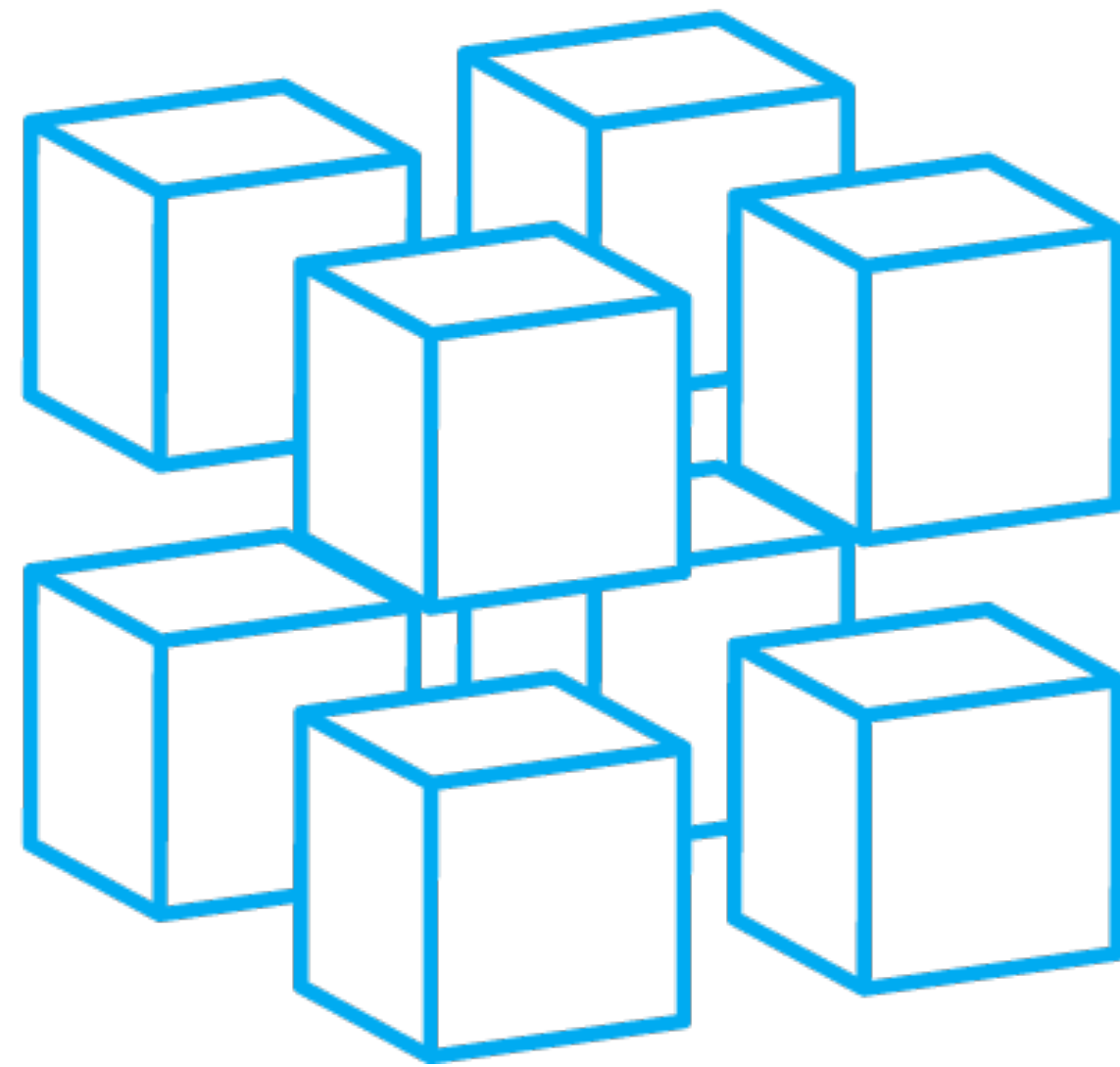


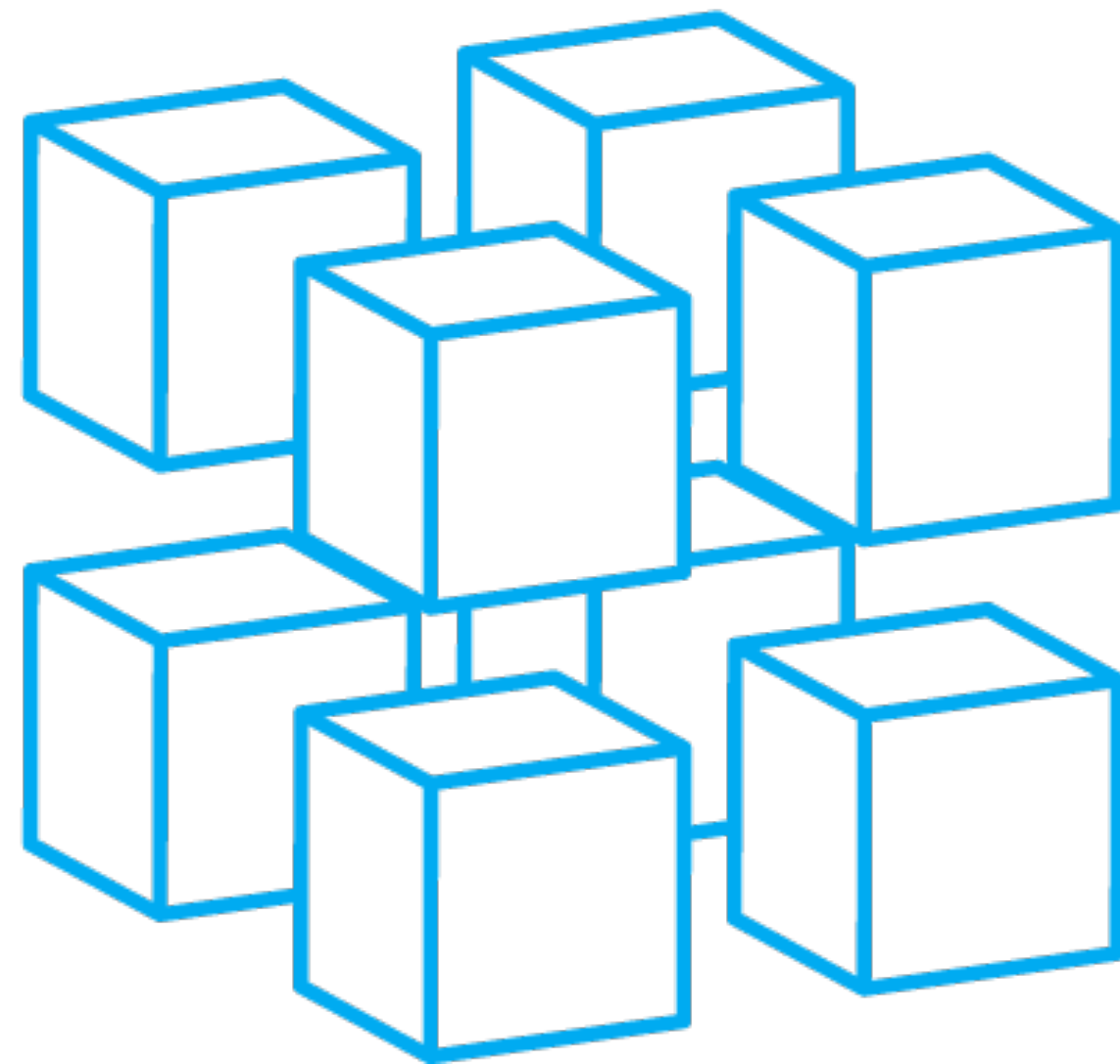
INSTANA

Ops-Less Operation

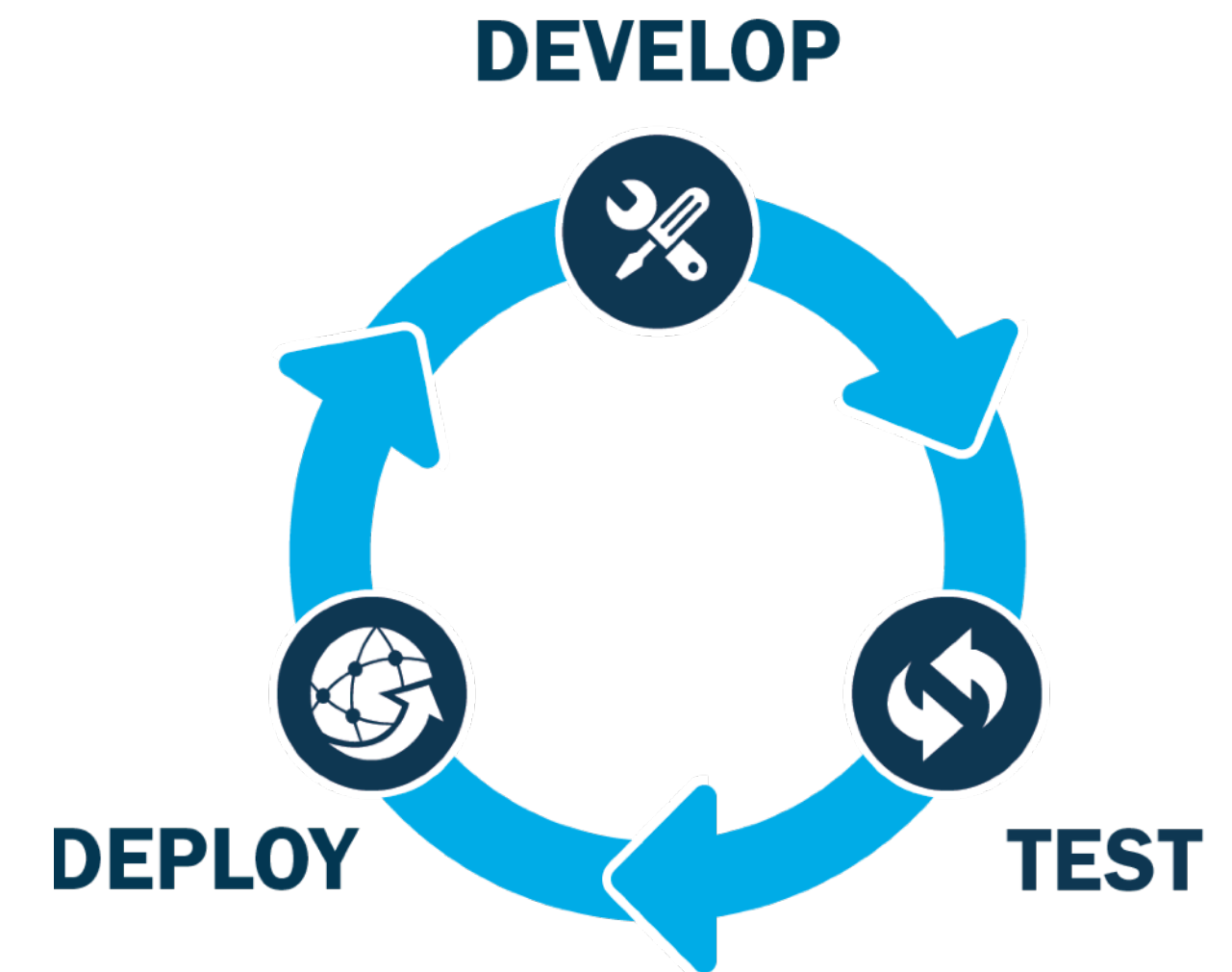




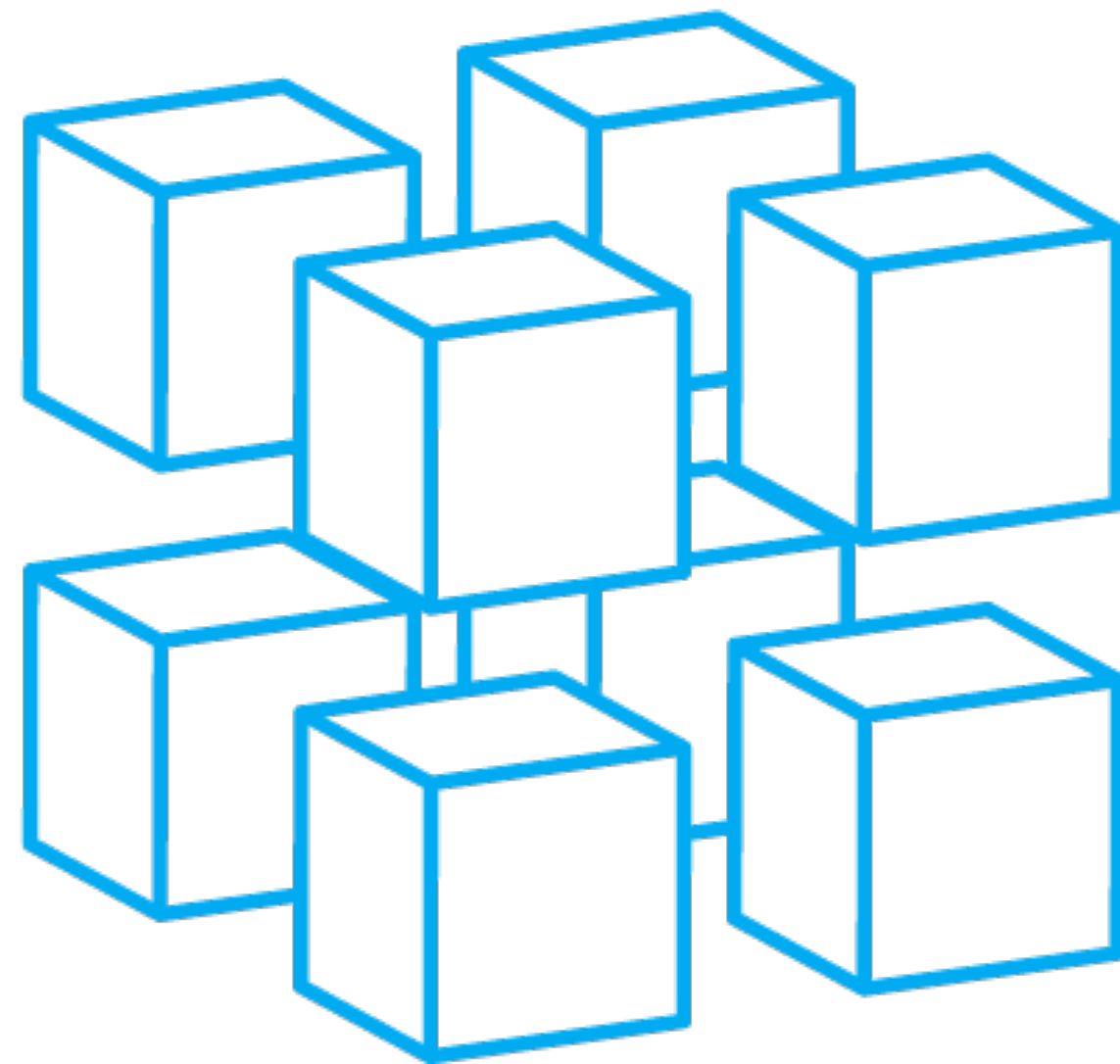
Modular Applications /
Microservices?



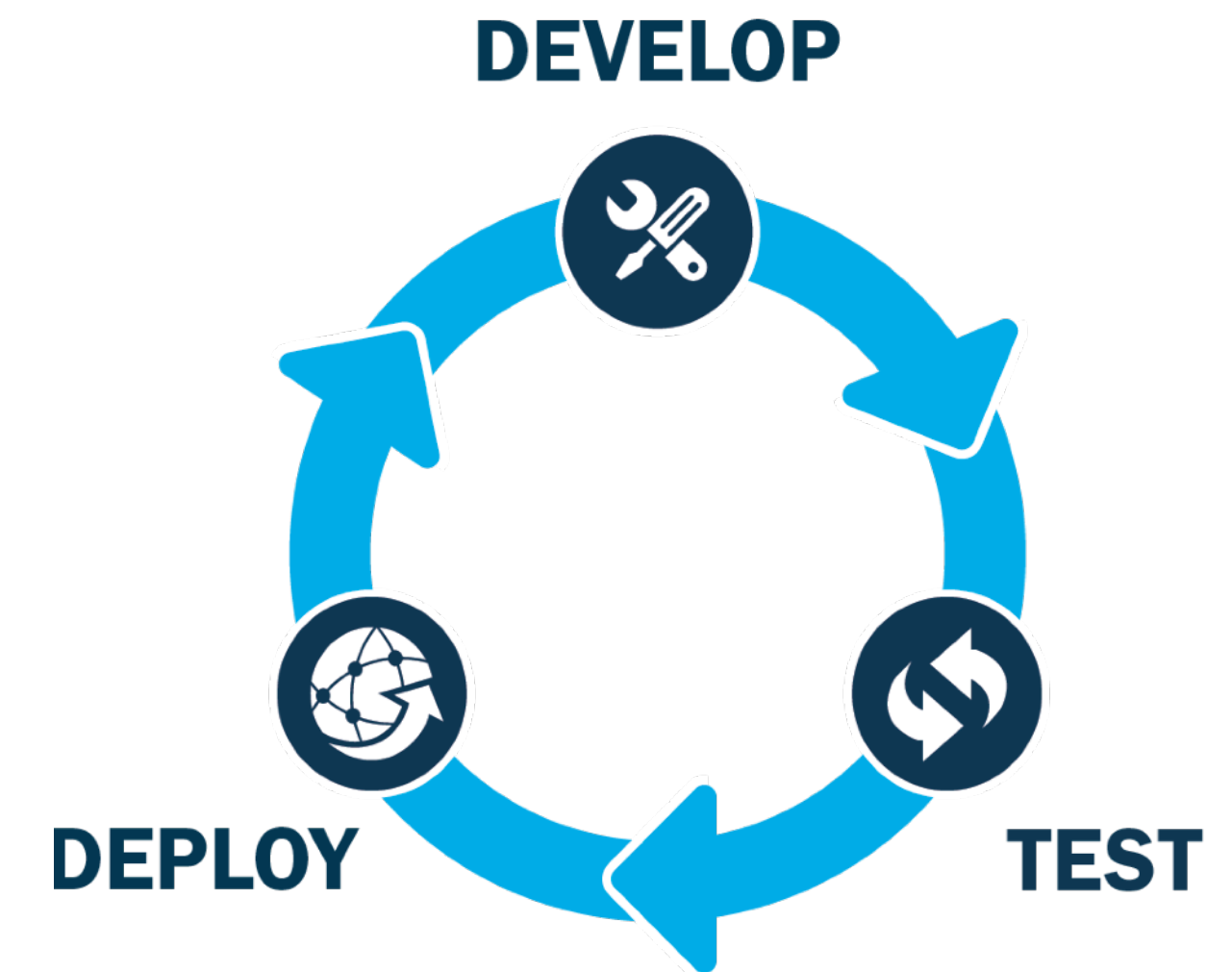
Modular Applications /
Microservices?



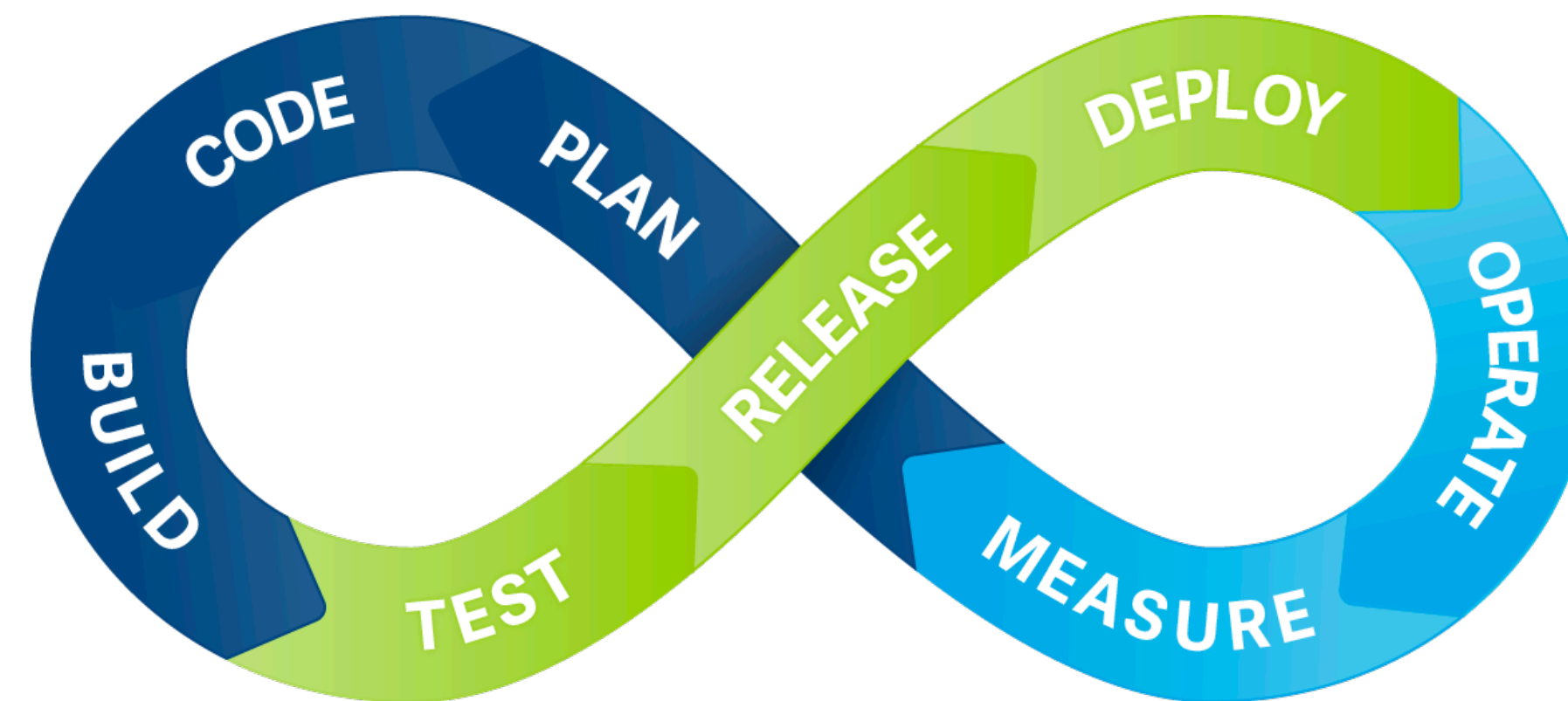
Continuous Integration?



Modular Applications /
Microservices?



Continuous Integration?



Continuous Deployment?

- **Chris Engelbert**
- **Senior Developer Advocate @ Instana**
- **Java-Passionate (10+ years)**
- **Go (2 years)**
- **Performance**
- **Garbage Collection**
- **Benchmark Fairytales**







Prefers Kotlin



Adores TypeScript



Codes Java





Prefers Kotlin



Adores TypeScript



golang

Kinda likes Go



Codes Java





Prefers Kotlin



Adores TypeScript

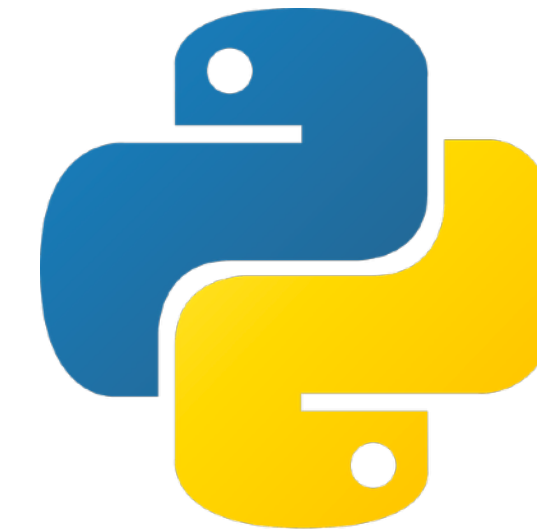


golang

Kinda likes Go



Forced to use JS



Totally hates Python



Codes Java





Prefers Kotlin



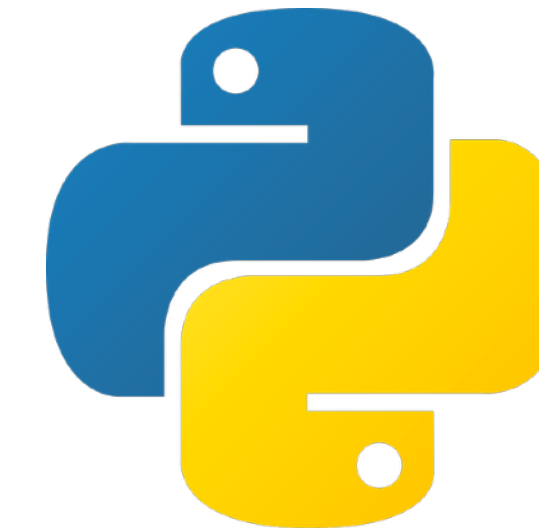
Adores TypeScript



Kinda likes Go



Forced to use JS



Totally hates Python

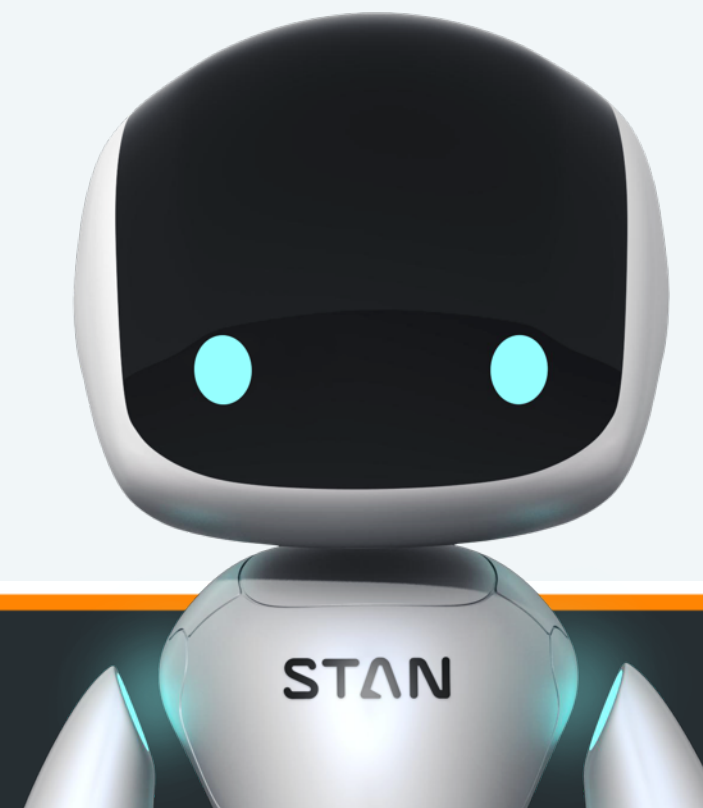


Codes Java



LOVES BEER!
(Dah, German)

Resiliency



About 178.000.000 results (0,49 seconds)

Dictionary

Search for a word



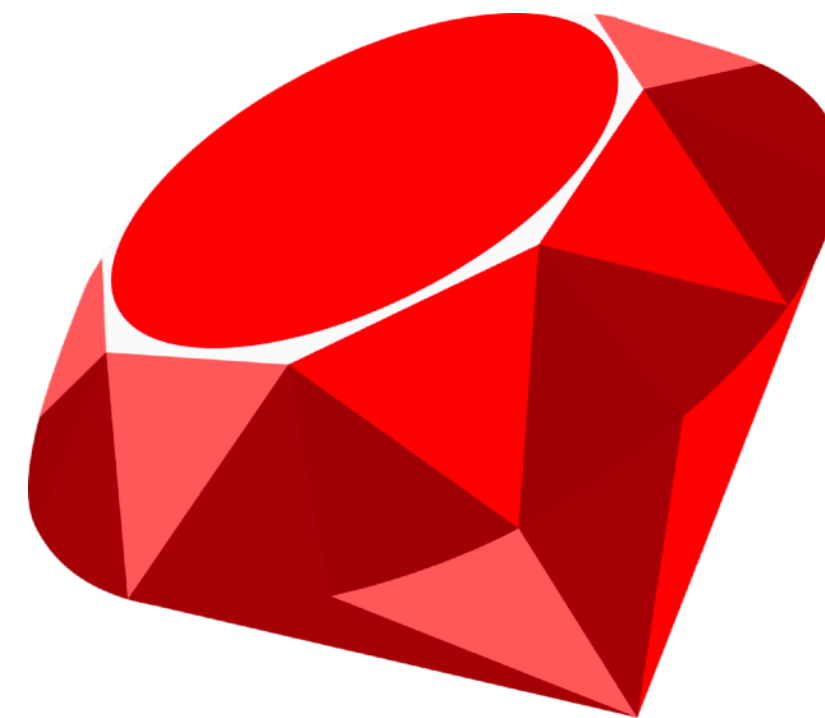
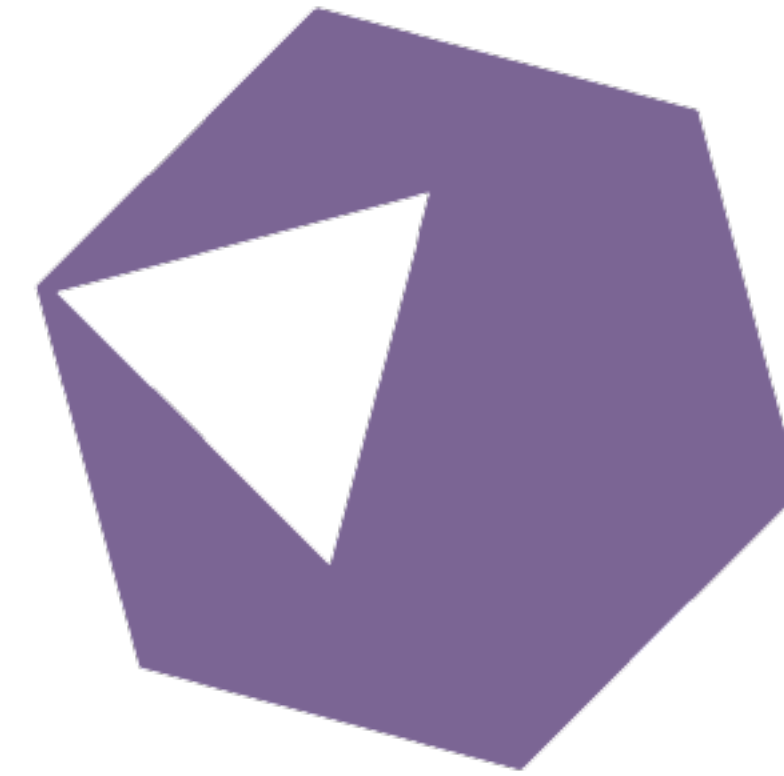
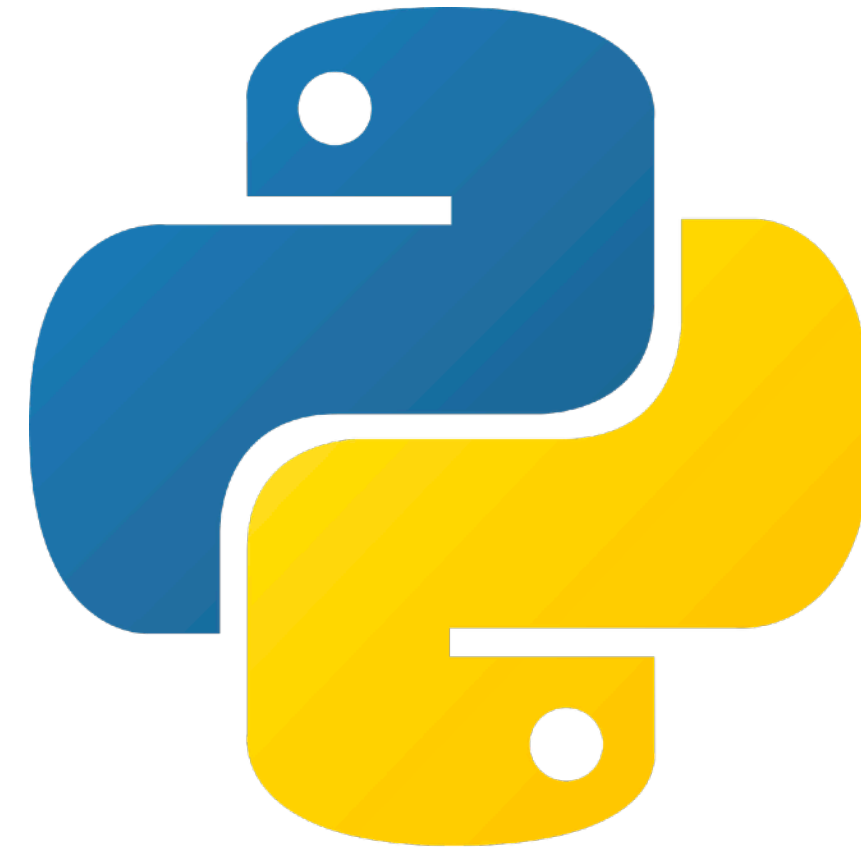
resilience

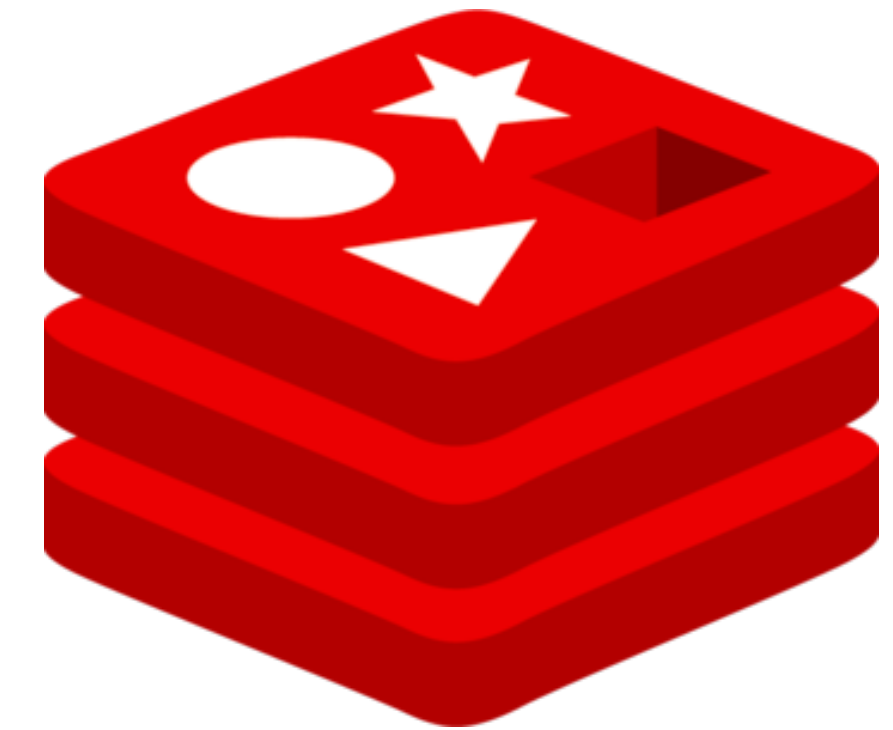
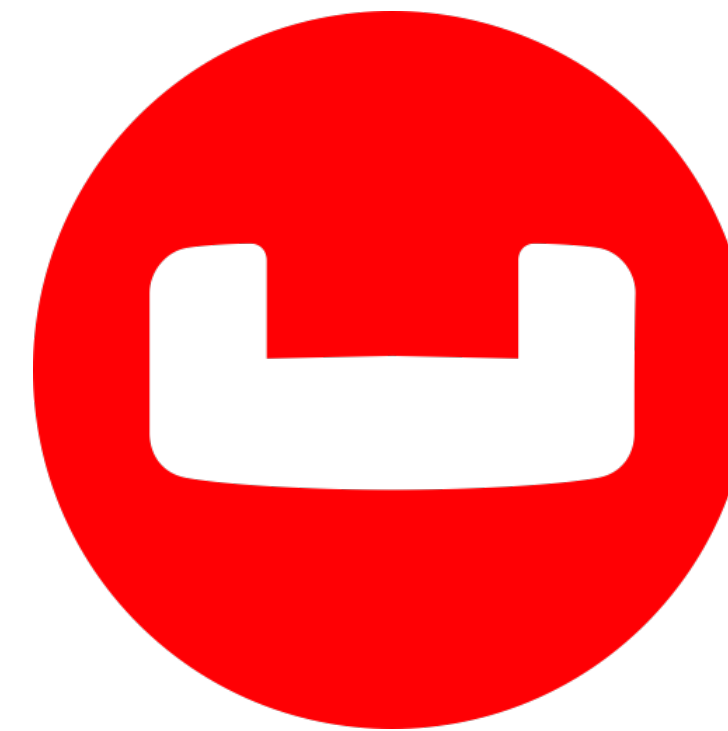
/rɪˈzɪliəns/

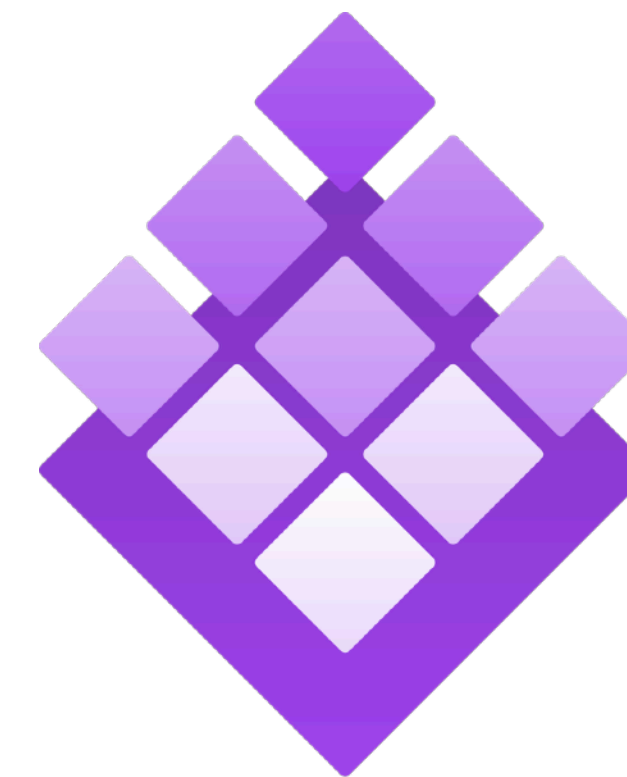
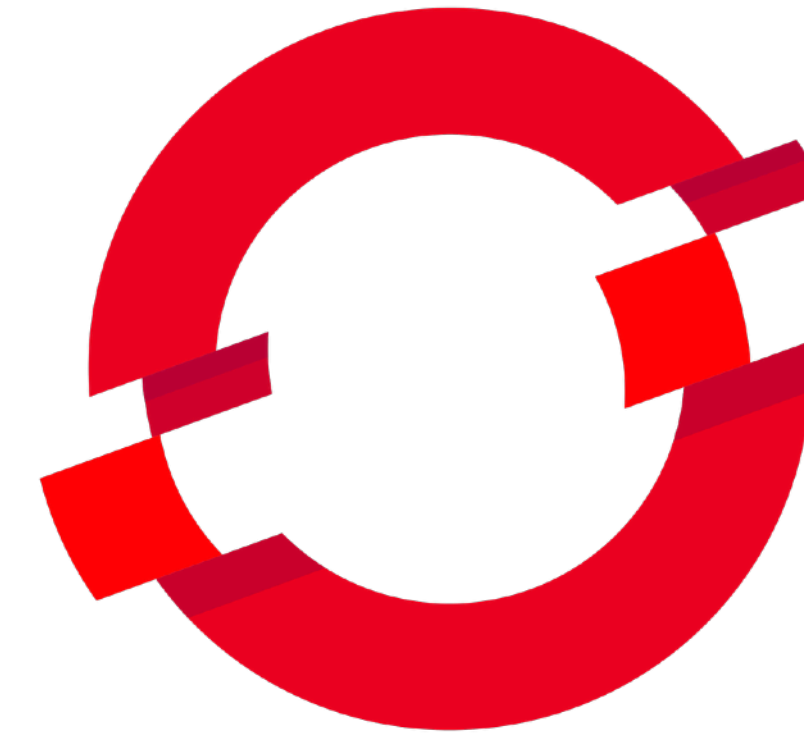
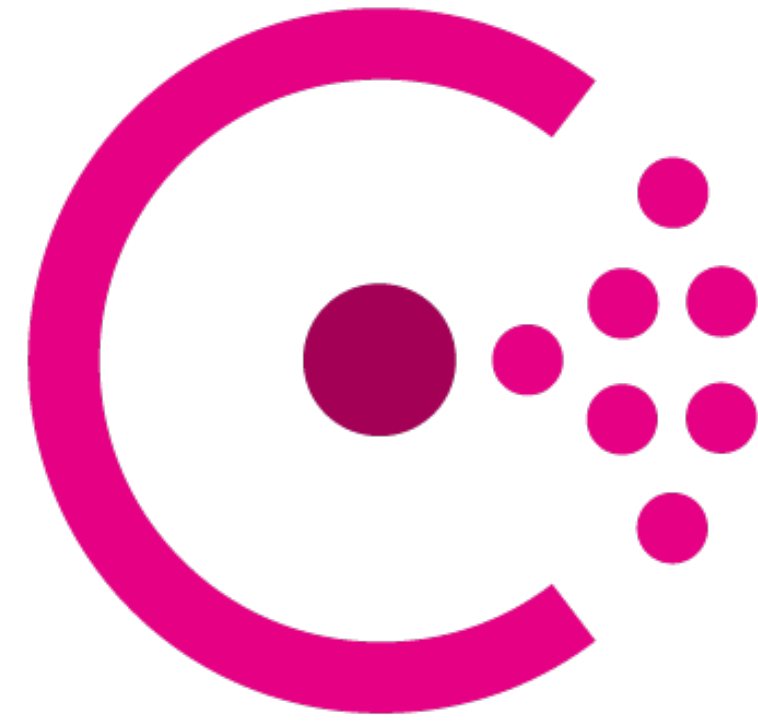
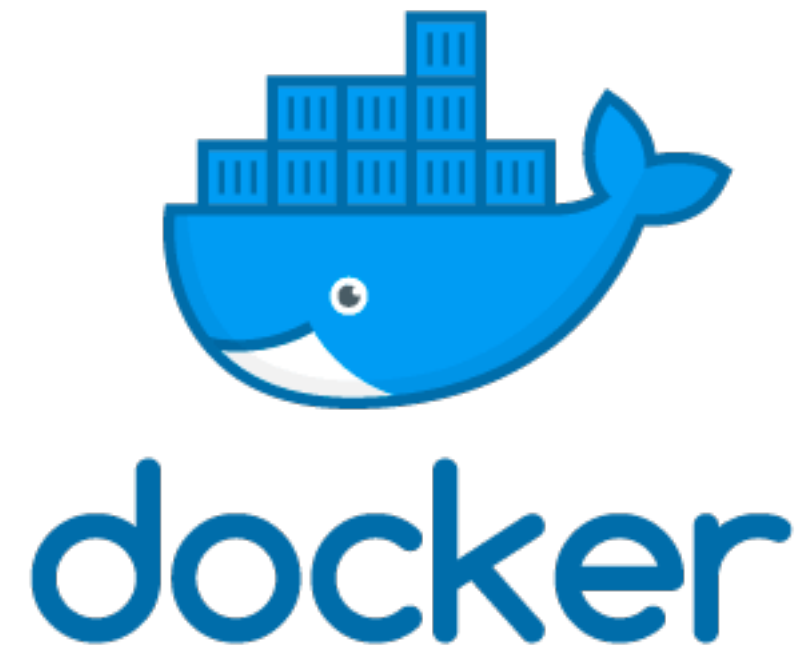
noun

1. the capacity to recover quickly from difficulties; toughness.
"the often remarkable resilience of so many British institutions"
2. the ability of a substance or object to spring back into shape; elasticity.
"nylon is excellent in wearability, abrasion resistance and resilience"





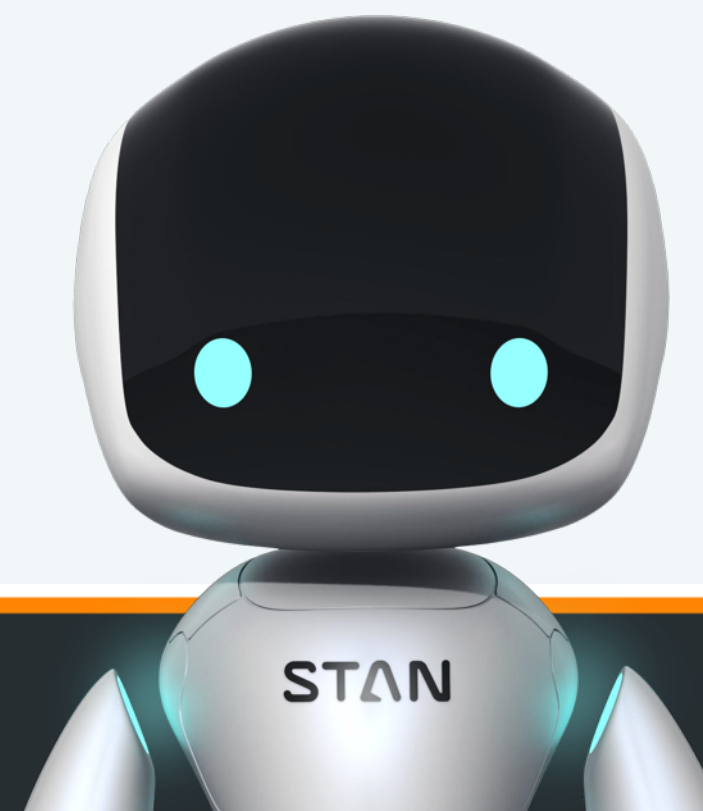








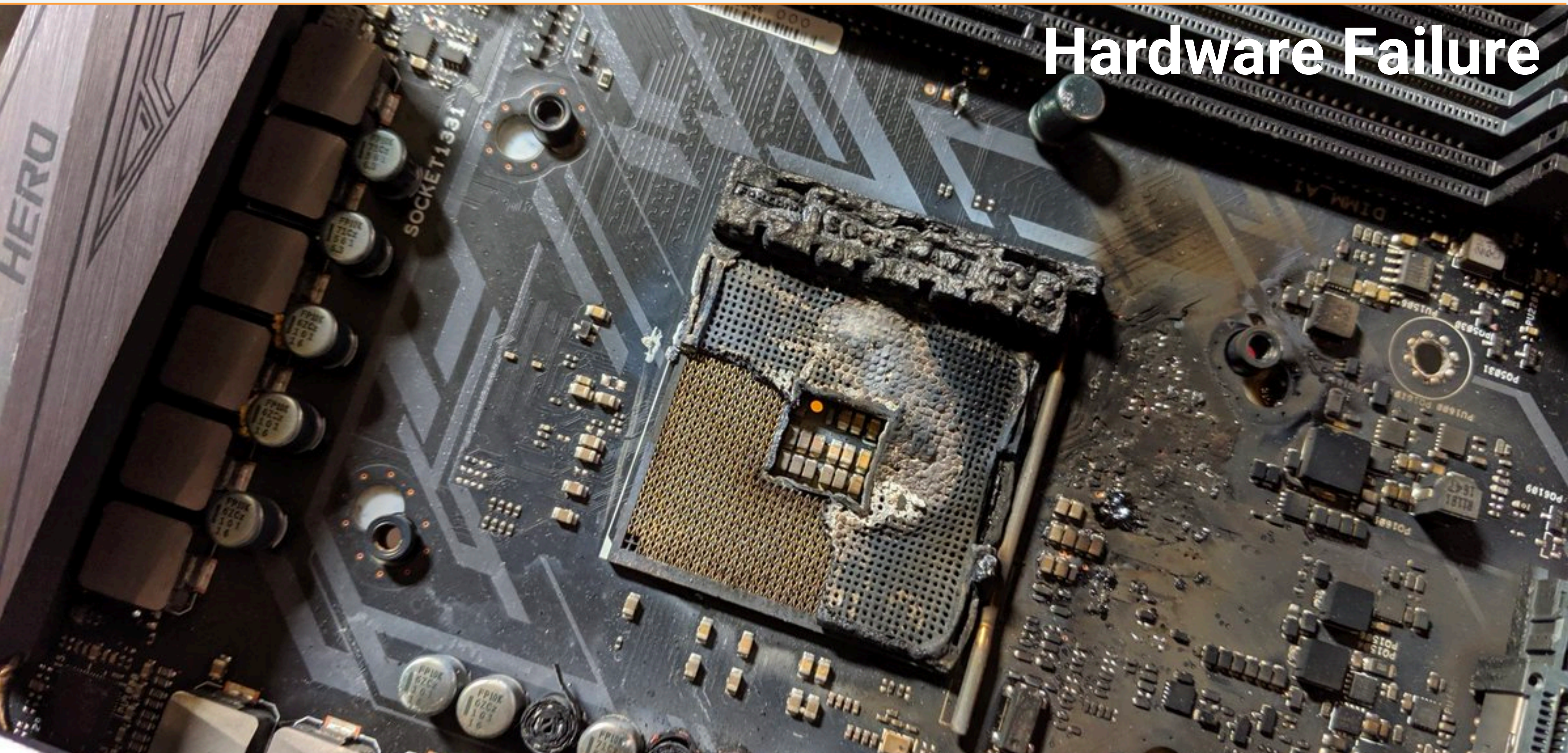
Resilient? To What?

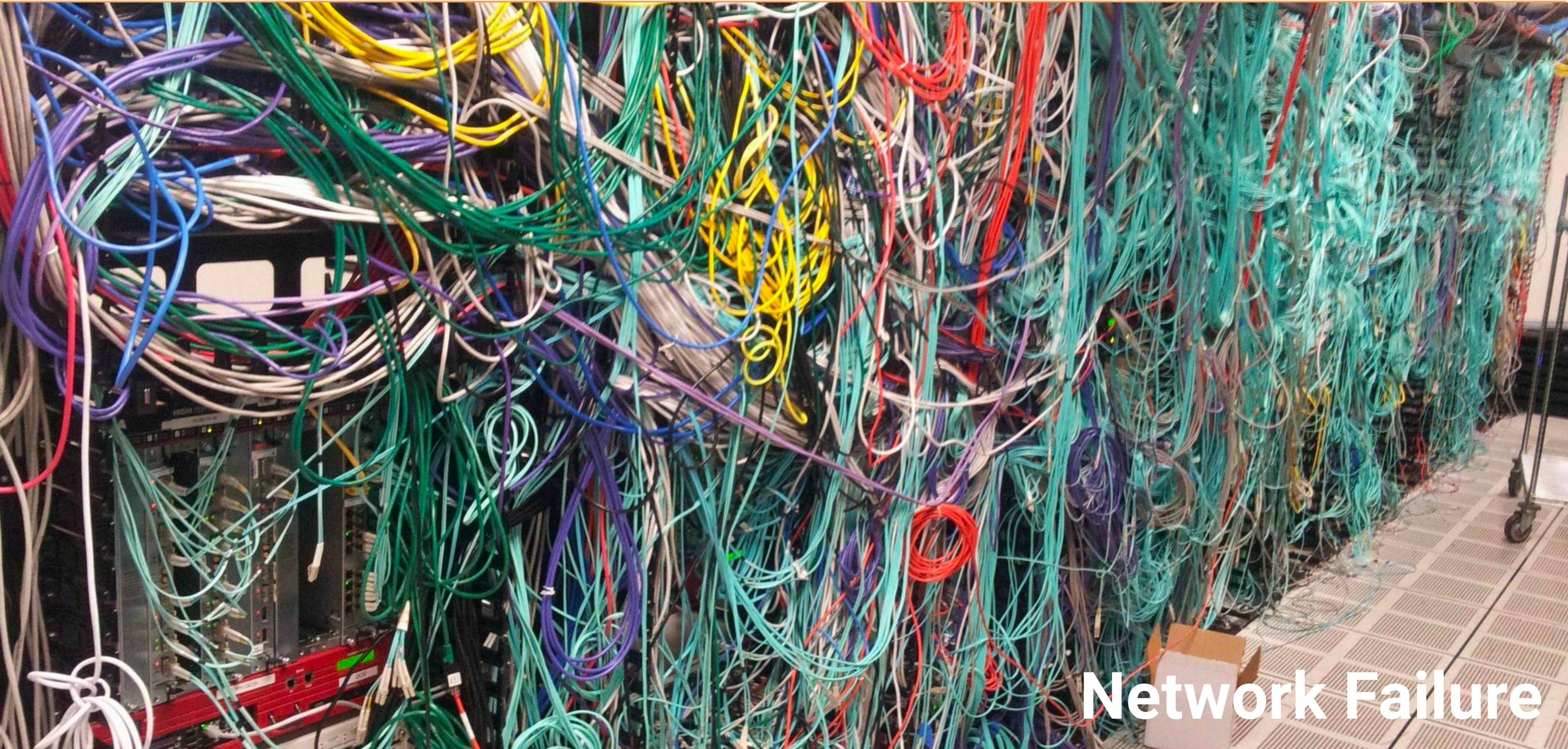




Power Outage

Hardware Failure





Network Failure



Human Error

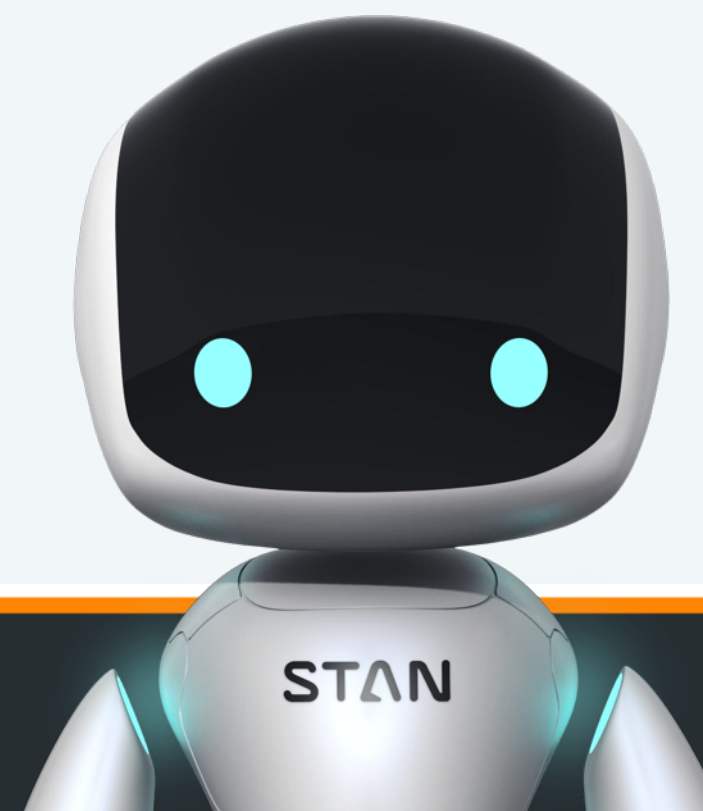
Software Bugs

~_(ツ)_/~

**IT WORKED
ON MY MACHINE**

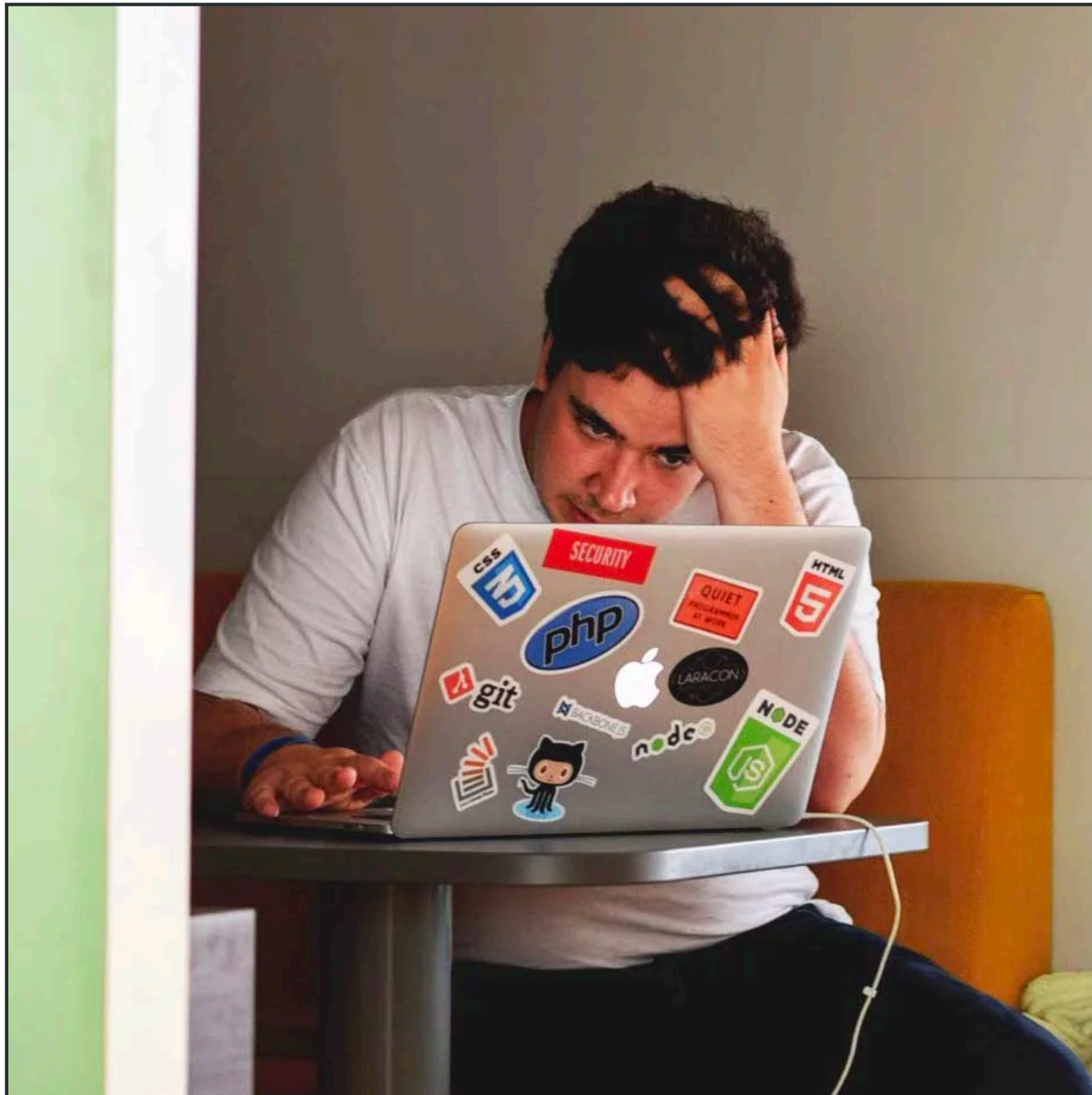
What Could Possibly Go Wrong™?

The Stages of Resiliency



Cross-Cutting Concern

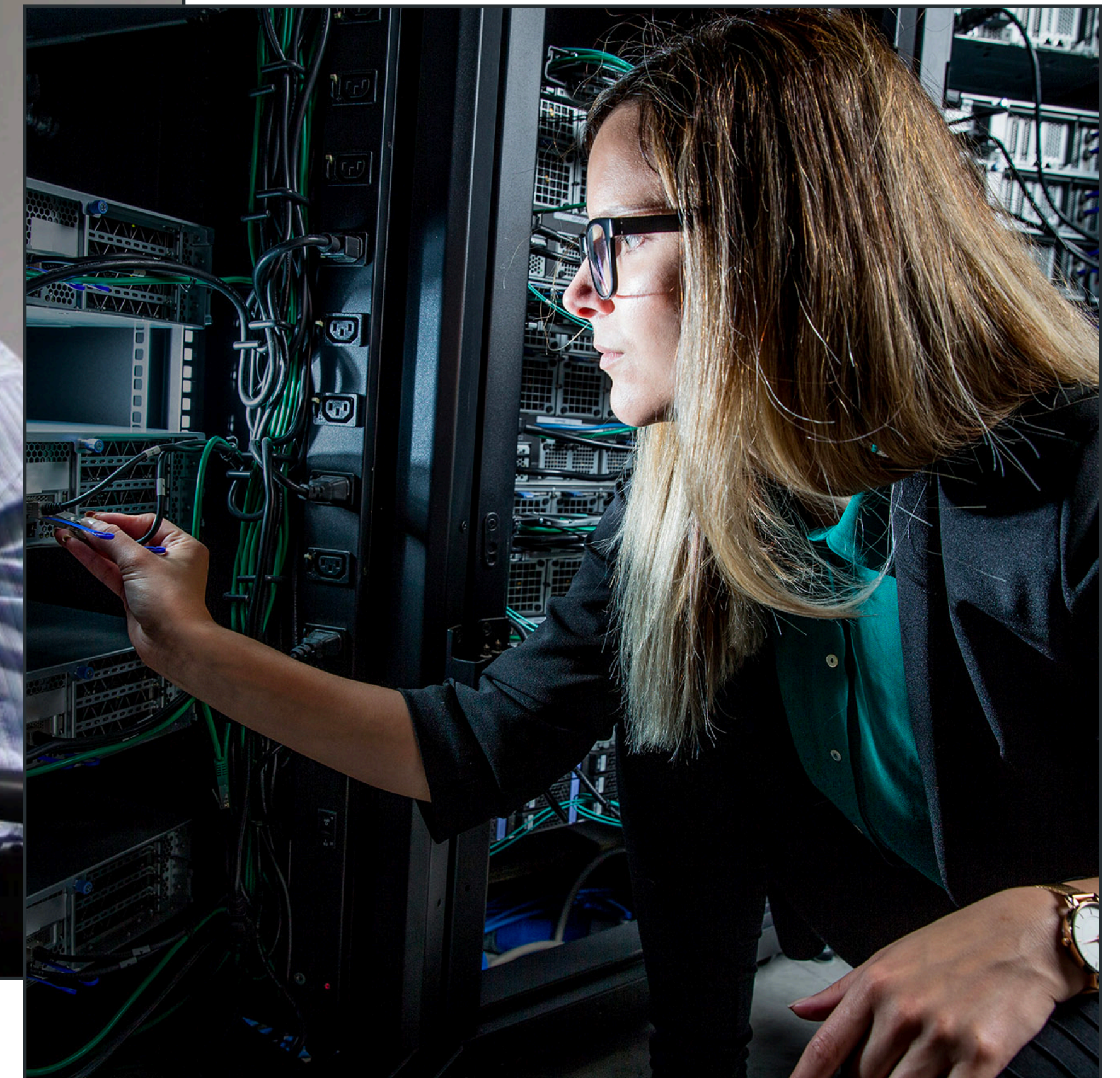
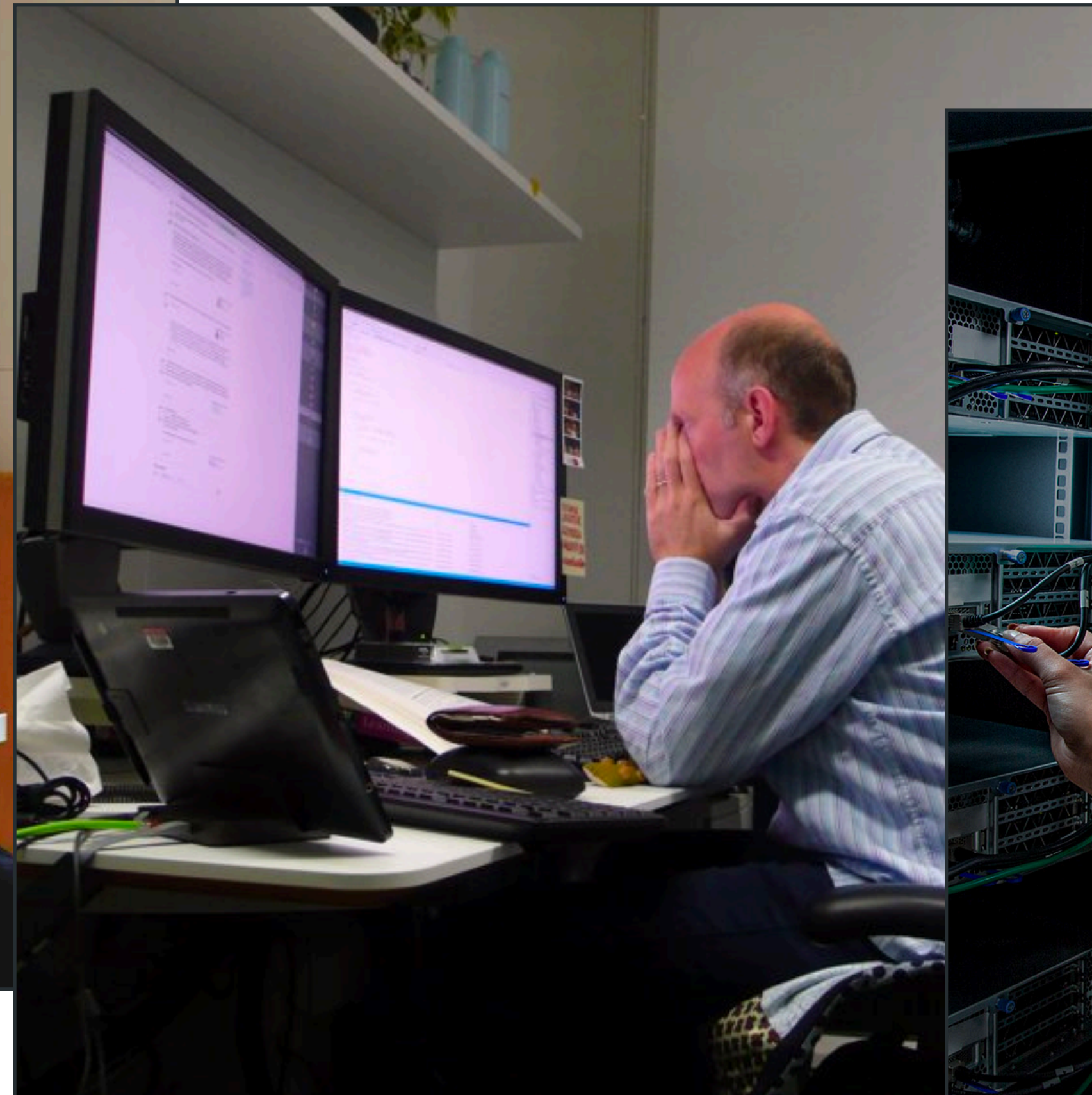
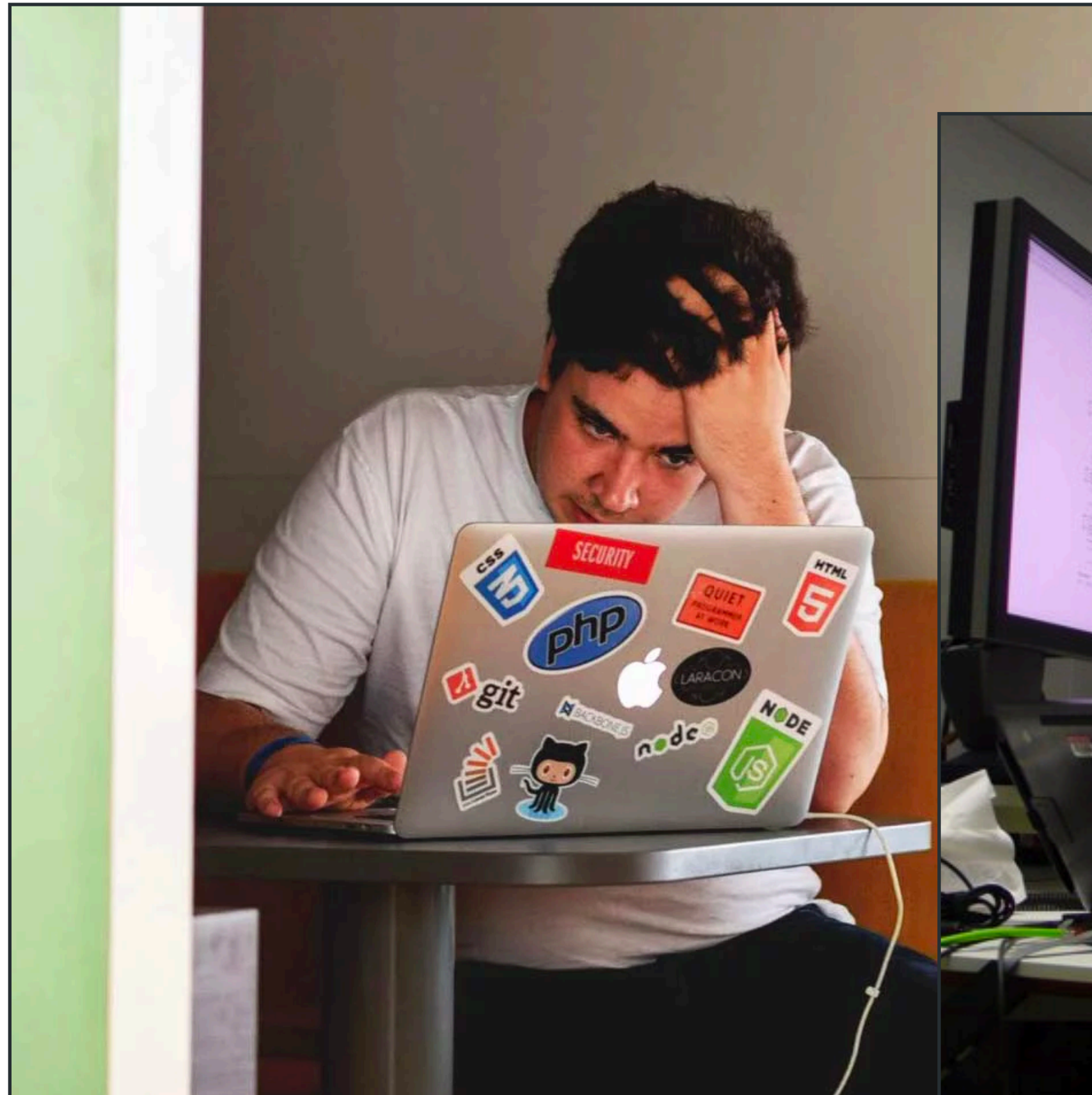
Cross-Cutting Concern



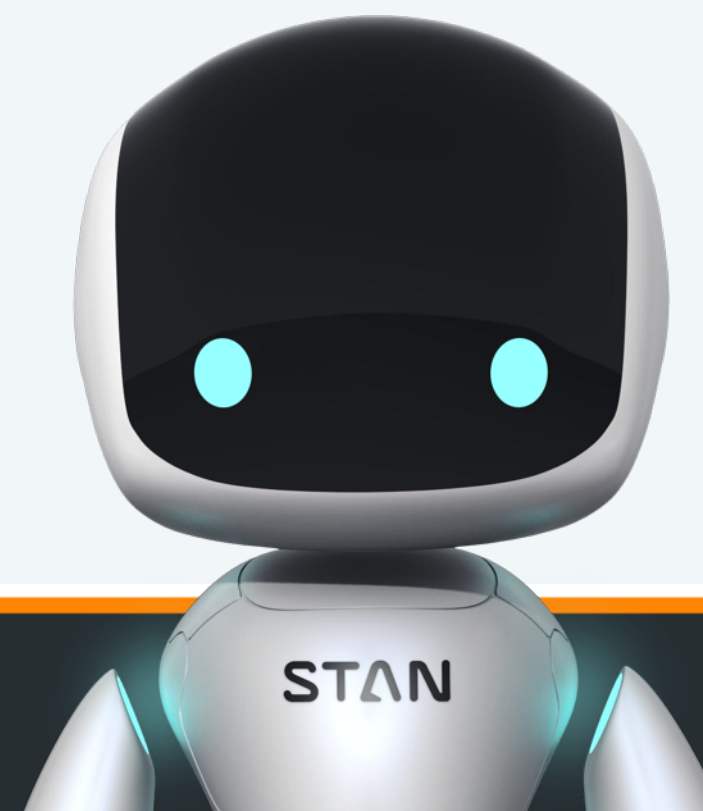
Cross-Cutting Concern



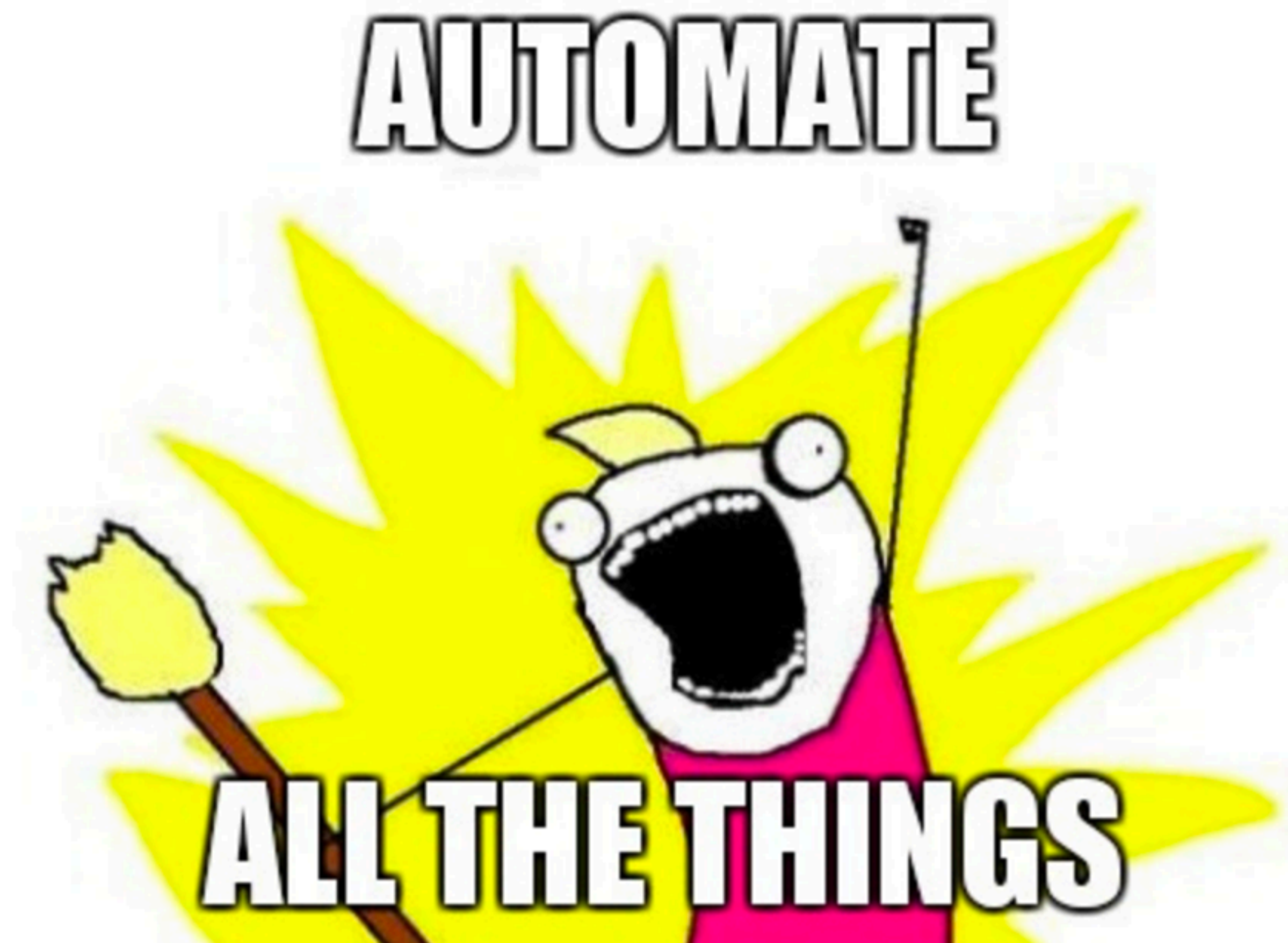
Cross-Cutting Concern



Some Basic Rules

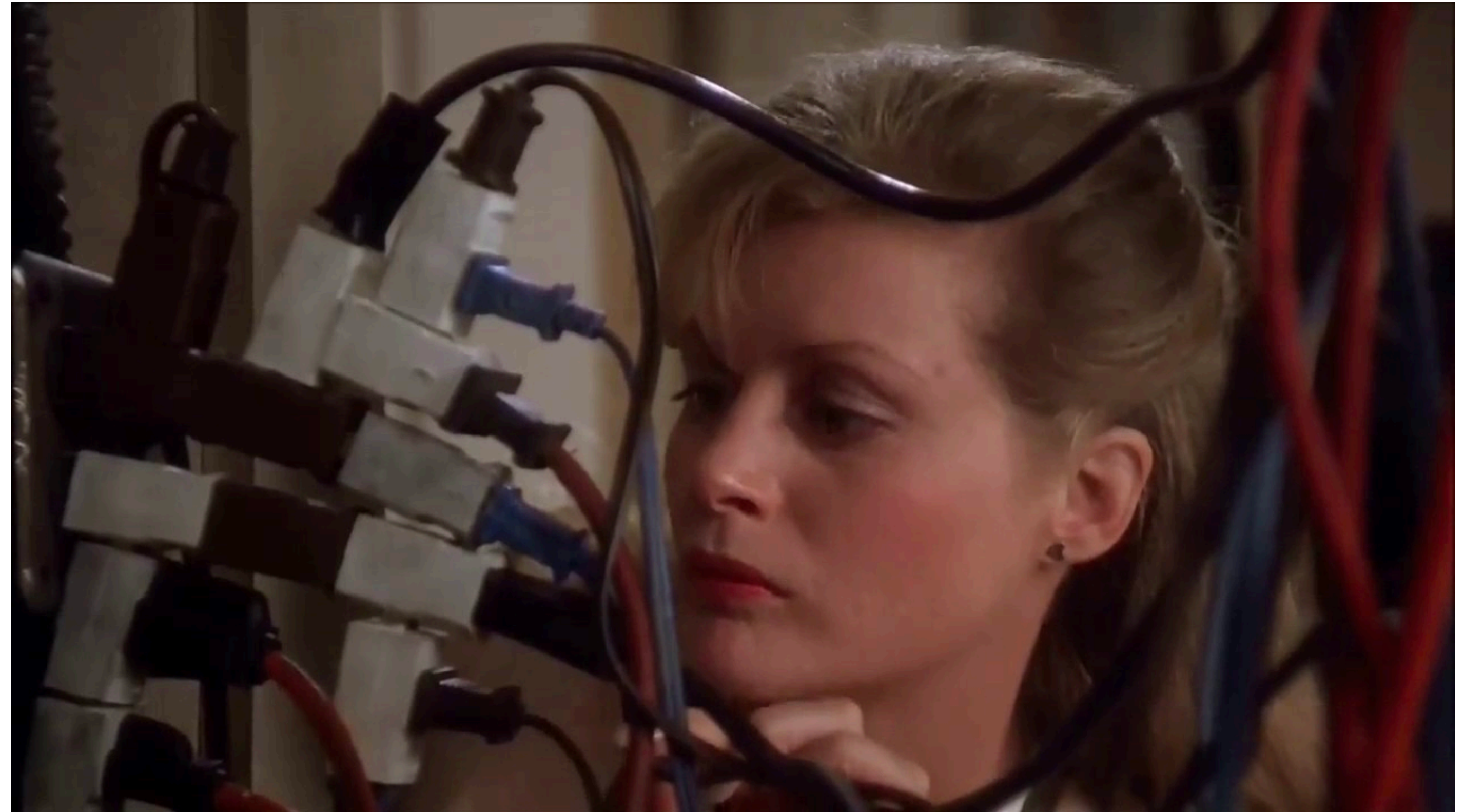


Rule #1



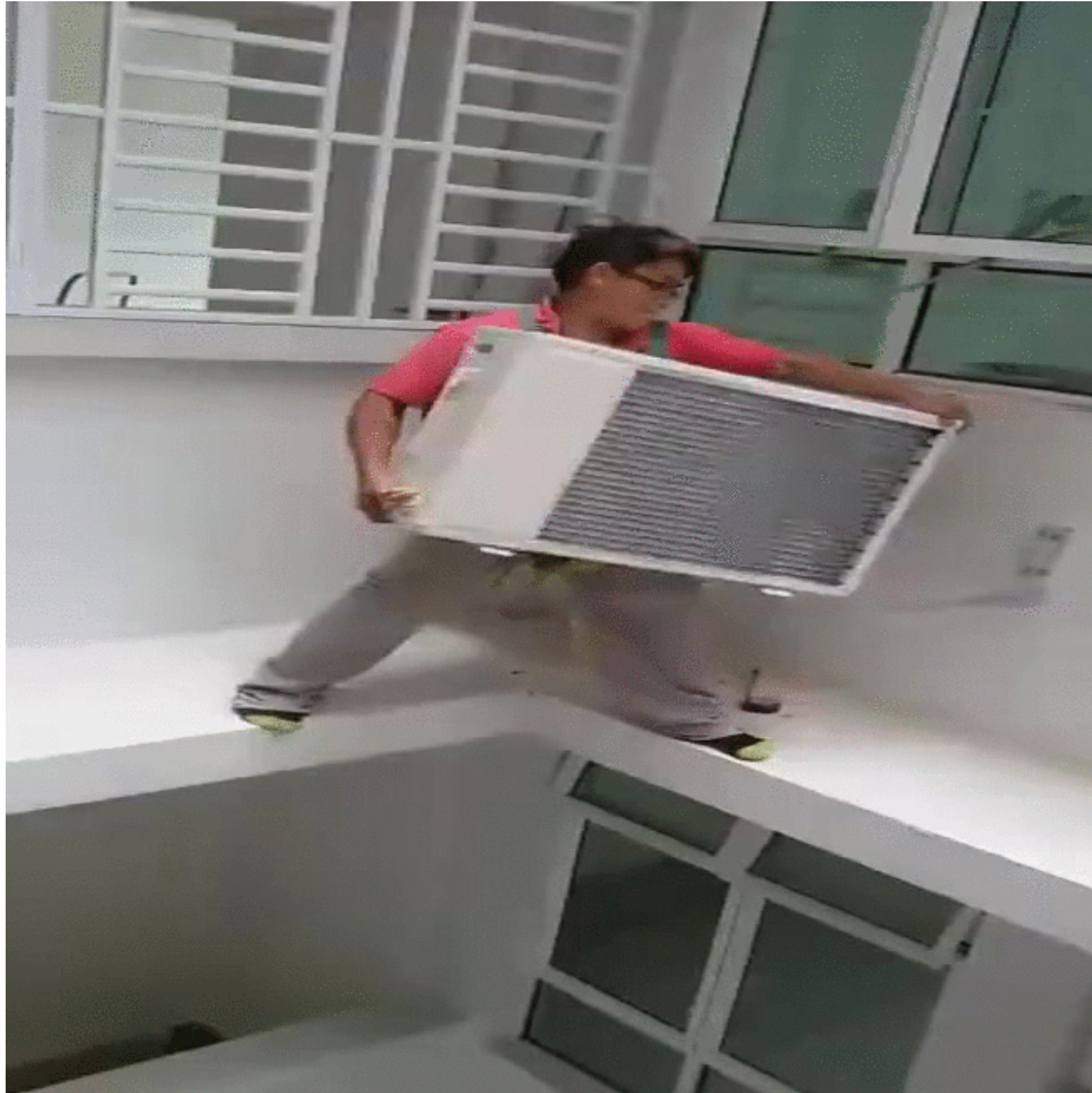
Rule #2

No Single Point of Failure



Rule #3

Embrace The Failure



Rule #4

**Have a Beer
the second it works**



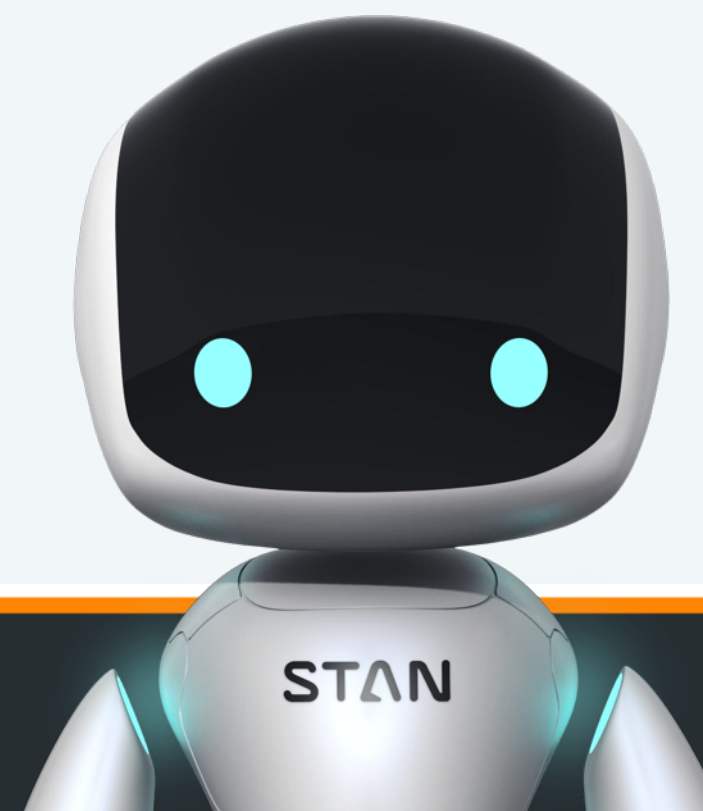
Rule #4

**Have a Beer
the second it works**

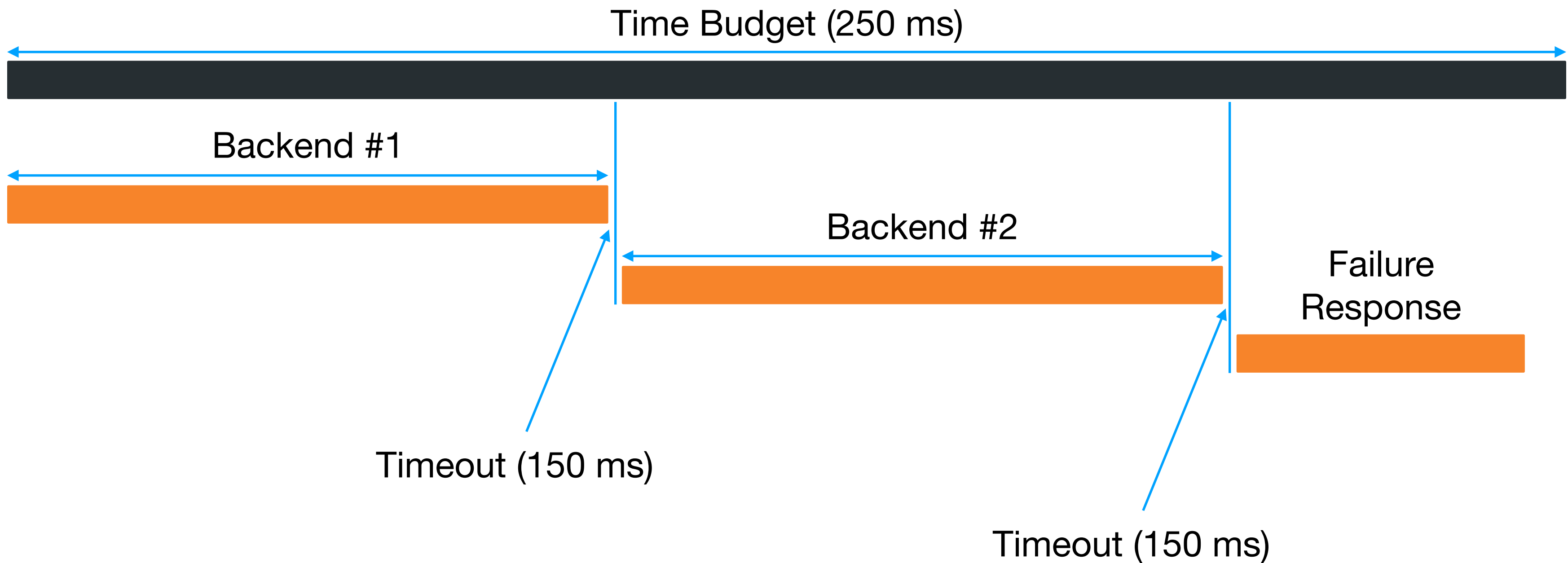
You Never Know How Long It'll Work



Developers, Developers, Developers

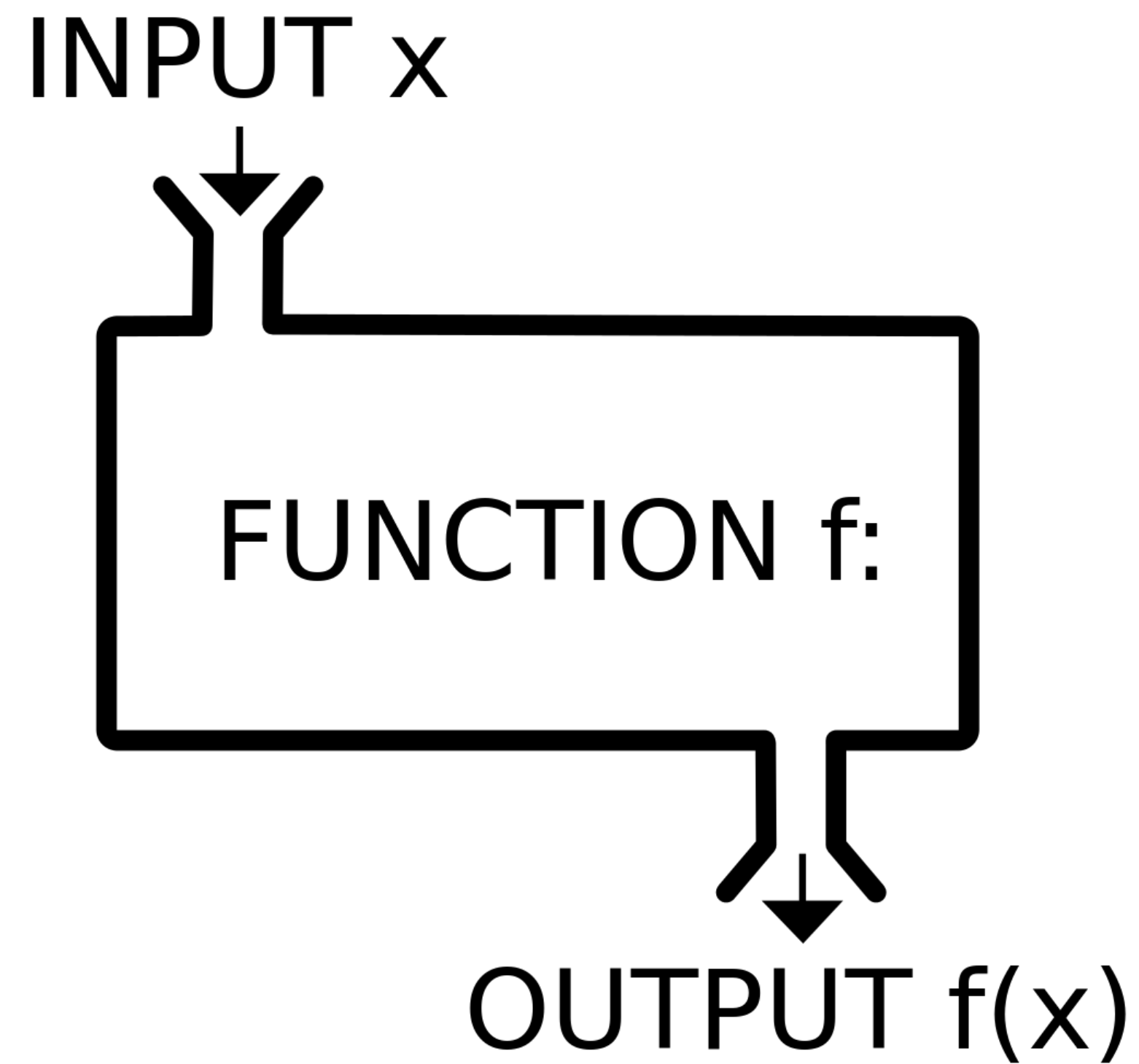




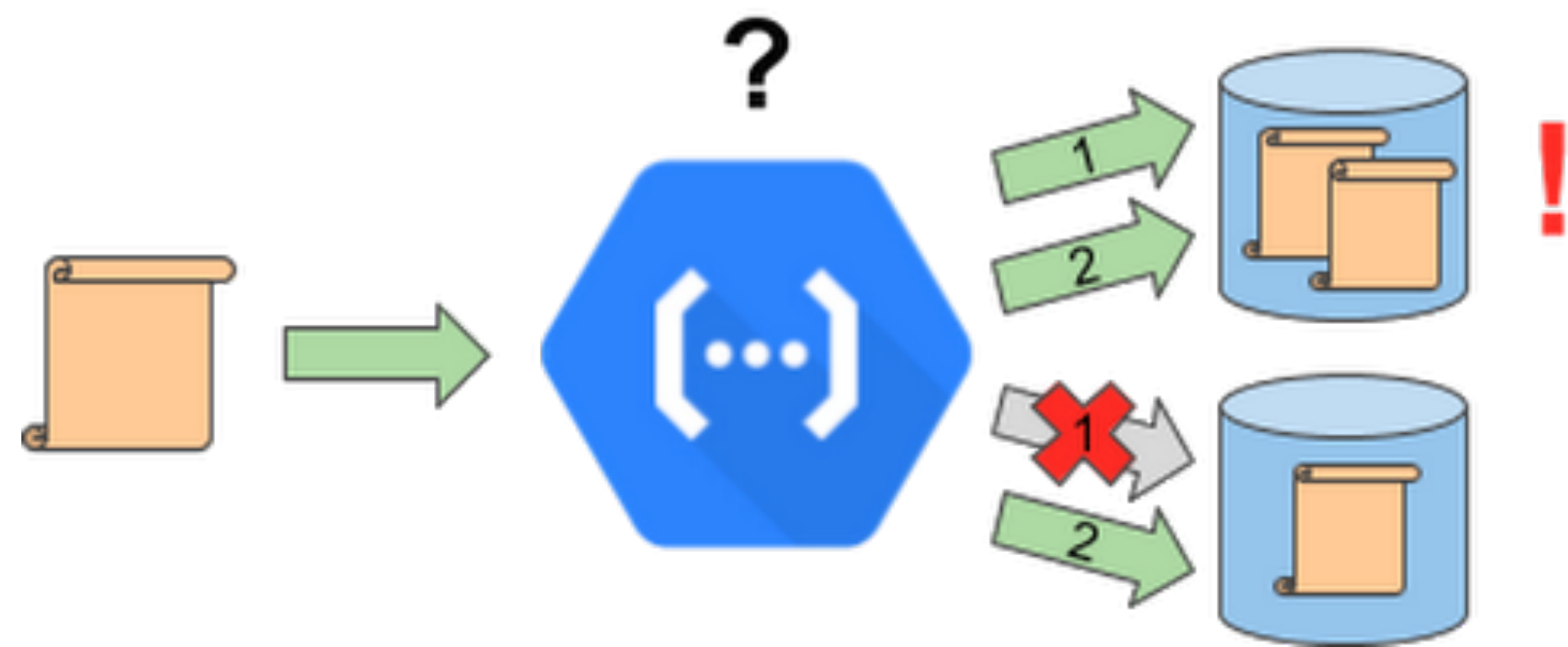


Back-off Algorithm



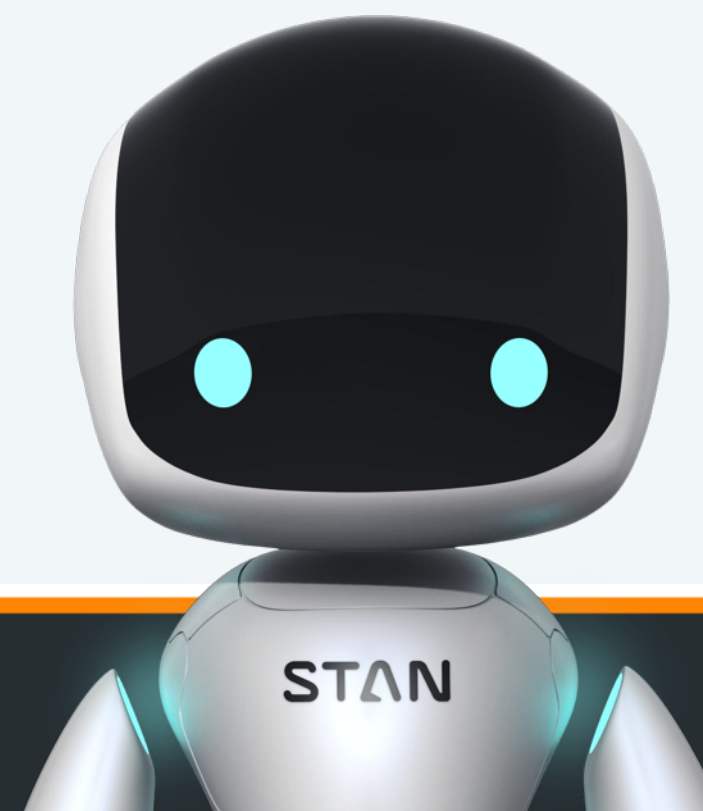


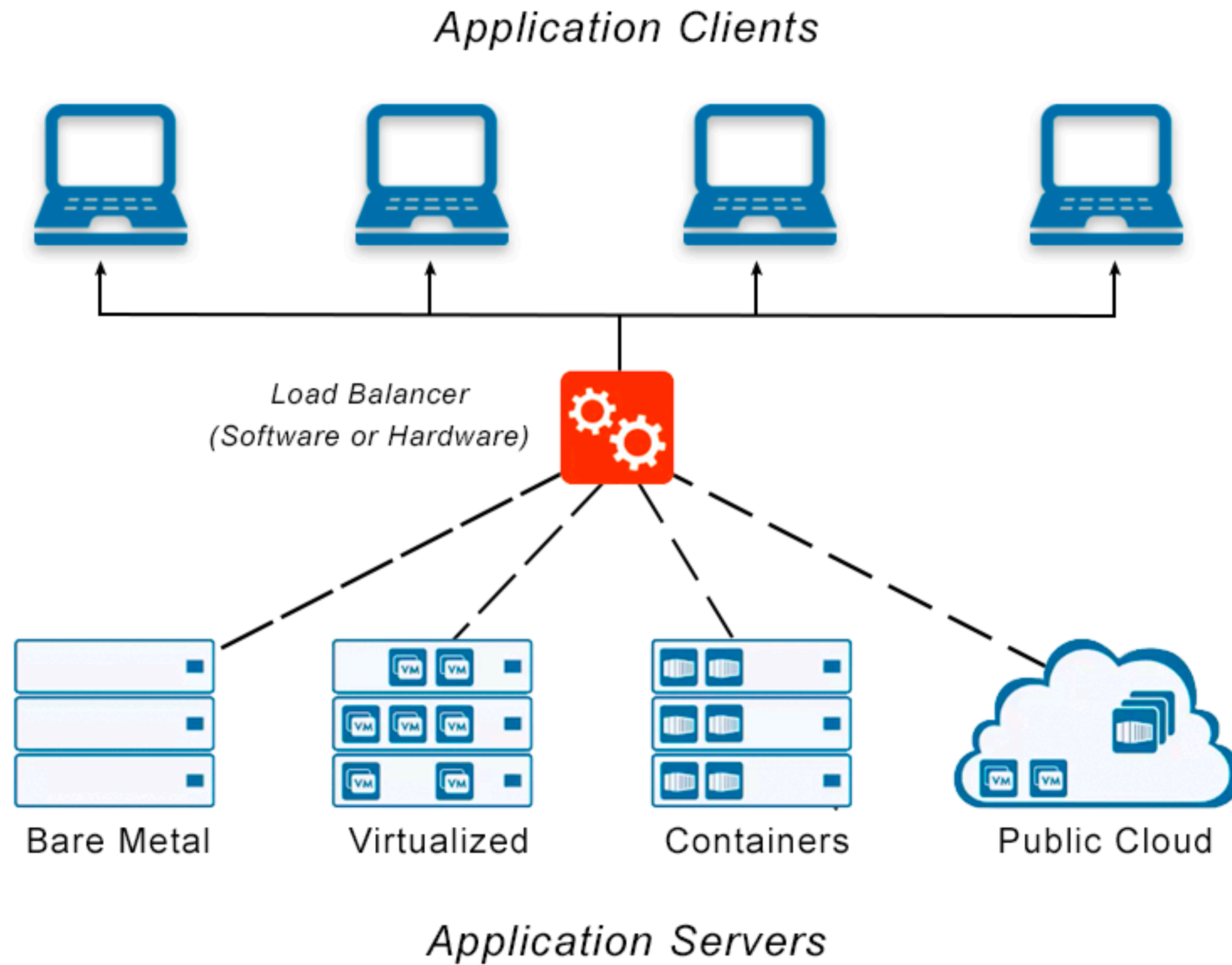
Immutability

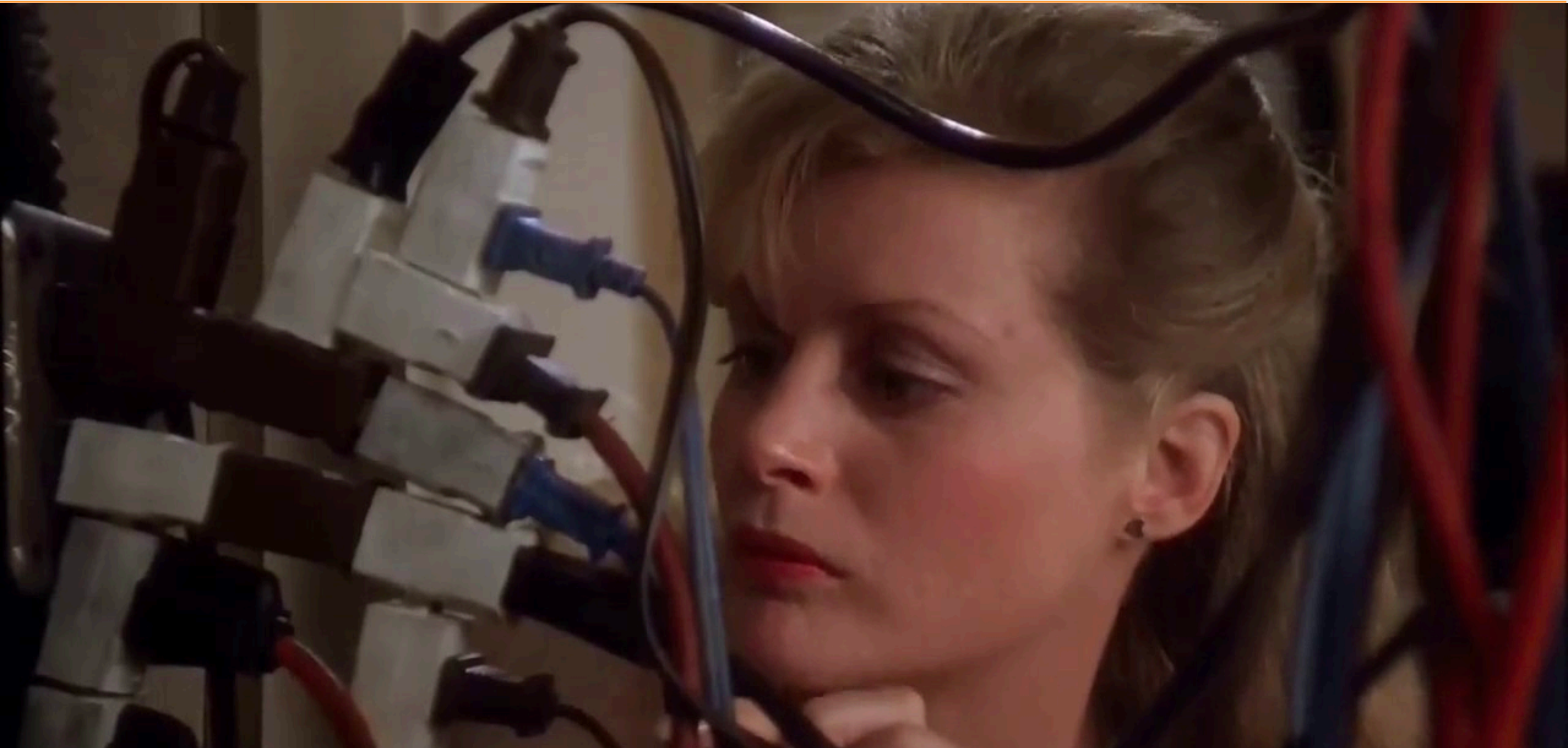


Idempotency

DevOps and Operations



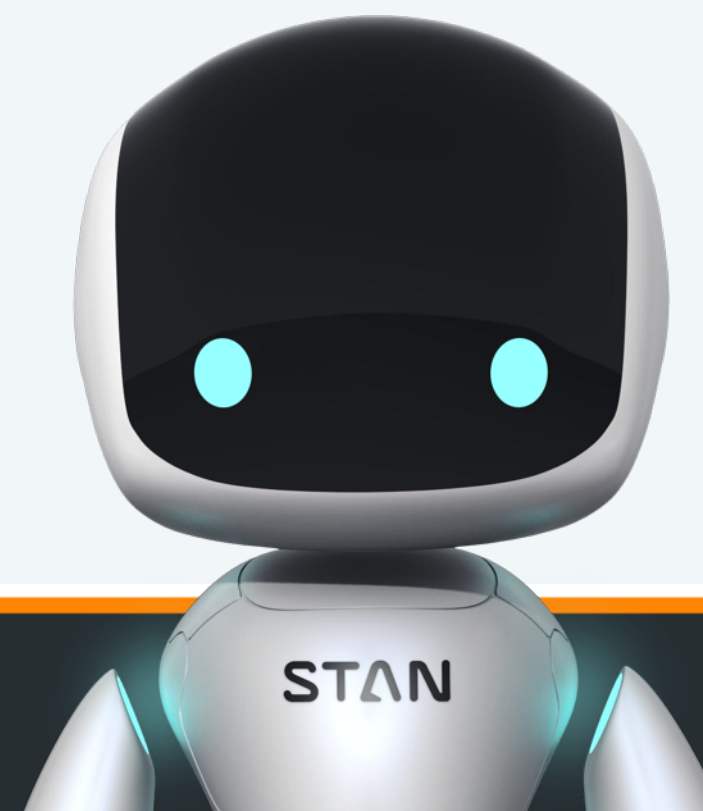








Infrastructure and Cloud

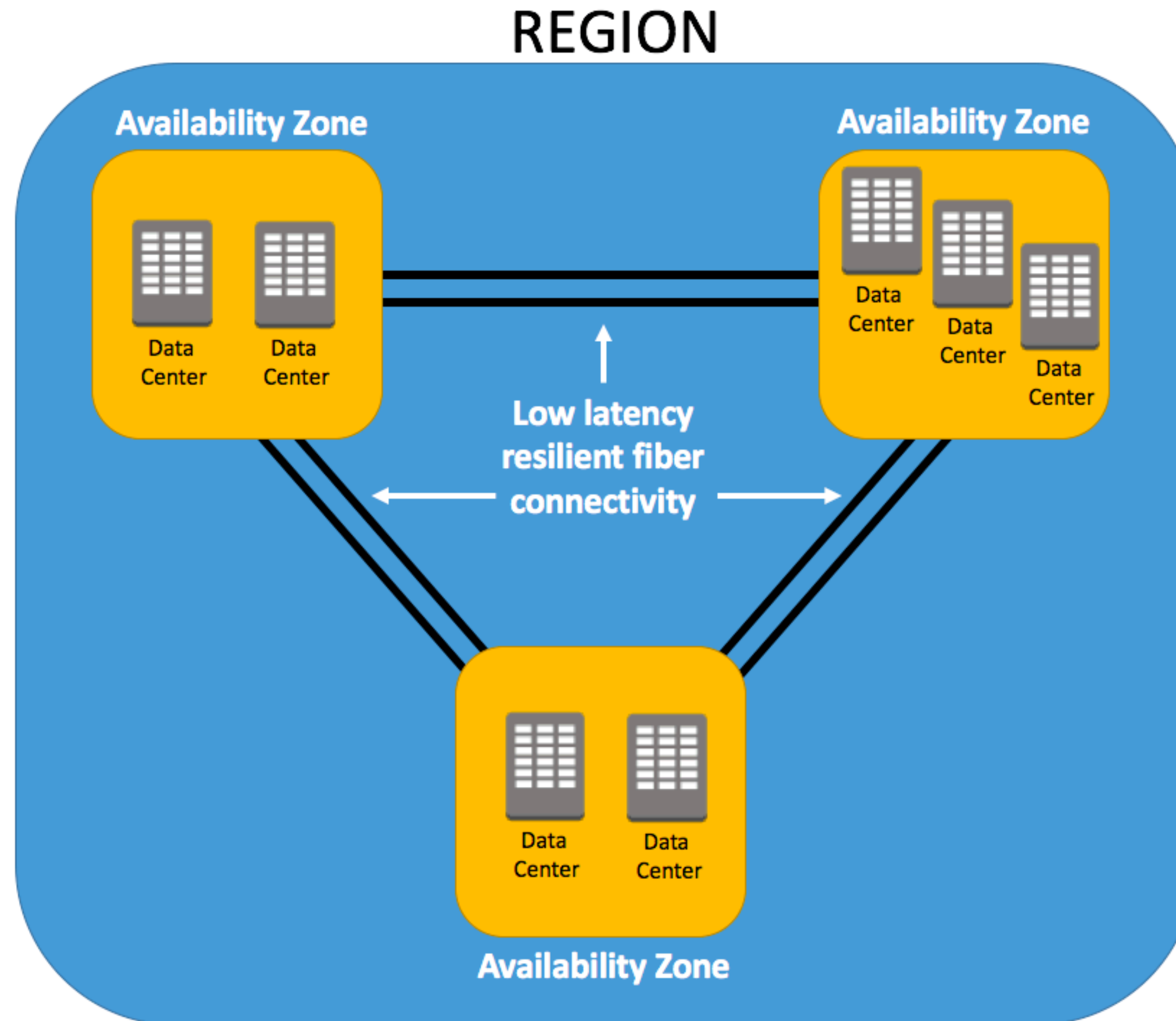




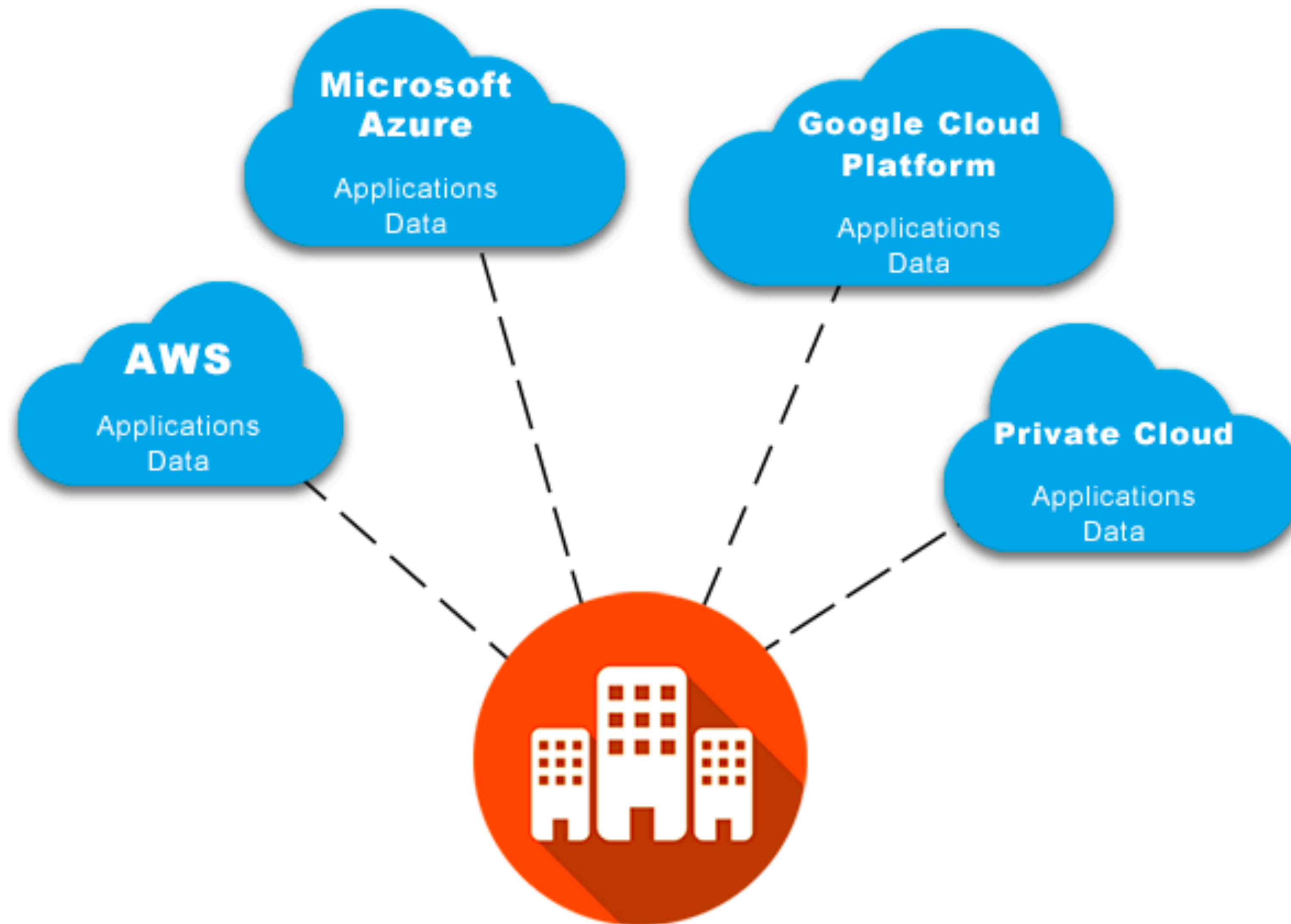


kubernetes

CLOUD FOUNDRY



<https://cloudacademy.com/blog/aws-global-infrastructure/>



<https://avinetworks.com/glossary/multi-cloud/>

Dyn – 2016

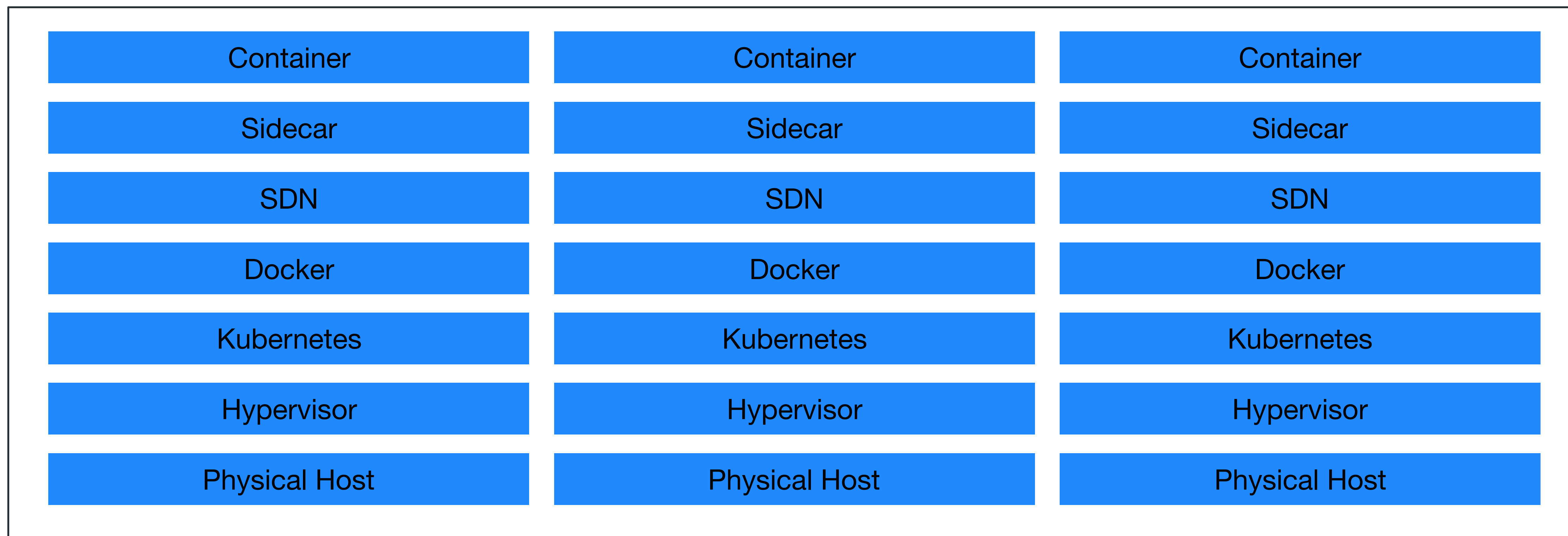
Dyn is an internet performance management and web application security company founded in 2001 (acquired by Oracle Corporation in 2016) and based in the U.S. It offers products to optimize, control, and monitor online infrastructure.

On October 21st, Dyn had a series of DDoS attacks targeting systems operated by this DNS provider. The attack affected a large amount of users in North America and Europe. The DDoS attack lasted roughly one day, with spikes coming and going up to 1.2Tbps. [It affected several large businesses and websites with high authority and traffic](#), such as: Airbnb, Amazon.com, Fox News, HBO, The New York Times, Twitter, Visa and CNN.

The New World Hackers, Anonymous, and SpainSquad claimed responsibility for the attack, a hacktivist effort to retaliate for Ecuador's rescinding internet access to WikiLeaks's founder Julian Assange at their embassy in London where he had asylum. No has confirmed this as the reason.

Dyn stated that according to risk intelligence firm FlashPoint, this was a botnet coordinated through a large number of IoT-enabled devices, including baby monitors, cameras, and residential gateways that had been infected with [mirai malware](#).

Abstraction Layers bring Complexity



Sooooooooo much more!

<https://medium.com/@adhorn/patterns-for-resilient-architecture-part-1-d3b60cd8d2b6>

<https://blog.serverdensity.com/service-resilience/>

<https://dzone.com/articles/libraries-for-microservices-development>

<https://blog.giantswarm.io/reliability-not-enough-resilient-applications-containerized-microservices/>

<https://www.pushtechology.com/blog/building-resilient-applications/>

<https://cabforward.com/the-difference-between-reliable-and-resilient-software/>

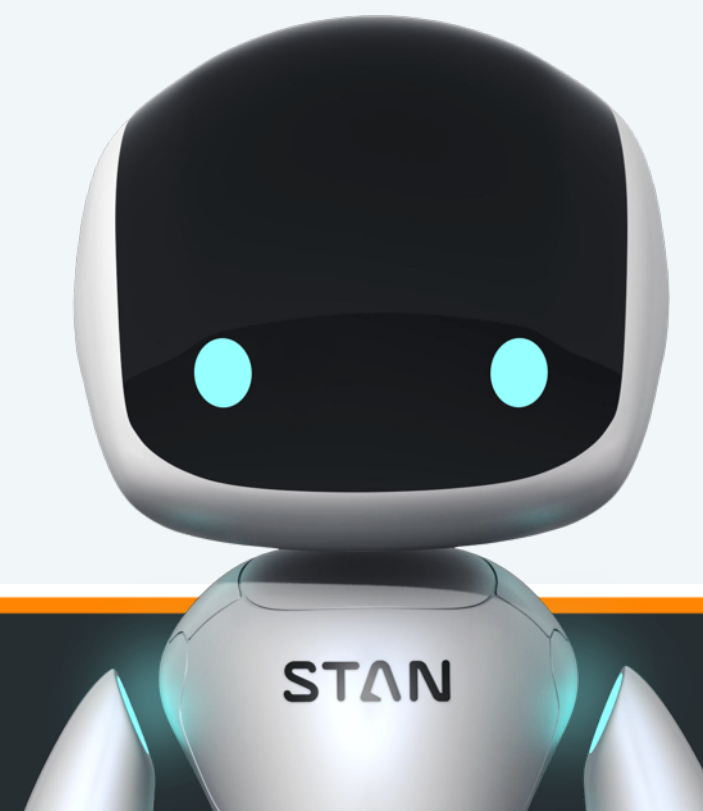
<https://developers.redhat.com/blog/2017/05/16/it-takes-more-than-a-circuit-breaker-to-create-a-resilient-application/>

<https://www.cio.com/article/2388239/ensure-cloud-application-resilience-the-netflix-way.html>

<https://computing.llnl.gov/projects/application-level-resilience>

<https://jaxenter.com/need-resilient-software-design-115055.html>

? ? ?



Questions?

? ? ?



😊 **Thank You** 😊

? ? ?

