

# MEASURE WHAT MATTERS

How to measure developer productivity while building your engineering culture

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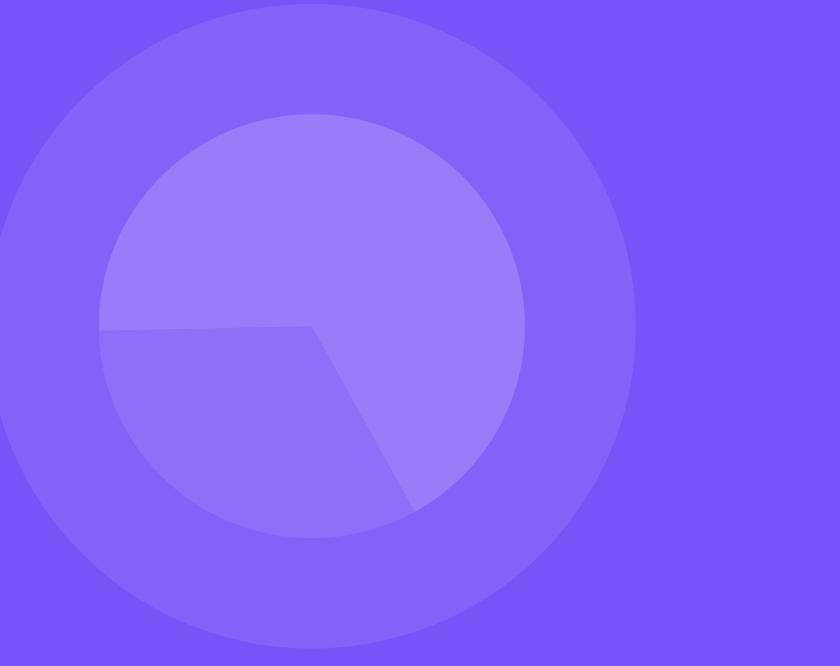
Currently enjoying the Boston area and New England in general

\* wayfair\*



- Measure engineers by what matters to the business
- 02 Measure your engineering culture by what matters to your engineers
- 13 Measurement frameworks
- 104 Debugging issues
- 15 Happy engineers write happy code



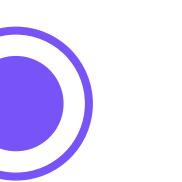




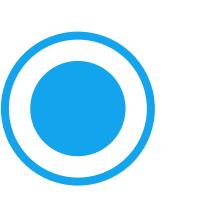


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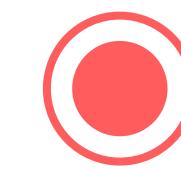
## MODEL OF SOFTWARE ENGINEERING



- + Spot a customer pain point
- + Brainstorm how to solve it
- + Make a plan
- + Write the code
- + Ship it



- + Design docs
- + Code written
- + The feature in production



+ Customers behave differently

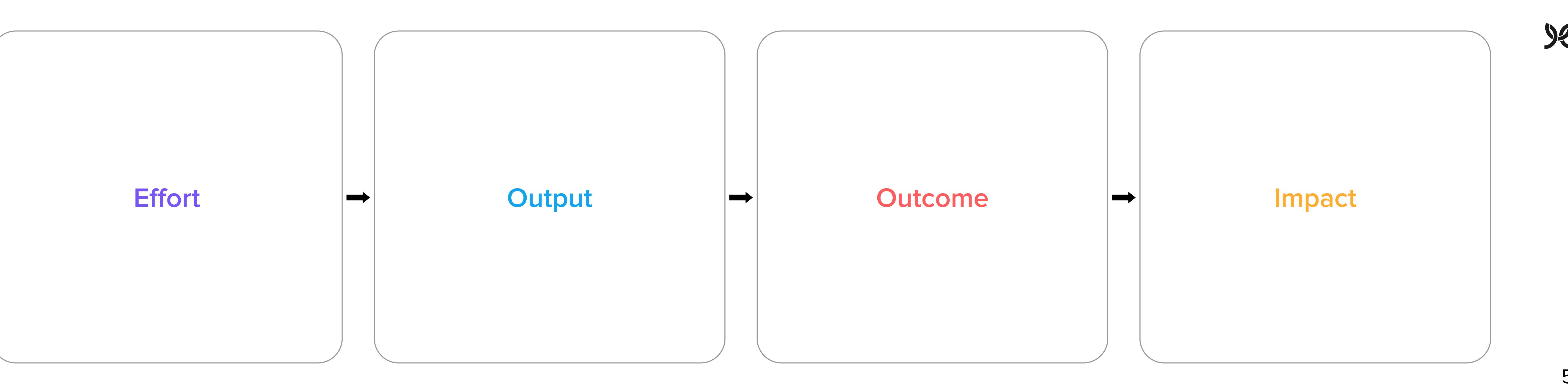


- + Value generated through this change
- + E.g. more revenue, less churn, etc.





## MODEL OF SOFTWARE ENGINEERING







#### GOODHART'S LAW

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

## GOODHART'S LAW

The British government, concerned about the number of venomous cobras in Delhi, offered a bounty for every dead cobra.

Initially, this was a successful strategy; large numbers of snakes were killed for the reward.

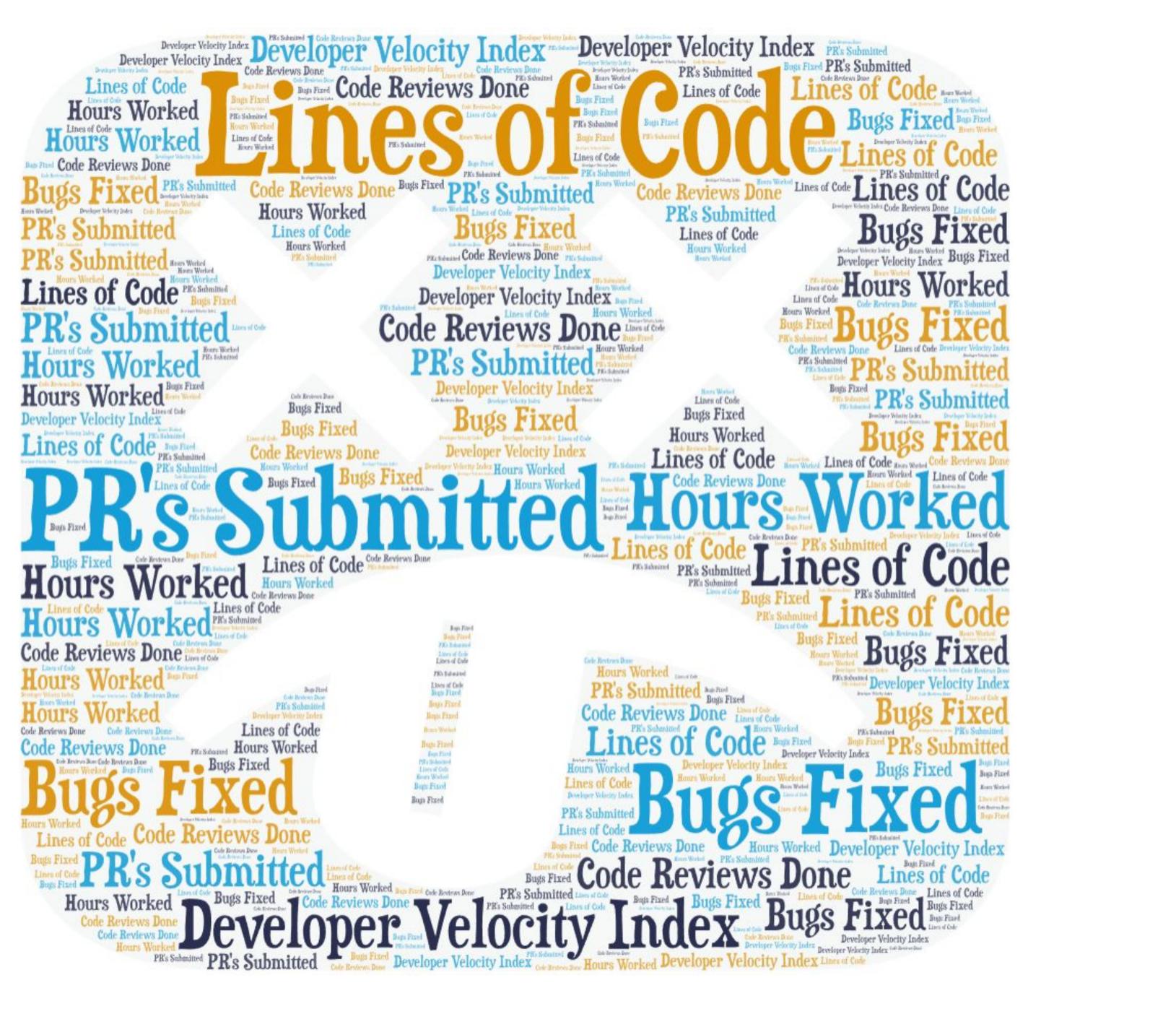
Eventually, however, enterprising people began to breed cobras for the income.

When the government became aware of this, the reward program was scrapped. When cobra breeders set their now-worthless snakes free, the wild cobra population further increased.



## EFFORT & MEASUREMENTS

- These metrics don't measure
  Accomplishments
- They only measure time used
- These measurements look just the same whether you reach the finish line or run in circles.





## MEASUREMENTS

#### ros

- Easy to measure
- Easy to attribute to an individual

#### Cons

- Gamification people will push to hit the target regardless of other effects
- \* Over-optimization people will push far past the target figuring if some is good, more is better
- + False Positives measuring how fast your running tells you nothing about if you are running in the right direction. You could be making negative progress

\* Countervailing metrics - ex. Pair deploy frequency with leaked defects to ensure changes are small not rushed.

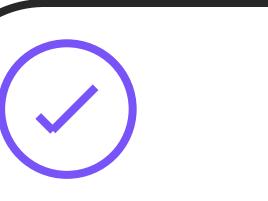
## OUTCOME MEASUREMENTS

Measured by Objectives & Key Results (OKRs)

#### Examples include:







Tech Debt Eliminated



Observability & Reliability Improvements



Performance Improvements



Scalability Improvements





## OUTCOME MEASUREMENTS

#### ros

- Measure what is important to the Business
- Don't limit methodology or tool selection
- Directionally appropriate eg. it is less likely to move in the wrong direction

#### Cons

- + Gamification people will push to hit the target regardless of other effects
- + Under-Optimization Doesn't consider the how, which can lead to scrappy solutions with unfavorable long term TCO

- \* **Behavioral Metrics** Make sure people are held accountable for how they treat one another.
- \* Total Cost of Ownership Make sure to measure both the short and long term effect on the business to keep quality high while pursuing positive outcomes

# MEASUREMENTS

Measured by Business Results

#### Examples include:







Cost Management



Customer Satisfaction



Brand Recognition



Customer Adoption & Retention



# IMPACT MEASUREMENTS

#### ros

- Measure what is **important to your Customers**
- Long term objectives that set a vision for your business
- Foundationally important

#### Cons

- Hard to attribute Universal goals are affected by everyone internally, and often externally, making attribution to one team or individual difficult.
- **+ Trailing Metric** by the time you know the result it is too late to make changes

\* Focus on Leading Metrics (Outcomes) and track the predictability of those metrics against the trailing metrics (Impacts)

## TAKEAWAYS

#### Outputs are your tools

Like plays in a playbook they can be used tactically to achieve outcomes.

#### Impacts are your win/loss record

Use as a guide for investment level decisions.

#### Outcomes are your scoreboard

Use to adjust strategy. They tell you if you are winning or losing and what to do about it.

#### Effort metrics

Often abused and do little to increase performance. They are good for self reflection for individuals. Don't use for targeted improvements.

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## INTRINSIC MOTIVATION



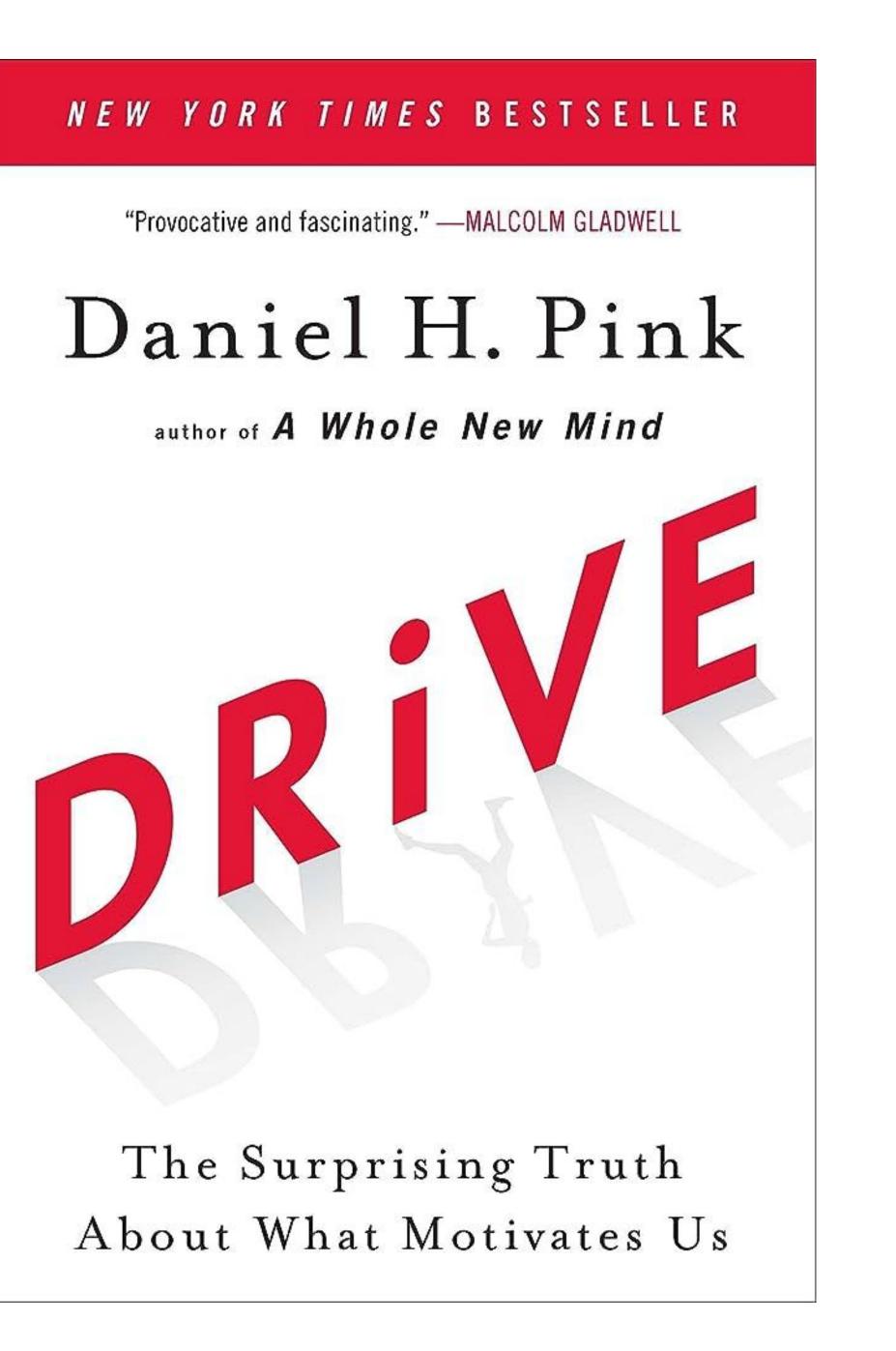
Human beings have an innate inner drive to be autonomous, self-determined, and connected to one another. And when that drive is liberated, people achieve more and live richer lives."

- Daniel H. Pink, Drive: The Surprising Truth About What Motivates Us



The ultimate freedom for creative groups is the freedom to experiment with new ideas. Some skeptics insist that innovation is expensive. In the long run, innovation is cheap. Mediocrity is expensive—and autonomy can be the antidote."

Tom Kelley General Manager, IDEO



# MEASUREMENTS

Qualitatively measured by asking your engineers

Examples include:



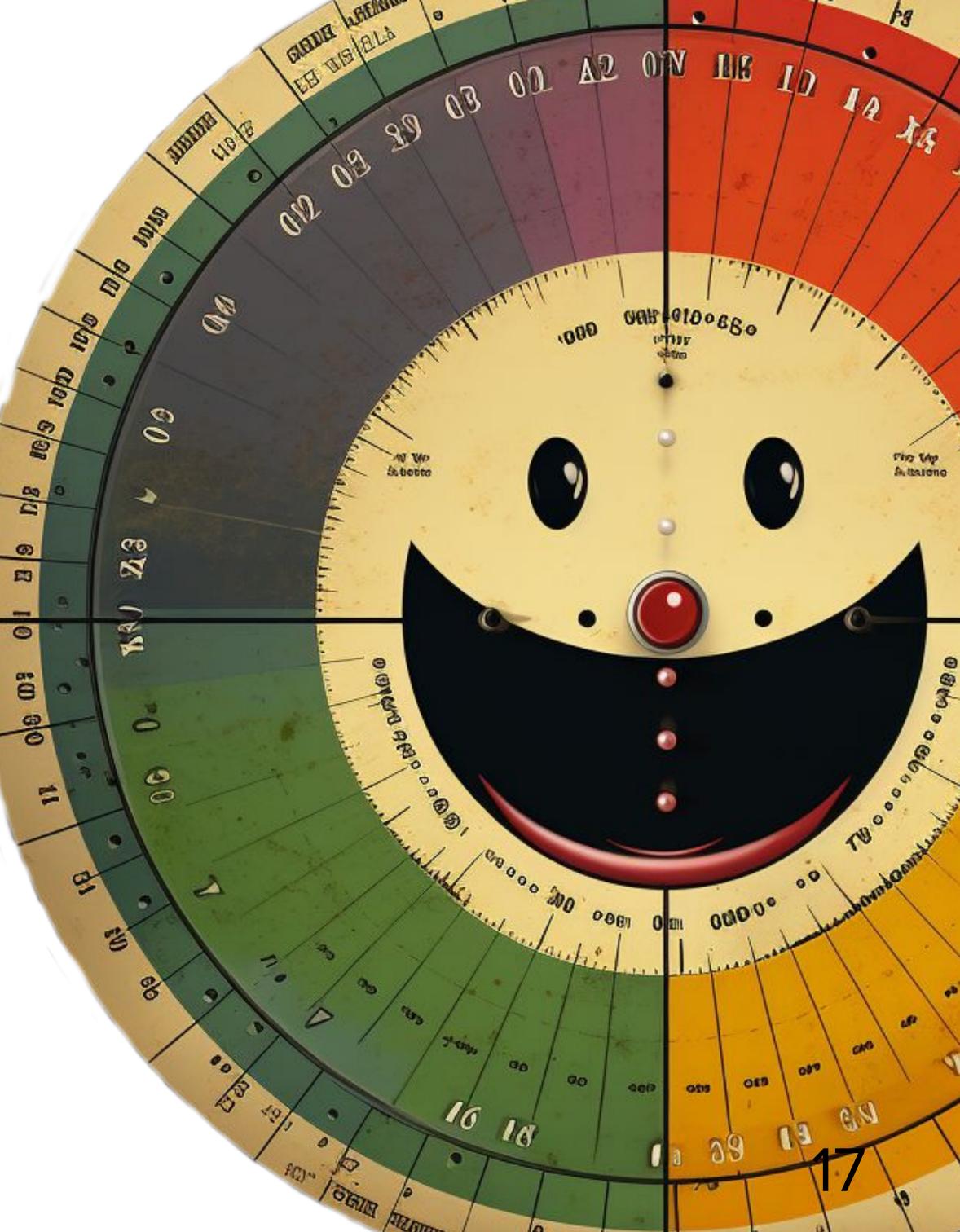




AMA sessions with sr. leadership (track sentiment)

Customer Adoption & Retention





## SATISFACTION & MELL-BEING

#### Pros

- Measure what is important to your Engineers
- <sup>+</sup> Opens room for Innovation
- Increases Retention & Attraction

#### Cons

- Hard to action on
- + Can vary broadly by demographic

- <sup>+</sup> Focus on Driving Action from inputs
- <sup>+</sup> Focus on **Management Accountability** to these results

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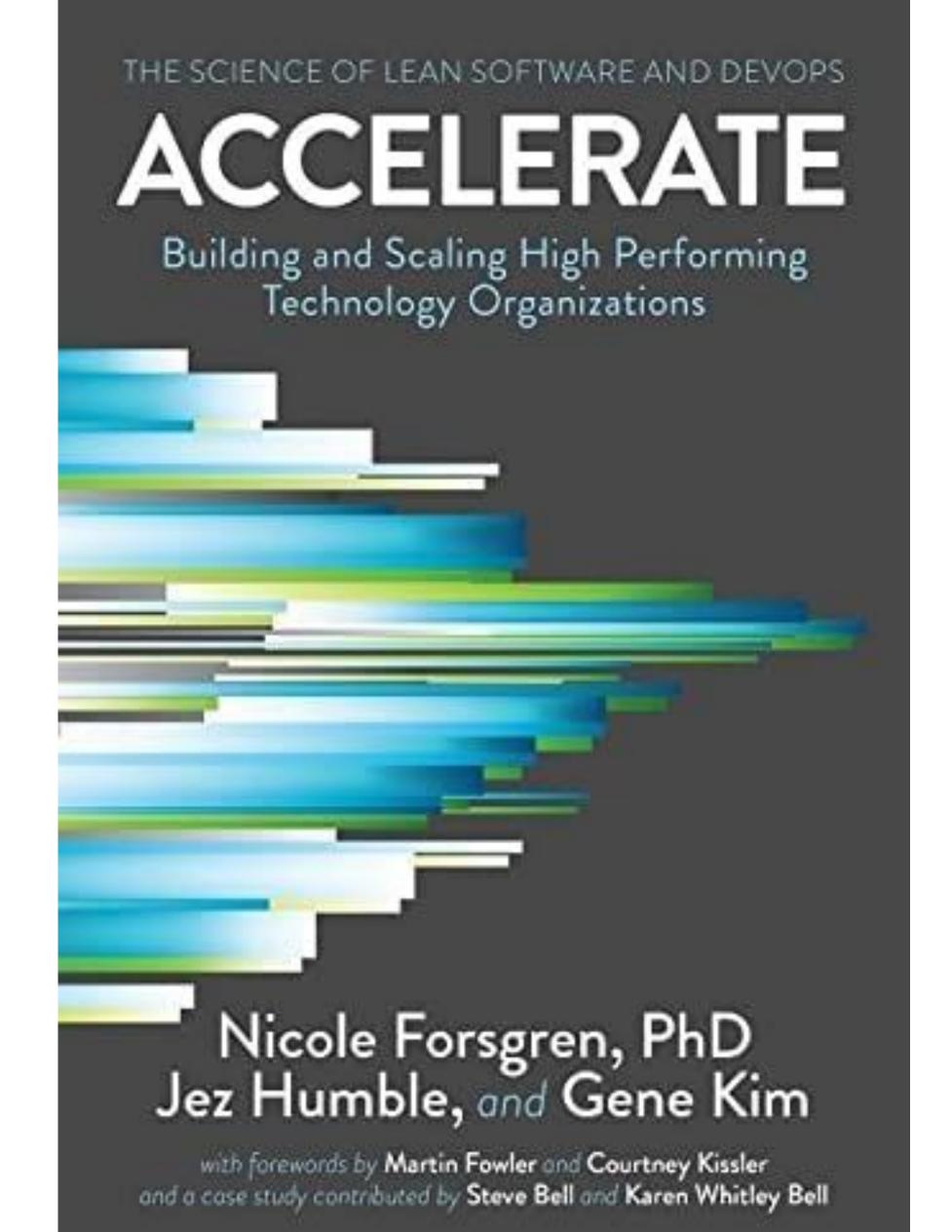






## DEVOPS RESEARCH AND ASSESSMENT

These metrics gained industry recognition with the 2018 publication of Accelerate which showed research-backed correlation between these metrics ←→ business performance.



- + Deployment Frequency
- + Mean Lead Time for Changes
- + Mean Time to Recovery

Outcomes

- + Change Failure Rate
- + Reliability





Satisfaction & well-being, Performance, Activity, Communication & collaboration, Efficiency & flow The **SPACE** Framework is a concept that seeks to explain the productivity of software engineering processes in new and innovative ways.

**Evolution of the DORA** metrics. DORA are an implementation of the Performance metric of SPACE.

Satisfaction and well-being

Performance

Activity

Communication and collaboration

Efficiency and flow



Measure engineers by what matters to the business

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## DEBUGGING PERFORMANCE

Systems Thinking

Systems Thinking is a process for thinking through interconnectedness, synthesis, emergence, feedback loops, causality, and systems mapping.



"We can't impose our will on a system. We can listen to what the system tells us and discover how its properties and our values can work together to bring forth something much better than could ever be produced by our will alone."

- Donella H. Meadows

## DEBUGGING PERFORMANCE

5 - Whys

Five whys (or 5 whys) is an iterative interrogative technique used to explore the cause-and-effect relationships underlying a particular problem. Problem: The team spends all their time on tickets

Why: We released a new product and people need help getting setup

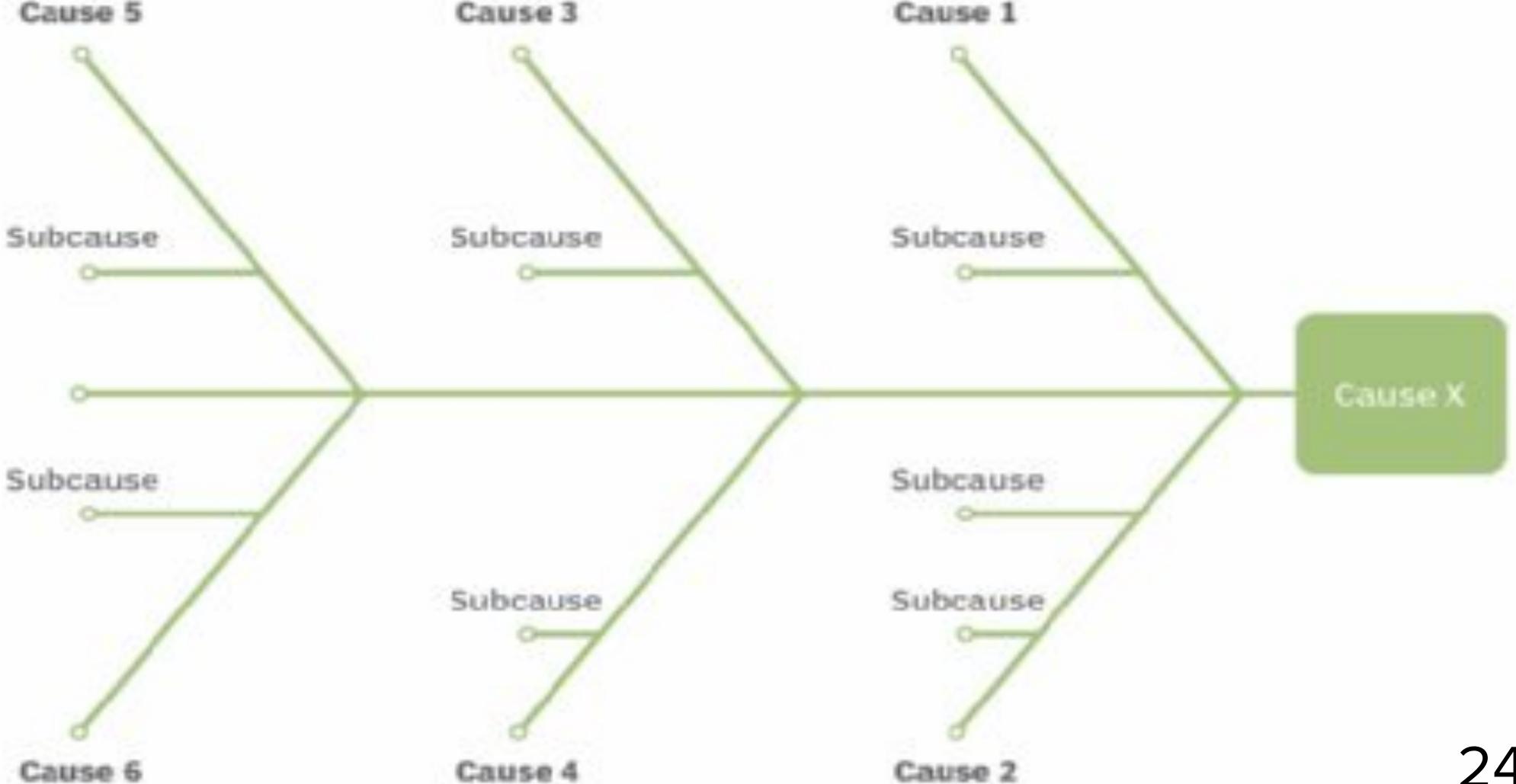
Why: We didn't enable self service

Why: We didn't enable self service there either

Why: The project was late

Why: We were distracted by the tickets from the last project

#### Ishikawa (fishbone) diagram for the Five Whys



Measure engineers by what matters to the business



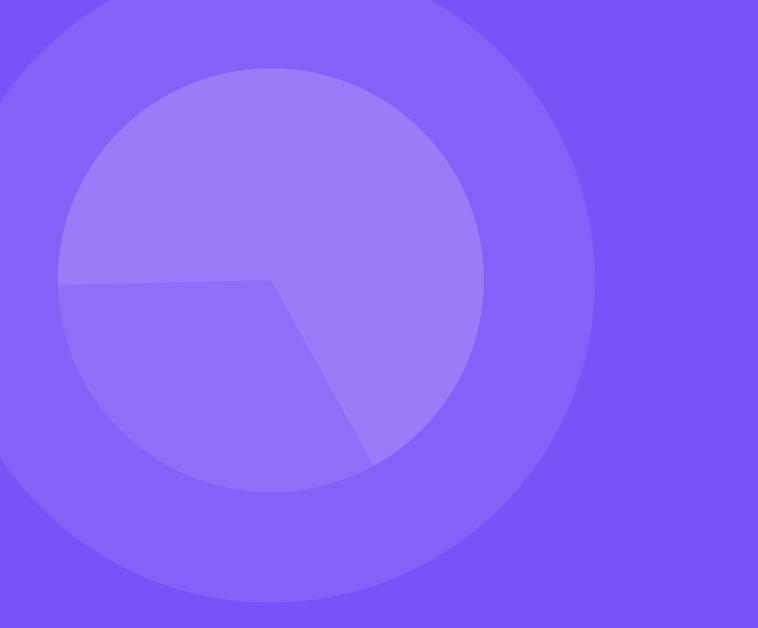




14 Debugging issues











## LONG TERM ENGINEERING GULTURE

Rome wasn't built in a day, but it burned in one.

**Engineering cultures** form over months and years and **are a reflection of the work being done**, not the inspirational poster in someone's office.

Culture drives motivation, innovation and success. Be thoughtful about how you measure and reward.

Be **skeptical of a "short term push"** being worth it, these are often the spark that lights the fire.







Let's make something great together.