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DORA
DEVOPS RESEARCH & ASSESSMENT

The State of DevOps

Capabilities for Building High-performing Technology Teams

November 2022

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Capabilities for Building High-performing Technology Teams

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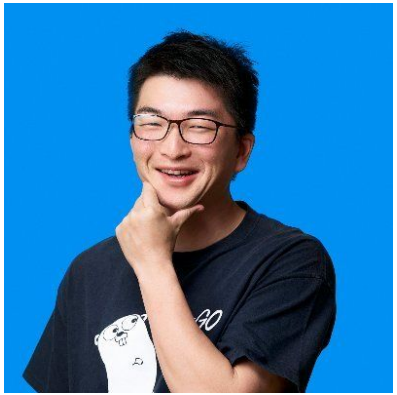

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bit.ly/sodr-dotc

STORY TIME

The story, all names, characters, and incidents portrayed in this production are fictitious. No identification with actual persons (living or deceased), places, buildings, and products is intended or should be inferred.

log4shell™

Timelines

Where were you when you heard about Log4Shell?

Where were you when you heard about Log4Shell?

DEC

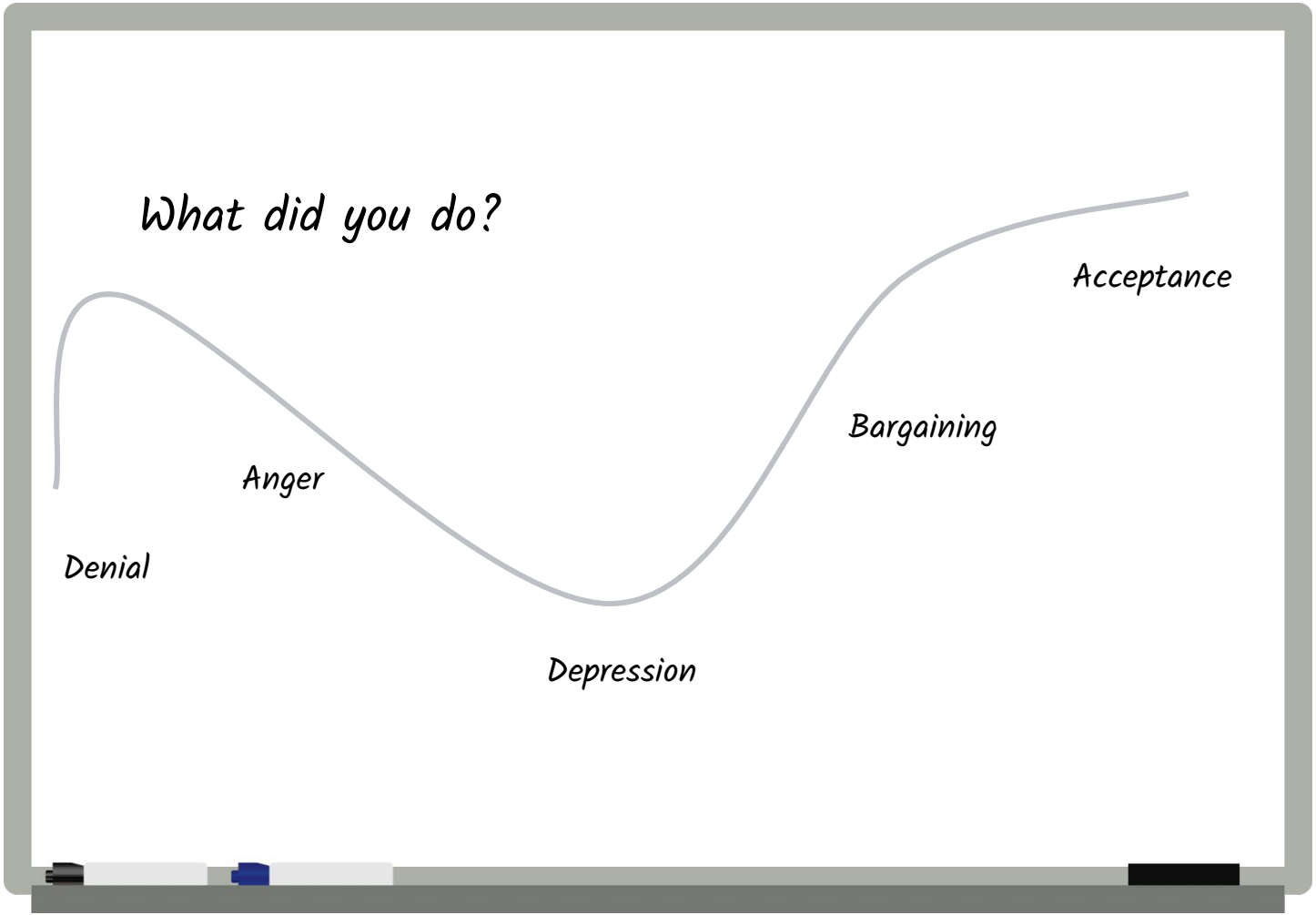
10

9:00 - 10:00
Coffee Chats

4:00 - 5:00
Holiday shopping

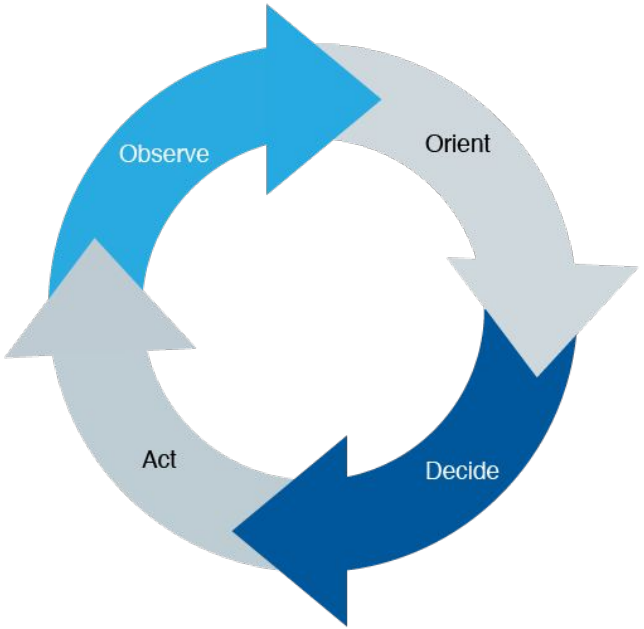
What did you do?

CVE


What did you do?
Acceptance
Bargaining
Anger
Denial
Depression

Getting started...

400 systems



Getting started...

E-commerce Website

E-commerce Website

- Microservices
- 27 repos

→ tightly coupled

❌ Vendor Built - no longer engaged

❌ little documentation

E-commerce Website

- Microservices
- 27 repos

→ tightly coupled

#nodeployfridays

❌ Vendor Built - no longer engaged

❌ little documentation

❌ CAB

20+ Days

Lead Time

1-2 Months

Deployment Frequency

1-2x a year

Change fail rate

50%ish

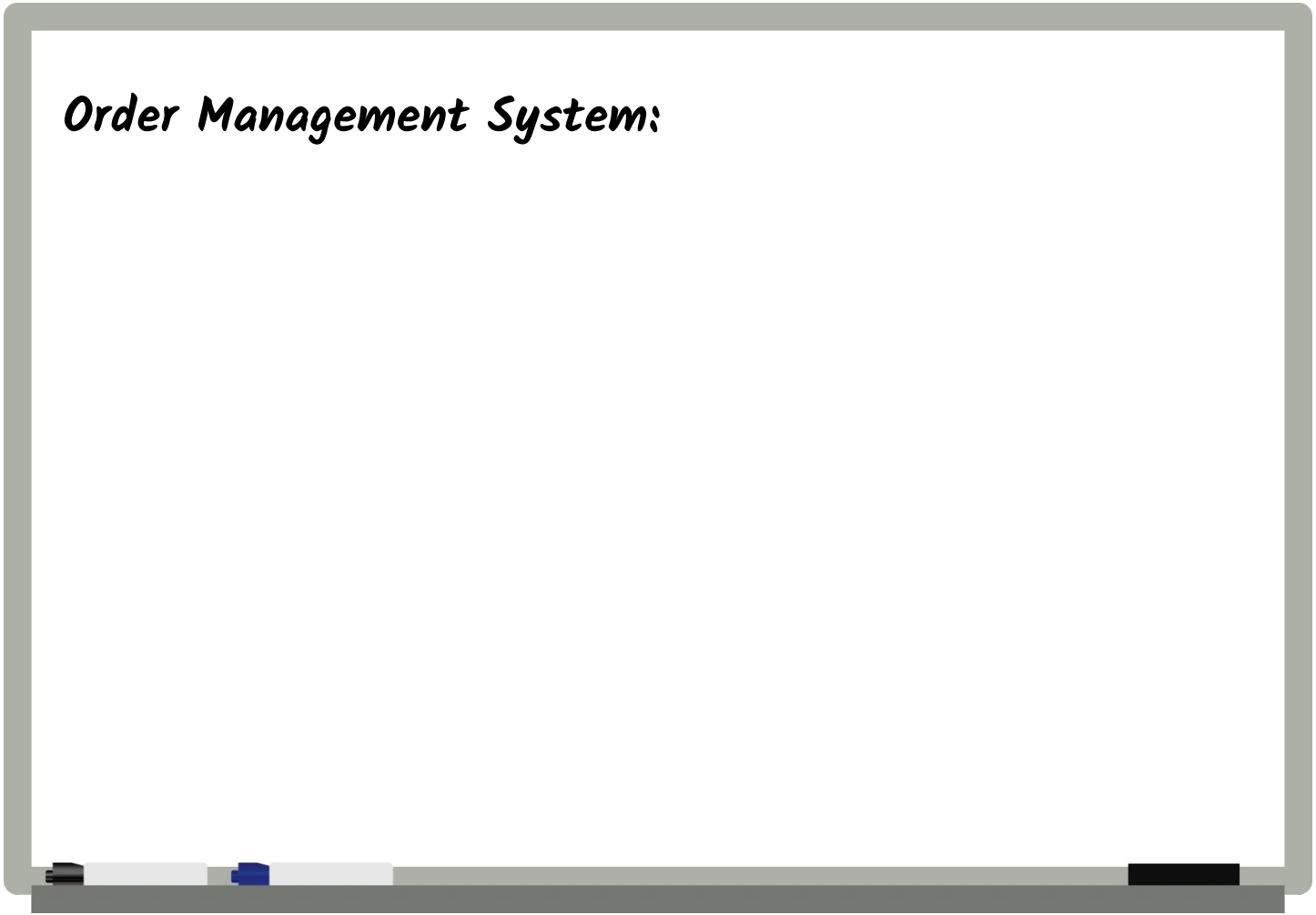
TTR

???

Reliability

Usually reliable

Did you burnout?


Order Management System:

Order Management System:

- Active development
- Team has been focused on improving
- Loosely coupled components

✔ Automated testing

✔ Automated builds

Order Management System:

- Active development
- Team has been focused on improving
- Loosely coupled components
- Prioritizing fixing broken builds :)

✔ Automated testing

✔ Automated builds

✘ CAB

Lead Time

1 week

Deployment Frequency

weekly

Change fail rate

15%

TTR

Less than a day

Reliability

Usually reliable

“How do we help the website team have the Order Management System team experience in the future?”

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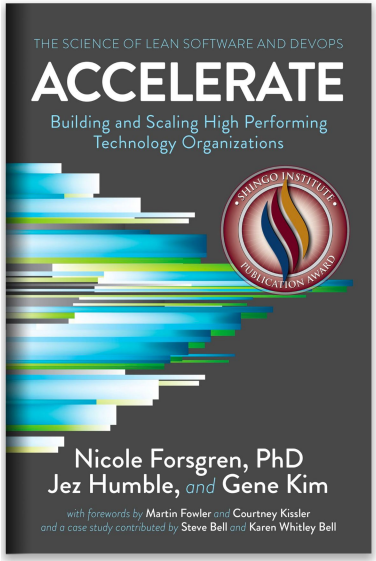

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Capabilities

Technical
- Trunk-based development
- Cloud infrastructure
- Shifting left on security

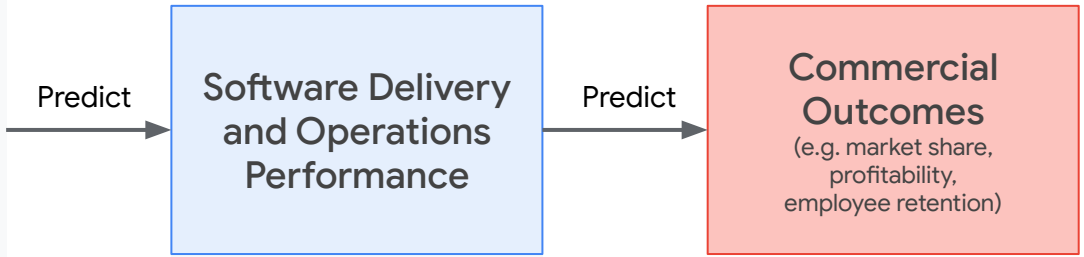
...

Process
- Work in small batches
- Streamlined change approval
- Visibility of work in value stream

...

Cultural
- Generative, trust-based
- Learning culture
- Transformational leadership

...



As measured by

- **Throughput**
  - lead time for changes
  - deployment frequency
- **Stability**
  - time to restore service
  - change failure rate
- **Reliability**

Context Matters

There is no well-paved, one-size-fits-all roadmap to follow

Delivery performance ***drives*** organizational performance only when operational performance is ***also*** high

Teams must ***mature reliability practices*** to meet reliability targets which then impact organizational performance

Reliability practices

Regular reliability **reviews**

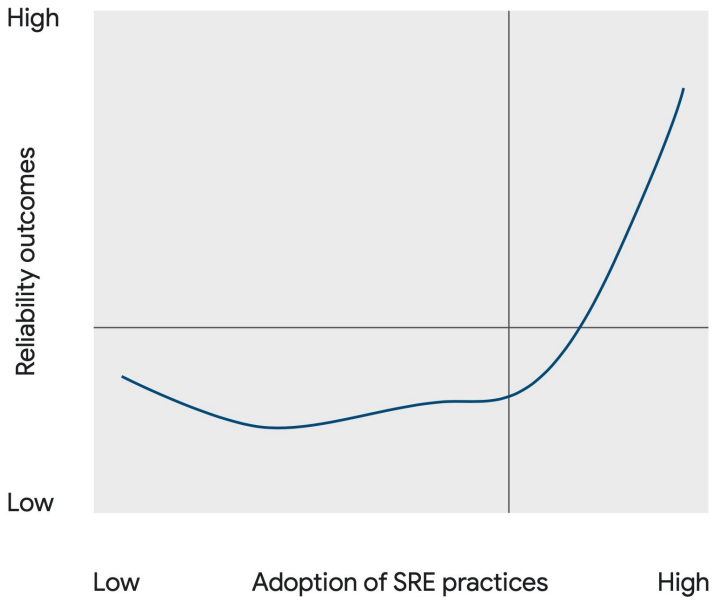
Reduce **toil**

Well defined **reliability targets**

Re-prioritize work when reliability targets are missed

Reliability

Investment yields improvements to reliability, but only once a **threshold of adoption** has been reached



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Technical capabilities ***build on one another***

Teams must ***mature reliability practices*** to meet reliability targets which then impact organizational performance

Technical Capabilities

Drivers of organizational performance

Version control

Continuous Delivery

Continuous Integration

Loosely-coupled architecture

3.8x higher organizational performance

Context Matters

There is no well-paved, one-size-fits-all roadmap to follow

Delivery performance ***drives*** organizational performance only when operational performance is ***also*** high

Technical capabilities ***build on one another***

Teams must ***mature reliability practices*** to meet reliability targets which then impact organizational performance

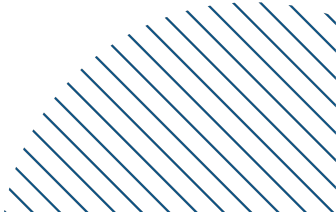
Security controls have a positive effect when continuous integration is in place

Security

01 Adoption has already begun

02 Healthier cultures have a head start

Incorporating security processes into existing workflows help reduce security risks and increase developer joy



Westum Topology of Organizational Cultures

Pathological *Power-oriented*	**Bureaucratic** *Rule-oriented*	**Generative** *Performance-oriented*
Low cooperation	Modest cooperation	High cooperation
Messengers shot	Messengers neglected	Messengers trained
Responsibilities shirked	Narrow responsibilities	Risks are shared
Bridging discouraged	Bridging tolerated	Bridging encouraged
Failure leads to scapegoating	Failure leads to justice	Failure leads to enquiry
Novelty crushed	Novelty leads to problems	Novelty implemented

Westrum R A typology of organisational cultures. BMJ Quality & Safety 2004;13:ii22–ii27. http://bmj.co/1BRGh5q

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Security

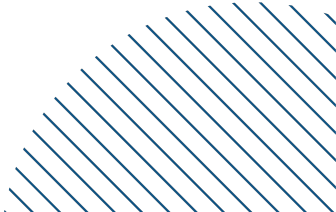
Incorporating security processes into existing workflows help reduce security risks and increase developer joy

01 Adoption has already begun

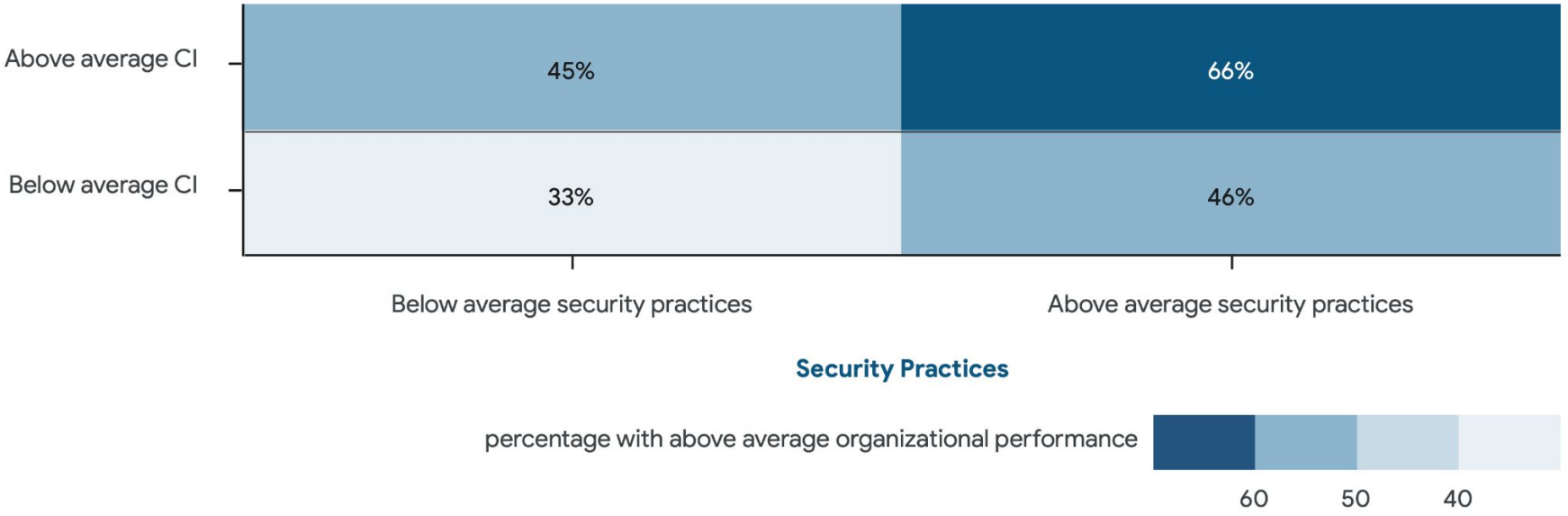
02 Healthier cultures have a head start

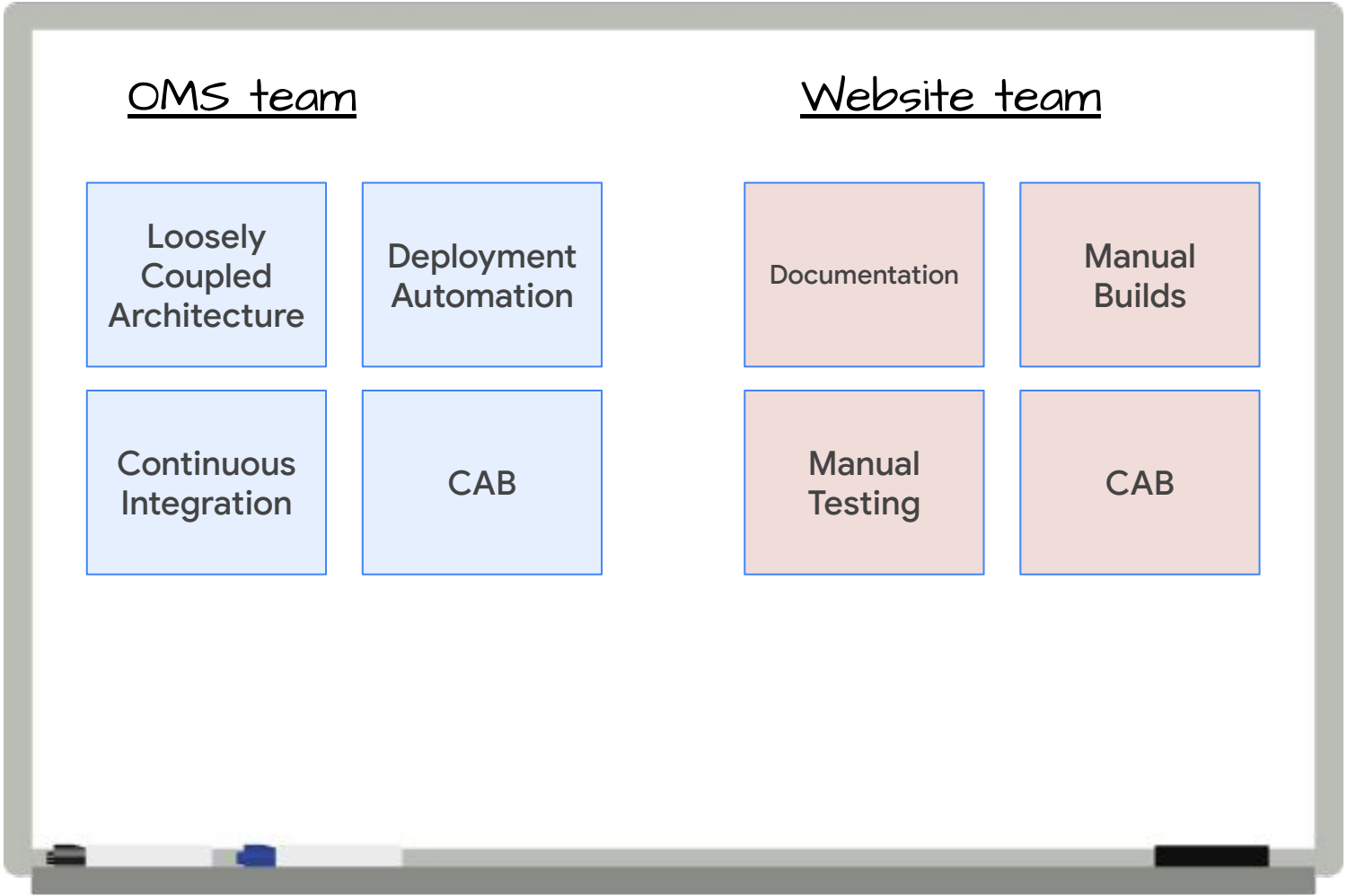
03 It provides unexpected benefits

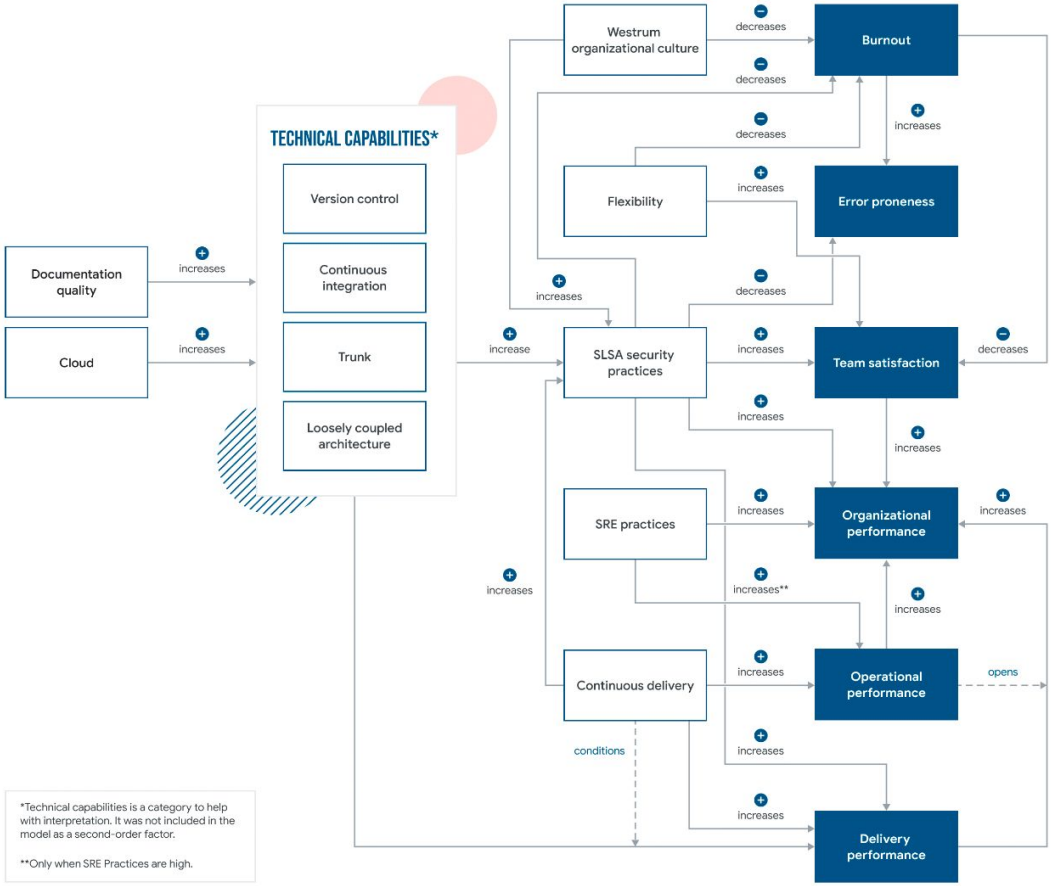
04 There's a key integration point

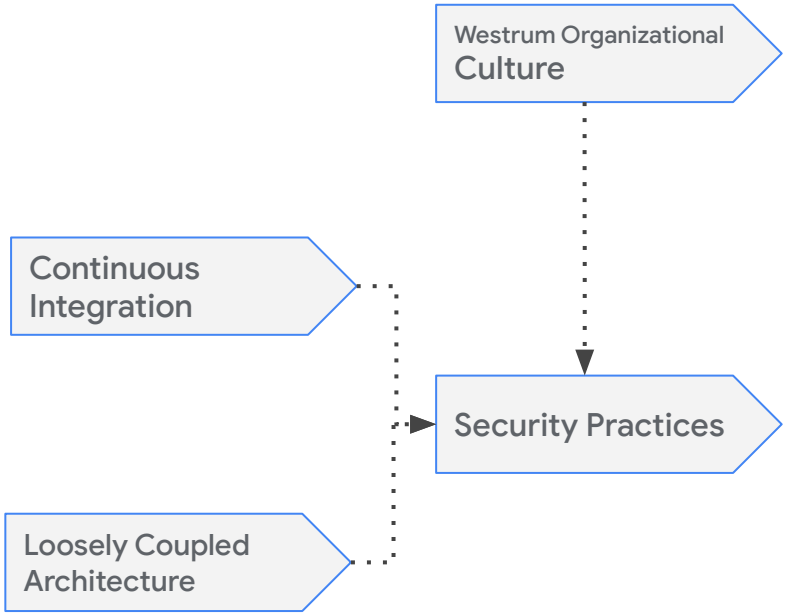


Continuous Integration & Security Practices

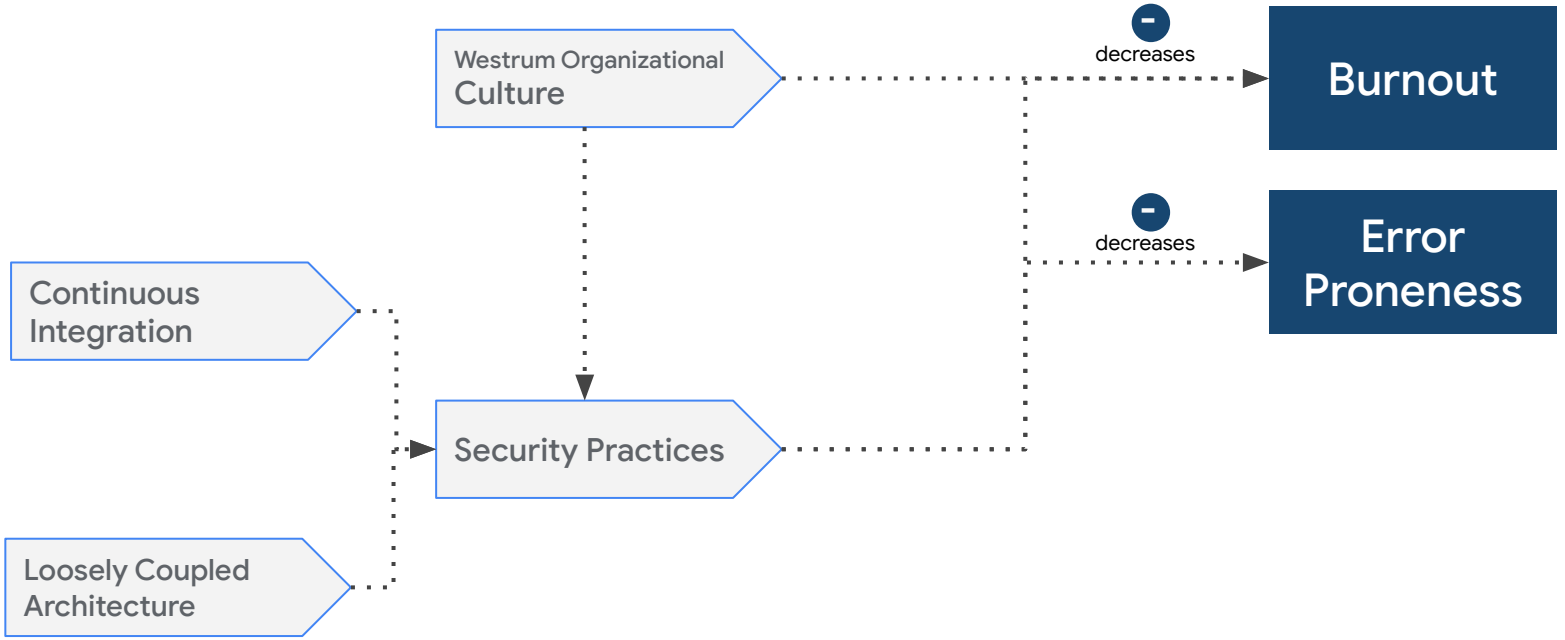



OMS team
Website team
Loosely Coupled Architecture
Deployment Automation
Continuous Integration
CAB
Documentation
Manual Builds
Manual Testing
CAB


TECHNICAL CAPABILITIES*
Version control
Continuous integration
Trunk
Loosely coupled architecture
Documentation quality
Cloud
increases
increases
Westrum organizational culture
Burnout
decreases
decreases
decreases
increases
Flexibility
Error proneness
increases
decreases
increases
increase
SLSA security practices
increases
Team satisfaction
decreases
increases
increases
SRE practices
increases
Organizational performance
increases
increases
increases**
increases
Continuous delivery
increases
Operational performance
opens
conditions
increases
increases
Delivery performance
*Technical capabilities is a category to help with interpretation. It was not included in the model as a second-order factor.
**Only when SRE Practices are high.


Westrum Organizational Culture
Continuous Integration
Security Practices
Loosely Coupled Architecture

Proprietary + Confidential



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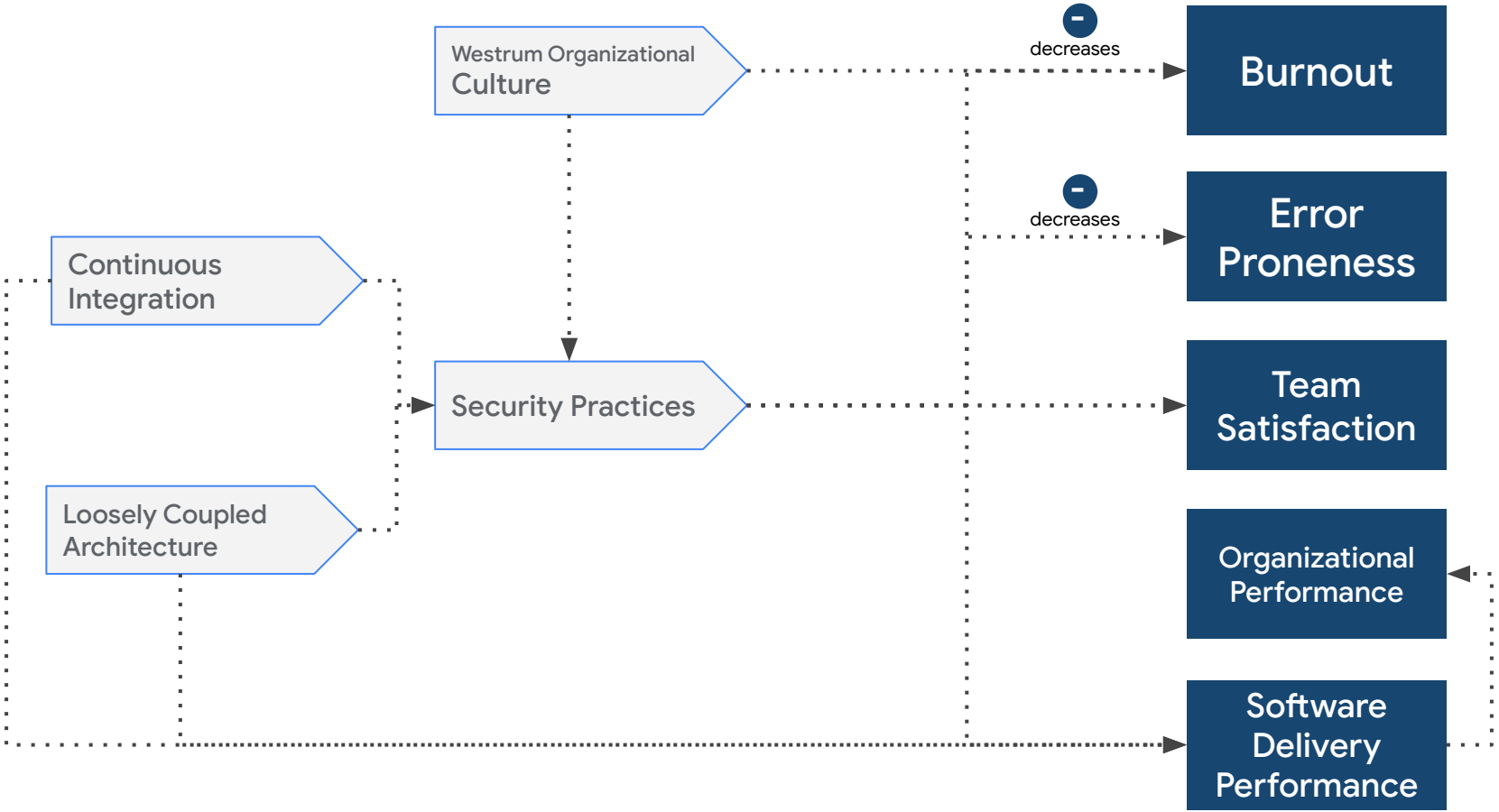

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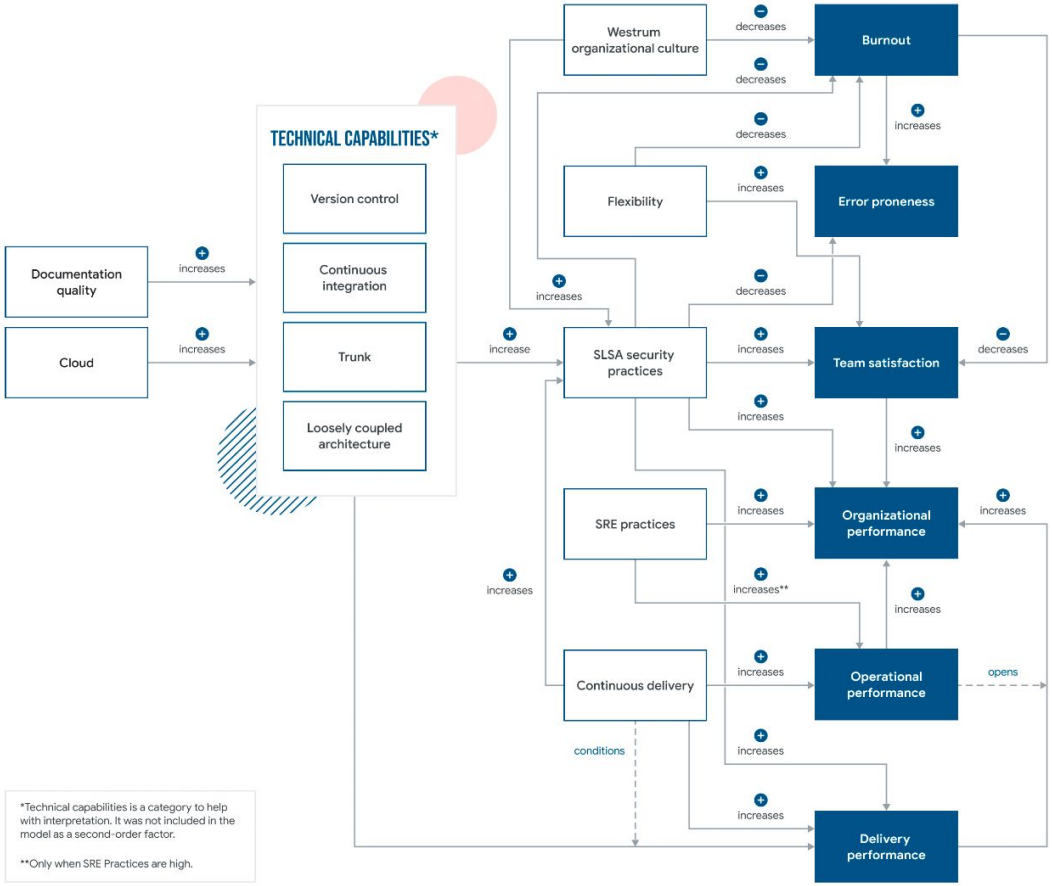
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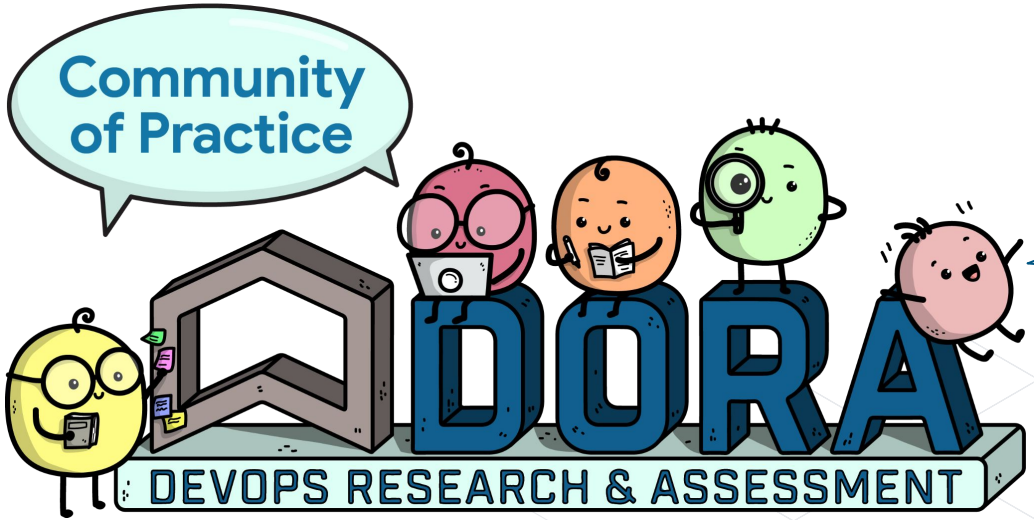
How can you help?



Upcoming Community Discussions:

December 15th 11pm SGT

Share, listen, and collaborate

Join the DORA.community

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Thank you.

bit.ly/sodr-dotc

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