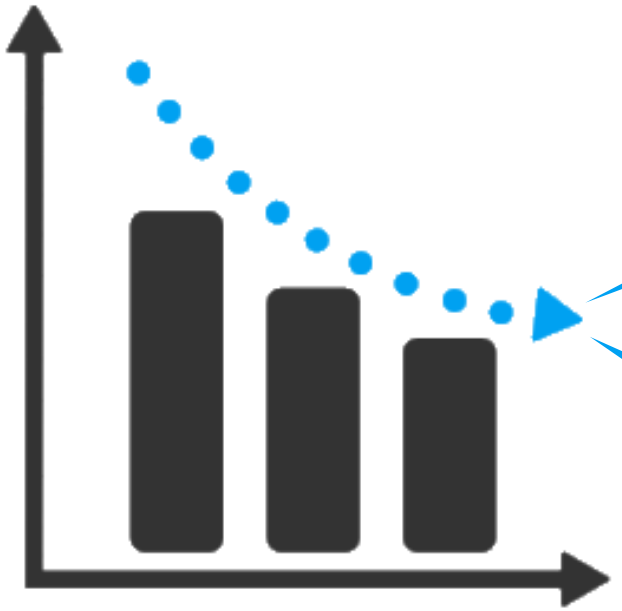


https://en.wikipedia.org/wiki/Goodhart%27s_law#

“Enforcing” Behavior



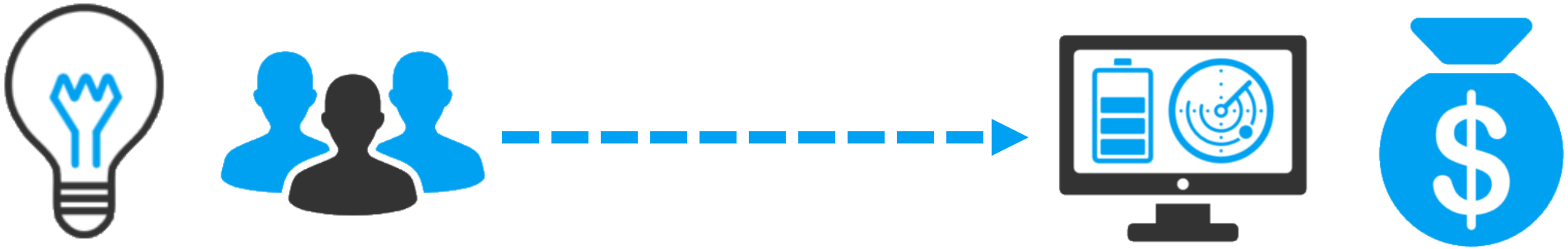
Metrics Should Inspire Curiosity



Oh, crap! What is the boss going to say?

Why did this happen, and how can we avoid it in the future?

Maximizing Flow



Speed to Market

High Level of Quality

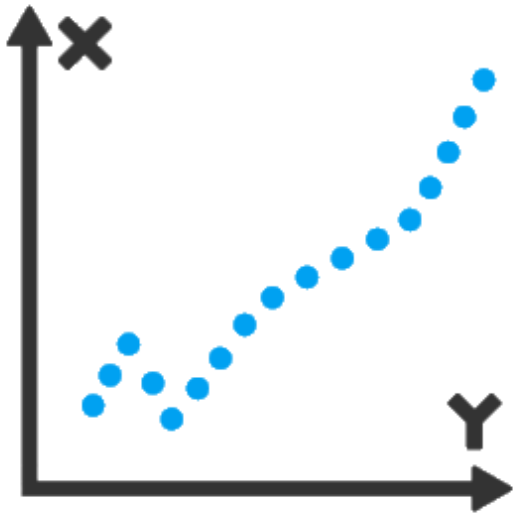
Happy Team

Happy Customers

Maximize Learning

Defining A Metric

Before You Measure...



- Why? What question(s) are you trying to answer?
- What behavior are you trying to influence?
- What exactly are you going to measure?
- What does it look like when it is good/bad?
- How do you plan to react to this metric?
- What are the possible side effect behaviors?

Example Focused On Speed

Speed

I want to ensure we deliver as efficiently as possible to get value to our customers quickly. Are we going to meet our delivery goals?

I want employees to identify and remove waste in our delivery processes.

The number of story points we can deliver in a two-week sprint. (velocity)

Good is as high as the team can consistently deliver with good quality.
Bad is highly inconsistent or trending lower than expected.

If we see a negative trend, we will focus on delivery impediments and inefficiencies in our next retrospective.

Teams lose focus on quality by taking shortcuts or sustainable pace by working too hard.

Continuous Improvement

A Different Example

Speed

We need to deliver 20 features every 2 weeks to make our deadline.
Are we going to make our deadline?

I want employees to go as fast as they can.

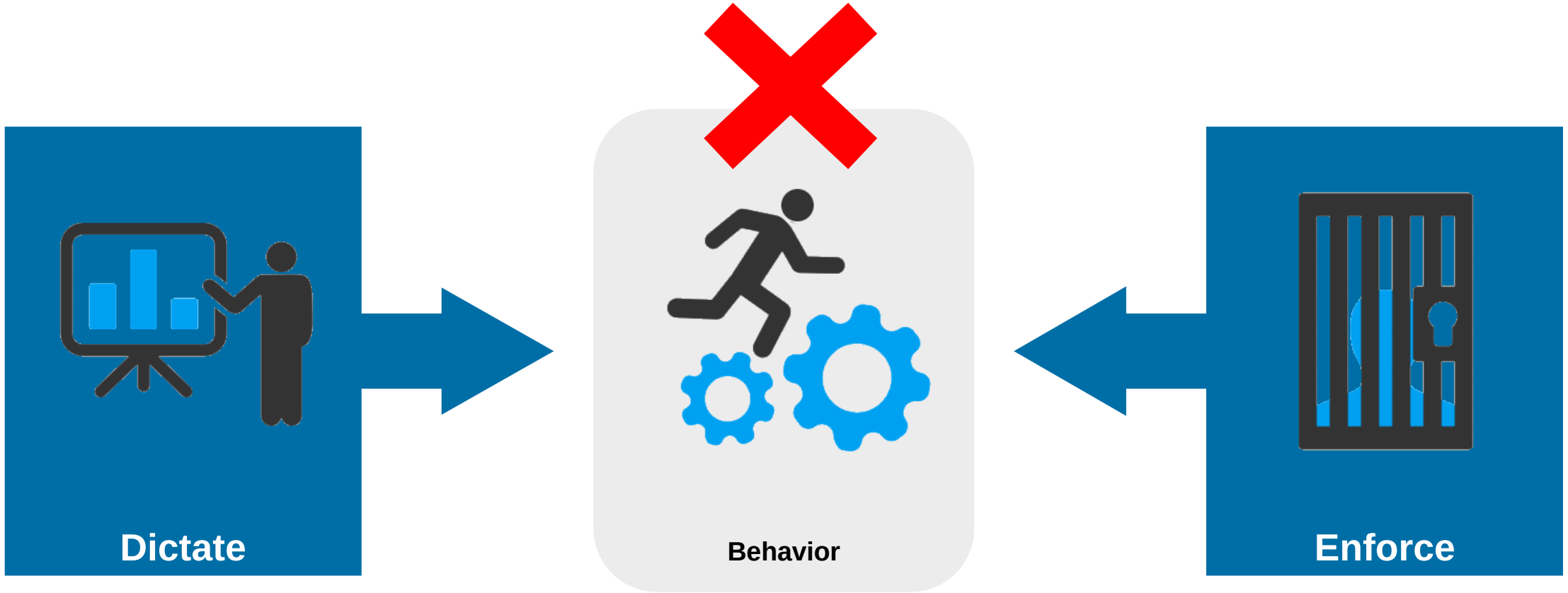
How on target we are towards delivering 20 features each week.

Good is 20 or more features per week. Bad is less than 20.

Add more people, work nights and weekends, and/or withhold bonuses.

What do you mean?
Like NOT meeting that goal?

Culture Of Fear



Which of those situations is closer to your experience?

Exercise: Metric Questionnaire

- Choose a ***quality*** metric.
- Answer the questionnaire.
  - Why? What question(s) are you trying to answer?
  - What behavior are you trying to influence?
  - What exactly are you going to measure?
  - What does it look like when it is good? Bad?
  - How do we plan to react to this metric?
  - What are possible side effect behaviors?
- Does this inspire continuous improvement?

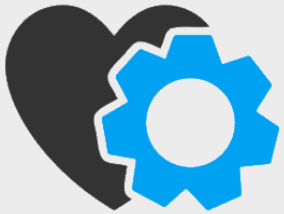
Qualities Of A Good Metric

Goal Focused

Clear

Actionable

Trusted



Positive Behavior

4 Types of Data Analytics

Descriptive
(What happened?)

Diagnostic
(Why did it happen?)

Predictive
(What's likely to happen?)

Prescriptive
(What should we do?)

Descriptive: What Happened?

What Data Are We Going To Collect?

Speed

Does this include bugs or just features?

The number of story points we can deliver in a two-week sprint. (velocity)

What does “delivered” mean exactly?

What Data Are We Going To Collect?

Speed

Velocity = the total number of story points for all cards that reach the “Done” lane on our team’s JIRA board each Sprint.

Descriptive Data

What is our average velocity?

Sprint	Velocity
1	25
2	27
3	21
4	11
5	32
6	25
7	25
8	21
9	19

What has been our lowest velocity?

What has been our highest velocity?

What are some other common Agile team descriptive metrics?

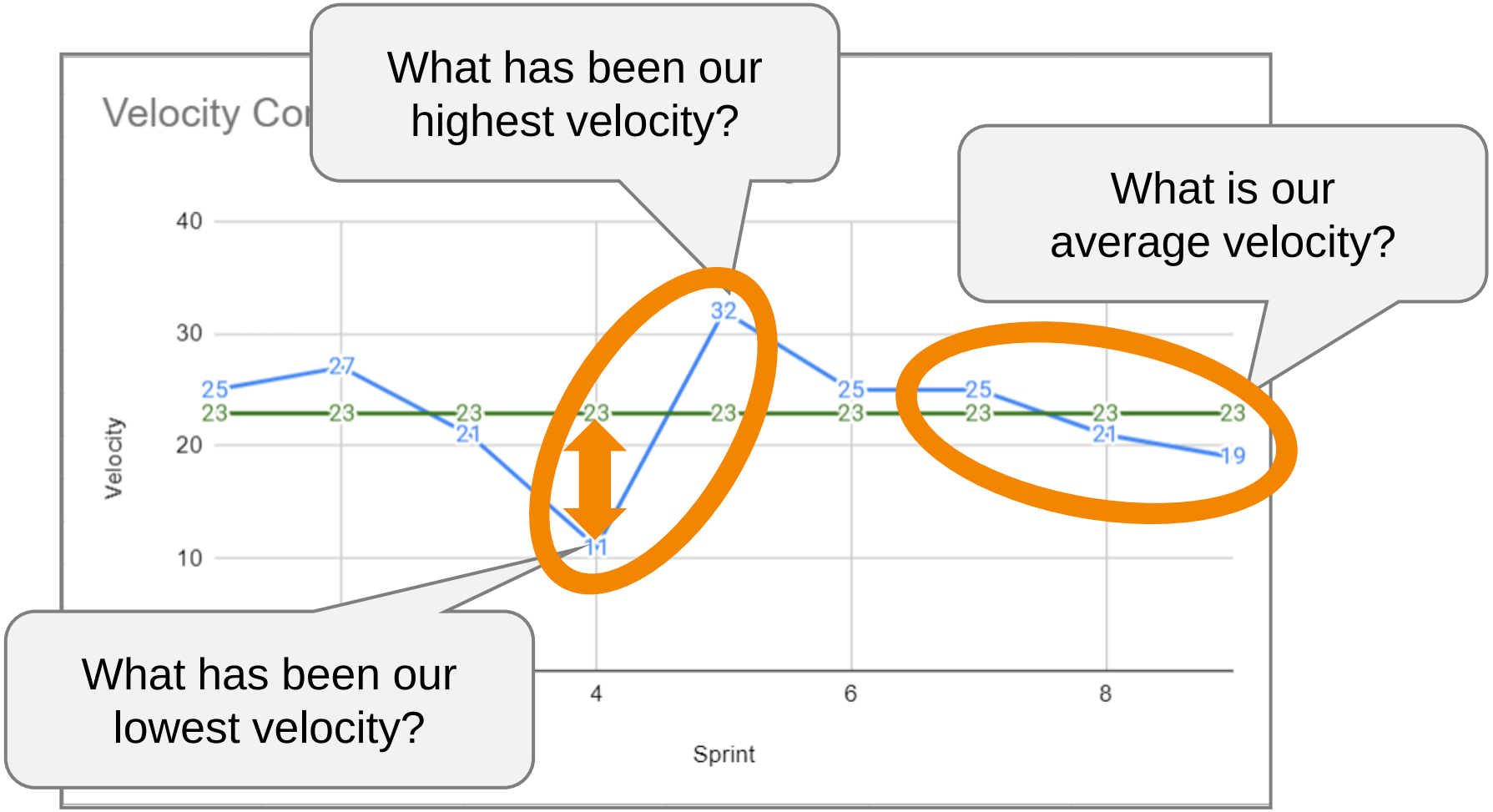
Data Visualization

Information Radiator

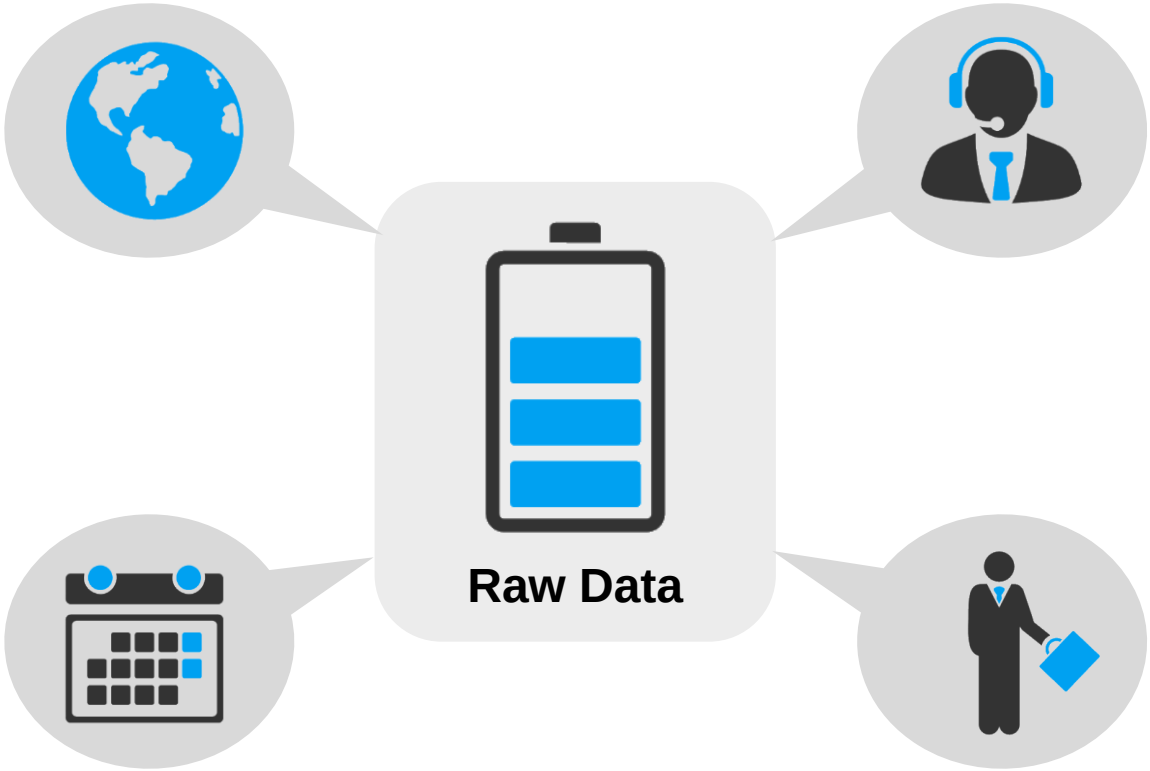
"…**displays** which a team places in a **highly visible** location so that all team members … can see the **latest information at a glance**…"

https://www.agilealliance.org/glossary/information-radiators

Data Visualization



Data Aggregation

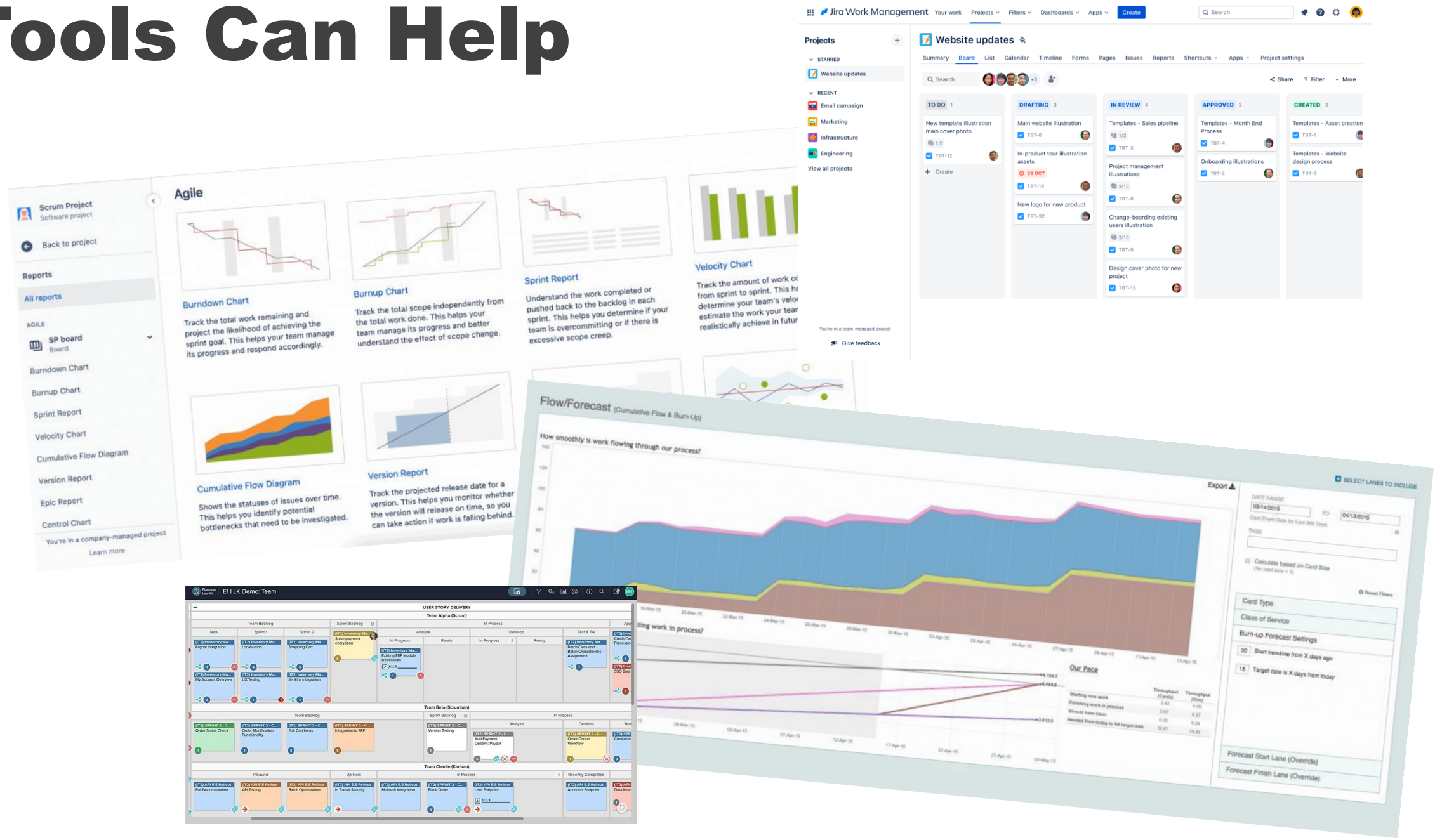


Descriptive Data

“80% of business analytics mainly involves **descriptions** based on **aggregations** of past performance.”

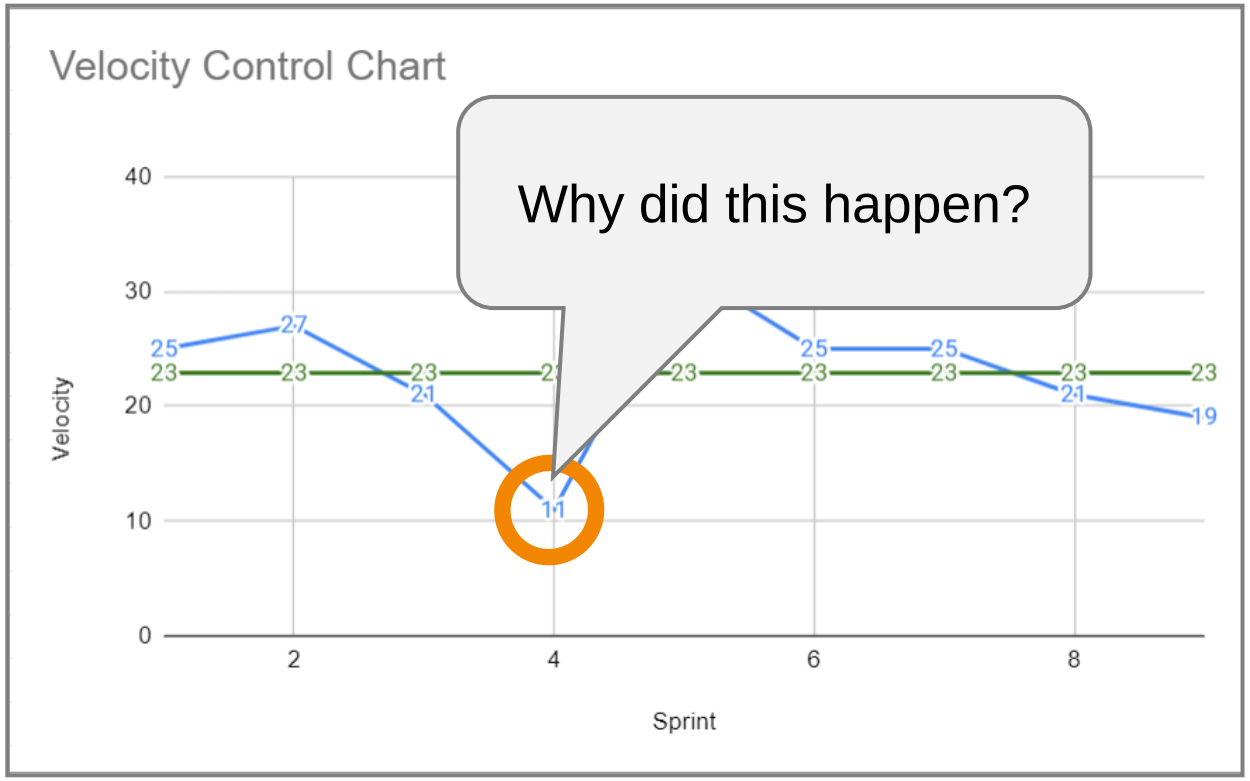
https://www.analyticsinsight.net/four-types-of-business-analytics-to-know/

Tools Can Help

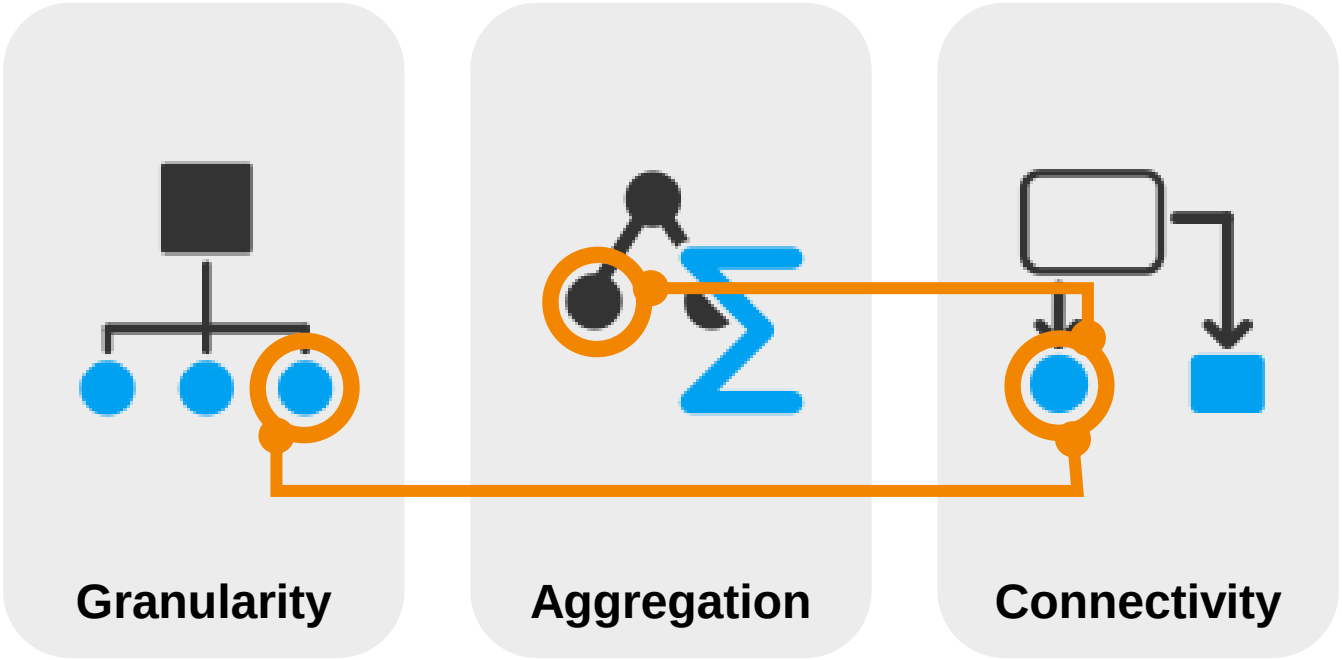


Diagnostic:
Why Did It Happen?

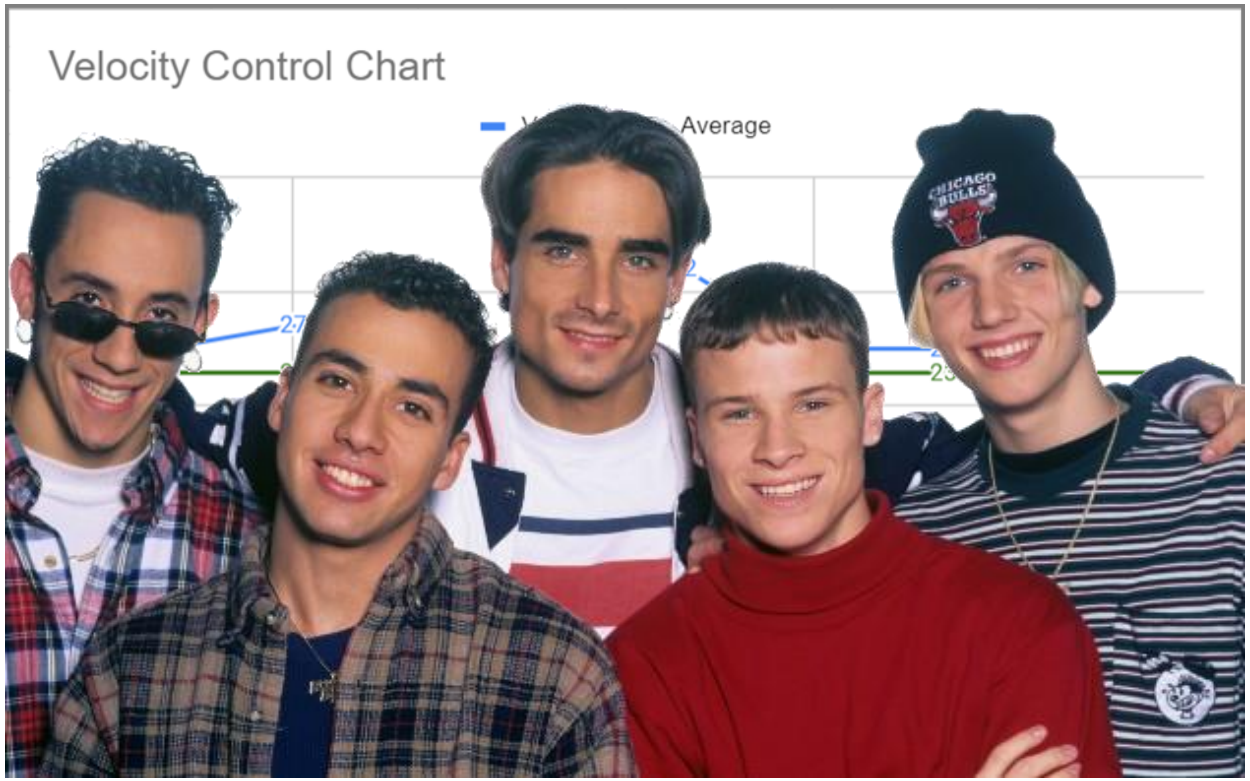
Why Did It Happen?



Metrics Tell A Story

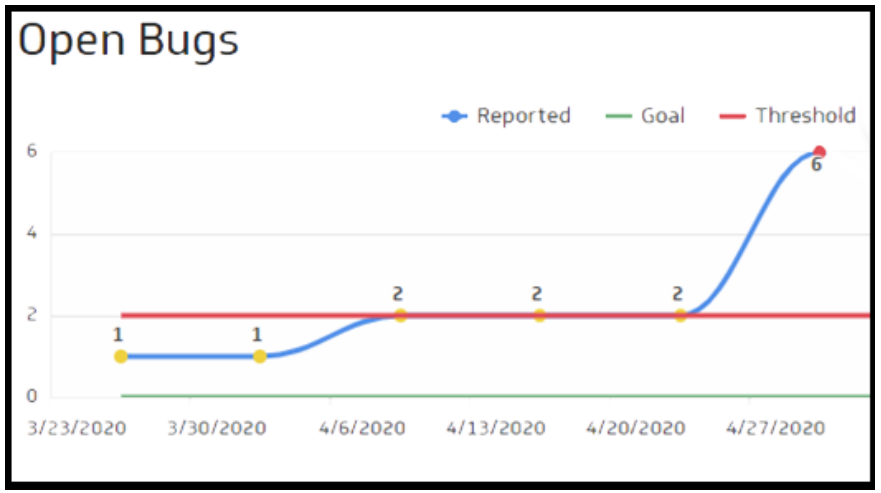


Metrics Tell A Story



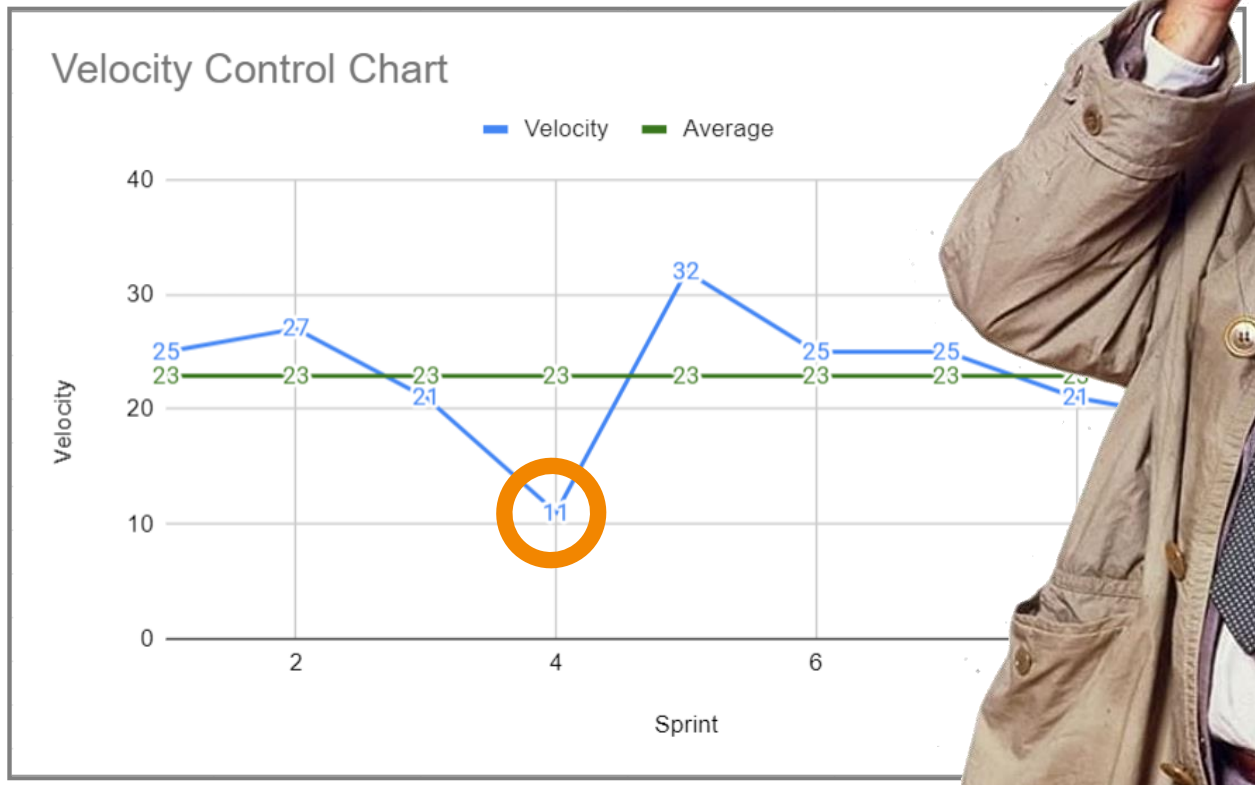
Demo: Diagnostic Data

Exercise: Diagnostic Data

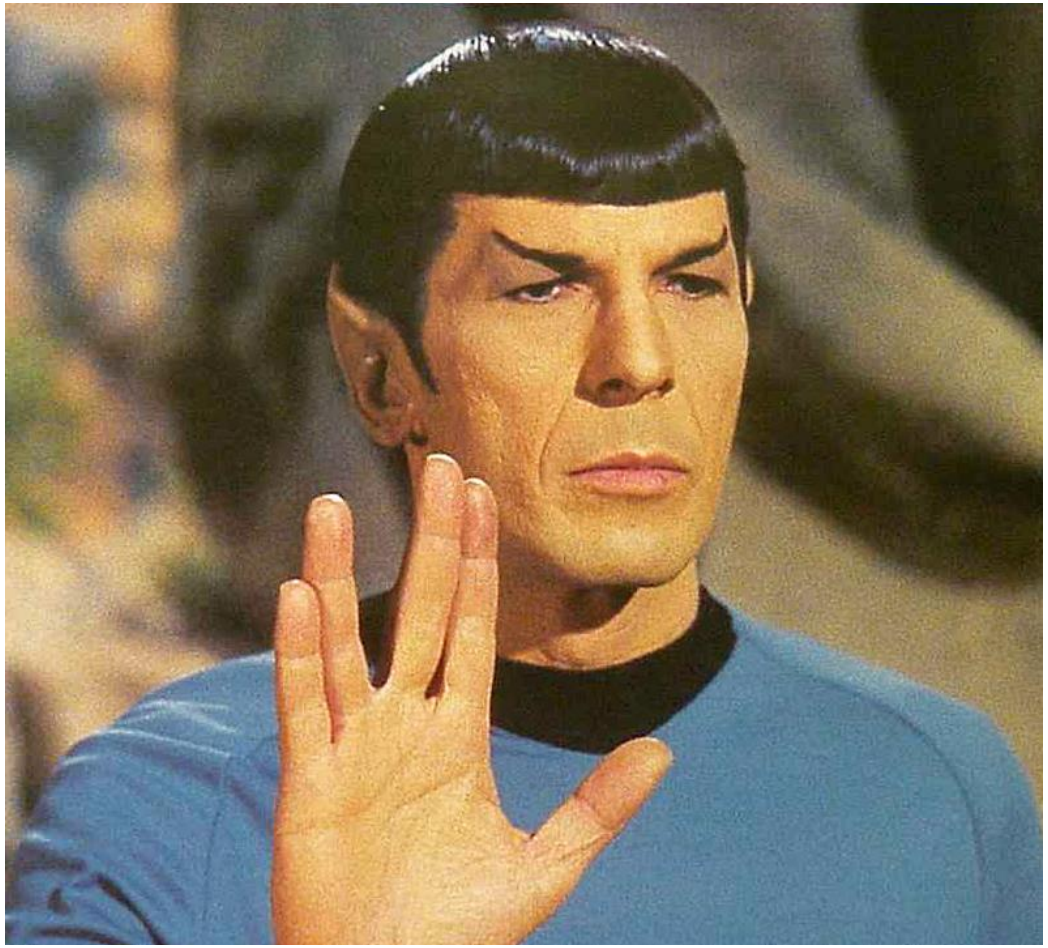


- Your team sees a spike in bugs reported.
- Discuss what metrics you might use to diagnose why it happened.

Why Not Just Ask The Team



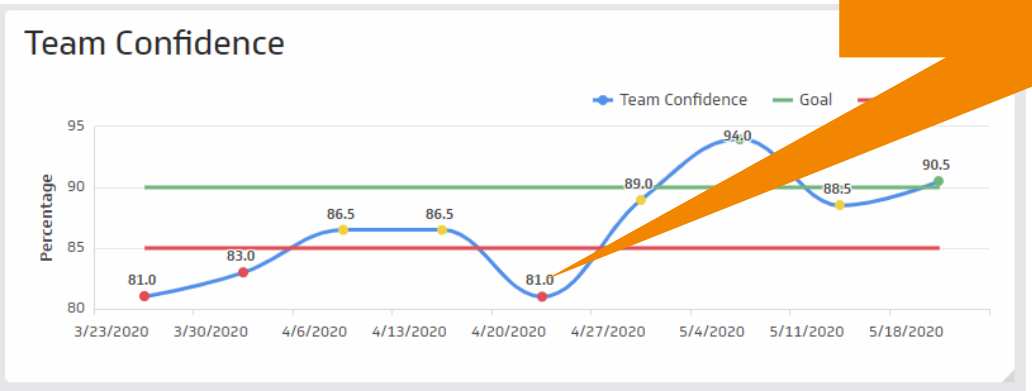
Data Versus Going With Your Gut



With the spike in bugs, were there any metrics that may have indicated a problem beforehand?

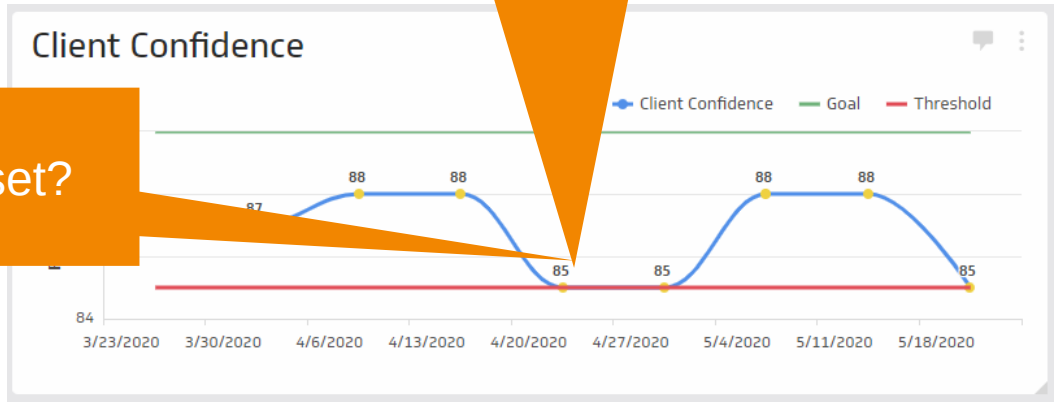
Follow The Clues

What is the team upset?

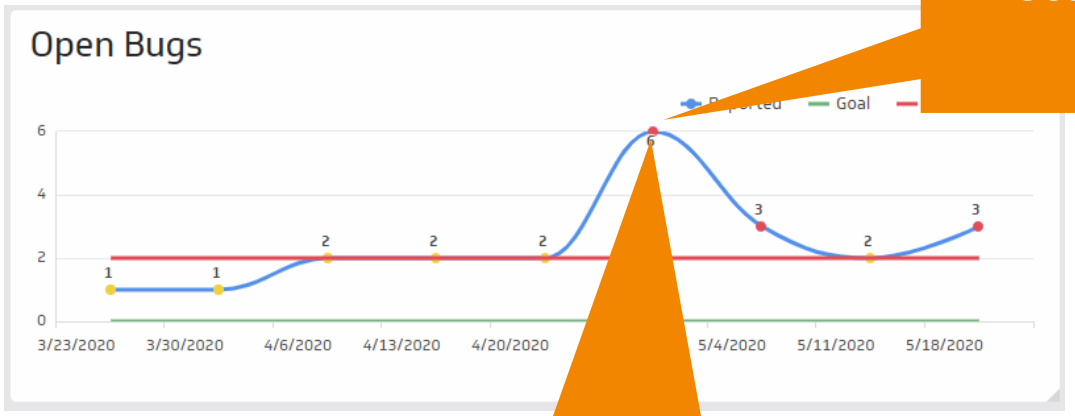


Because the client is upset.

Why is the client upset?



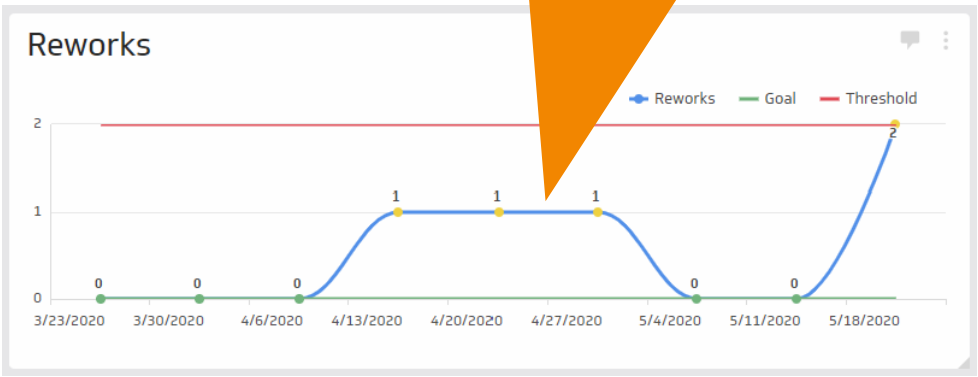
Follow The Clues



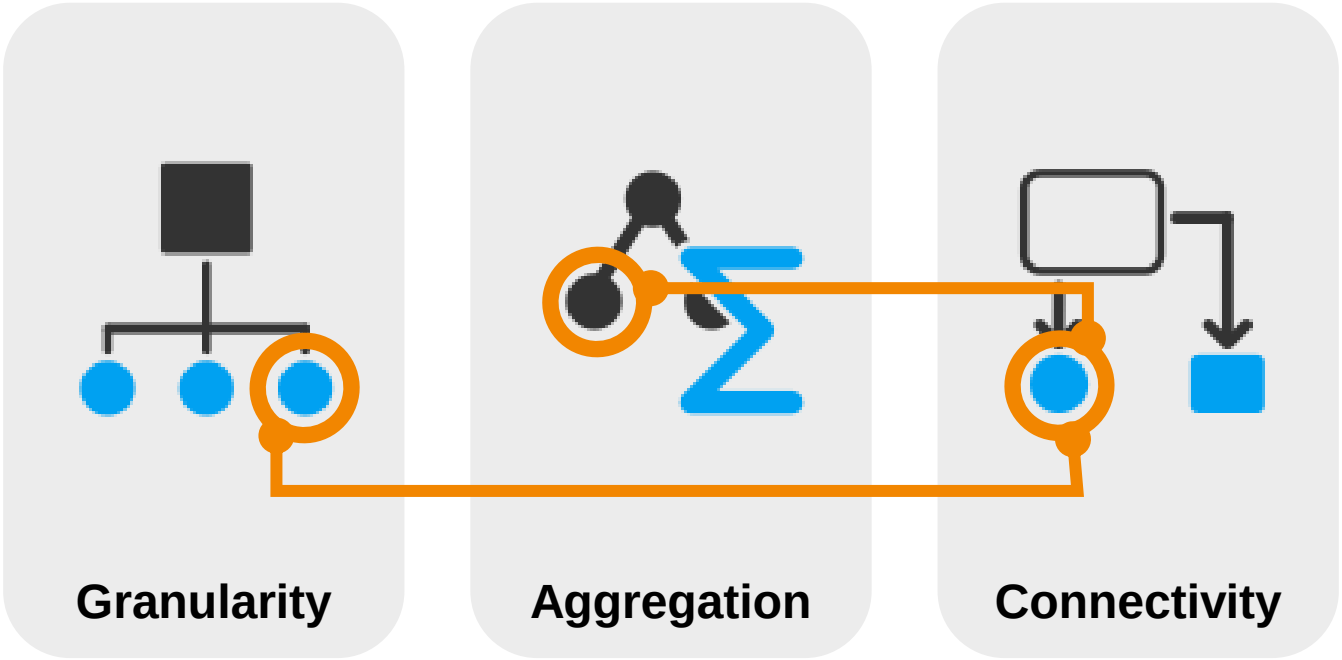
Because we had a spike in open bugs.

Why did we have a spike in open bugs?

I don’t know but I also see a spike in reworks right before…



Metrics Reveal Patterns



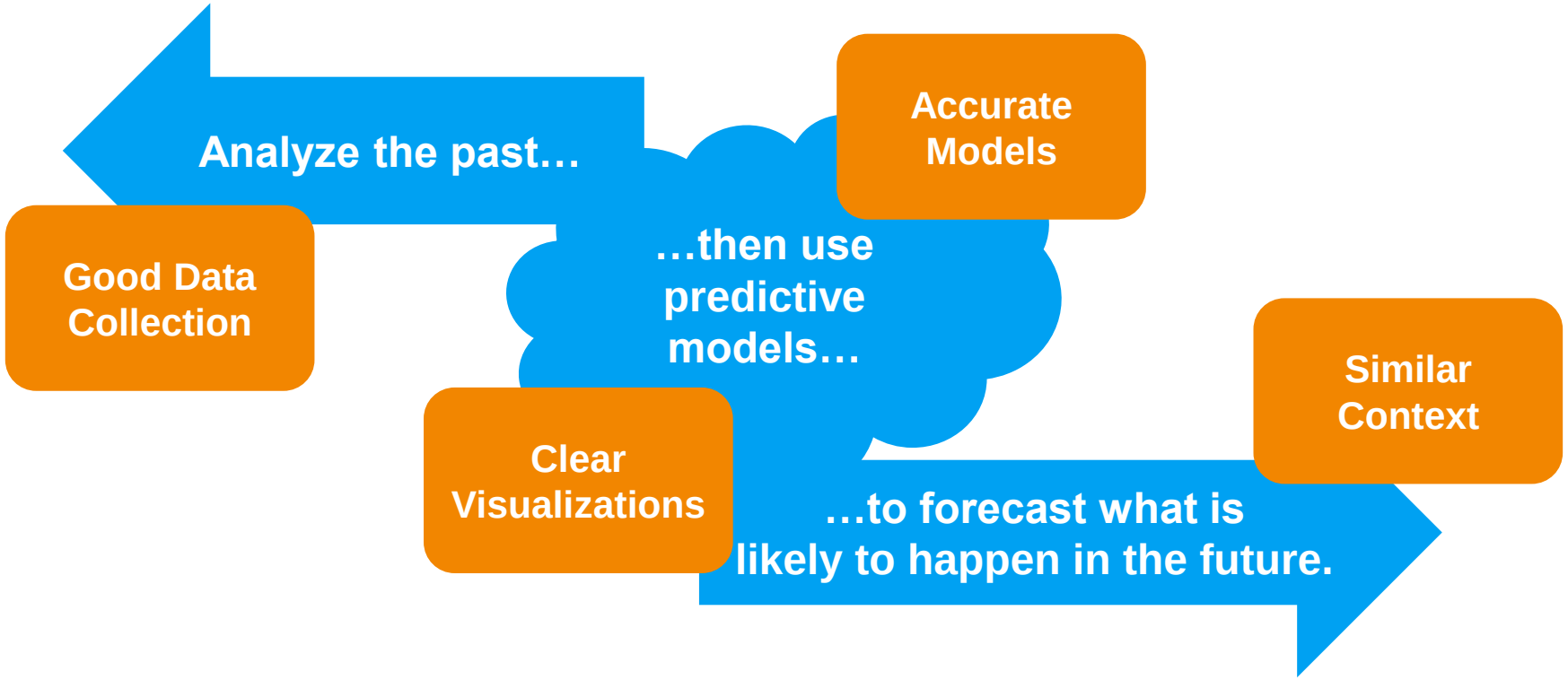
Predictive: What Is Likely To Happen?

The “Future”

“The **future does not exist**, it was made up by insurance companies and guidance counselors.”

(Some comedian I can’t remember)

Predictive Data Analytics



Predictive Data Analytics

Speed

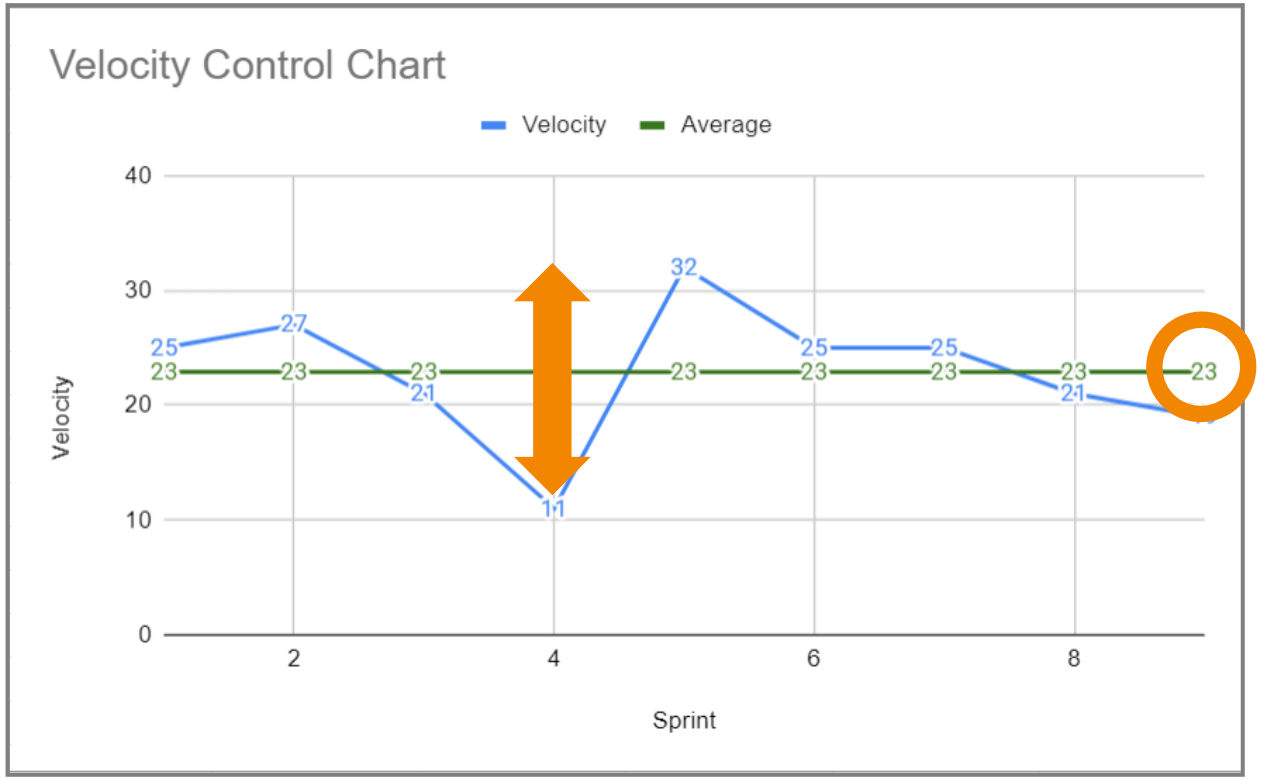
I want to ensure we deliver as efficiently as possible to get value to our customers quickly.

Are we going to meet our delivery goals?

How would you answer this question with this data?

Sprint	Velocity
1	25
2	27
3	21
4	11
5	32
6	25
7	25
8	21
9	19

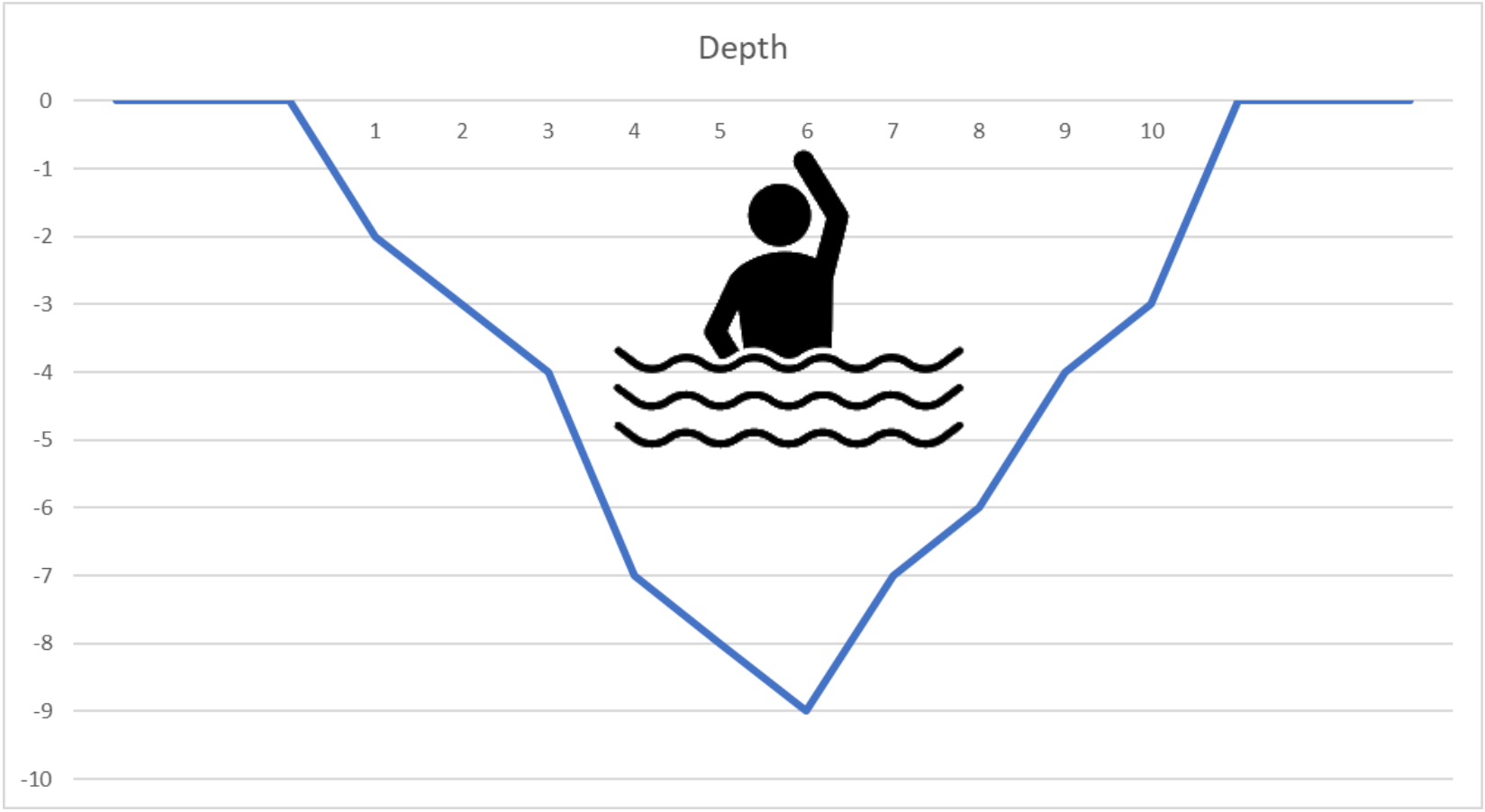
The Flaw Of Averages



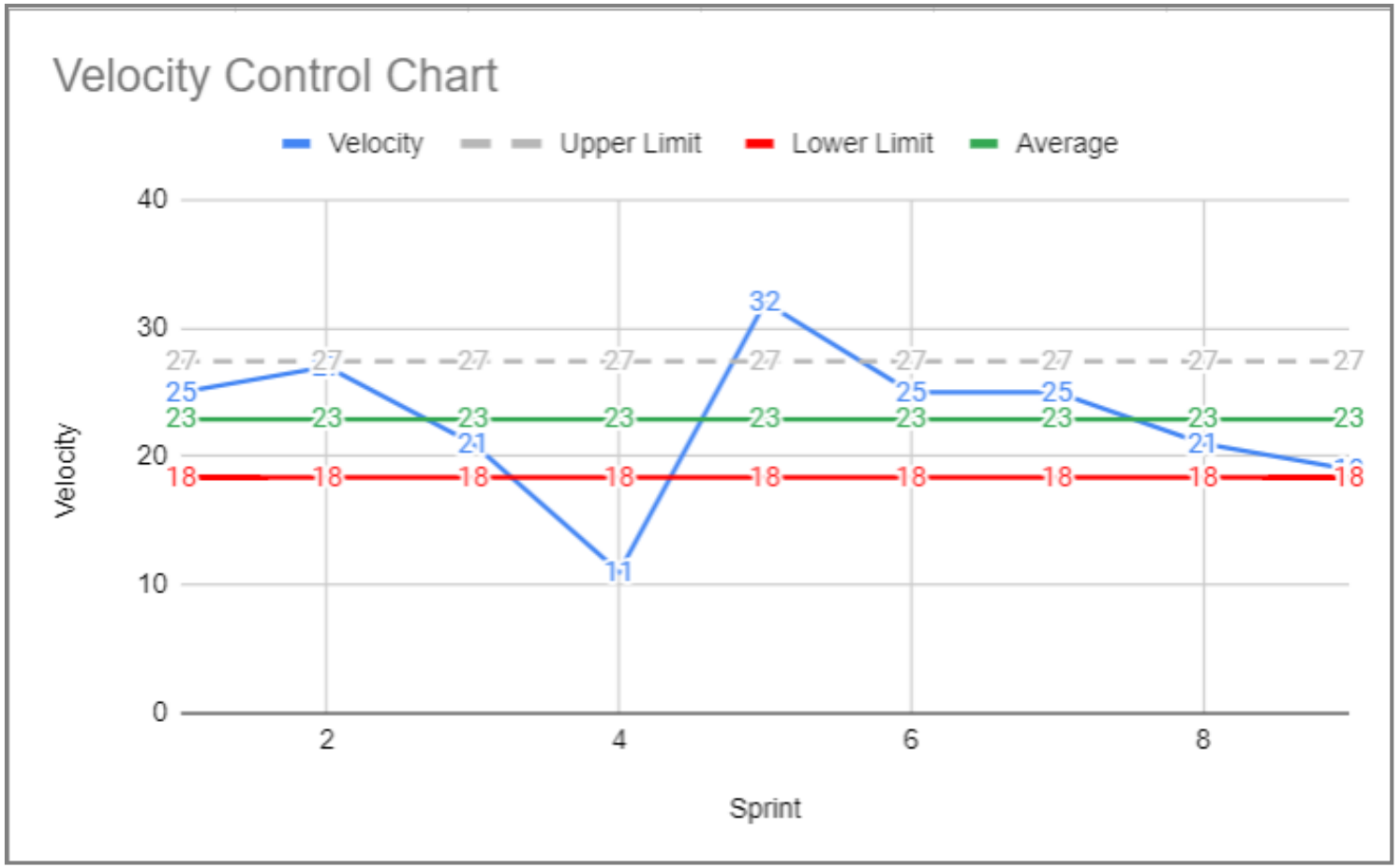
https://hbr.org/2002/11/the-flaw-of-averages

The Flaw Of Averages

Average depth: 5.3”

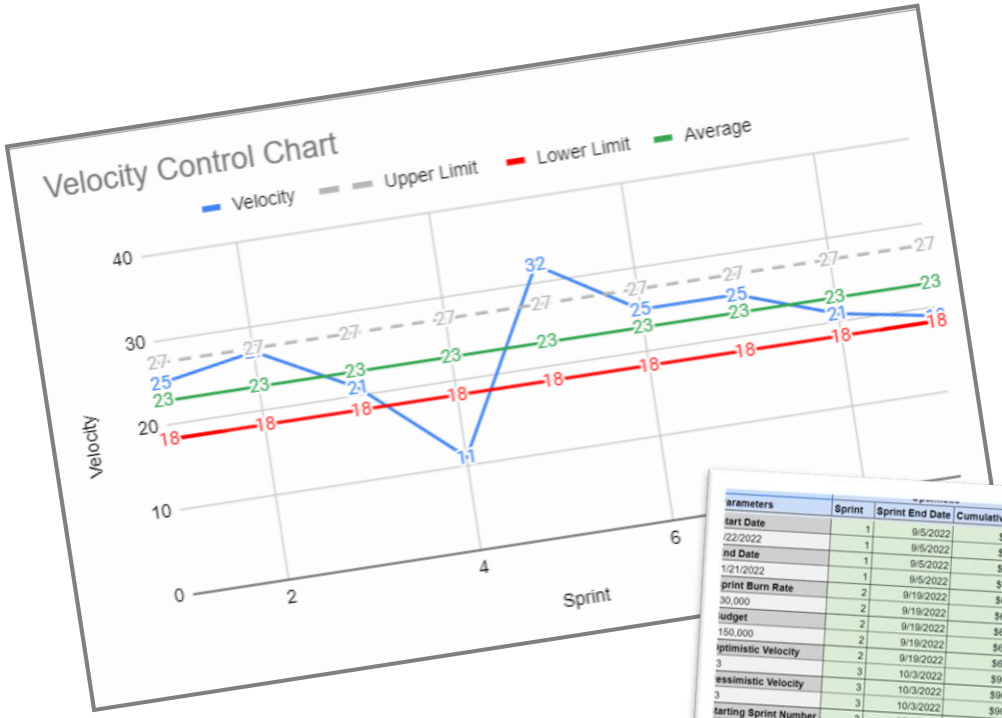


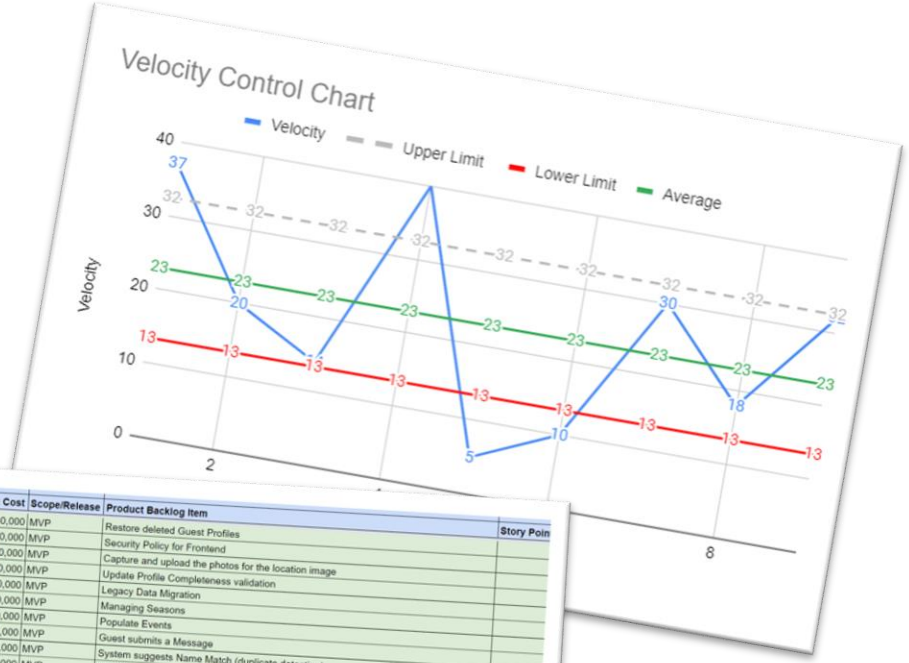
Standard Deviation / Confidence Intervals

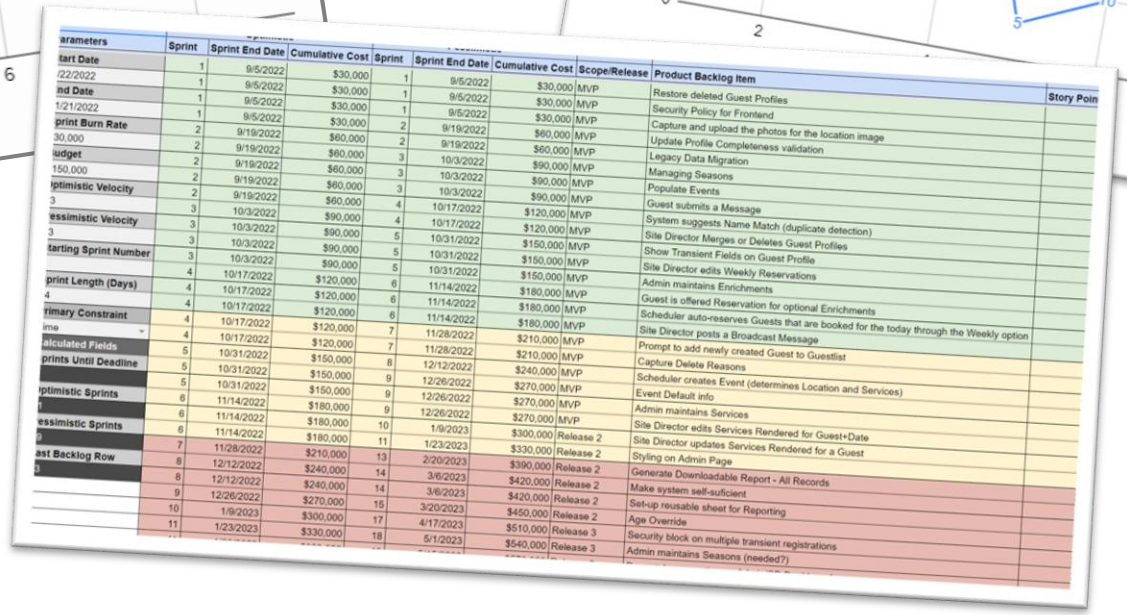


https://www.khanacademy.org/math/statistics-probability/summarizing-quantitative-data/variance-standard-deviation-population/a/calculating-standard-deviation-step-by-step

Demo: Predictive Data

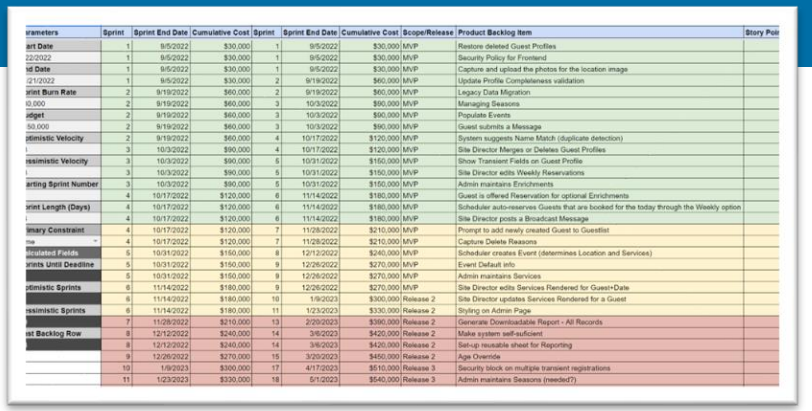






arameters	Sprint	Sprint End Date	Cumulative Cost	Sprint	Sprint End Date	Cumulative Cost	Scope/Release	Product Backlog Item	Story Poin
tart Date	1	9/5/2022	$30,000	1	9/5/2022	$30,000	MVP	Restore deleted Guest Profiles	
/22/2022	1	9/5/2022	$30,000	1	9/5/2022	$30,000	MVP	Security Policy for Frontend	
nd Date	1	9/5/2022	$30,000	1	9/5/2022	$30,000	MVP	Capture and upload the photos for the location image	
1/21/2022	1	9/5/2022	$30,000	2	9/19/2022	$60,000	MVP	Update Profile Completeness validation	
print Burn Rate	2	9/19/2022	$60,000	2	9/19/2022	$60,000	MVP	Legacy Data Migration	
30,000	2	9/19/2022	$60,000	3	10/3/2022	$90,000	MVP	Managing Seasons	
udget	2	9/19/2022	$60,000	3	10/3/2022	$90,000	MVP	Populate Events	
150,000	2	9/19/2022	$60,000	3	10/3/2022	$90,000	MVP	Guest submits a Message	
ptimistic Velocity	3	10/3/2022	$90,000	4	10/17/2022	$120,000	MVP	System suggests Name Match (duplicate detection)	
3	3	10/3/2022	$90,000	4	10/17/2022	$120,000	MVP	Site Director Merges or Deletes Guest Profiles	
essimistic Velocity	3	10/3/2022	$90,000	5	10/31/2022	$150,000	MVP	Show Transient Fields on Guest Profile	
3	3	10/3/2022	$90,000	5	10/31/2022	$150,000	MVP	Site Director edits Weekly Reservations	
tarting Sprint Number	4	10/17/2022	$120,000	5	10/31/2022	$150,000	MVP	Admin maintains Enrichments	
	4	10/17/2022	$120,000	6	11/14/2022	$180,000	MVP	Guest is offered Reservation for optional Enrichments	
print Length (Days)	4	10/17/2022	$120,000	6	11/14/2022	$180,000	MVP	Scheduler auto-reserves Guests that are booked for the today through the Weekly option	
4	4	10/17/2022	$120,000	6	11/14/2022	$180,000	MVP	Site Director posts a Broadcast Message	
rimary Constraint	4	10/17/2022	$120,000	7	11/28/2022	$210,000	MVP	Prompt to add newly created Guest to Guestlist	
ime	4	10/17/2022	$120,000	7	11/28/2022	$210,000	MVP	Capture Delete Reasons	
alculated Fields	5	10/31/2022	$150,000	8	12/12/2022	$240,000	MVP	Scheduler creates Event (determines Location and Services)	
prints Until Deadline	5	10/31/2022	$150,000	9	12/26/2022	$270,000	MVP	Event Default info	
	5	10/31/2022	$150,000	9	12/26/2022	$270,000	MVP	Admin maintains Services	
ptimistic Sprints	6	11/14/2022	$180,000	9	12/26/2022	$270,000	MVP	Site Director edits Services Rendered for Guest+Date	
	6	11/14/2022	$180,000	10	1/9/2023	$300,000	Release 2	Site Director updates Services Rendered for a Guest	
essimistic Sprints	6	11/14/2022	$180,000	11	1/23/2023	$330,000	Release 2	Styling on Admin Page	
3	7	11/28/2022	$210,000	13	2/20/2023	$390,000	Release 2	Generate Downloadable Report - All Records	
ast Backlog Row	8	12/12/2022	$240,000	14	3/6/2023	$420,000	Release 2	Make system self-suficient	
3	8	12/12/2022	$240,000	14	3/6/2023	$420,000	Release 2	Set-up reusable sheet for Reporting	
	9	12/26/2022	$270,000	15	3/20/2023	$450,000	Release 2	Age Override	
	10	1/9/2023	$300,000	17	4/17/2023	$510,000	Release 3	Security block on multiple transient registrations	
	11	1/23/2023	$330,000	18	5/1/2023	$540,000	Release 3	Admin maintains Seasons (needed?)	

Exercise: Predictive Data



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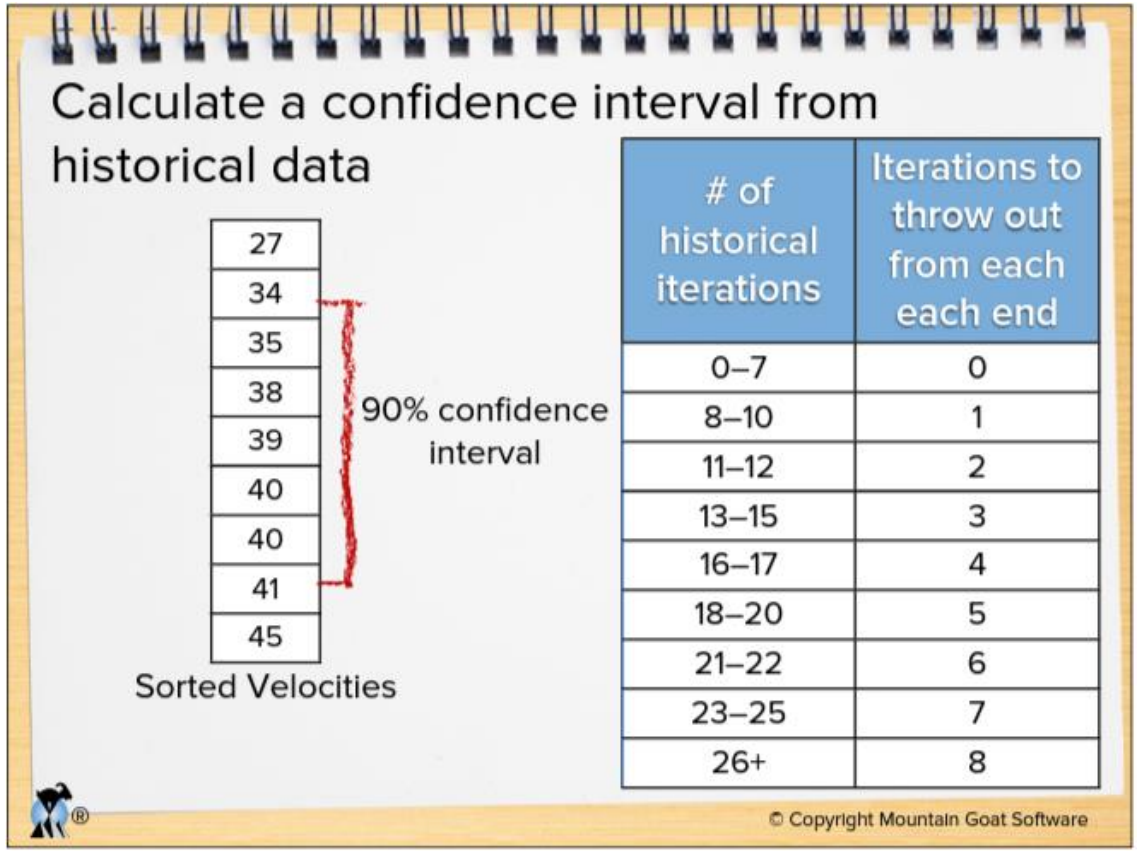
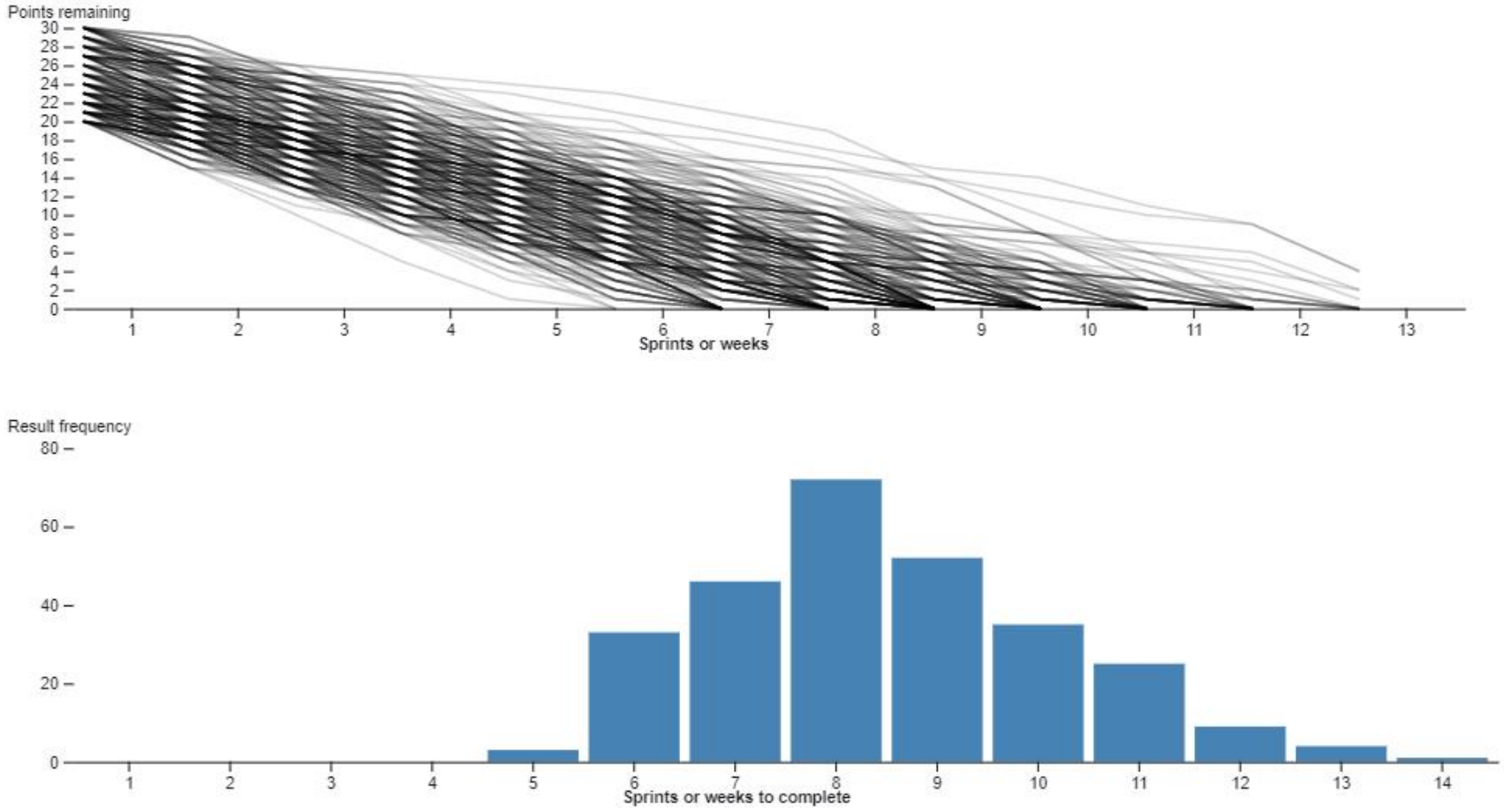
	3	10/3/2022	$90,000	5	10/31/2022	$150,000	MVP	Site Director edits Weekly Reservations	
arting Sprint Number	3	10/3/2022	$90,000	5	10/31/2022	$150,000	MVP	Admin maintains Enrichments	
	4	10/17/2022	$120,000	6	11/14/2022	$180,000	MVP	Guest is offered Reservation for optional Enrichments	
rint Length (Days)	4	10/17/2022	$120,000	6	11/14/2022	$180,000	MVP	Scheduler auto-reserves Guests that are booked for the today through the Weekly option	
	4	10/17/2022	$120,000	6	11/14/2022	$180,000	MVP	Site Director posts a Broadcast Message	
mary Constraint	4	10/17/2022	$120,000	7	11/28/2022	$210,000	MVP	Prompt to add newly created Guest to Guestlist	
me	4	10/17/2022	$120,000	7	11/28/2022	$210,000	MVP	Capture Delete Reasons	
culated Fields	5	10/31/2022	$150,000	8	12/12/2022	$240,000	MVP	Scheduler creates Event (determines Location and Services)	
rints Until Deadline	5	10/31/2022	$150,000	9	12/26/2022	$270,000	MVP	Event Default info	
	5	10/31/2022	$150,000	9	12/26/2022	$270,000	MVP	Admin maintains Services	
timistic Sprints	6	11/14/2022	$180,000	9	12/26/2022	$270,000	MVP	Site Director edits Services Rendered for Guest+Date	
	6	11/14/2022	$180,000	10	1/9/2023	$300,000	Release 2	Site Director updates Services Rendered for a Guest	
ssimistic Sprints	6	11/14/2022	$180,000	11	1/23/2023	$330,000	Release 2	Styling on Admin Page	
	7	11/28/2022	$210,000	13	2/20/2023	$390,000	Release 2	Generate Downloadable Report - All Records	
st Backlog Row	8	12/12/2022	$240,000	14	3/6/2023	$420,000	Release 2	Make system self-sufficient	
	8	12/12/2022	$240,000	14	3/6/2023	$420,000	Release 2	Set-up reusable sheet for Reporting	
	9	12/26/2022	$270,000	15	3/20/2023	$450,000	Release 2	Age Override	
	10	1/9/2023	$300,000	17	4/17/2023	$510,000	Release 3	Security block on multiple transient registrations	
	11	1/23/2023	$330,000	18	5/1/2023	$540,000	Release 3	Admin maintains Seasons (needed?)	

- Roll a 10-sided die and add 5 for your pessimistic velocity.
- Roll a 10-sided die and add 15 for your optimistic velocity.
- Role play as a Product Owner communicating this forecast to a Stakeholder.
- Roll an 8-sided die and subtract that from your pessimistic velocity.
- Have that same conversation.

Other Forecasting Techniques



Monte Carlo Simulation



https://observablehq.com/@troymagennis/introduction-to-monte-carlo-forecasting

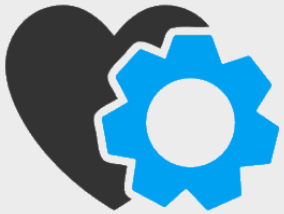
Qualities Of A Good Metric

Goal Focused

Clear

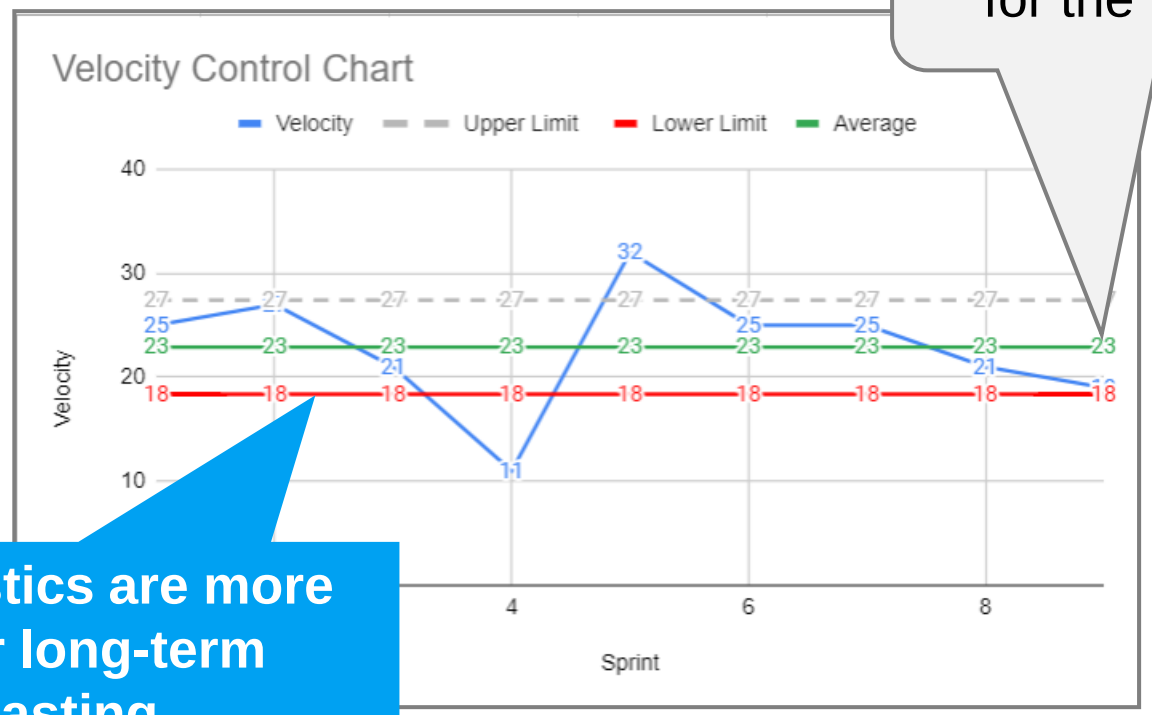
Actionable

Trusted



Positive Behavior

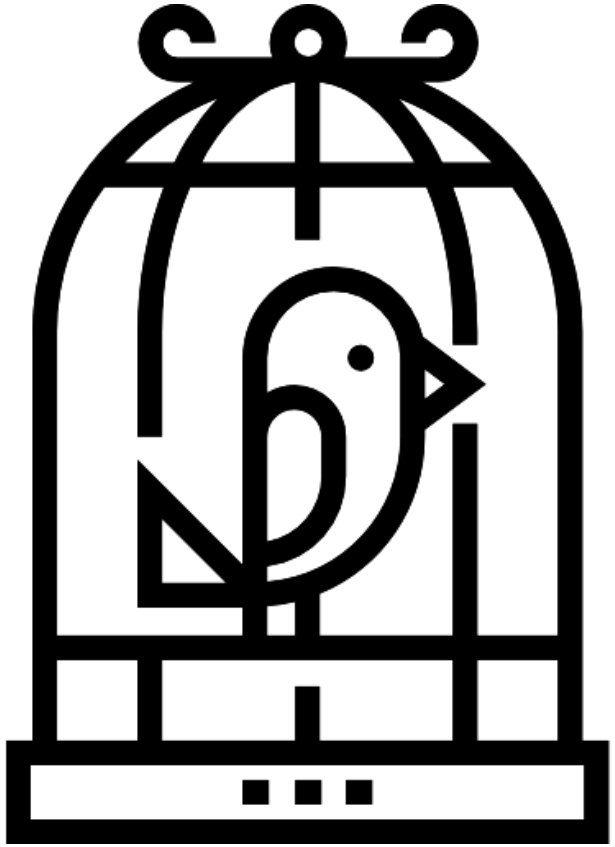
Short Term Forecasting



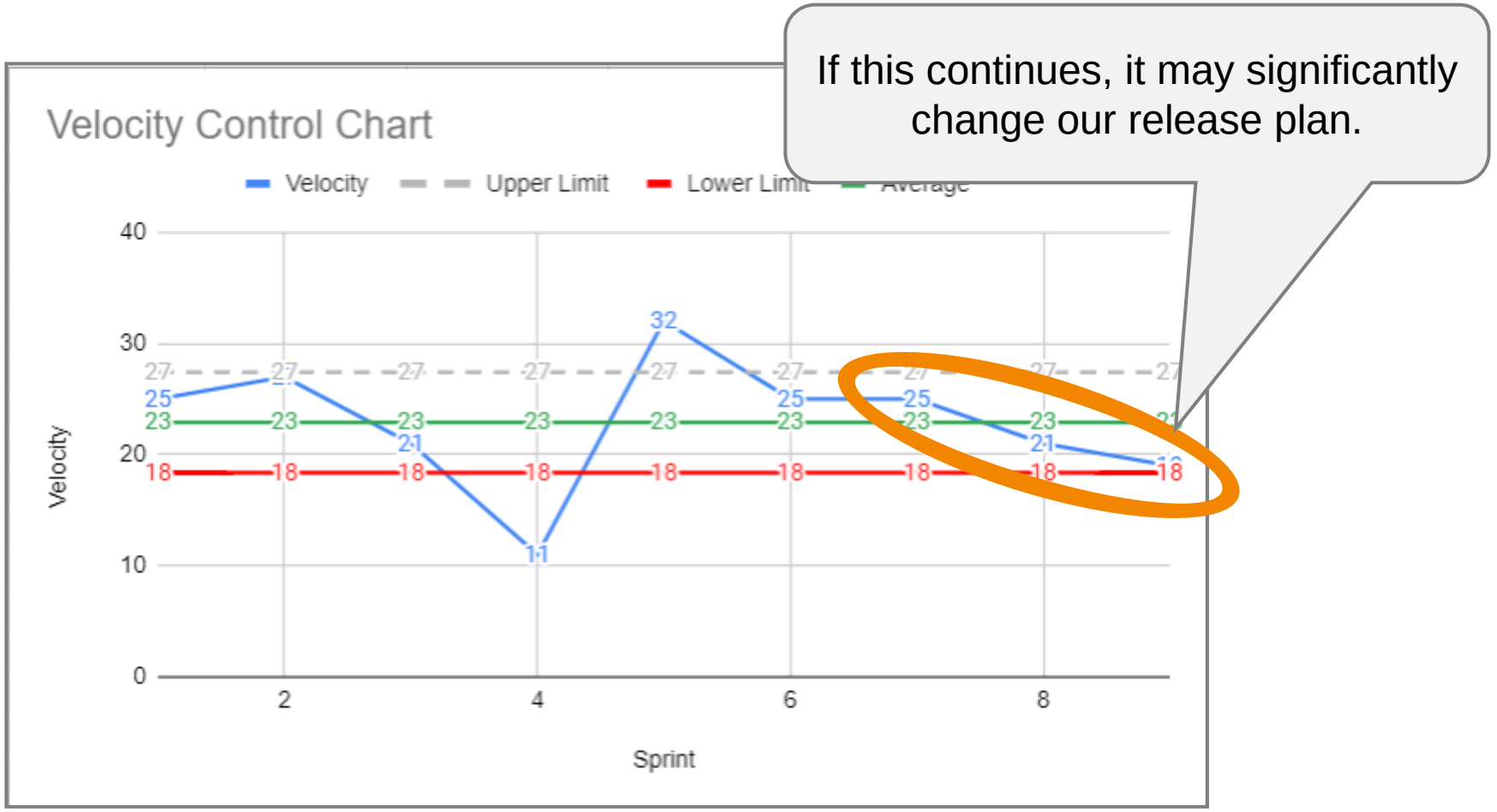
What will be our velocity for the **next** sprint?

These statistics are more suited for long-term forecasting

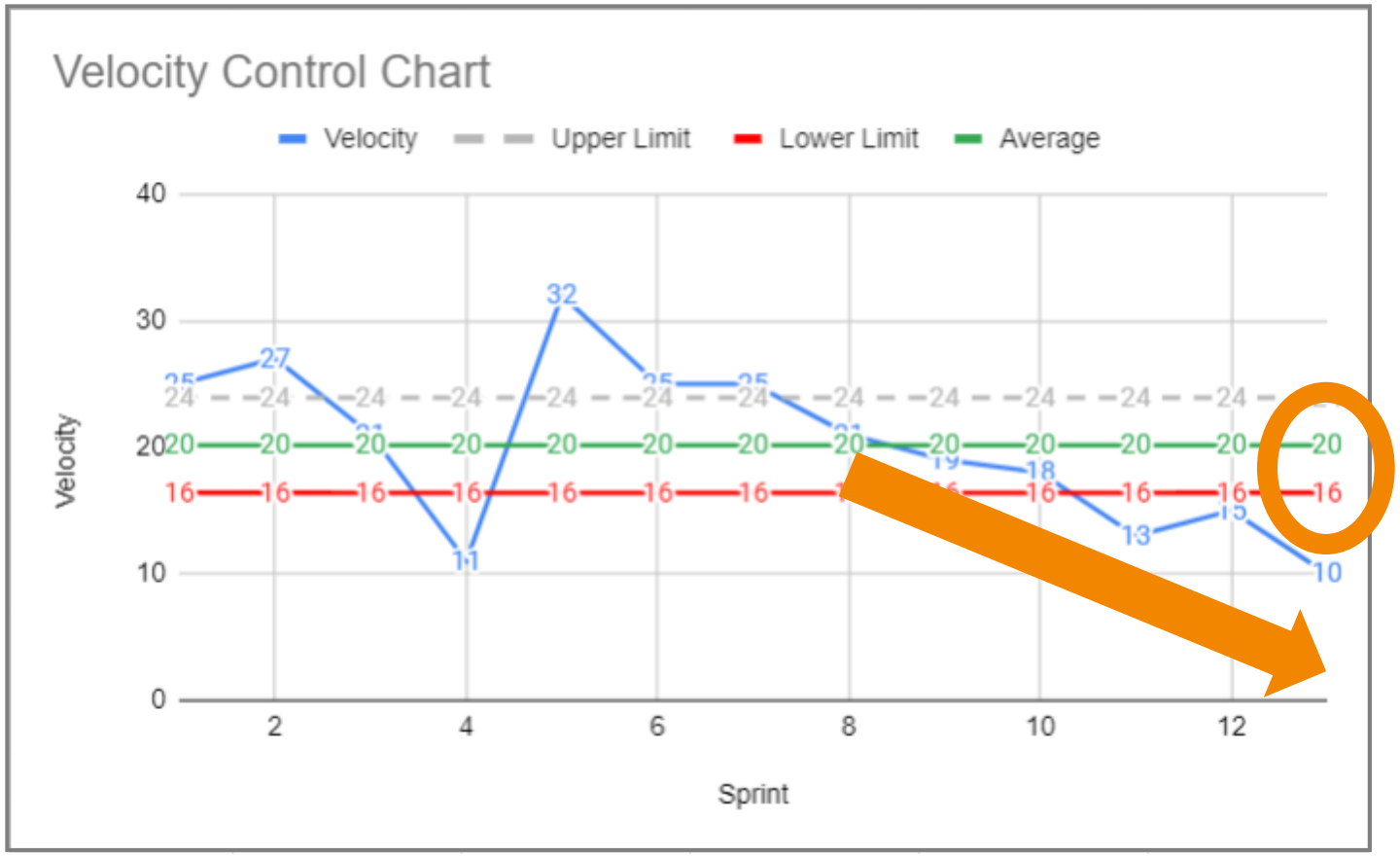
Canary In The Coalmine



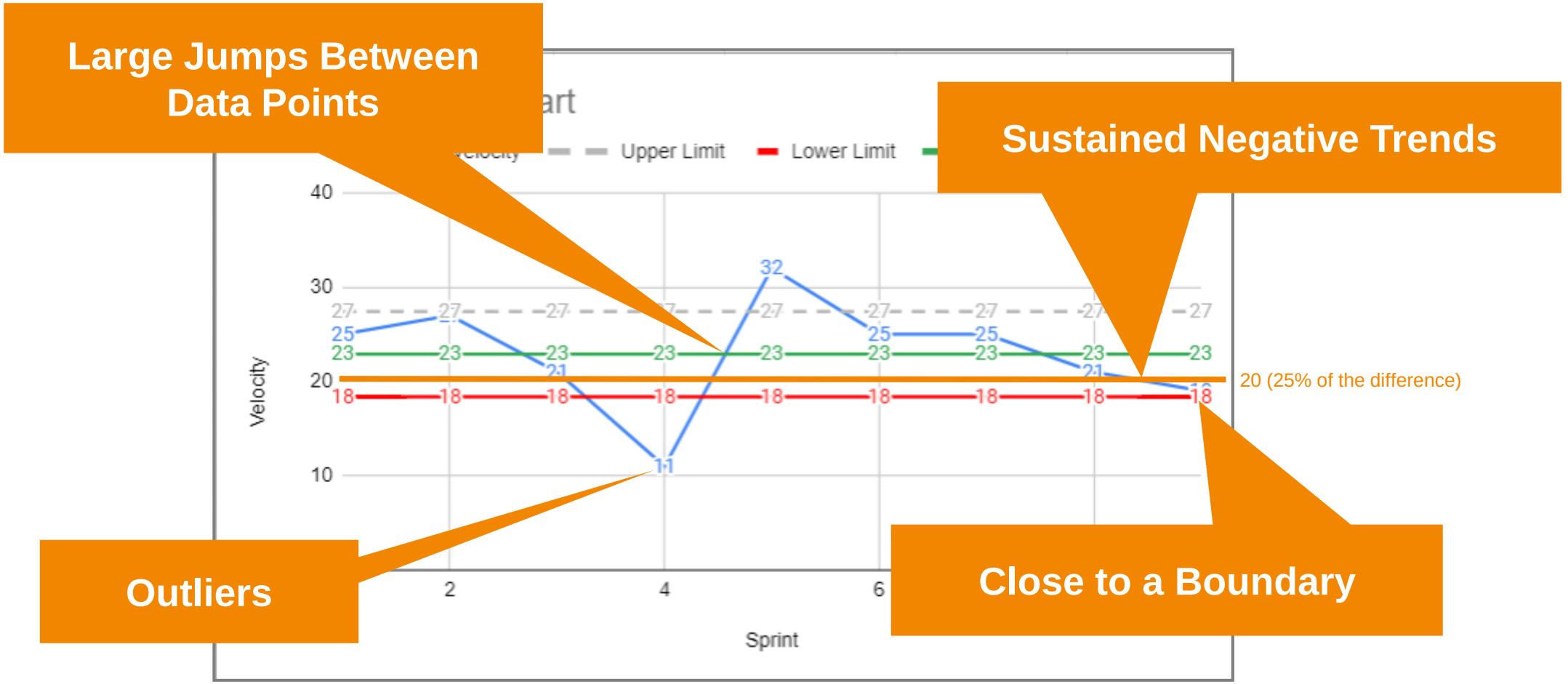
I’ve Got A Bad Feeling About This



Early Warning Signs

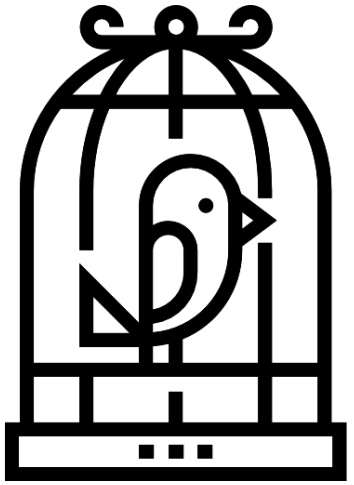


Boundaries And Thresholds

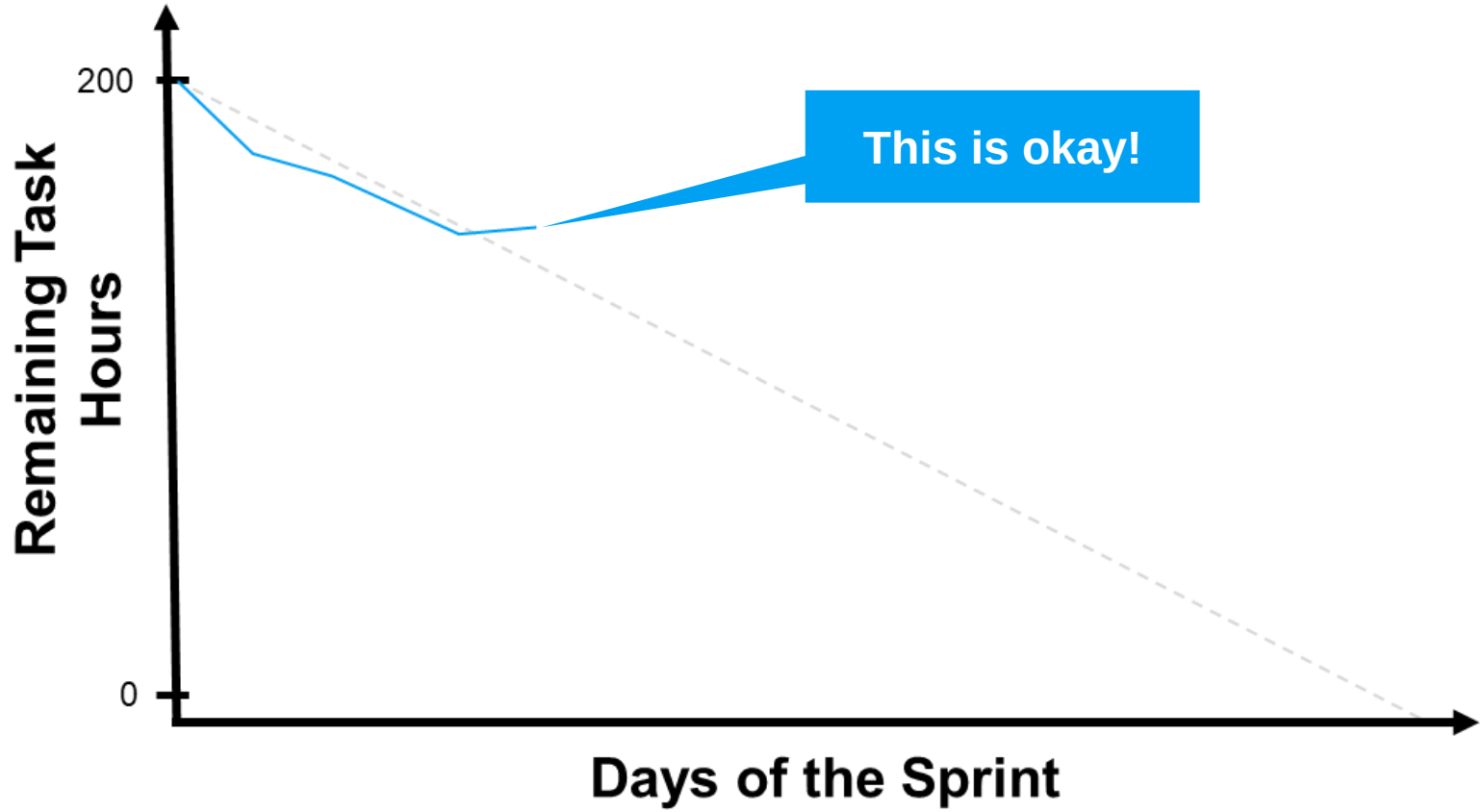


Exercise: Early Warnings

- Use the quality metric you discussed in our previous exercise.
- Discuss what thresholds and boundaries you might set for it.
- If you have time, discuss other metrics and their thresholds and boundaries.

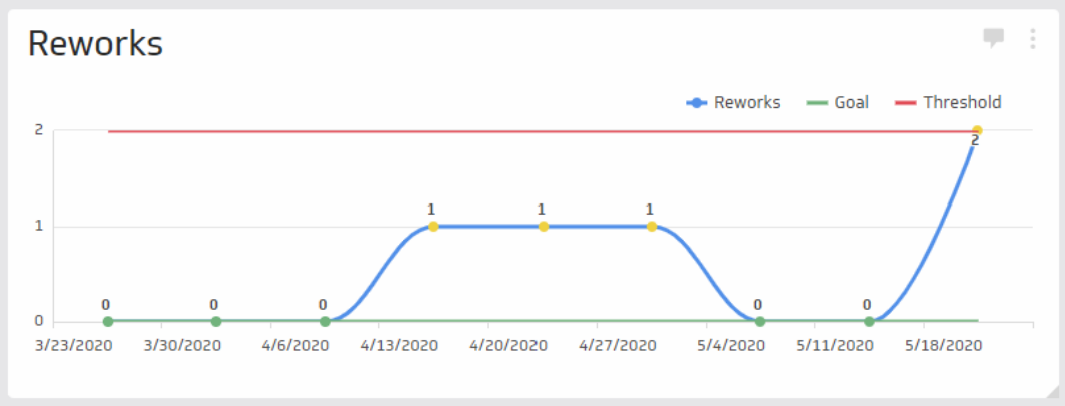


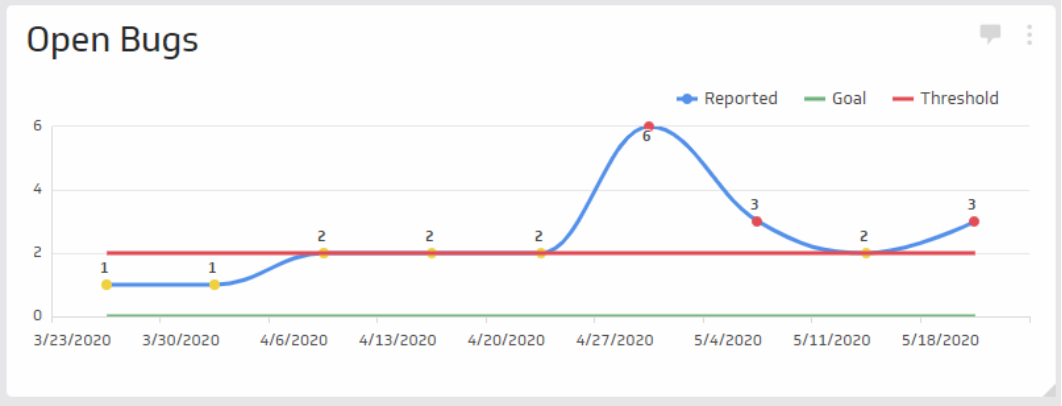
Don’t Sweat The Small Stuff

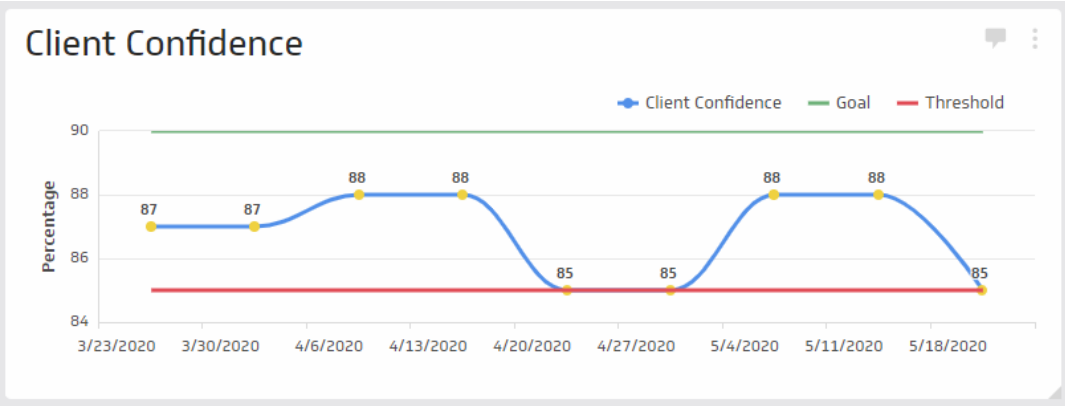


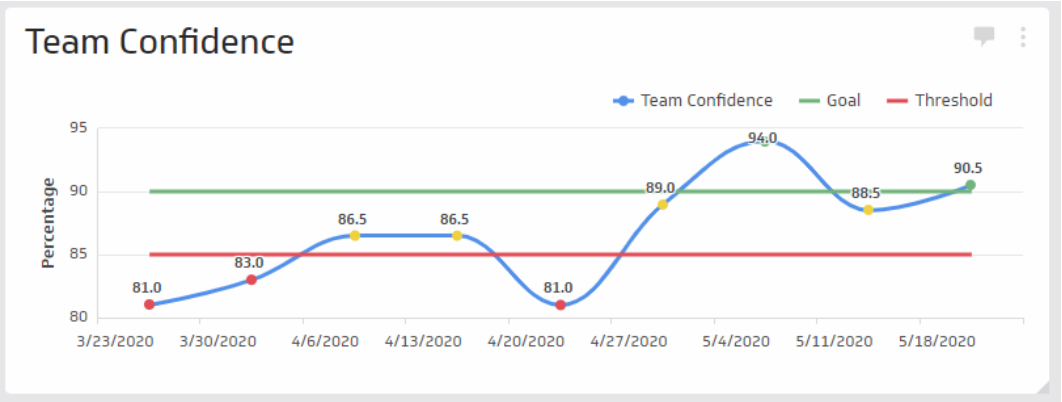
Predictive Patterns

Predictive Patterns

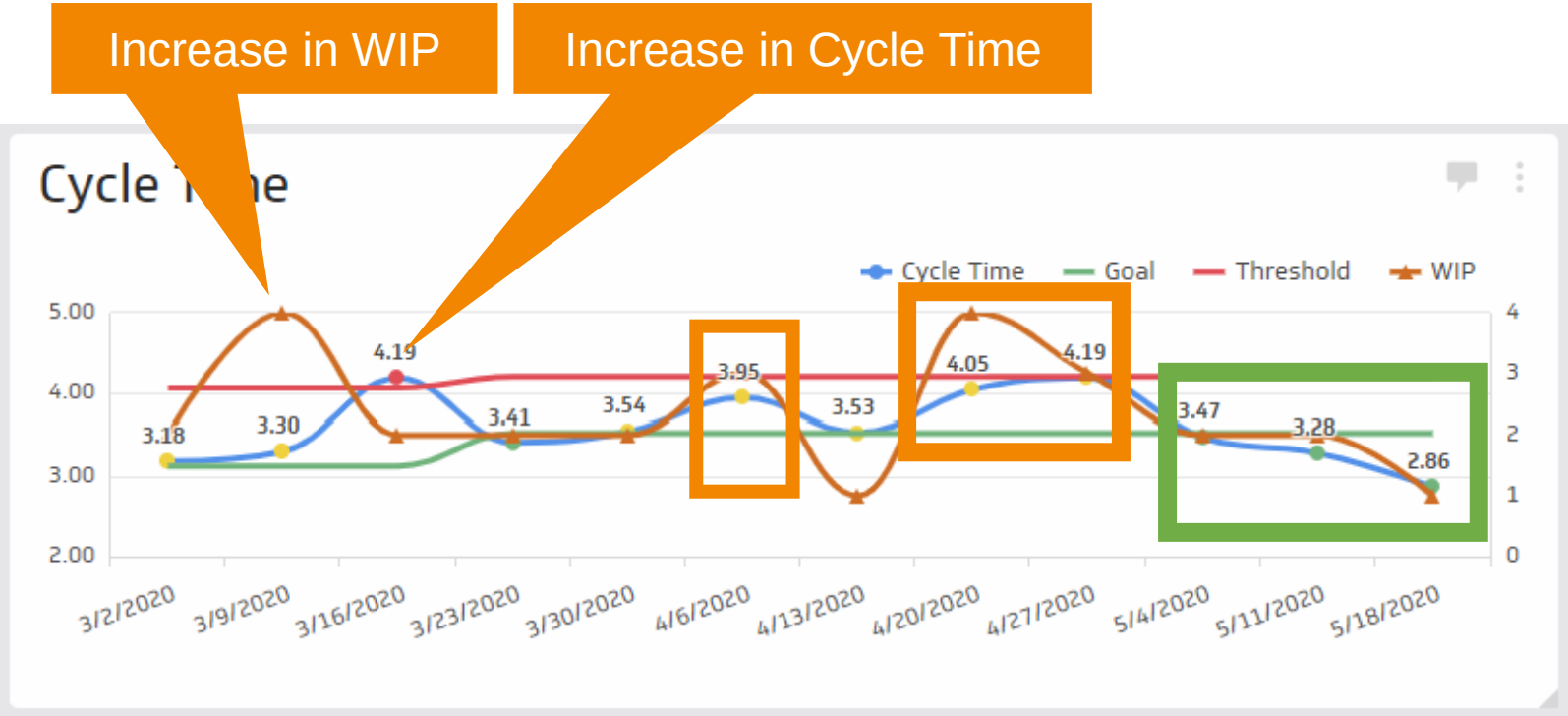






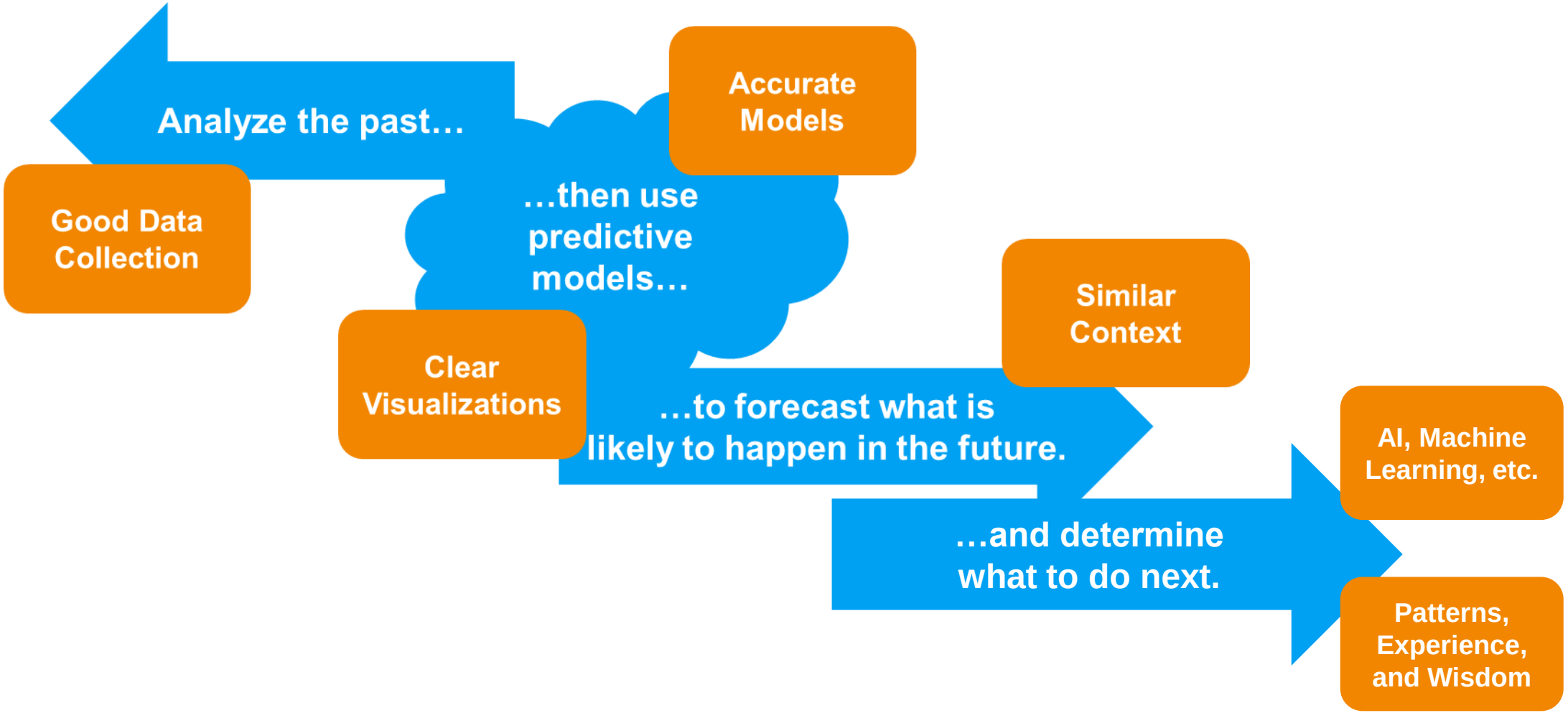


Hate To Say “I Told You So”

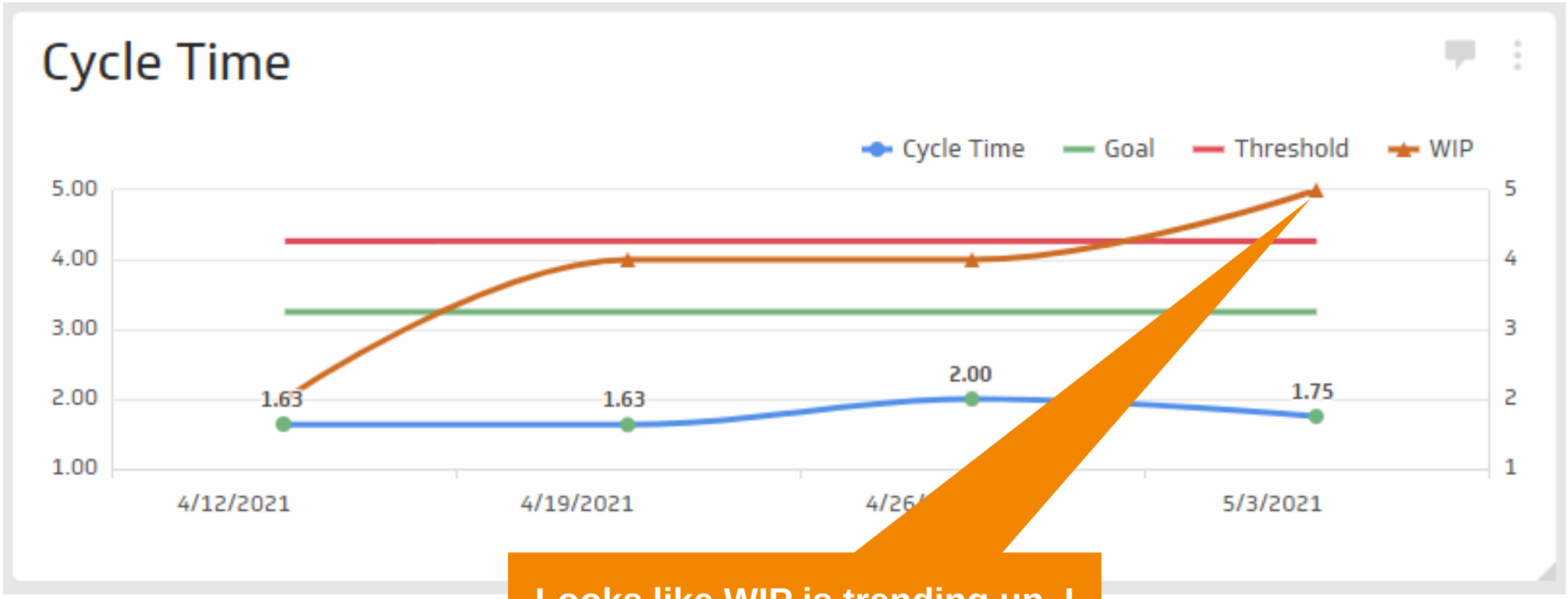


Prescriptive: What Should We Do?

Learning From The Past

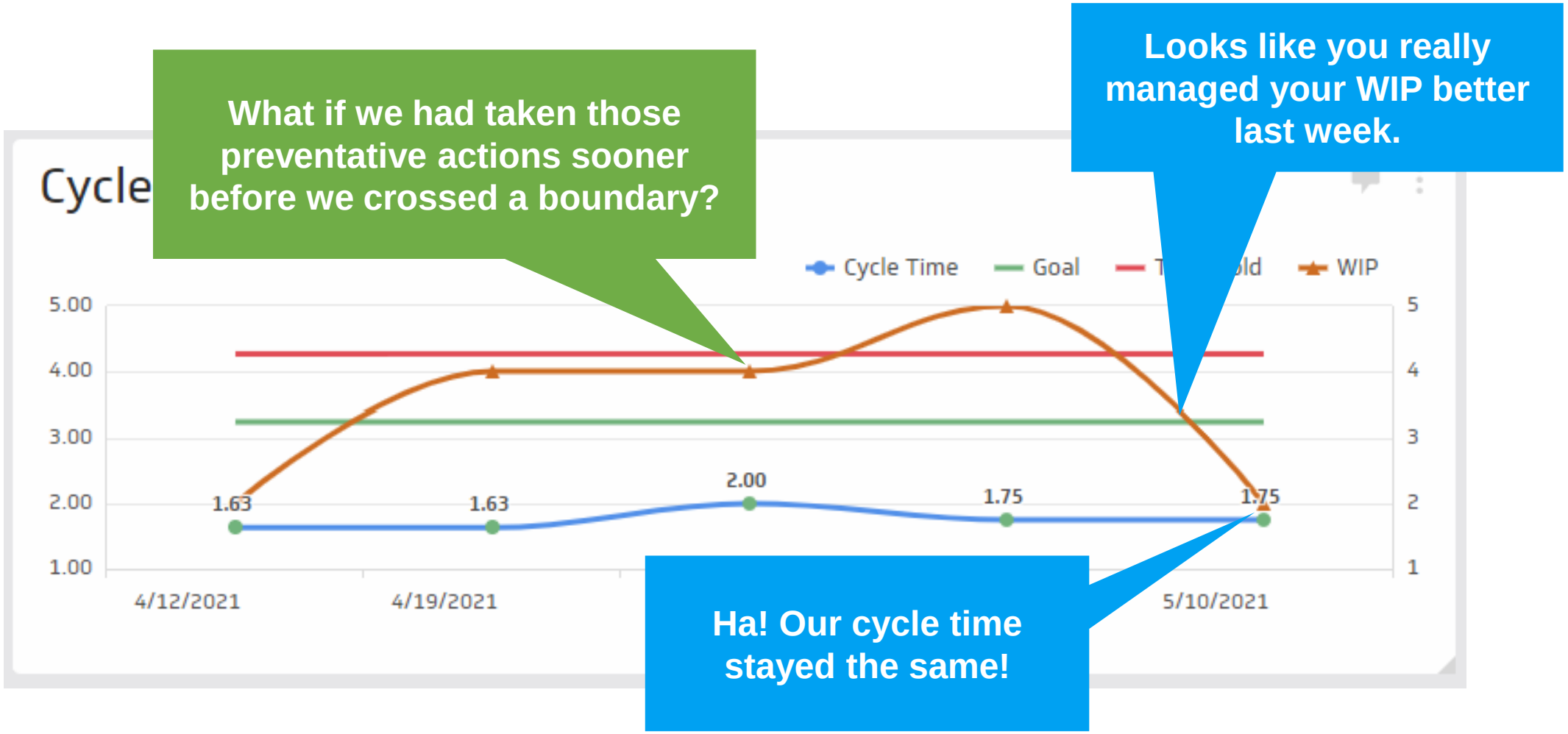


Getting Ahead Of Potential Risks



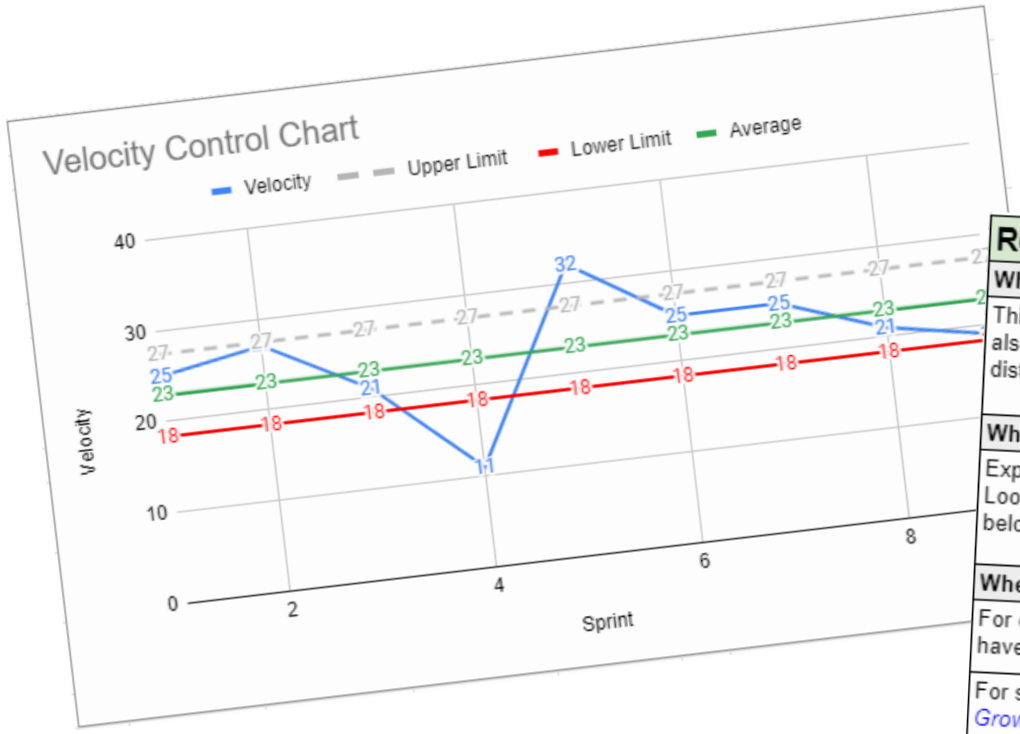
Looks like WIP is trending up. I bet your cycle time will go up as well!

Getting Ahead Of Potential Risks



Inspect And Adapt

Demo: Prescriptive Data Analytics



Report Guidance

What does this report show?

This report tracks the velocity (every PBI that gets to "Done" in the sprint) for each sprint. It also calculates the average as well as the stastical upper and lower bounds of the distribution of the reported data.

What show we be looking for?

Expected behavior is that velocity stays within the upper and lower bounds consistently. Look for a downward trend that is getting close to the lower bound or any velocity that is below the lower bound. Also investigate the causes of any big spikes in either direction.

Where should I look for deeper diagostics?

For outliers below the lower bound, look at the *Velocity Breakdown* to see what story may have taken more time than expected.

For stories that took longer than expected, review their *Task Hours Breakdown* and *Task Growth* reports.

Review the *Sprint Analysis Log* to see what situations or complications occurred during the sprint that might give some insight on what happened.

More Details

Video on *Standard Deviation and Confidence Intervals*.

Putting It All Together

Descriptive
(What happened?)

Diagnostic
(Why did it happen?)

Predictive
(What's likely to happen?)

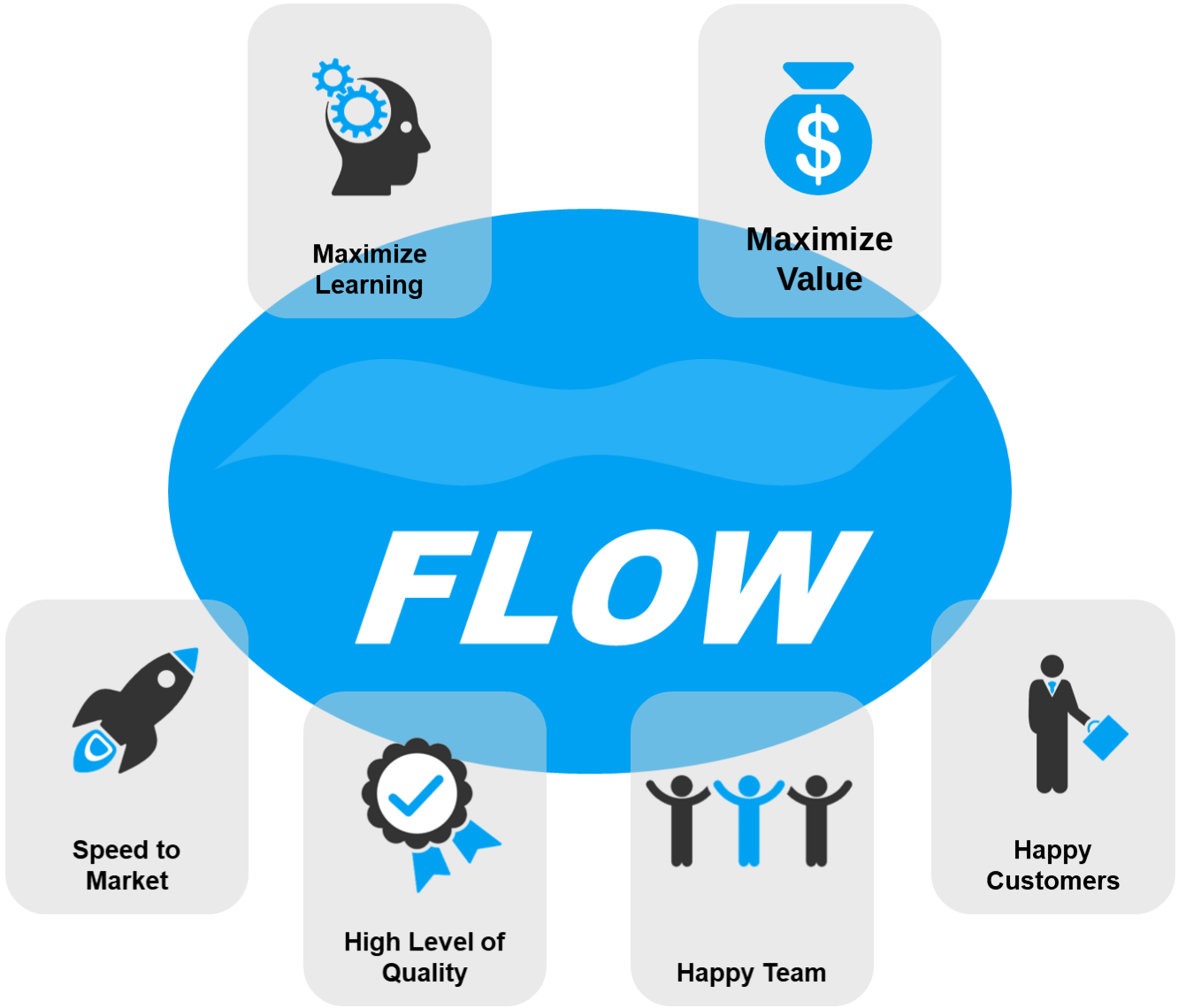
Prescriptive
(What should we do?)

Exercise: Patterns

- Choose a metric you have used previously.
- Discuss what typical patterns you might see in this metric.
- Discuss how you might get ahead of those patterns and what you would prescribe to avoid potential issues.

Maximizing Flow

Flow


Maximize Learning
Maximize Value
FLOW
Speed to Market
High Level of Quality
Happy Team
Happy Customers

Maximizing Flow

Help The System Reveal Itself

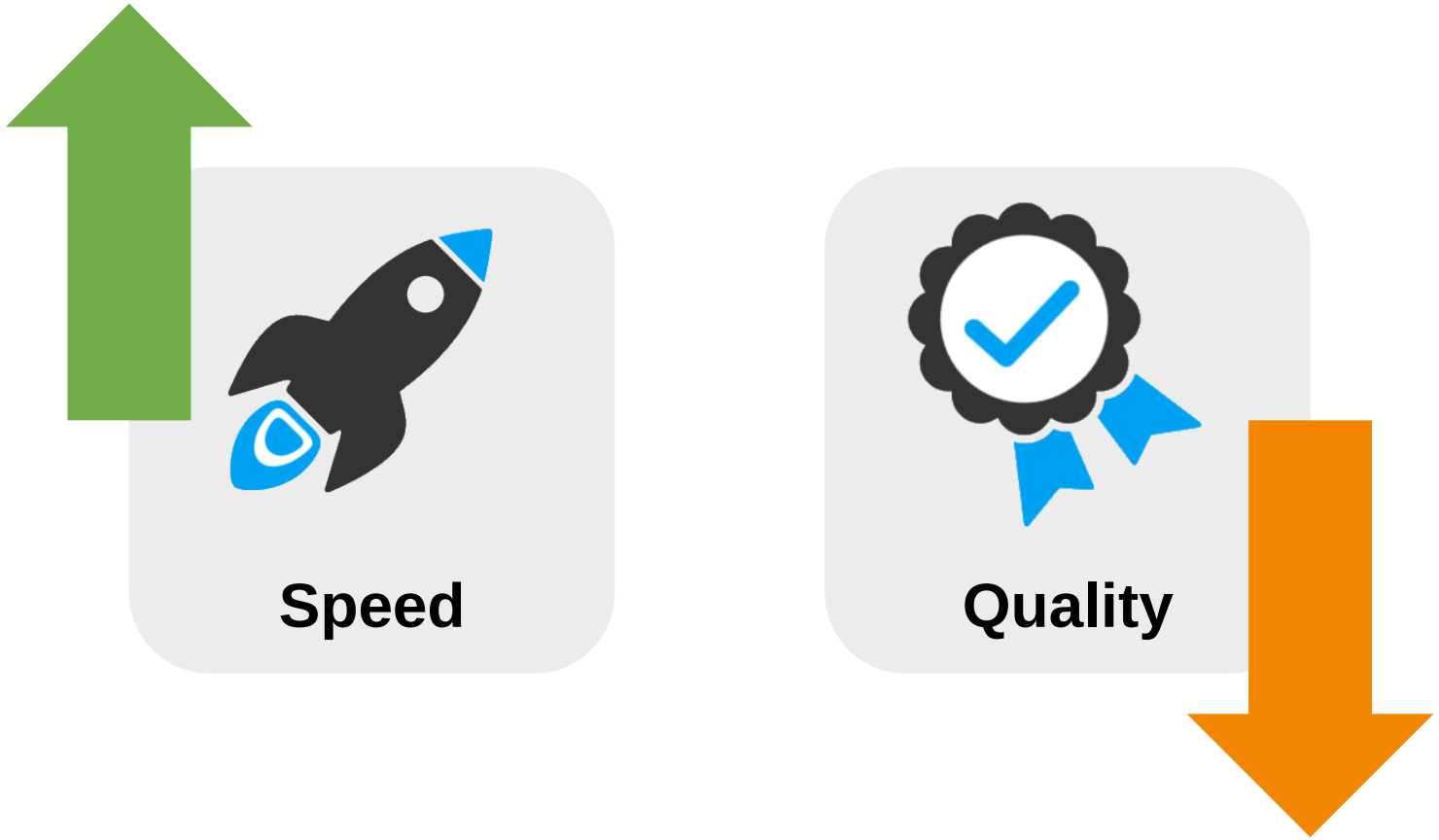
Stabilize The System

Identify Constraints In The System

Relieve the Constraints

Iteratively Improve The System

Metrics Are Connected

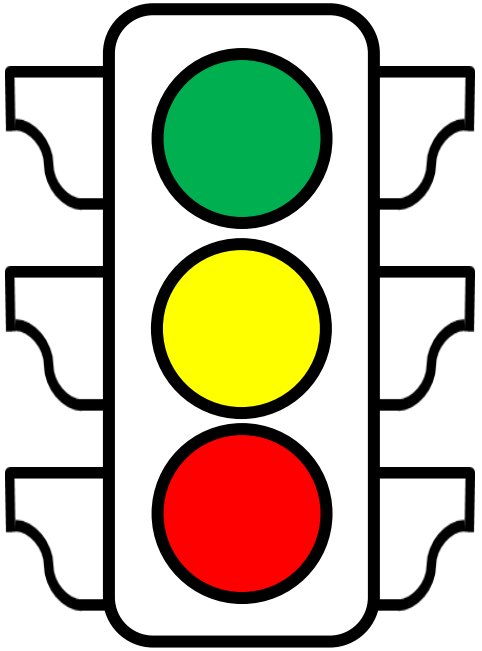


Balanced Metrics Quadrant

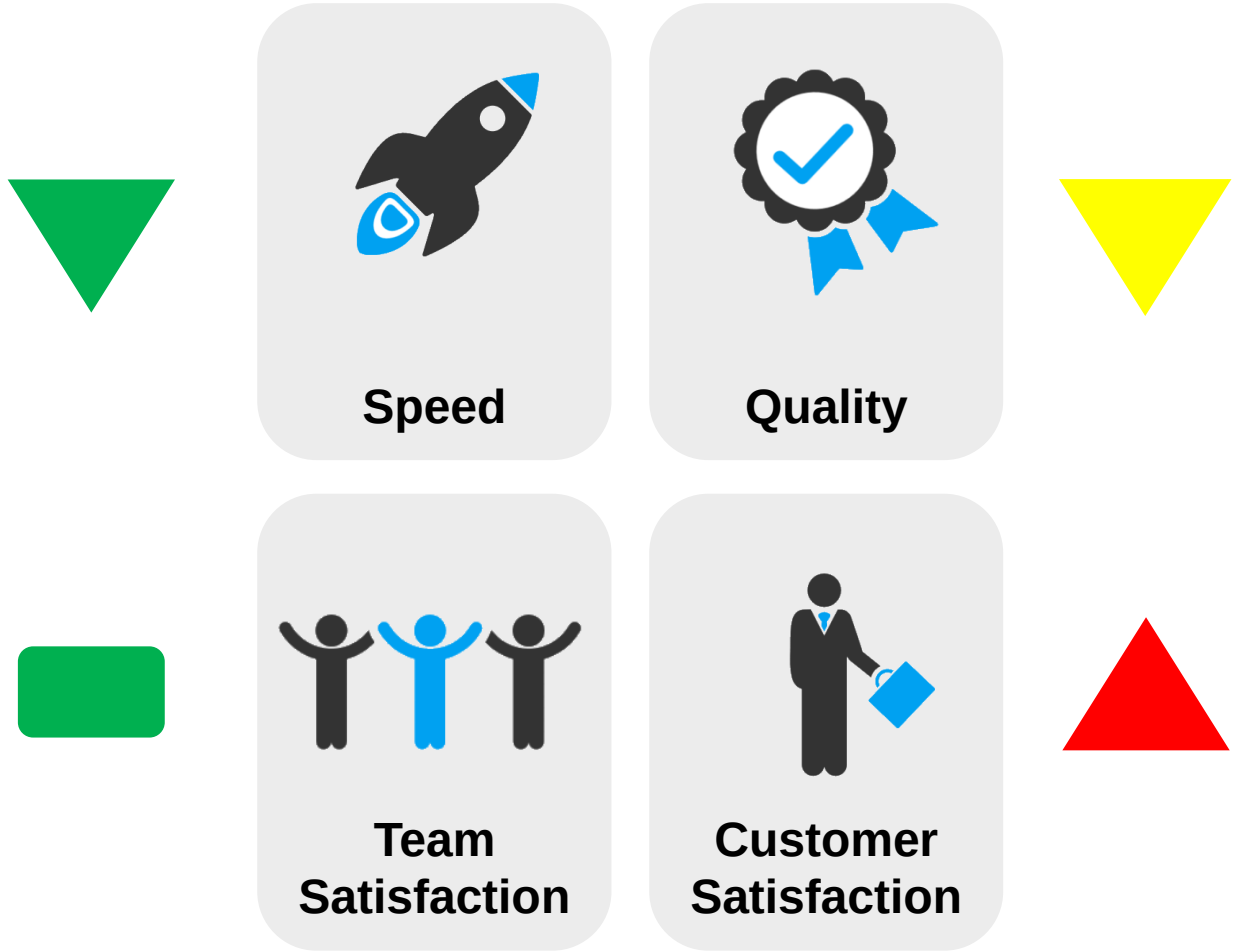
“Timely” Metrics

Balanced Metrics Quadrant

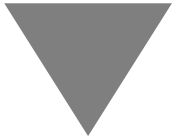
Metric Dashboards



Trend Dashboards



Trend Dashboards



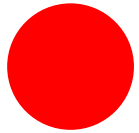
Trending in a negative direction

No significant change

Trending in a positive direction

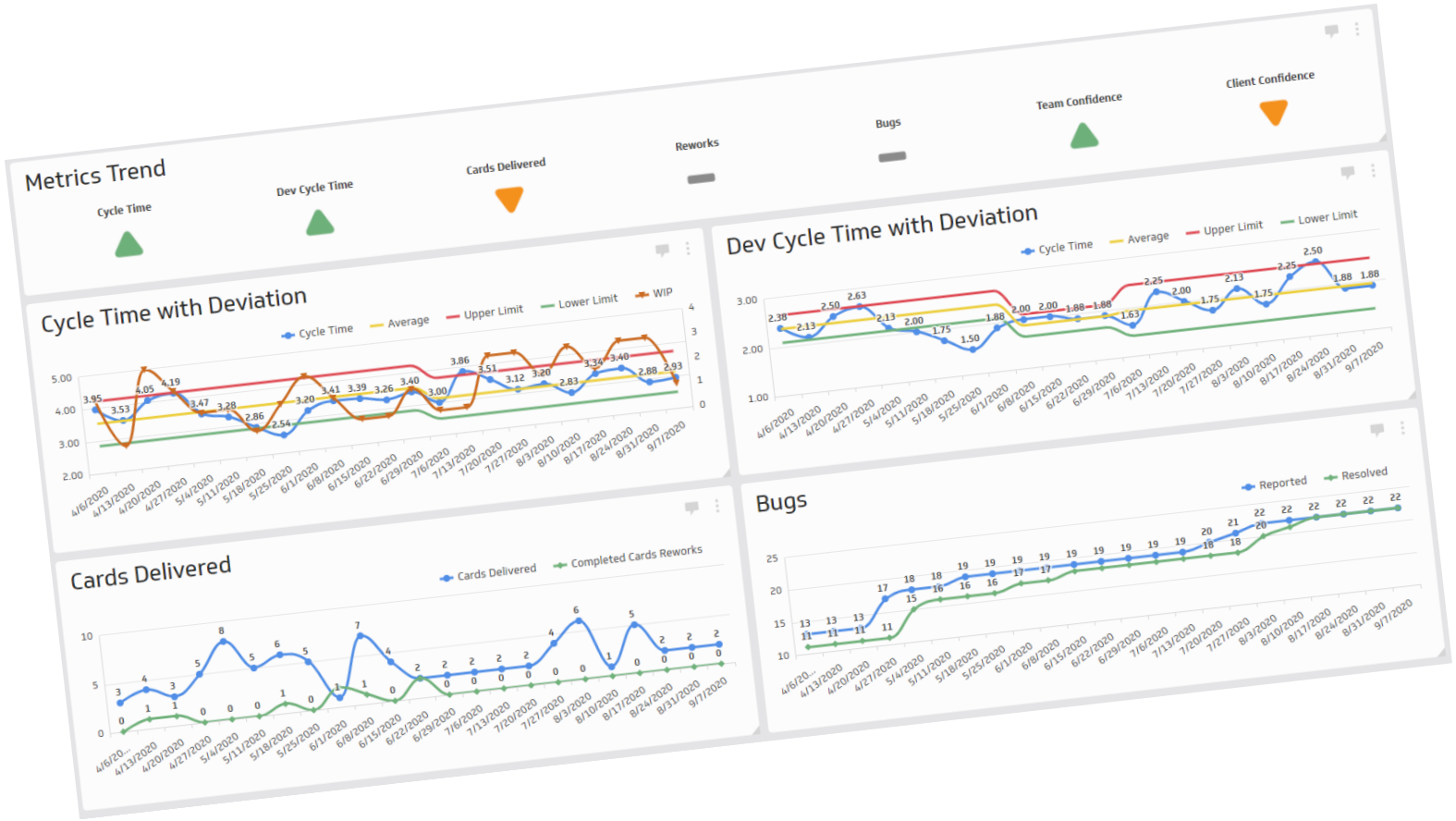
Within thresholds

Outside threshold but within boundary



Outside boundaries

Demo: Metrics Dashboard



What metrics do you include on your dashboards?

Creating A Culture Of Continuous Improvement

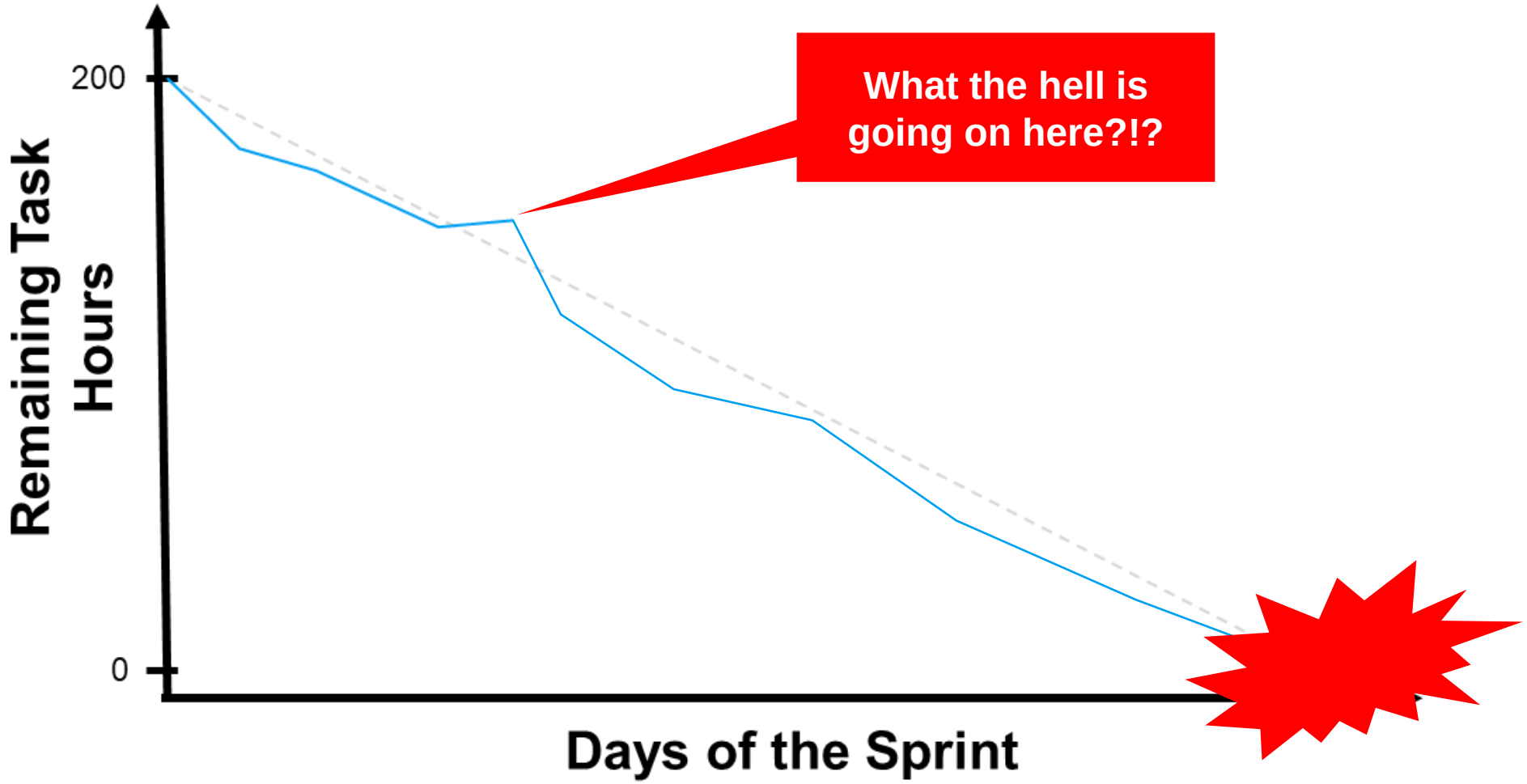
Inspect And Adapt

Failure

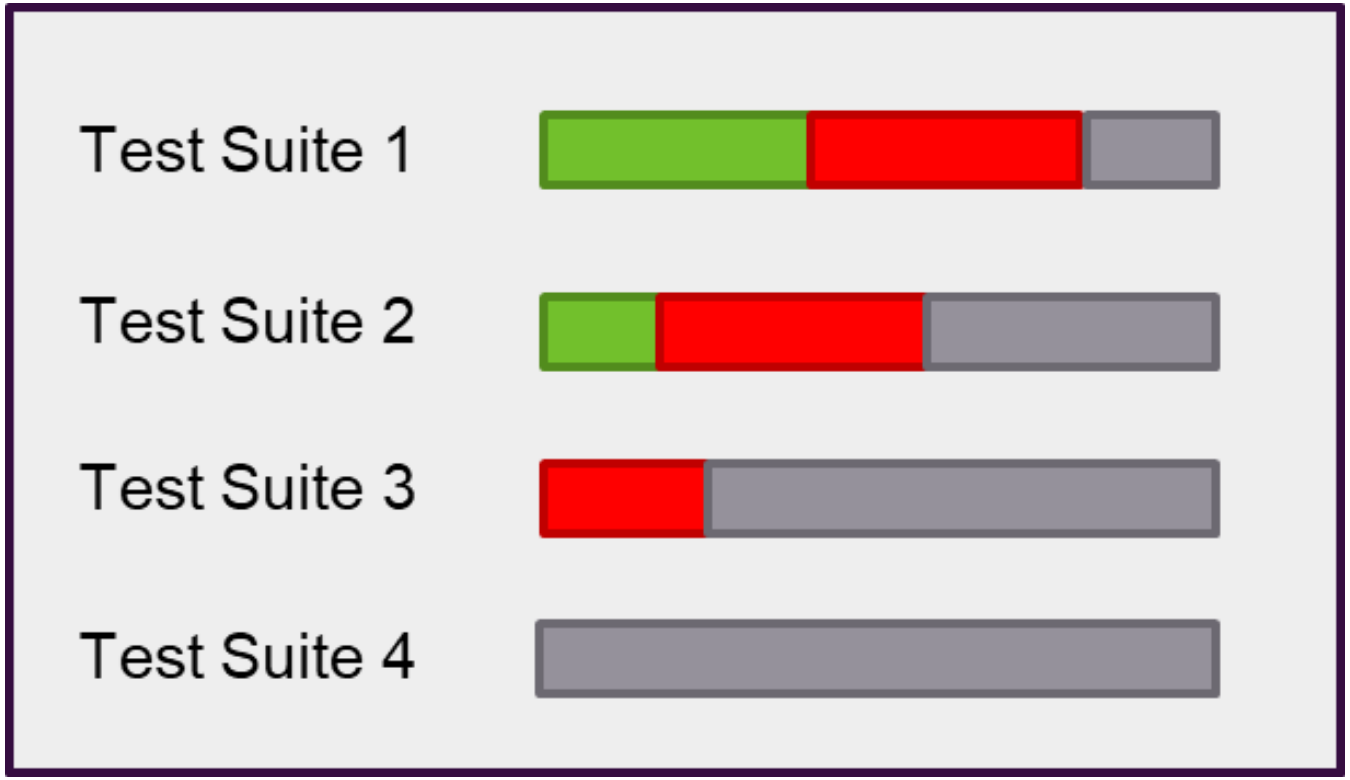
“I have not failed. I’ve just found 10,000 ways that won’t work.”

- Thomas Edison

Avoiding A Culture Of Fear



Avoiding A Culture Of Fear



Leadership Creates The System

"A bad system (process) will beat a good person every time."

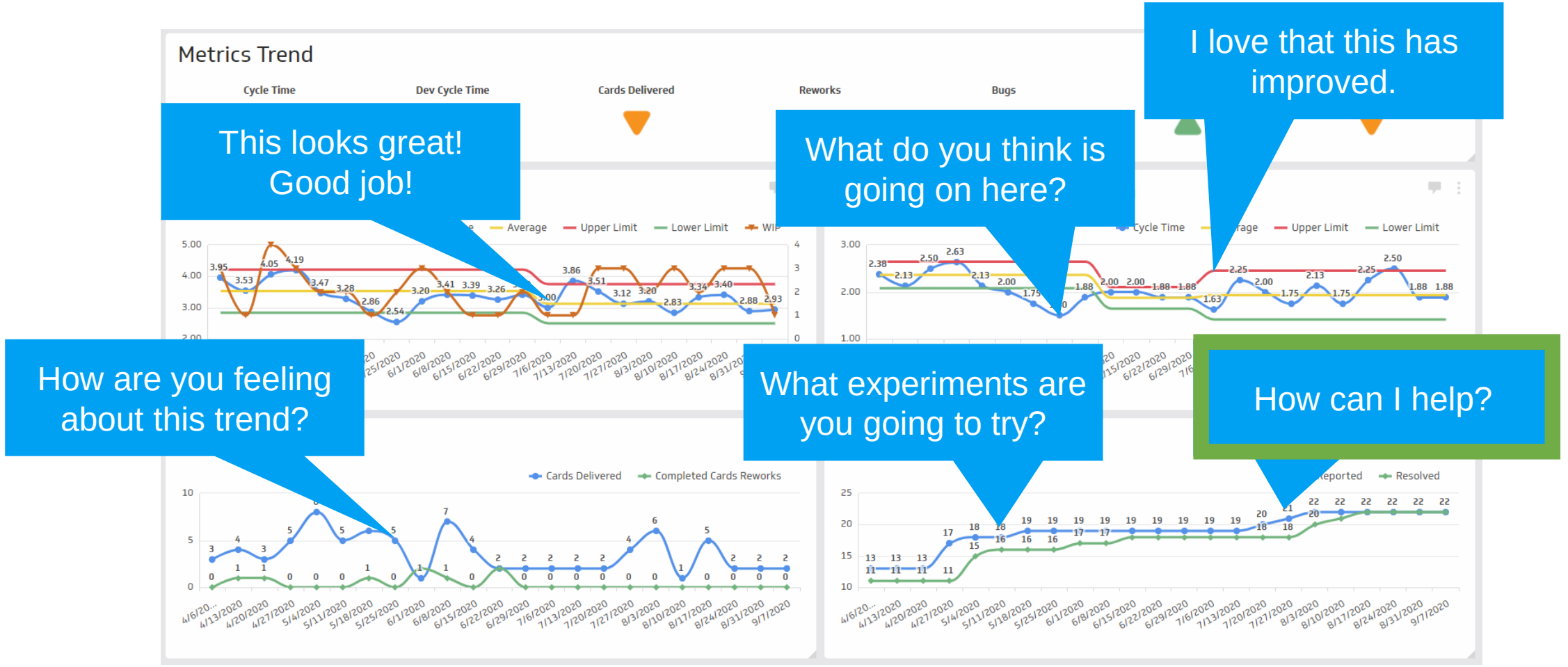
- Edwards Deming

Leadership Dictates Culture

“Culture eats process (strategy) for lunch.”

- Peter Drucker

Approach Metrics With Curiosity



Where can metrics fit into an Agile framework?

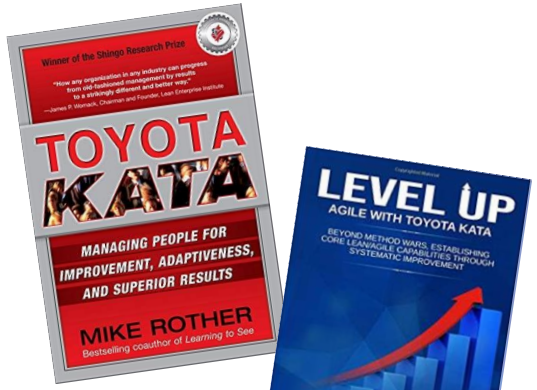
Sprint Retrospectives

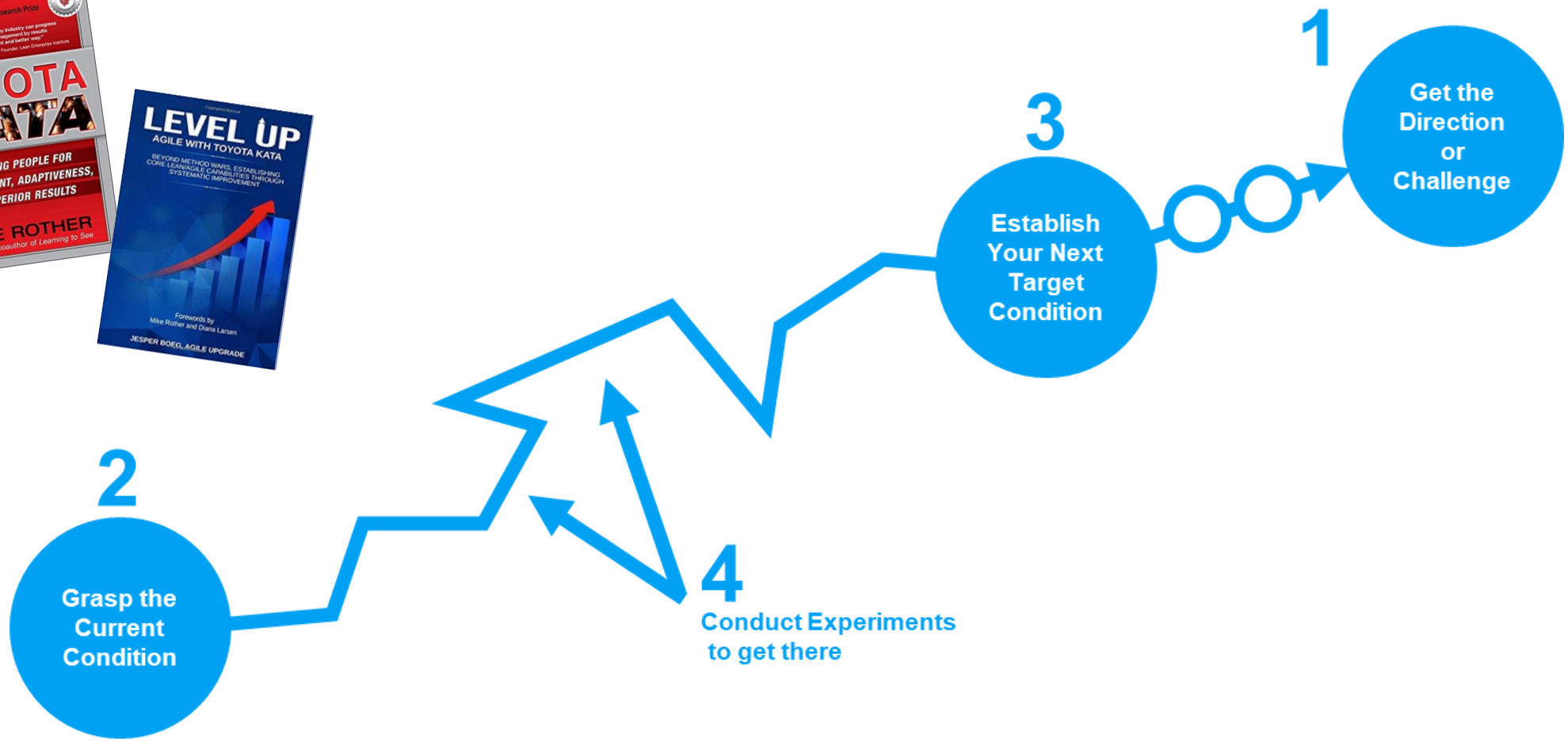
What went well this last sprint?

Sprint Retrospective

What can we improve for the next sprint?

Toyota Kata





https://www.amazon.com/LEVEL-AGILE-TOYOTA-KATA-Establishing/dp/1797406183

https://www.amazon.com/Toyota-Kata-Managing-Improvement-Adaptiveness/dp/0071635238

Toyota Kata

- Significant Step Toward the Challenge
- 1-2 Months

Challenge

- Measurable
- Outcome Based
- 3-6 Months

Target Condition

- Data-Driven Experiments
- 1-2 Weeks

Experiments

Obstacles

What is preventing you from reaching your target condition?

Current Condition

Where are you currently?

Kata Board

CHALLENGE: Decrease delivery rate by 15% (1 hr and 30 min)

Target Condition			Current Condition							
Achieve				Test Run	PDCA 1	PDCA 2	PDCA 3	PDCA 4	PDCA 5	
Metric	1st NTC	2nd NTC	Metric							
ARD			ARD	3.00	2.50	2.22	1.82			
ERD				---	---	---	---			
Team En				4.25	4.13	4.28	4.25			
Bug Den				0.00	0.00	0.00	0.00			
Code He				48.22%	48.22%	48.68%	49.21%			
Pair Prog				40.00%	16.46%	13.79%	13.79%			
Defect-1 Noncompliance			Noncompliance	33.33%	29.82%	27.42%	26.15%			
Defect-2 Uncaptured	0.00		Defect-2 Uncaptured	0%	0%	0%	0%			
Defect-3 Unknown	0.02		Defect-3 Unknown	1.96%	1.75%	1.61%	1.54%			
Defect-4 Overlooked	0.10		Defect-4 Overlooked	9.80%	8.77%	8.06%	7.69%			
Defect-5 Bad assumption	0.00		Defect-5 Bad assumption	0%	0%	0%	0%			
Defect-6 Noncompliance UI	0.00		Defect-6 Noncompliance UI	0%	0%	0%	0%			
Unlcassed Rework	0.02		Unlcassed Rework	1.96%	1.75%	1.61%	1.54%			
Grooming Time Per Week / Per Card in hrs	0.50		Grooming Time Per Week / Per Card in hrs	0.50	0.50		---			
Total reworks %	0.47		Total reworks %	47.05%	42.09%	38.70%	36.92%			
ARD(4w)	2.00		ARD(4w)	2.00	1.43	1.18	1.05			
Developing cycle time	2.18		Developing cycle time (days)	2.18	0.69	0.62	0.56			
Client Confidence	90		Client Confidence	90	90	90	90			
Weekly Rate of delivery	2.50	or less	Weekly Rate of delivery	1	0.83	1	1.67			
OERD	2.08		OERD	2.08	1.67	2.50	2.50			

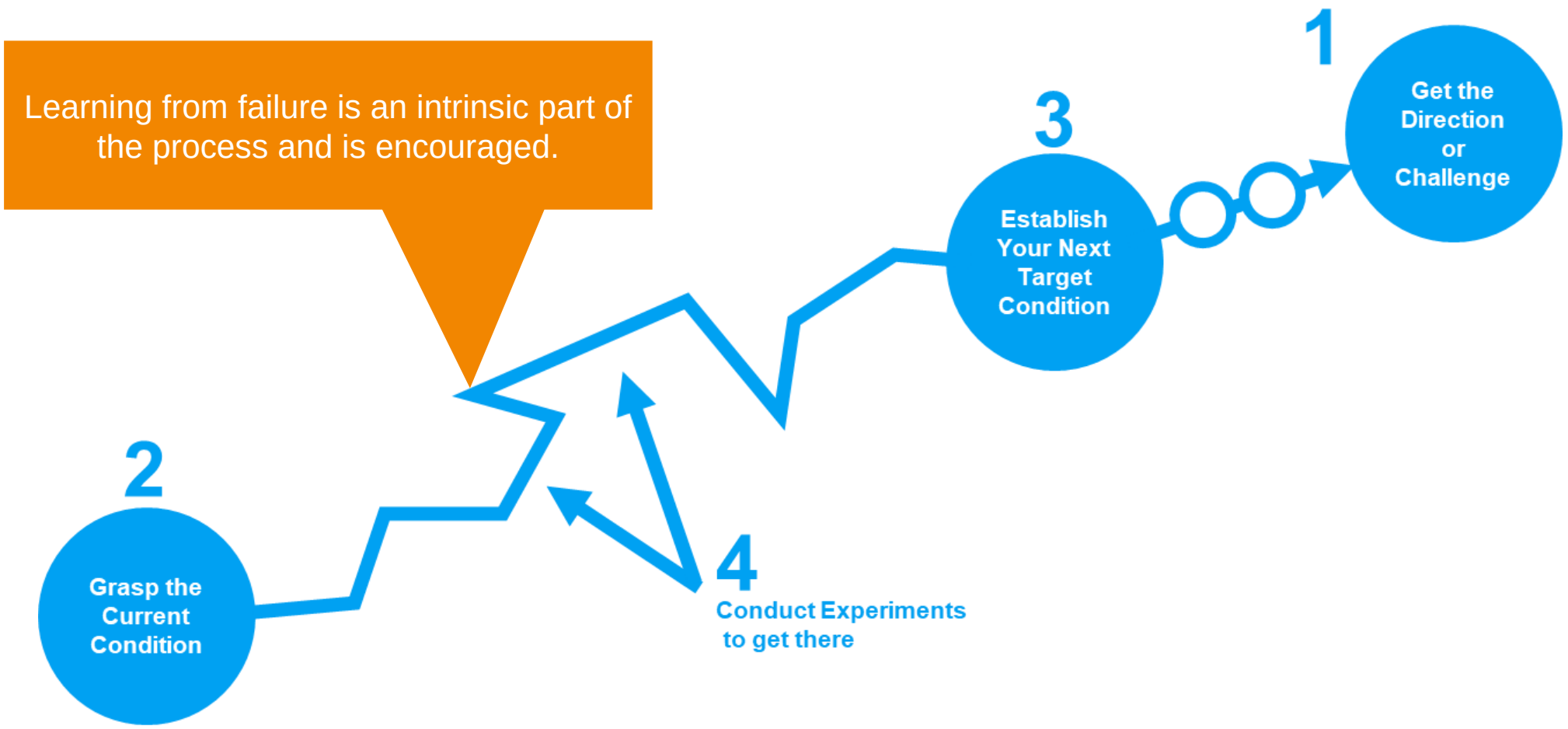
Wait a minute!
What about **Goodhart's Law**?

PDCA Cycles Record *(link to PDCA forms)*

Obstacles Parking Lot

- Lack of share understanding around a feature with the team and the client
- Mockups/Requirements changed after dev process started, causing more reworks
- Feautures are not implemented as mocked up. Lack of standart review process
- Fix merge conflicts
- When devs test a card themselves in the dev environment, they don't test all the same scenarios that QA will.
- Some requirements were stated as "like Auth0 does" which implied a lot of scenarios that we did not initially account for and results in overlooked

A Culture Of Continuous Improvement



Kata Coaching

Experiment

- What is the target condition?
- What is the actual condition now?
- What did you try in your experiment?
- What did you expect to happen?
- What actually happened?
- What did you learn?
- What will you try next?

Exercise: Continuous Improvement

- Identify things you can do in an organization with metrics that foster a culture of continuous improvement.
- Identify things you can do in an organization with metrics that create a culture of continuous fear.
- How can we promote learning and avoid fear?

Wrap Up


METRICS!!!!!

More Metrics!!!

- What is a good agile metric?
- Why velocity often ends up being a vanity metric?
- How TARS framework can help evaluate how good is your feature?
- Who is Dora? (joking)

Tuesday, July 25, 2023, 2:00 PM - 3:15 PM

Coastal Ballroom 2

4 Types of Data Analytics

Descriptive
(What happened?)

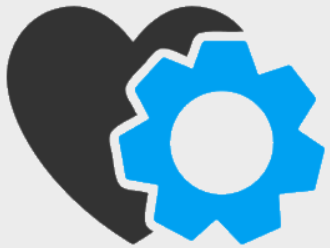
Diagnostic
(Why did it happen?)

Predictive
(What's likely to happen?)

Prescriptive
(What should we do?)

Remember That Metrics Should...

Roll Up To
Business Goals



Influence
Positive Behavior

Have A Clearly
Define “Why”

Remember That Metrics Should...

Be Balanced

Inspire Curiosity

Drive Improvement

Q & A

Tommy Norman
tommy@tommynorman.com
linkedin.tommynorman.com
oreilly.tommynorman.com

Juan Carlos River
jcrc_1986@hotmail.com
www.linkedin.com/in/jcrivera27

Thank You!

Examples Google Sheet:
https://bit.ly/agile-2023-metrics

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Agile ORLANDO 2023

JULY 24-28

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