



Red Hat Open Innovation Labs

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The 5 Elements Of Transformation

Successful transformation requires a holistic approach and system thinking. The challenges cannot be solved by considering only one of these elements.

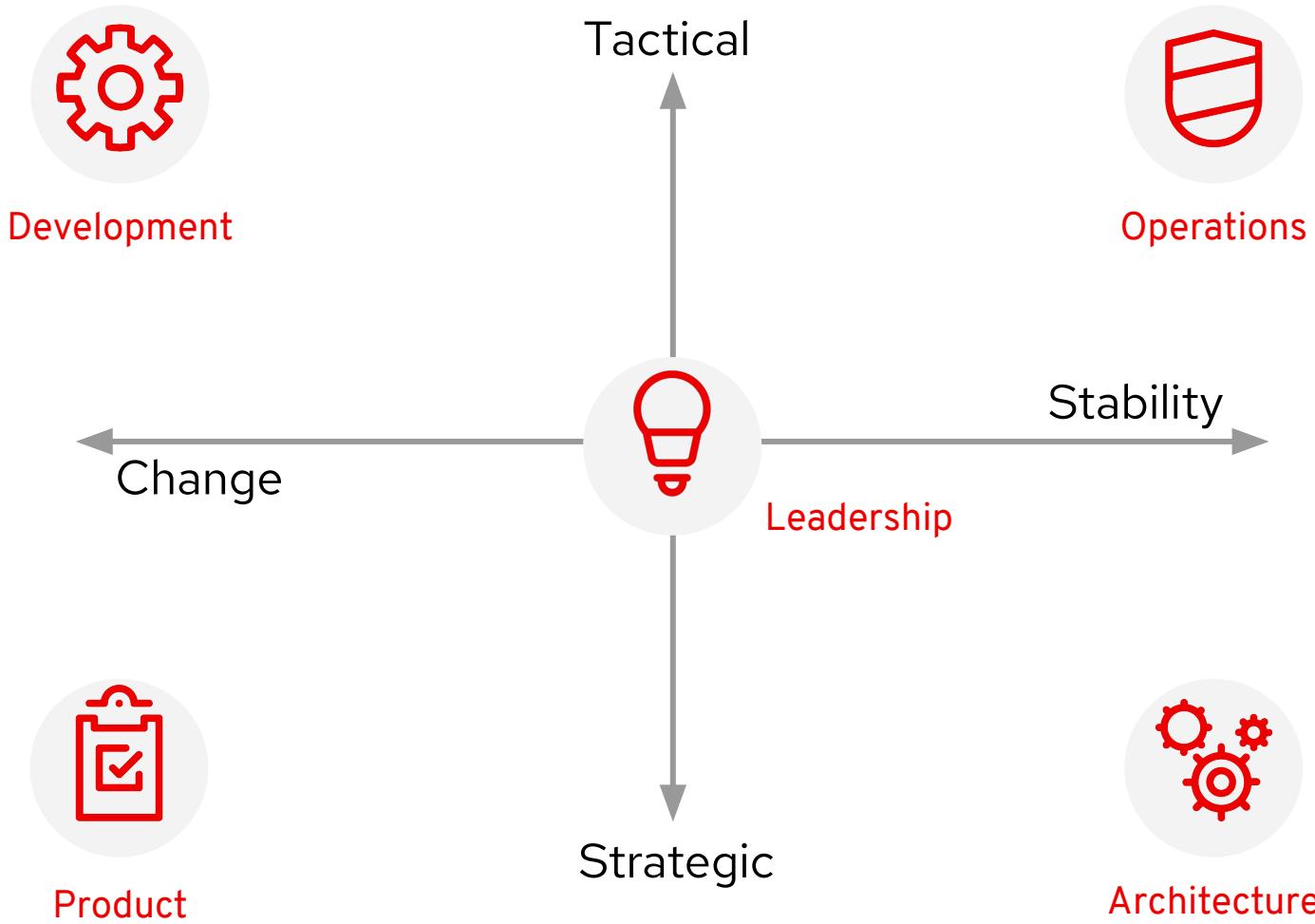
These 5 elements are all part of a system that falls out of balance if improvements are considered in isolation.

Whilst many customers are currently organised into silos that broadly map to the 5 elements, the target is for these 5 elements to be treated as capabilities which each unit within the organisation must possess.

The 5 Elements are NOT:

- Roles
- Departments
- Teams
- Silos

Red Hat's transformation engagements are built to balance across all 5 elements



Resilience Engineering and Psychological Safety

"Before you can engineer resilience, you must engineer the conditions in which it is possible to engineer resilience."

The USS Santa Fe





"A **resilient** organisation adapts effectively to surprise."

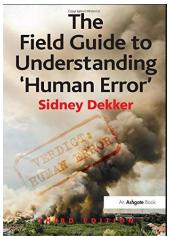
Lorin Hochstein
Netflix

“Things that have never happened before happen all the time”.

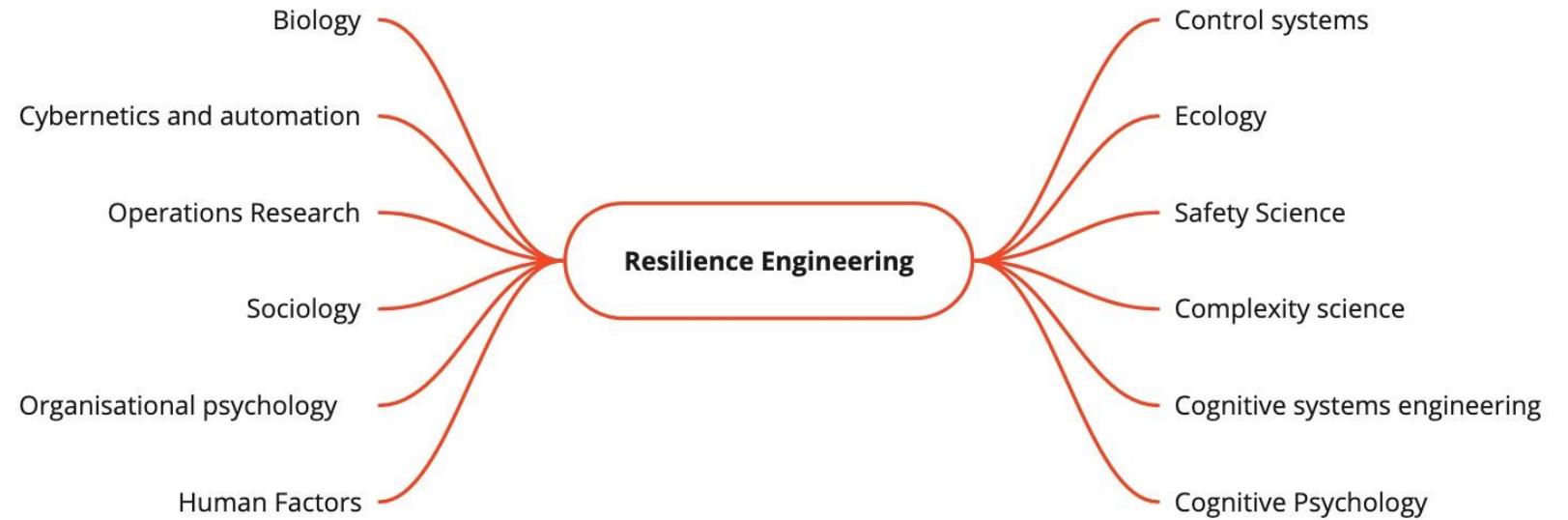


Scott Sagan
1993

There is no root cause.



Resilience Engineering



Safety I and Safety II

“The intrinsic ability of a **system** to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions.”



Dr Erik Hollnagel
2010

Cynefin

Systems taxonomy

Welsh for “habitat”

Source: Kurtz and Snowden, 2003

COMPLEX

the relationship between cause and effect can only be perceived in retrospect

probe-sense-respond

EMERGENT PRACTICE

CHAOTIC

no relationship between cause and effect at systems level

act-sense-respond

NOVEL PRACTICE

COMPLICATED

the relationship between cause and effect requires analysis, investigation and/or expert knowledge

sense-analyze-respond

GOOD PRACTICE

SIMPLE

the relationship between cause and effect is obvious to all

sense-categorize-respond

BEST PRACTICE

Simple

Known knowns



Mark Cunningham via Getty Images

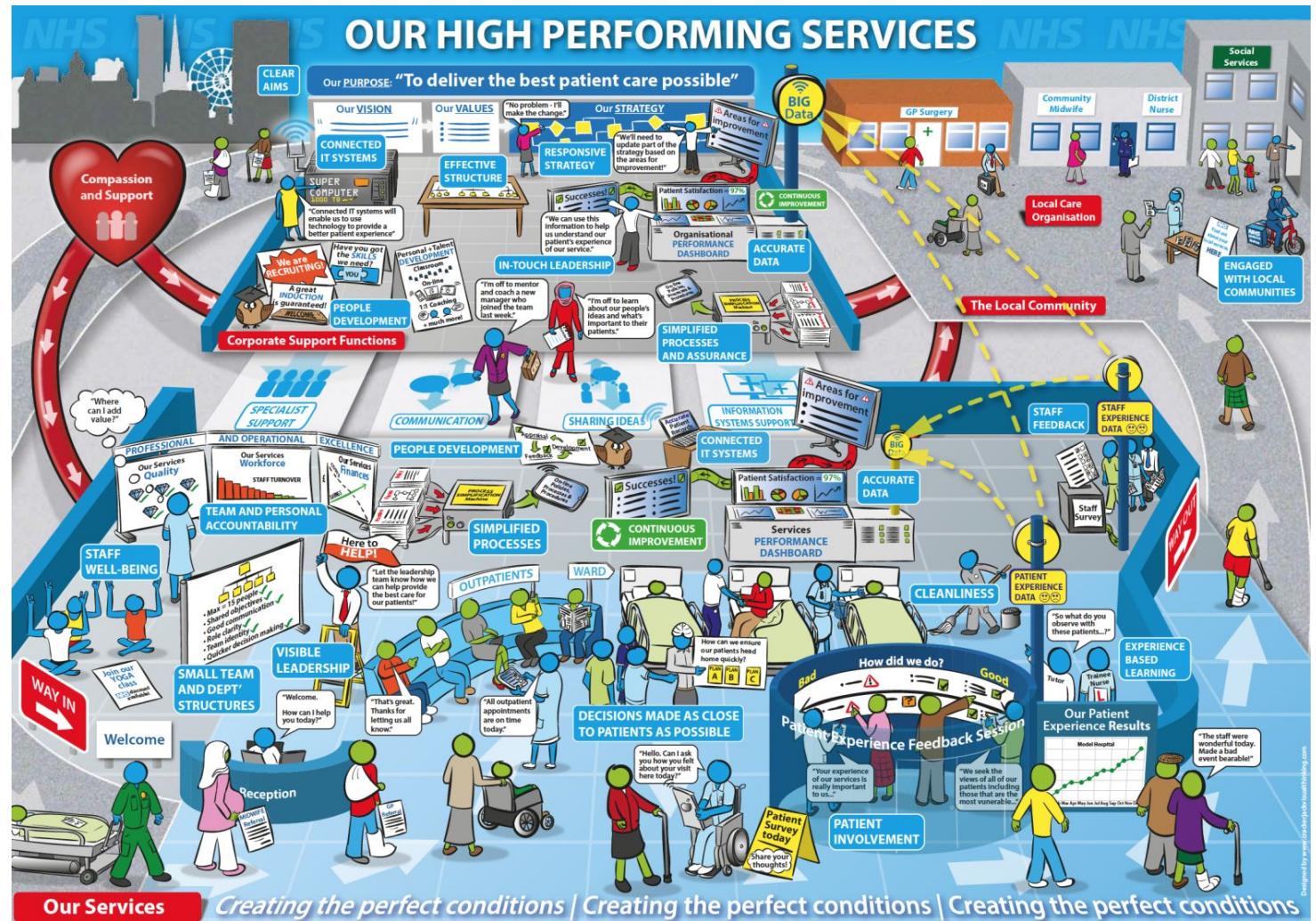
Complicated

known unknowns



Complex

unknown-unknowns



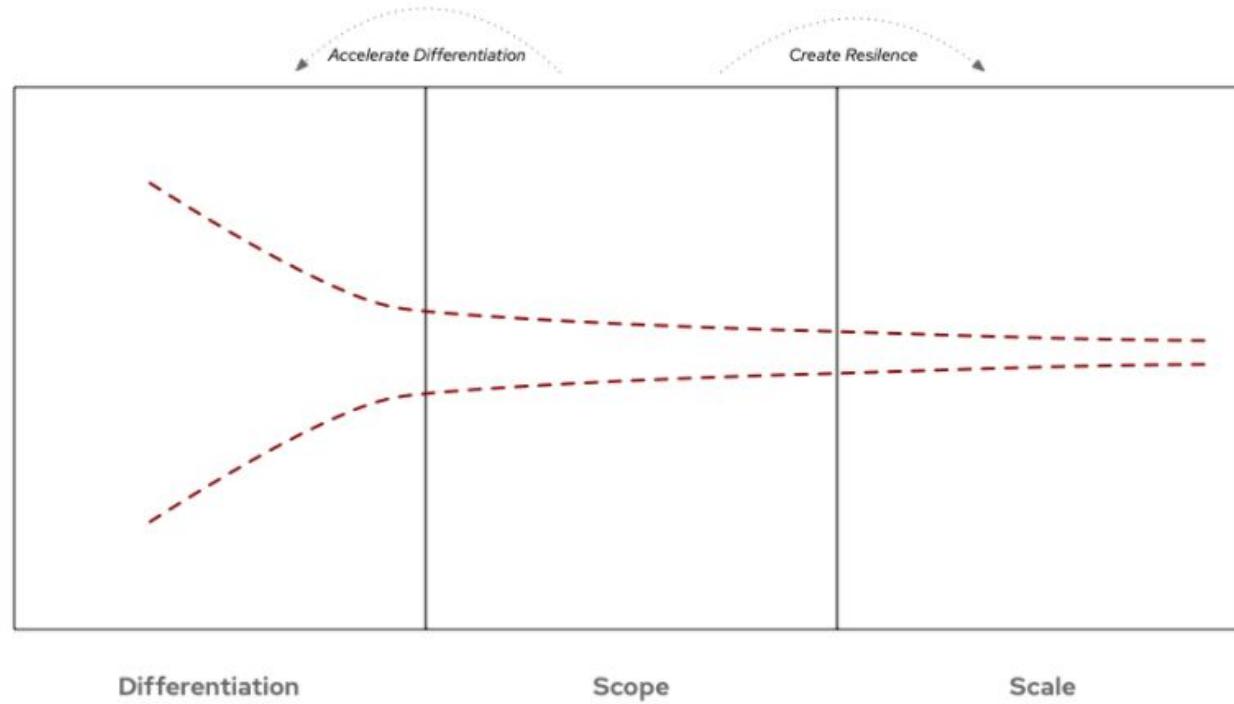
Chaotic

No known relation between cause
and effect



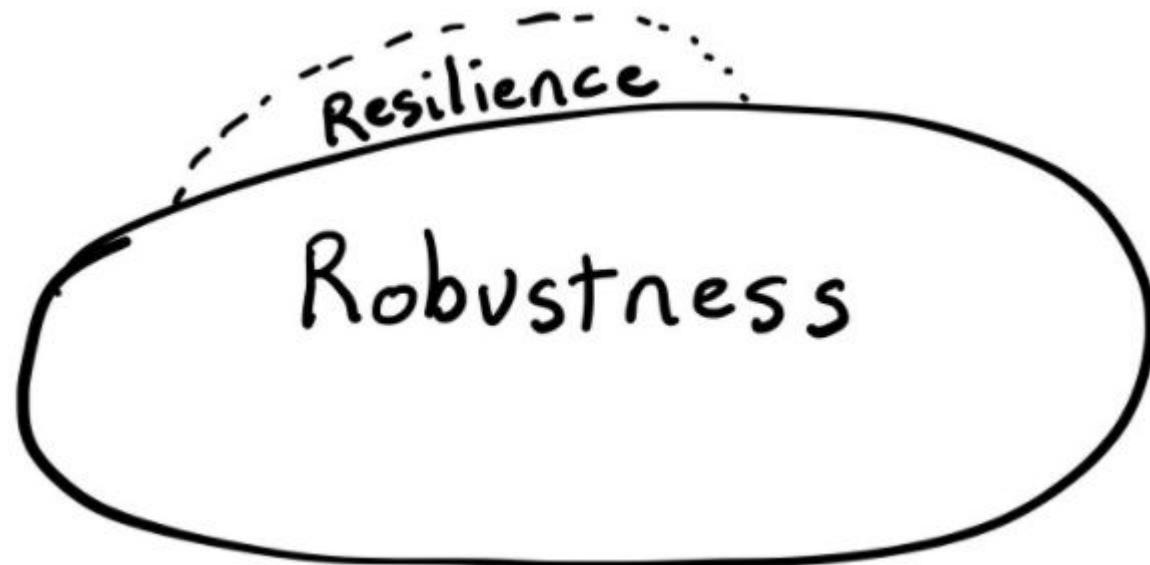


The Three Economies



Jabe Bloom
GTO

© Joshua Bloom 2016

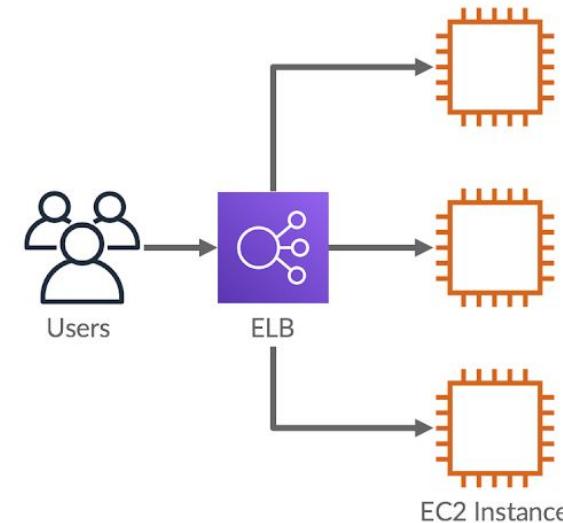
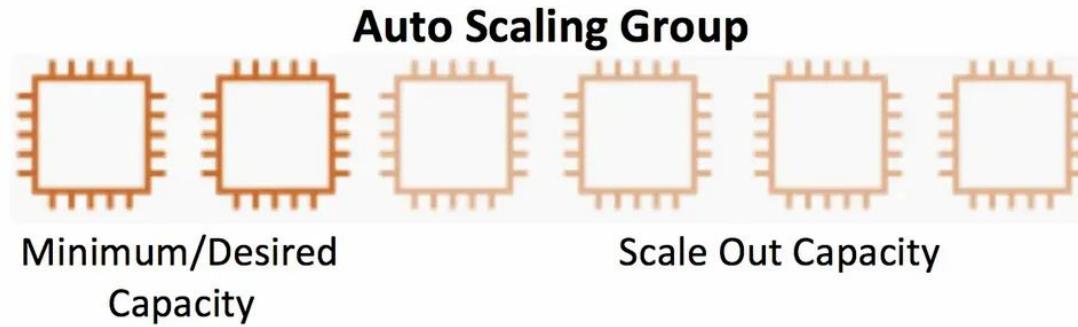


Credit: Lorin Hochstein

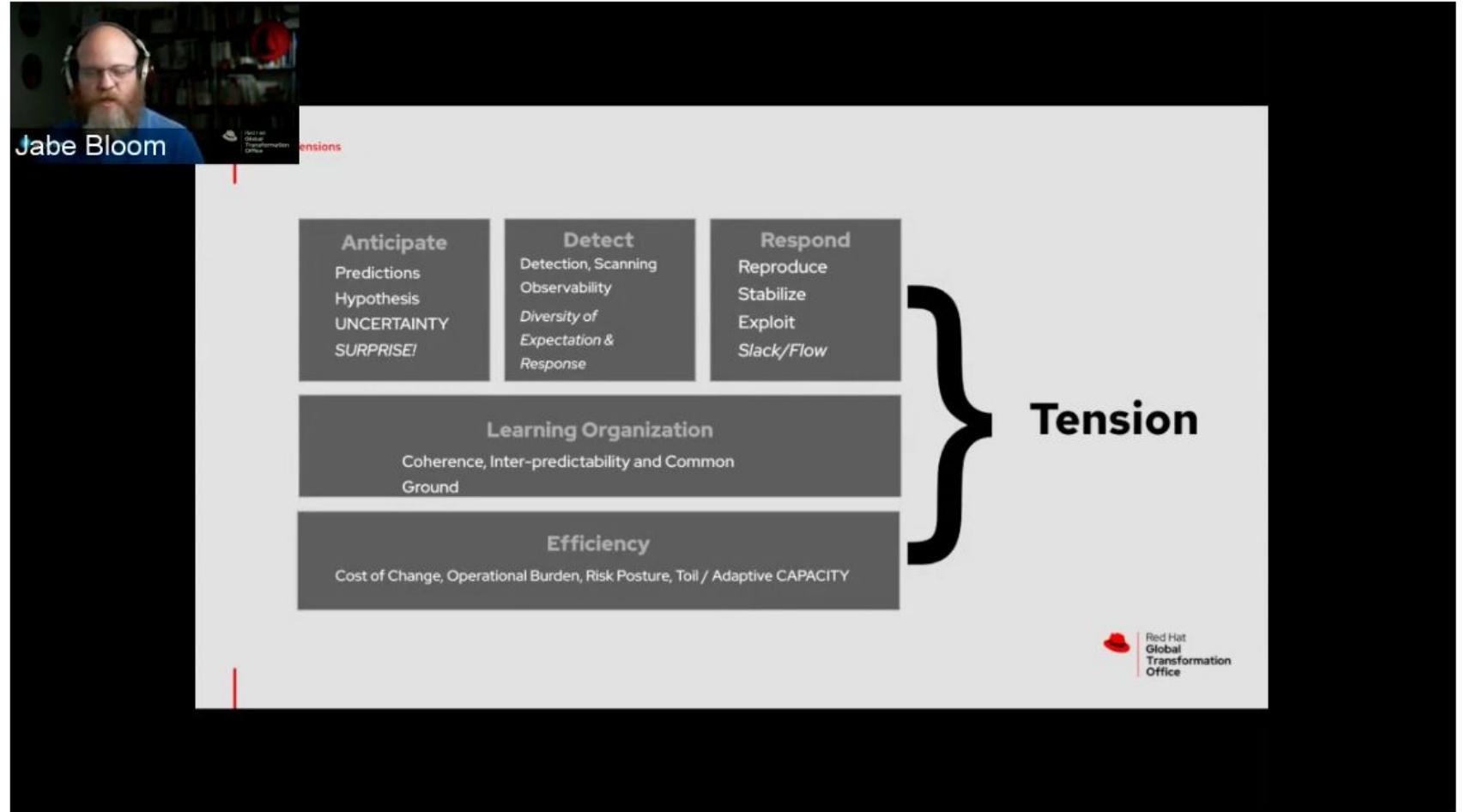


Robustness

Redundancy



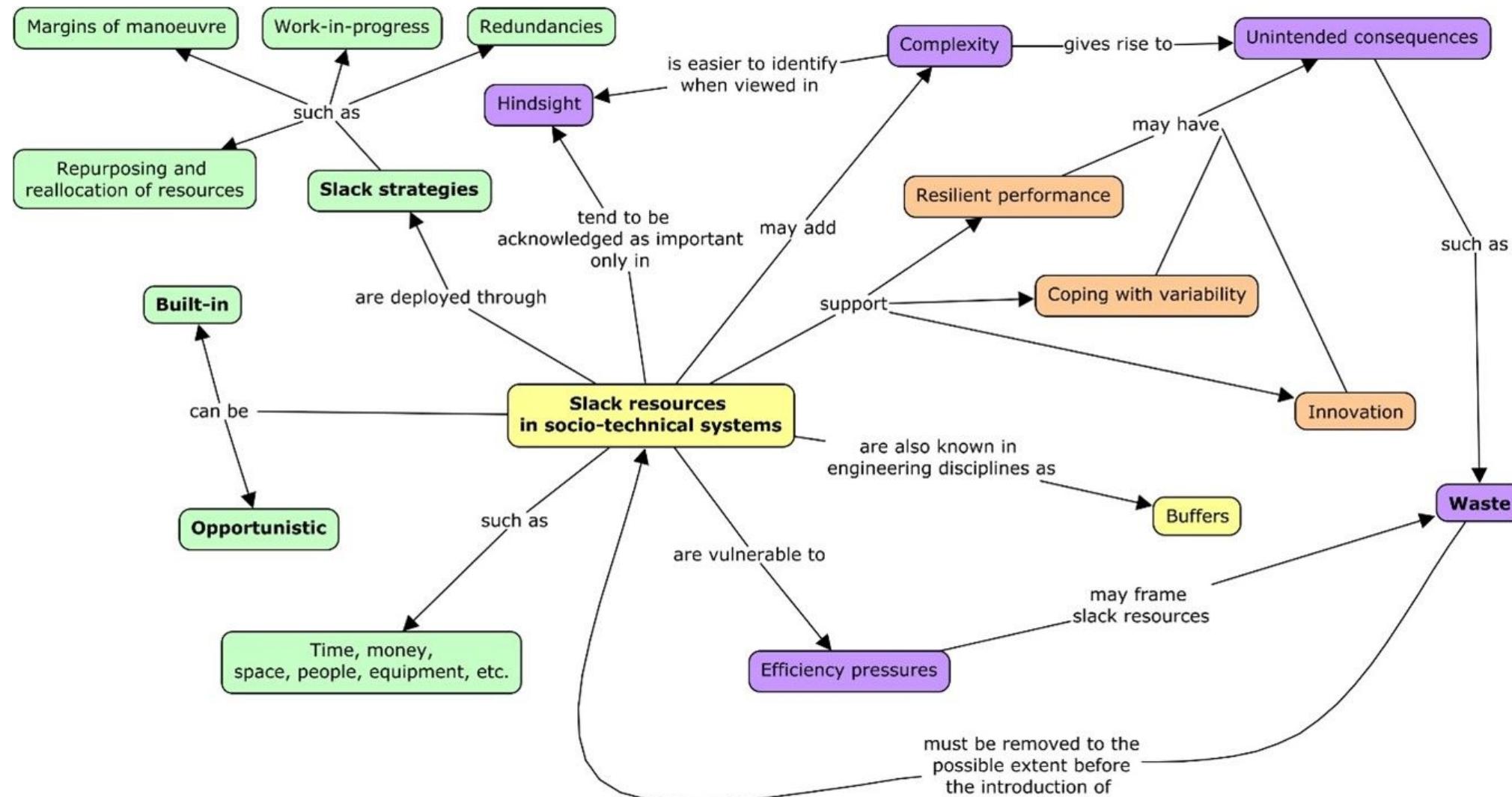
Resilience and Efficiency



Efficiency ← → Resilience

<https://chiefexecutive.net/efficiency-vs-resiliency-who-won-the-bout/>

<https://www.resilience-engineering-association.org/blog/2021/01/12/slack-a-key-enabler-of-resilient-performance/>





Jabe Bloom
@cyetain



A learning organization (in Resilience Engineering terms) is one in which the organization is (continuously?) discovering the boundaries at which the current model of competence begin breaking down and limiting the organizations ability to adapt to (emergent) complexity.

9:28 PM · Mar 25, 2020 from Pittsburgh, PA



68



22 people are Tweeting about this

Harvard Business Review

www.hbr.org

TOOL KIT

Using this assessment tool, companies can pinpoint areas where they need to foster knowledge sharing, idea development, learning from mistakes, and holistic thinking.

Is Yours a Learning Organization?

by David A. Garvin, Amy C. Edmondson, and Francesca Gino

Included with this full-text *Harvard Business Review* article:

1 [Article Summary](#)

The Idea in Brief—*the core idea*
The Idea in Practice—*putting the idea to work*

2 [Is Yours a Learning Organization?](#)

10 [Further Reading](#)

A list of related materials, with annotations to guide further exploration of the article's ideas and applications

Reprint [R0803H](#)



In a learning organisation:

...employees continually create, acquire, and transfer knowledge—helping their company *adapt to the unpredictable* faster than rivals can.

Garvin et al, 2008

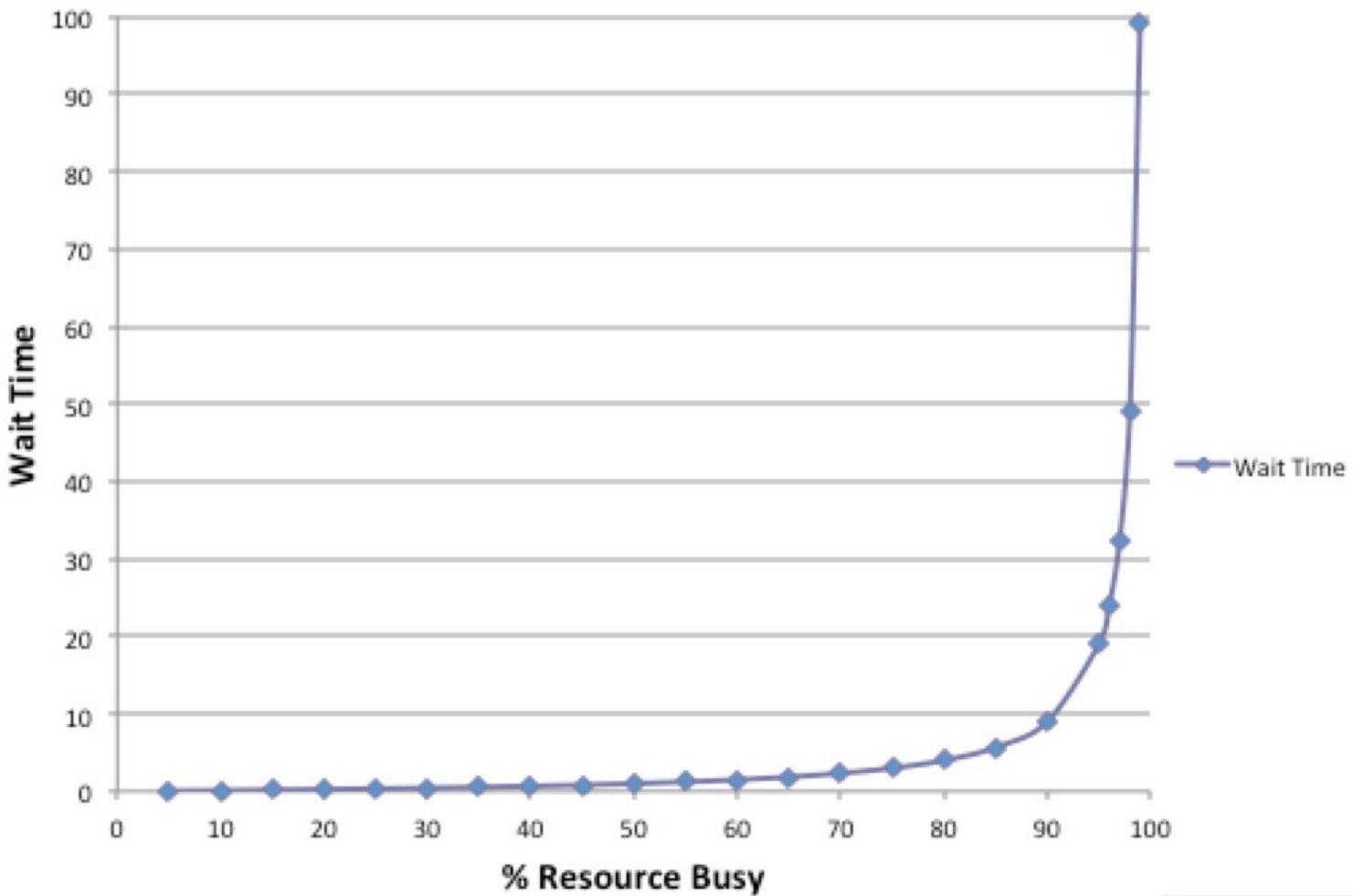
Is Resilience Engineering “DevOps”?

How to create resilient systems?

1. Reduce & optimise utilisation

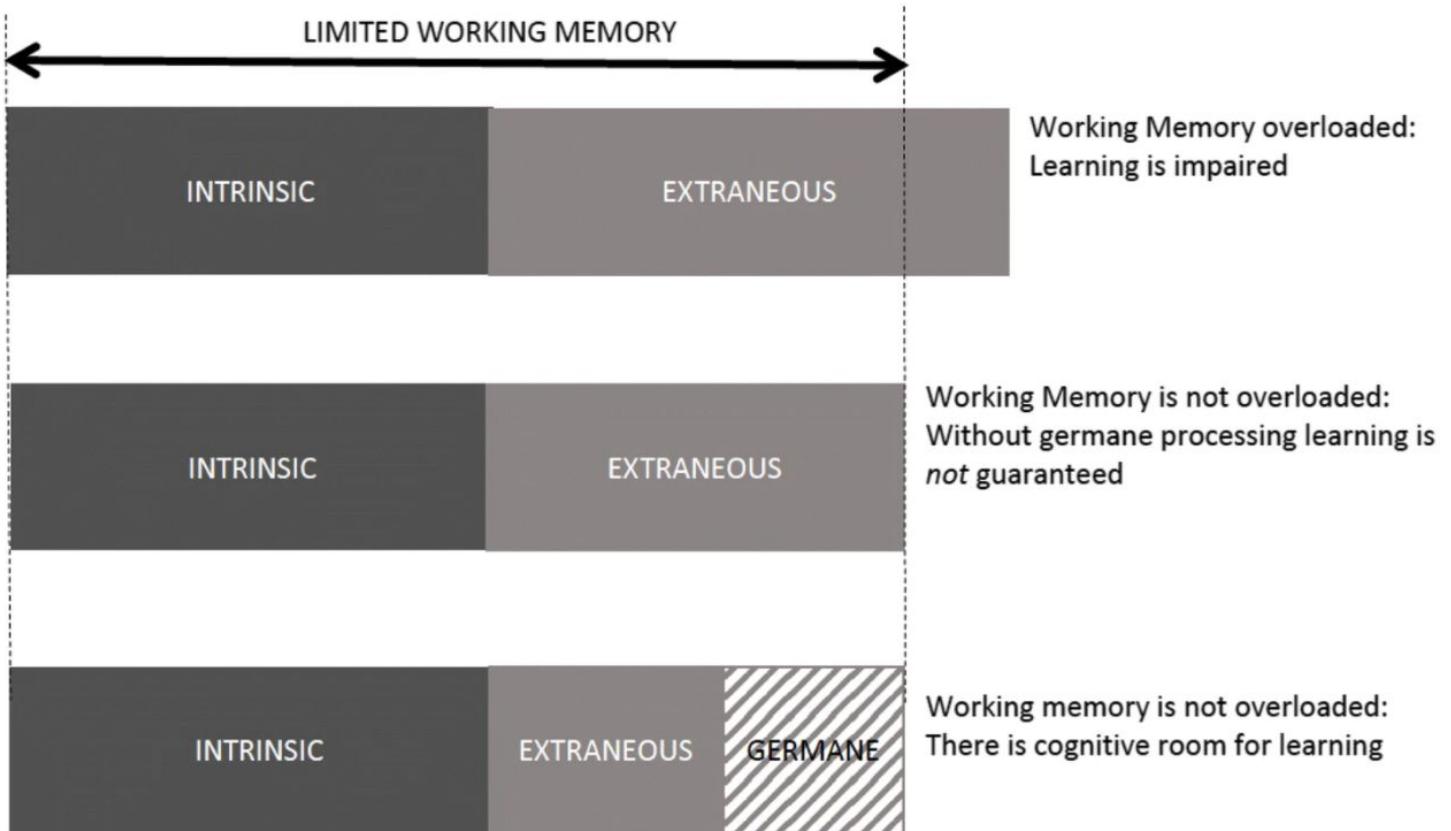
Your system needs slack

$$\text{Wait Time} = (\% \text{ Busy}) / (\% \text{ Idle})$$



2. Manage Cognitive Load

- Intrinsic - personal skill
- Extraneous - external unknowns
- Germane - problem solving



3. Manage Technical Debt

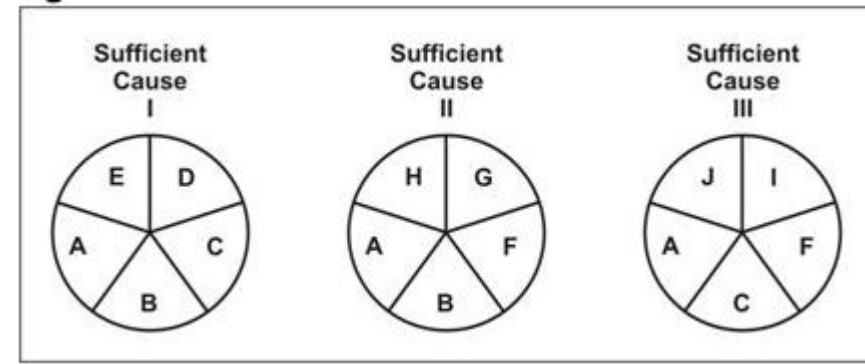


4. Increase Observability

Internal AND external facing



5. Practise Root Cause Analysis



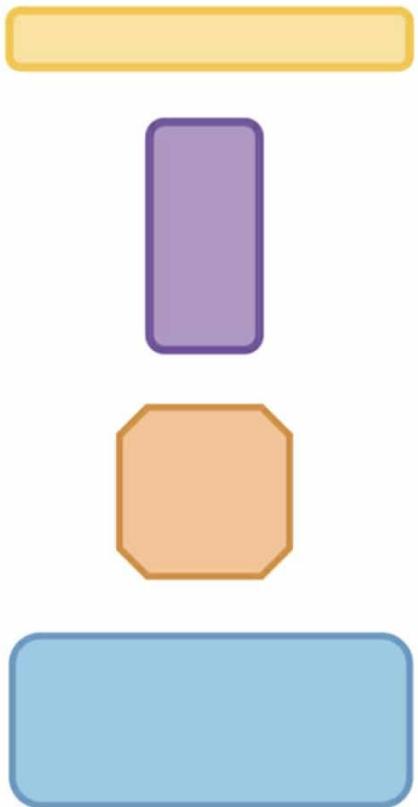
6. Carry out fire drills



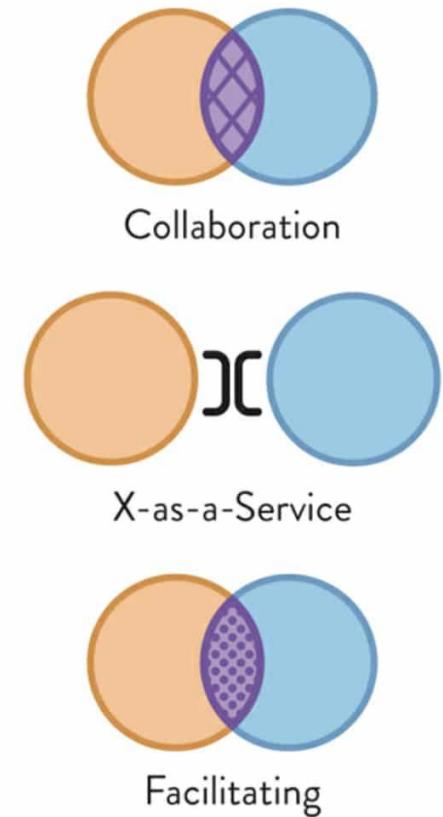
7. Implement appropriate Team Topologies

Appropriate team types and interaction modes influence, and are facilitated by, psychological safety.

Four Team Types



Three Interaction Modes



8. Increase & maintain psychological safety

“Psychological safety is a belief that one will not be punished or humiliated for speaking up with ideas, questions, concerns, or mistakes.”



Edmondson, A., 1999. Psychological safety and learning behavior in work teams. *Administrative science quarterly*, 44(2), pp.350-383.

Psychological Safety

“In a group context, psychological safety manifests as the belief that other members value your contributions and concerns and will not harm you, actively or passively, for expressing them.

It creates space for group members to take calculated risks, admit vulnerability and acknowledge mistakes without fear of negative consequences.”

Tom Geraghty

2021



The 4 stages of psychological safety

1. Inclusion
 2. Learner
 3. Contributor
 4. Challenger
-

Is your team psychologically safe?

- 
1. **On this team, I understand what is expected of me.**
 2. **We value outcomes more than outputs or inputs, and nobody needs to "look good".**
 3. **If I make a mistake on this team, it is never held against me.**
 4. **When something goes wrong, we work as a team to find the systemic cause.**
 5. **All members of this team feel able to bring up problems and tough issues.**
 6. **Members of this team never reject others for being different and nobody is left out.**
 7. **It is safe for me to take a risk on this team.**
 8. **It is easy for me to ask other members of this team for help.**
 9. **Nobody on this team would deliberately act in a way that undermines my efforts.**
 10. **Working with members of this team, my unique skills and talents are valued and utilised.**

Summary: How do we create Resilience?



1. Build in slack to systems
2. Manage cognitive load
3. Pay down technical debt
4. Increase observability and monitoring
5. Embed practices and expertise in root cause analysis
6. Run "fire drills" and disaster exercises
7. Apply the right team topologies
8. Create psychological safety



Senior Oops Engineer

@ReinH

Replying to @tom_geraghty @Hatchman76 and @allspaw

...

Before you can engineer resilience, you must engineer the conditions in which it is possible to engineer resilience.

9:34 PM · Oct 28, 2020 · Twitter Web App

Summary and Q&A



- **Complex, socio-technical systems**
- **There is no “root” cause**
- **Multidisciplinary field**
- **Anticipate, detect, respond and adapt**
- **Sustained adaptive capacity**
- **Robustness /= resilience**
- **Resilience vs efficiency**
- **Learning organisations**
- **8 ways to increase organisational resilience**

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End of presentation