

It's A Trap! How Our Abstractions Are Failing Us





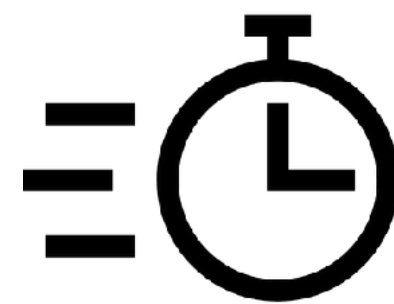
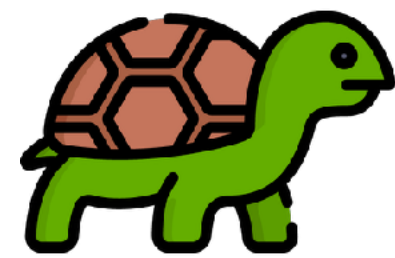
André D. Henry

Engineering Manager @Venmo

- * I have seen many, many moons in Tech
- * Software Engineer, Network Engineer, CTO, Janitor
- * Laser Engineer Extraordinaire
- * Code, Math, Science & Electronics
- * I probably made it explode at some point



Why Are We Here?



What is an Abstraction

In software engineering and computer science, abstraction is a technique for arranging complexity of computer systems. It works by establishing a level of complexity on which a person interacts with the system, suppressing the more complex details below the current level



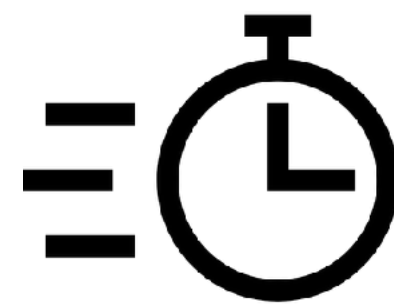
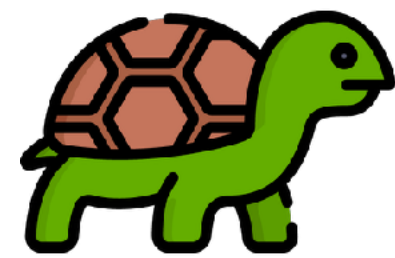
Fundamental Theorem Of Software Engineering



"We can solve any problem by introducing an extra level of indirection."
—David J. Wheeler



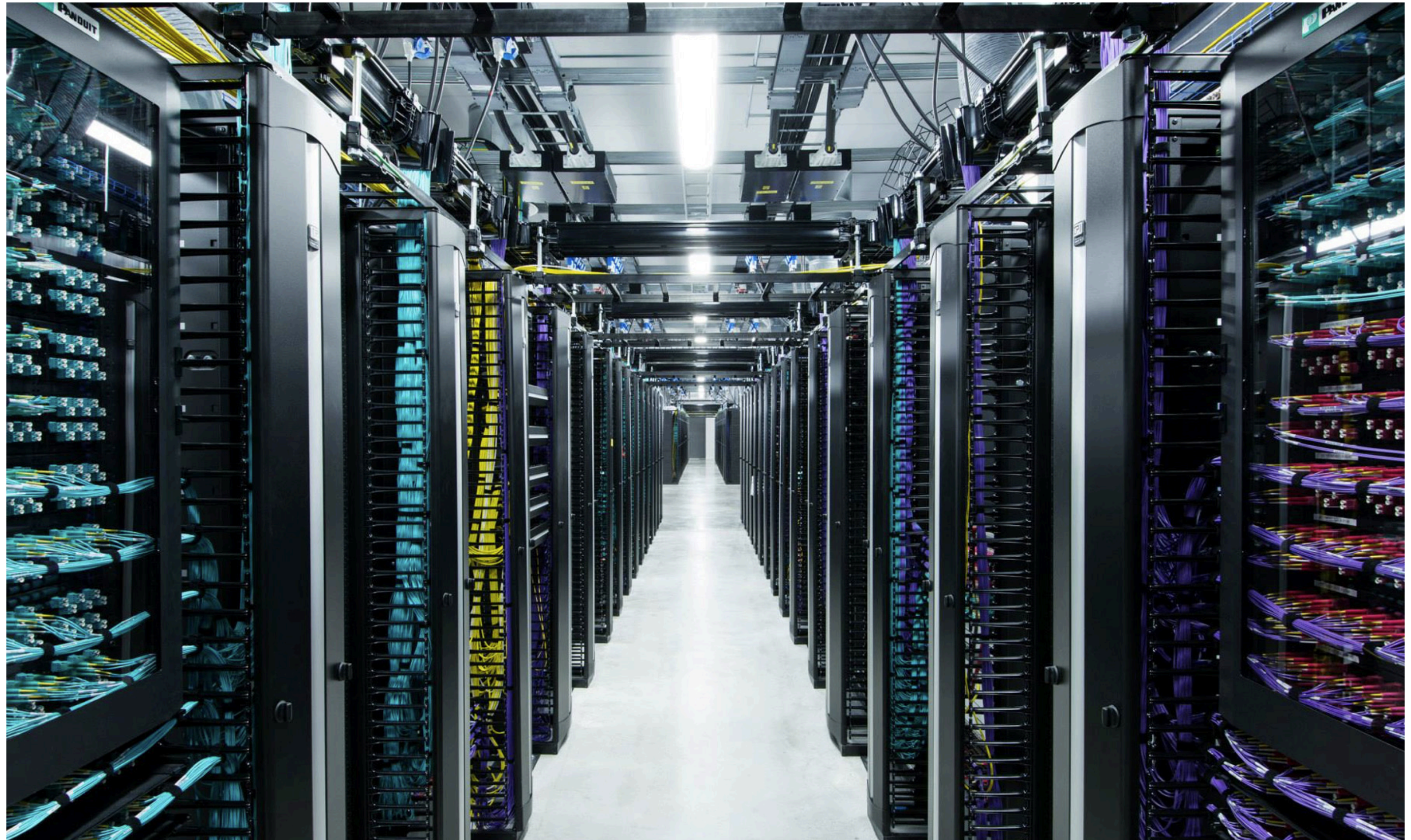
First, A Quick Review



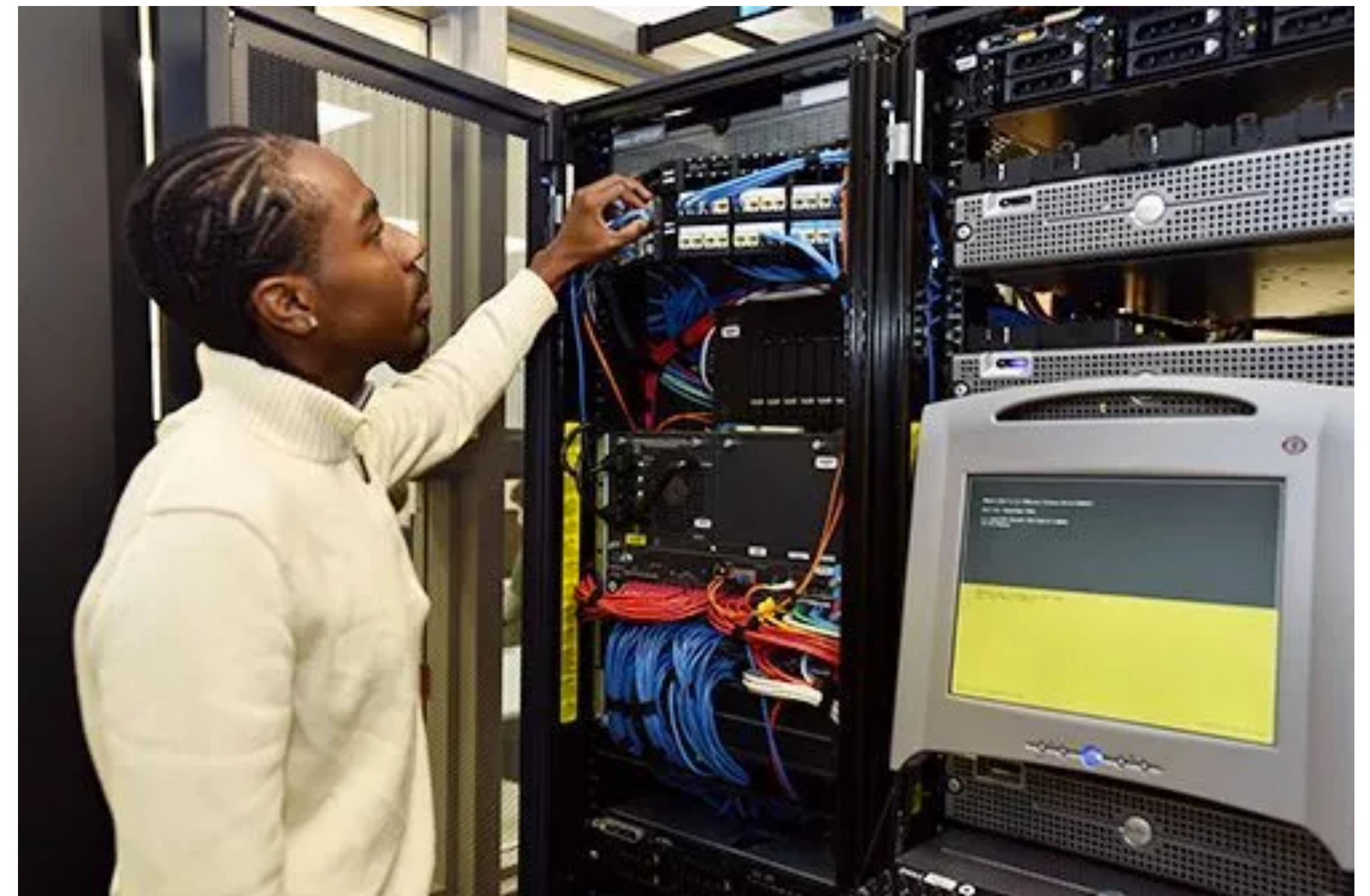
Throwback



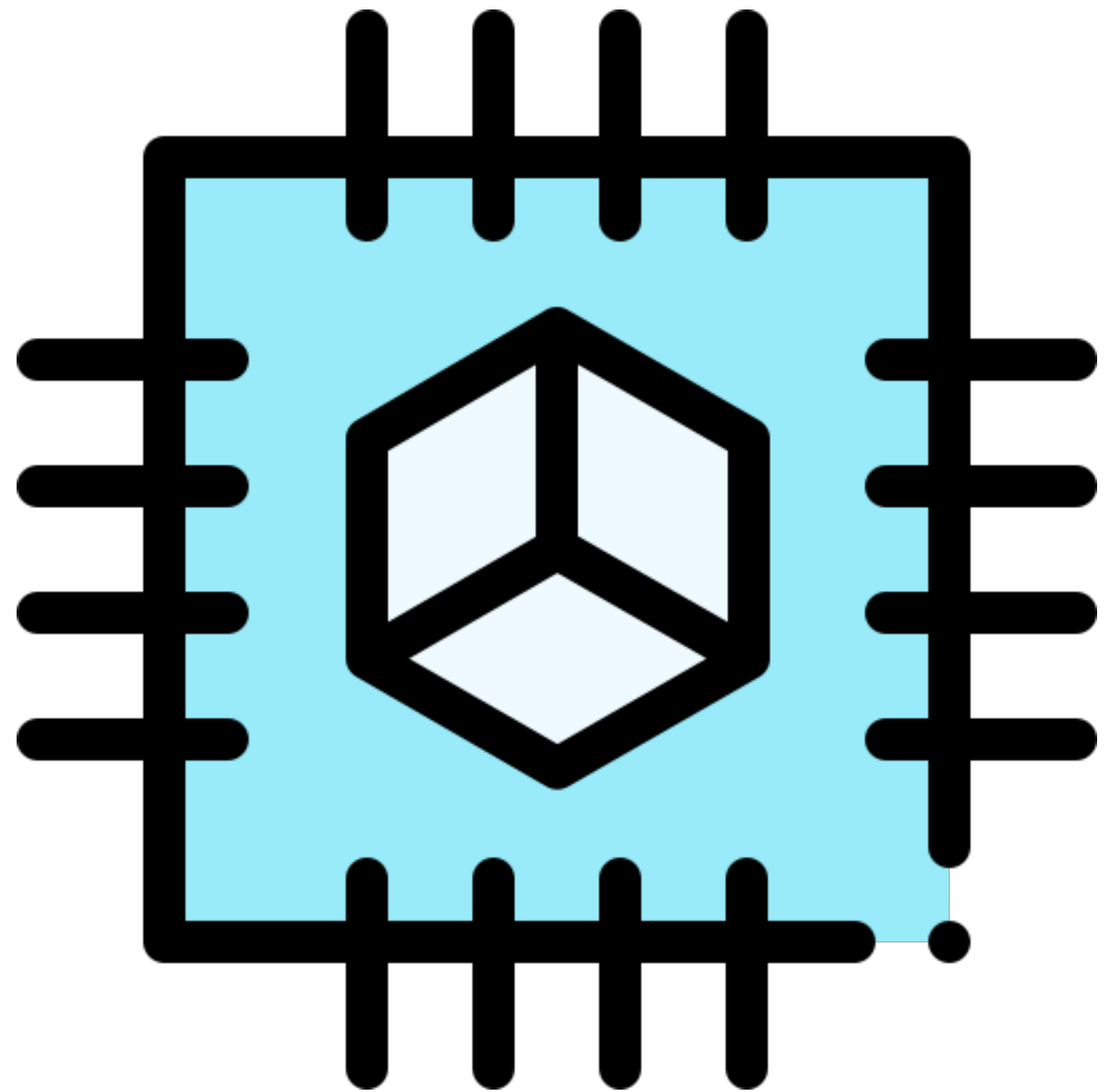
Today



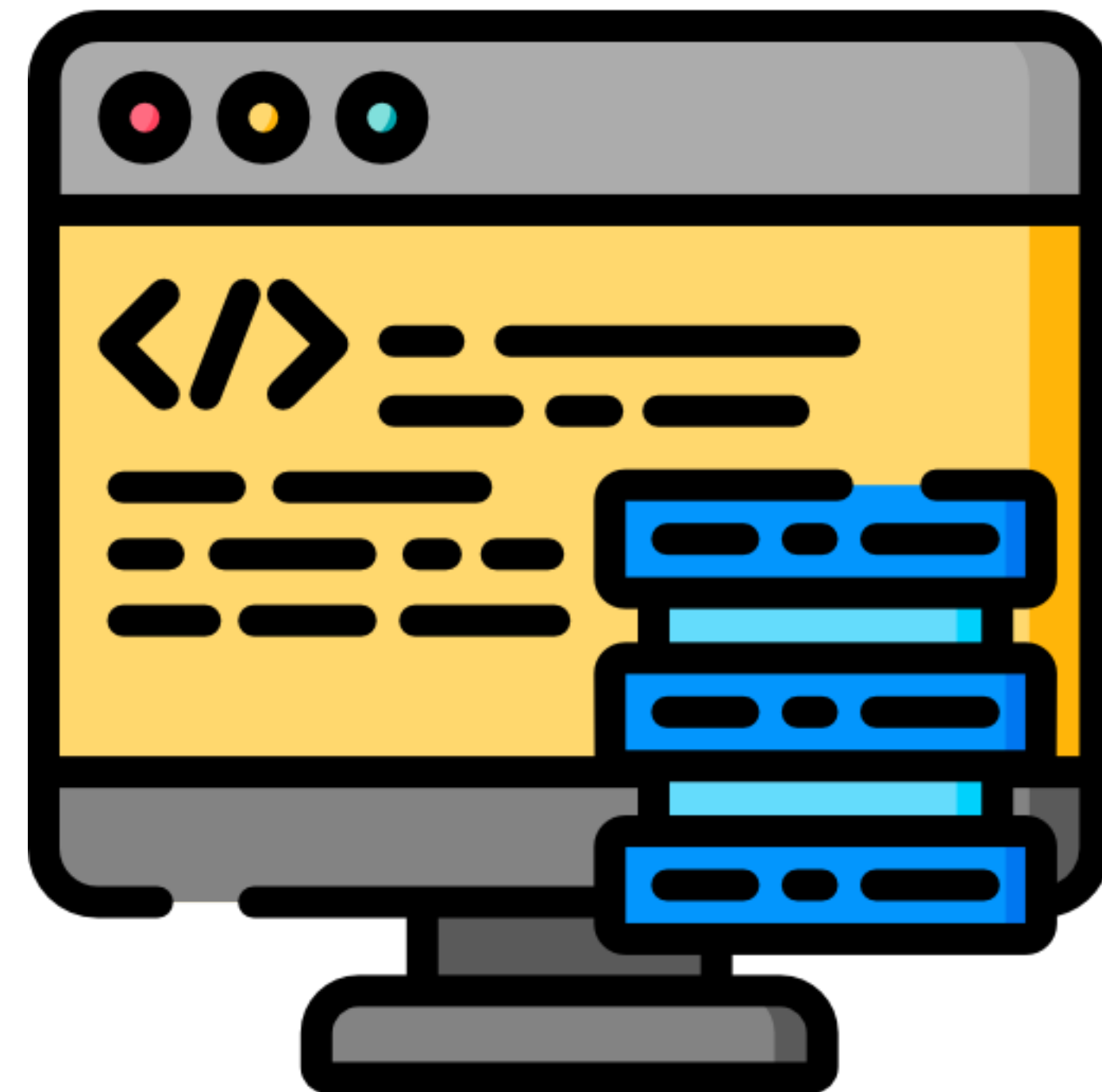
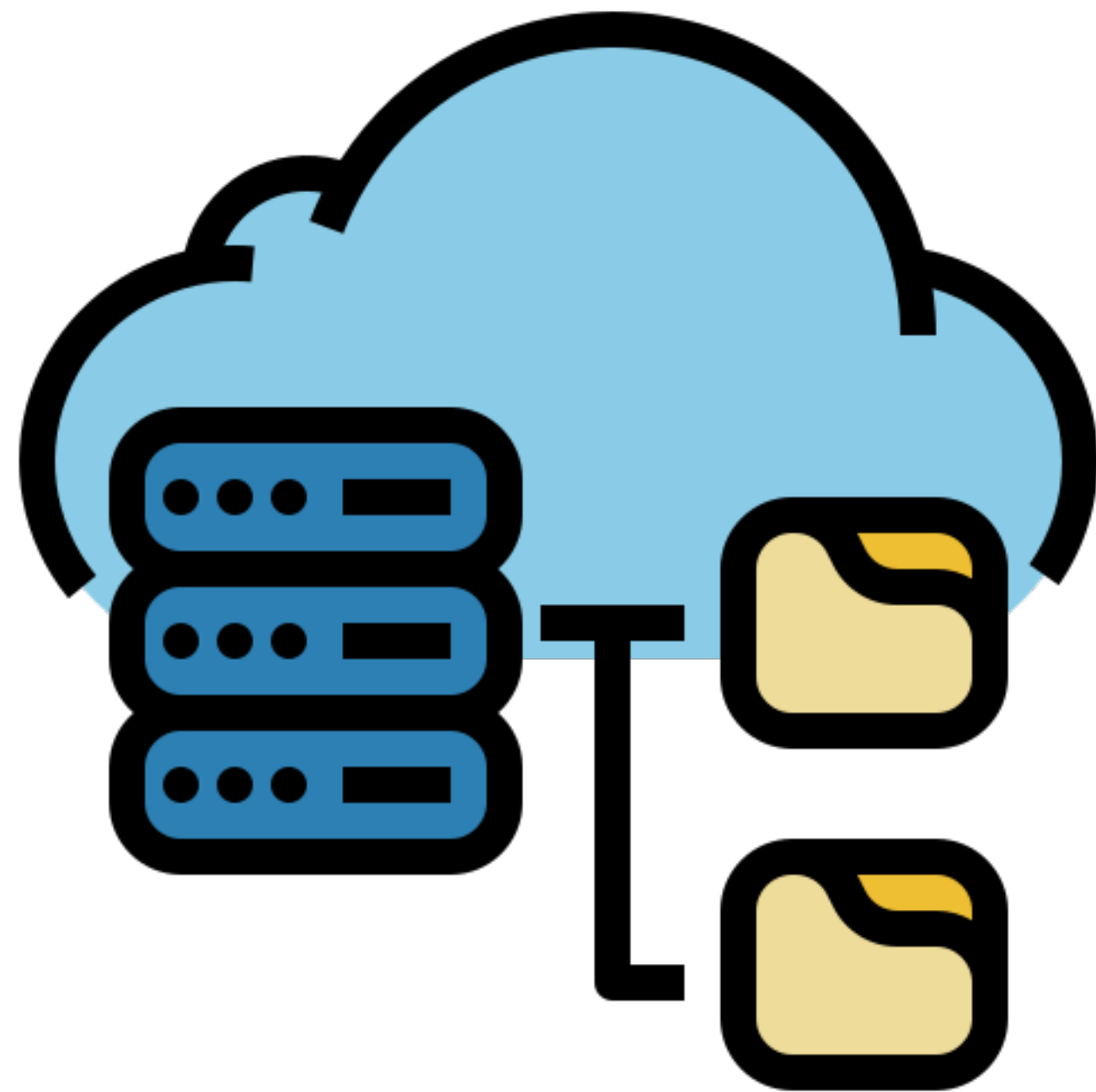
Systems Administration



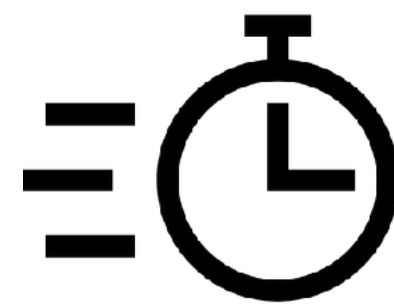
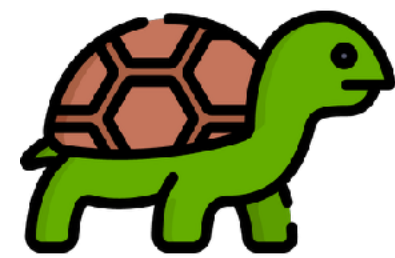
Virtualization



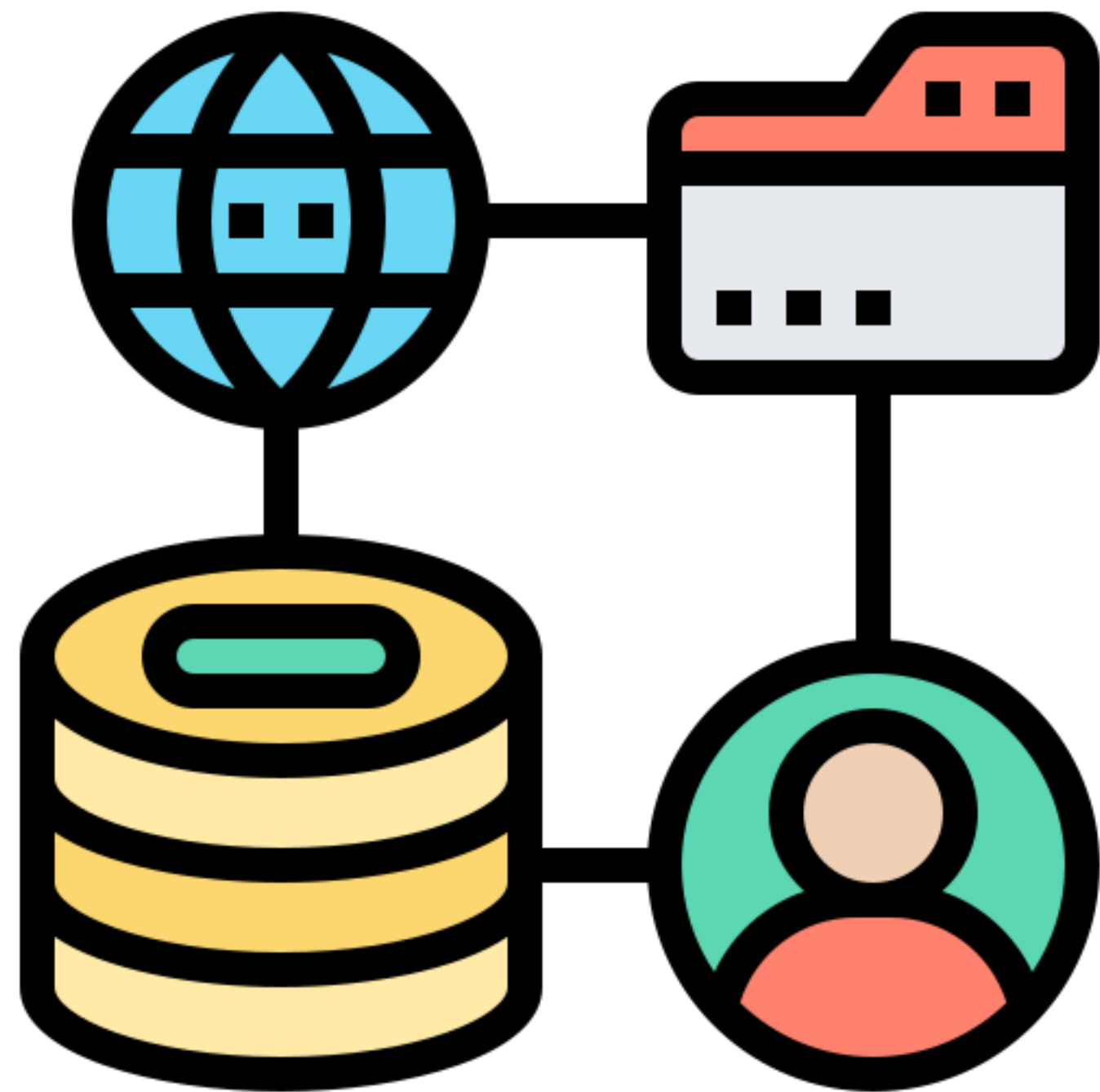
Infrastructure As Code



Should We Have Stopped Here?



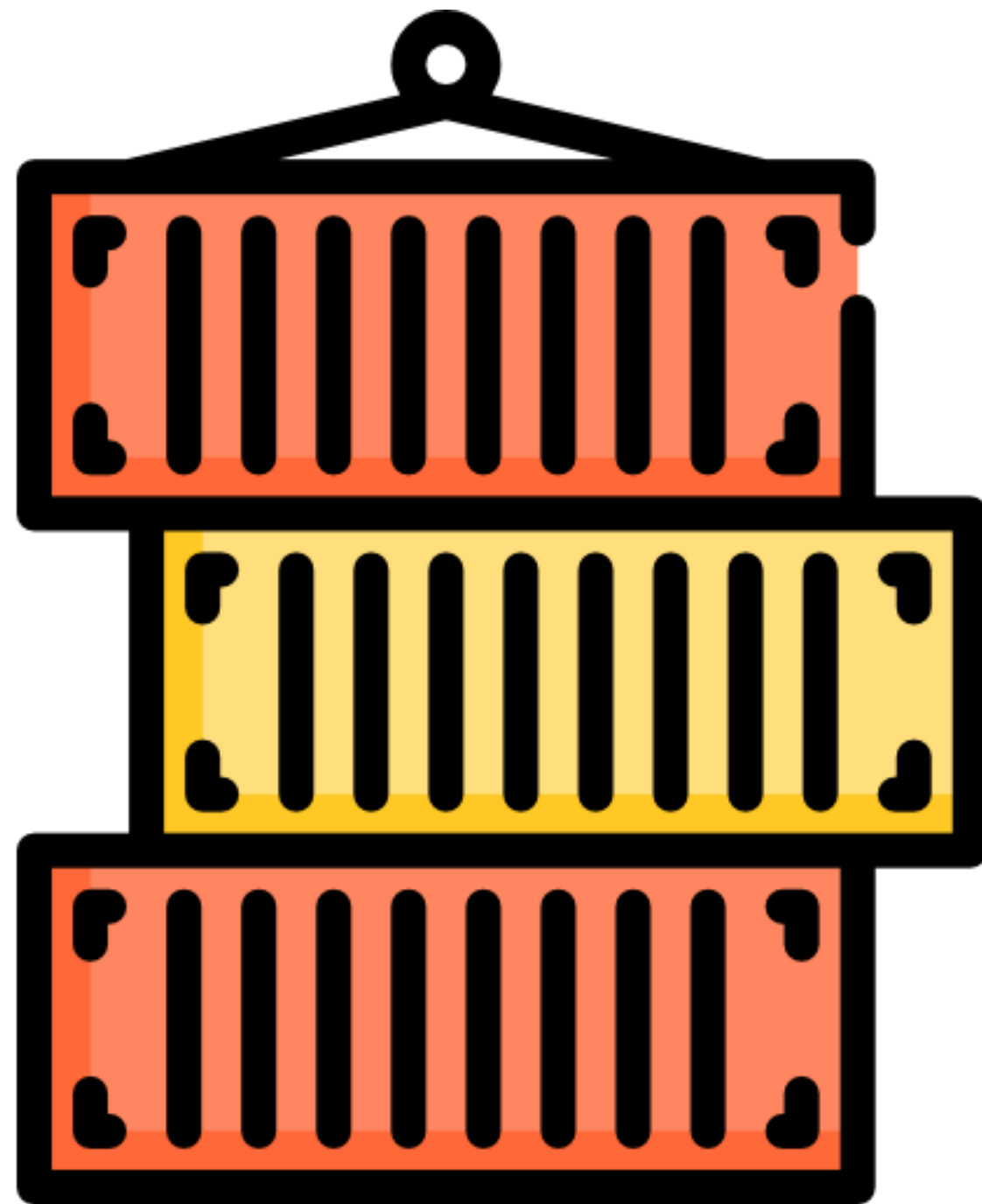
Why Didn't We?



What Was Missing?



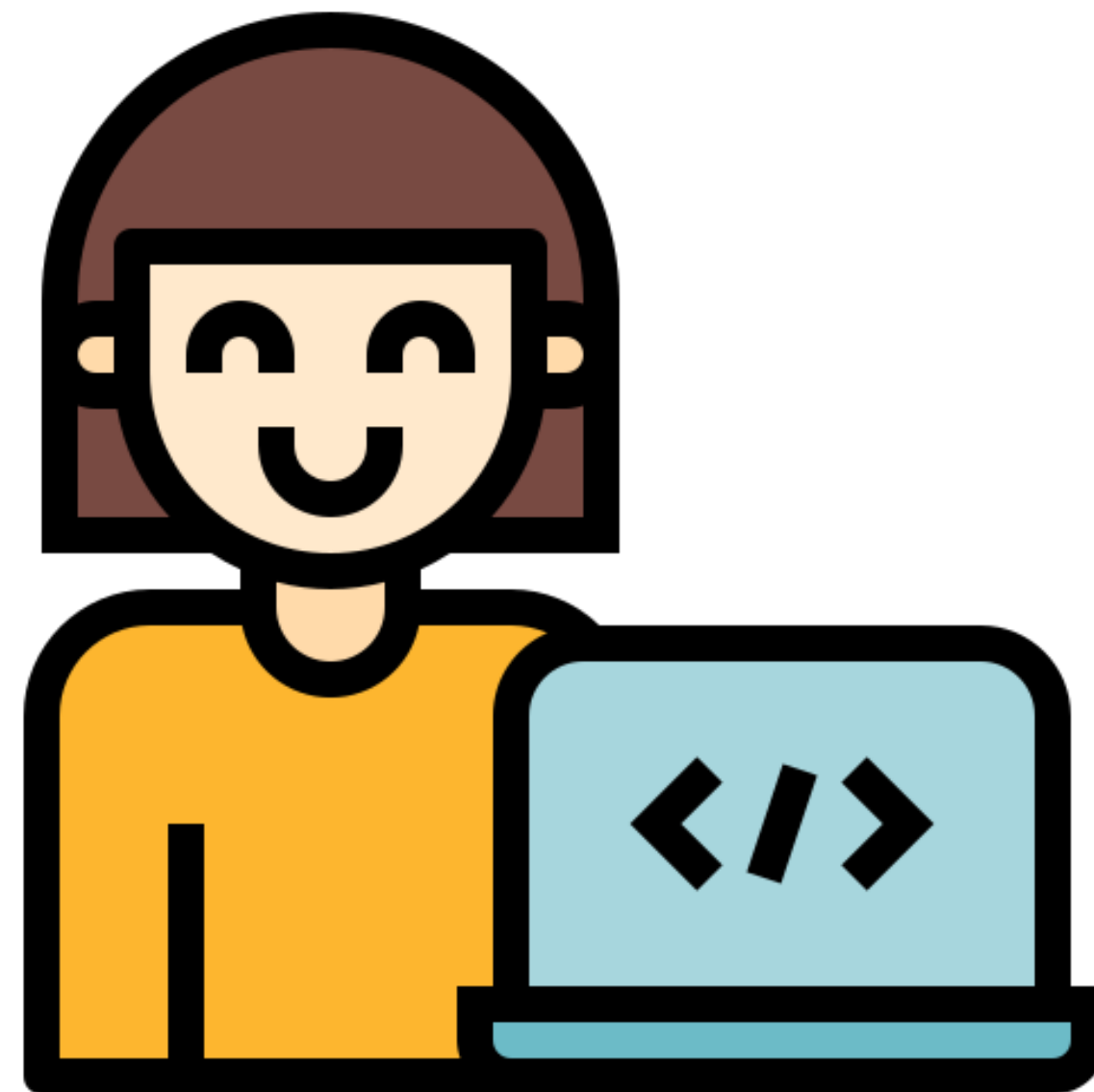
Where Did We Go?



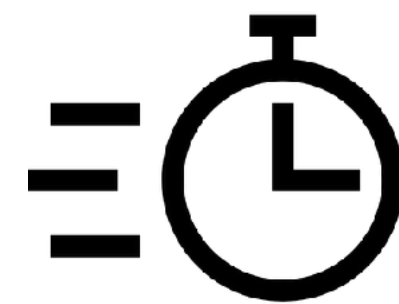
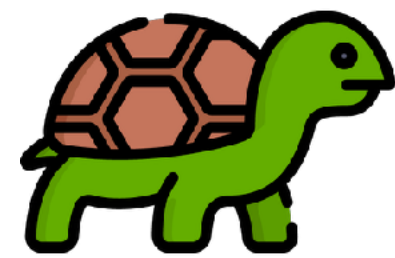
What Did We Gain?



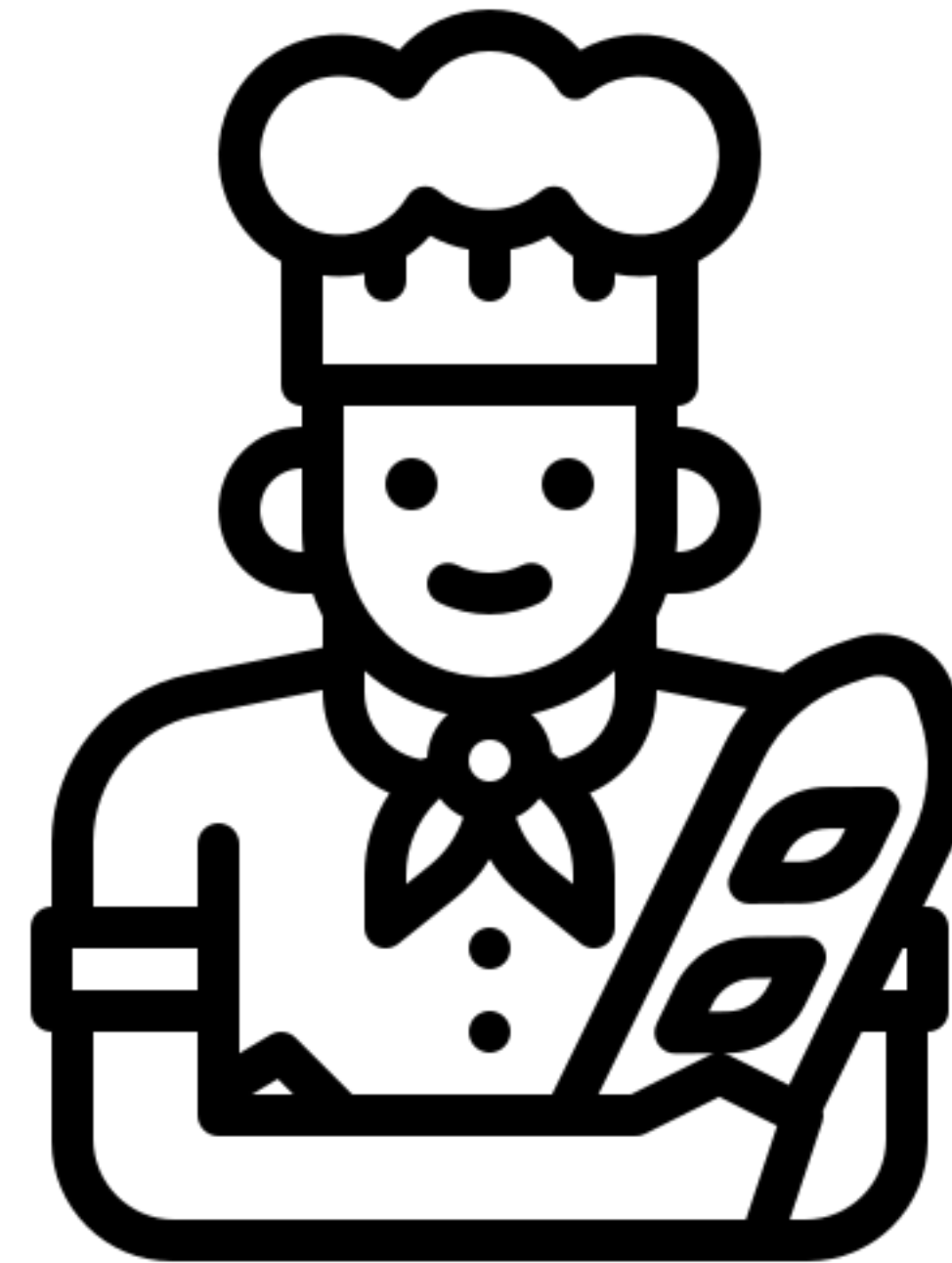
Who Benefits?



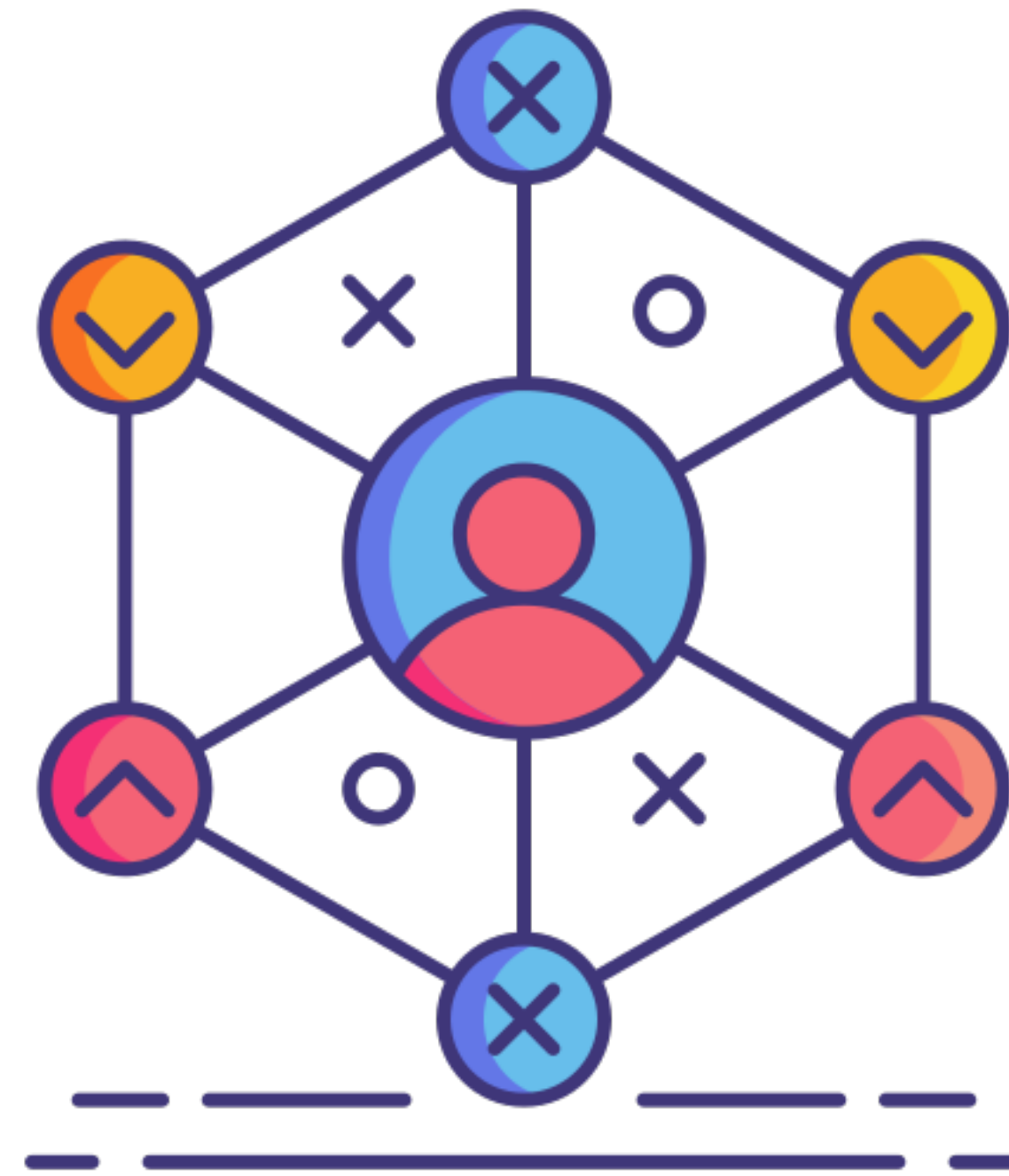
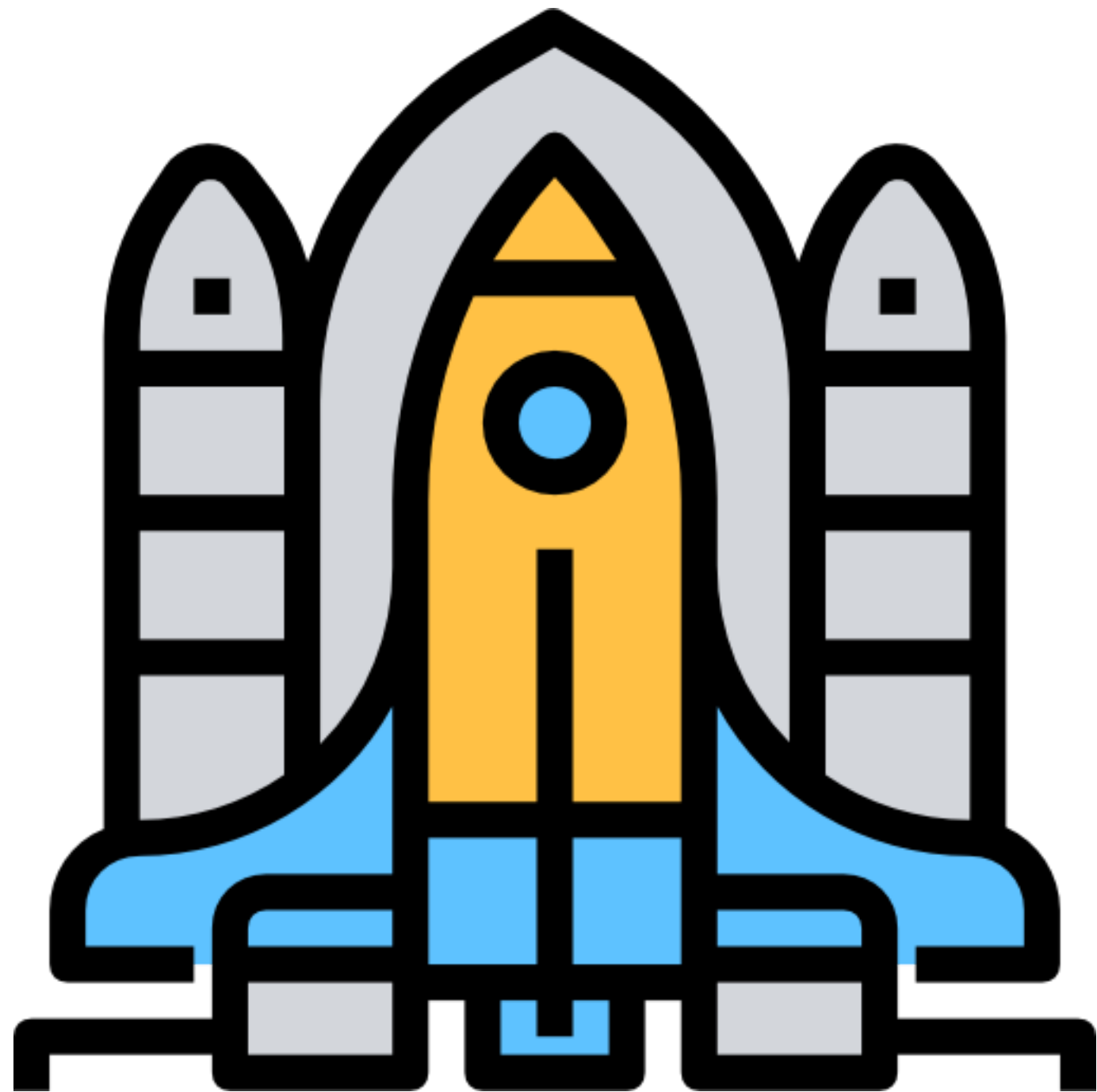
Did We Take It Too Far?



Are We All Relaxing?



We Are Starship Captains



How Much Of It Do We Need?

The image displays a comprehensive grid of logos for various cloud-native technologies, organized into several functional categories:

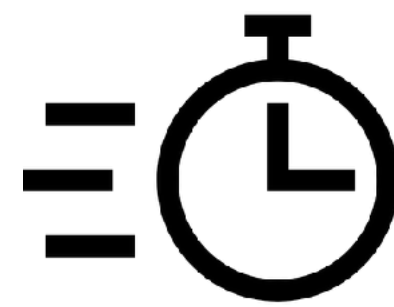
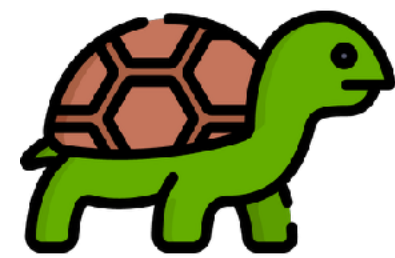
- App Definition and Development:** Includes Database (e.g., Vitess, KV), Streaming & Messaging (e.g., cloudevents, NATS), Application Definition & Image Build (e.g., HELM, K8S), and Continuous Integration & Delivery (e.g., argo, Jenkins).
- Orchestration & Management:** Includes Scheduling & Orchestration (e.g., kubernetes), Coordination & Service Discovery (e.g., CoreDNS, etcd), Remote Procedure Call (e.g., gRPC), Service Proxy (e.g., envoy), API Gateway (e.g., AWS API Gateway), and Service Mesh (e.g., LINKERD).
- Runtime:** Includes Cloud Native Storage (e.g., ROOK), Container Runtime (e.g., cri-o), and Cloud Native Network (e.g., CNI).
- Provisioning:** Includes Automation & Configuration (e.g., CHEF, Ansible), Container Registry (e.g., Harbor), Security & Compliance (e.g., Falco), and Key Management (e.g., spiffe).
- Platform:** Includes Certified Kubernetes - Distribution (e.g., AWS EKS, Azure AKS) and Certified Kubernetes - Hosted (e.g., AWS EKS, Azure AKS).
- Observability and Analysis:** Includes Monitoring (e.g., Prometheus), Logging (e.g., fluentd), Tracing (e.g., Jaeger), and Chaos Engineering (e.g., Chaos Mesh).
- Serverless:** Includes PaaS/Container Service (e.g., AWS Lambda, Azure Functions).



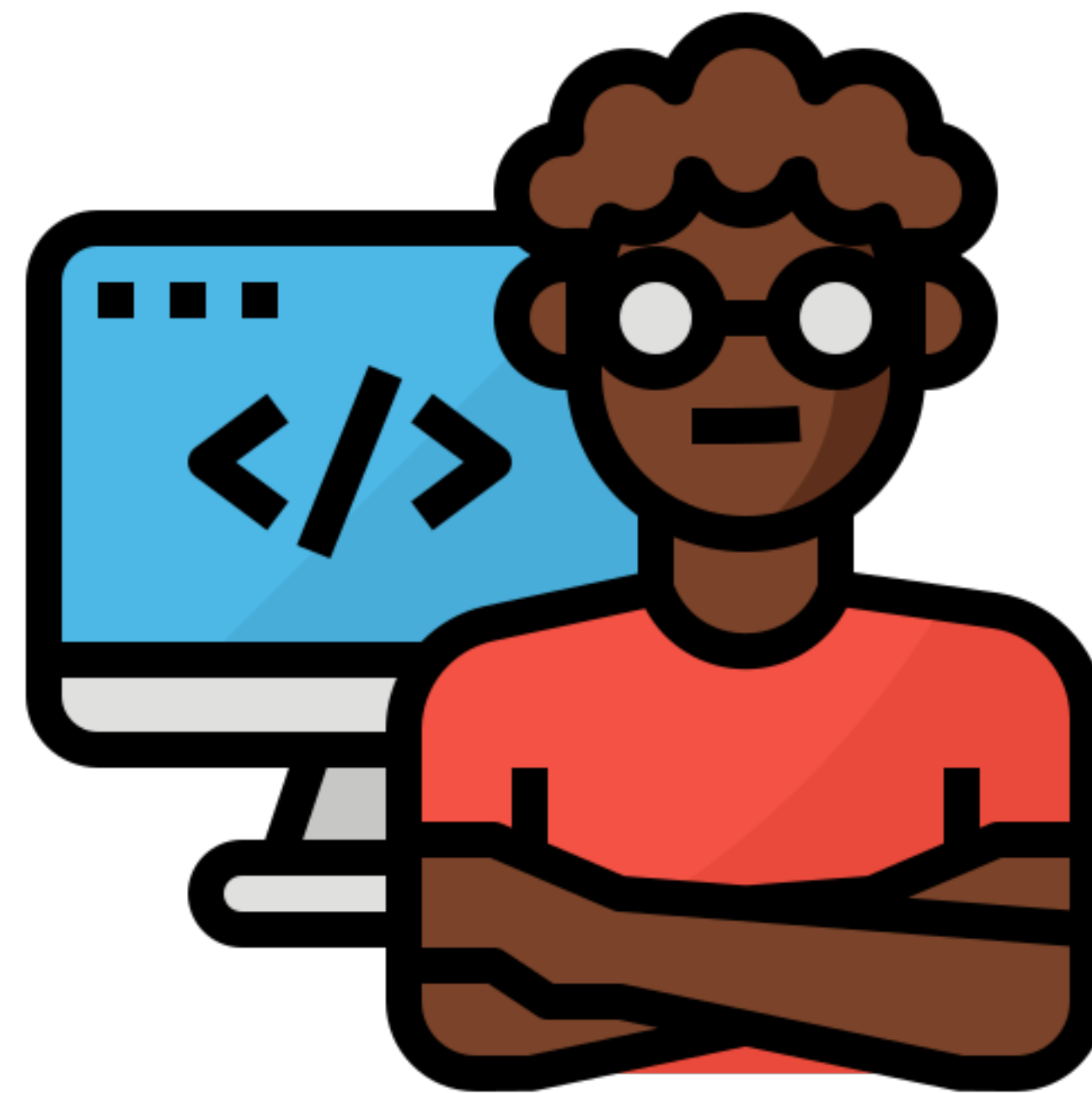
We Need Some Balance



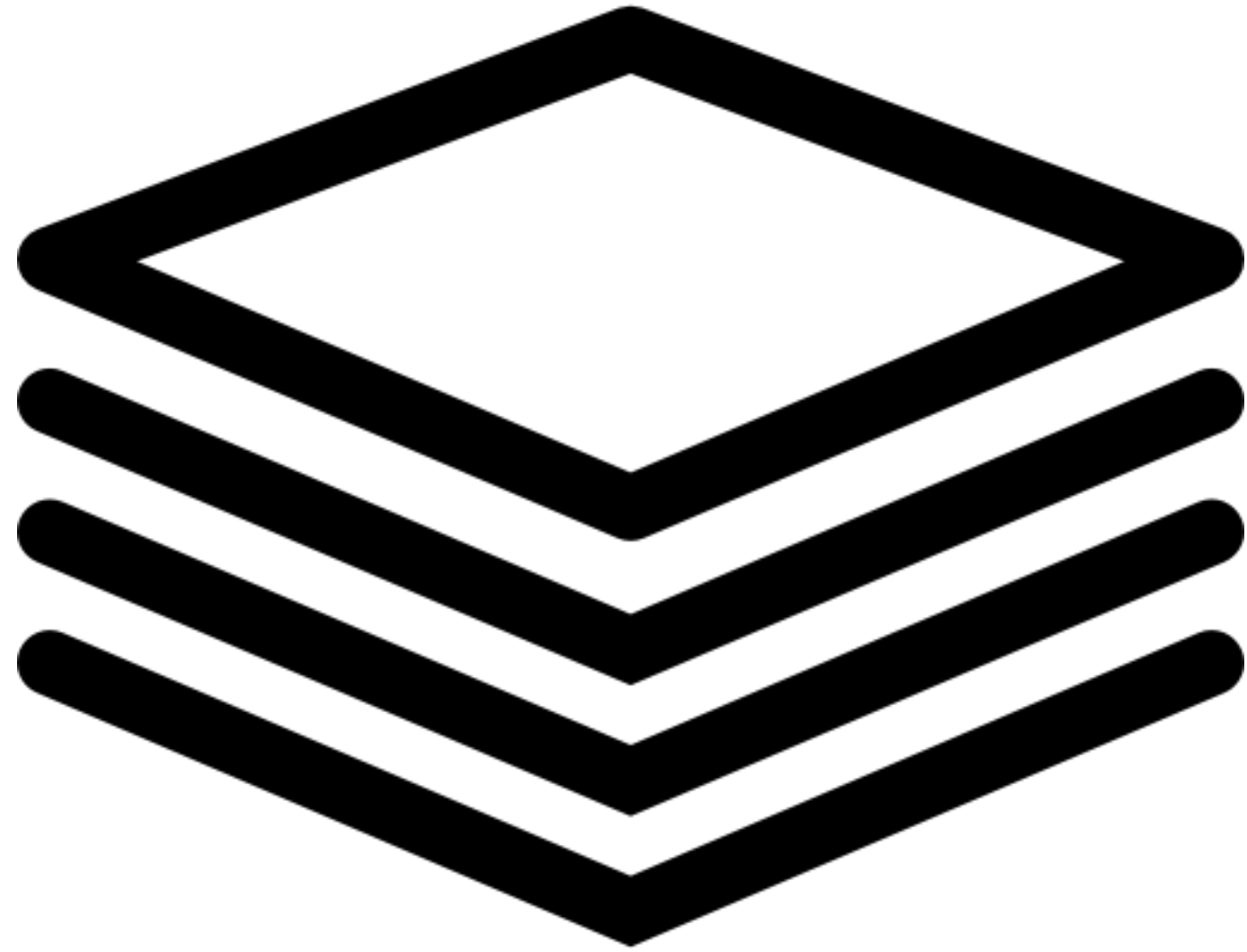
What's Going Wrong?



We Forgot About Our Customer



It's Not Just APIs & YAML



There Is A Real Computer Somewhere



There is no cloud. It's
just someone else's
computer.

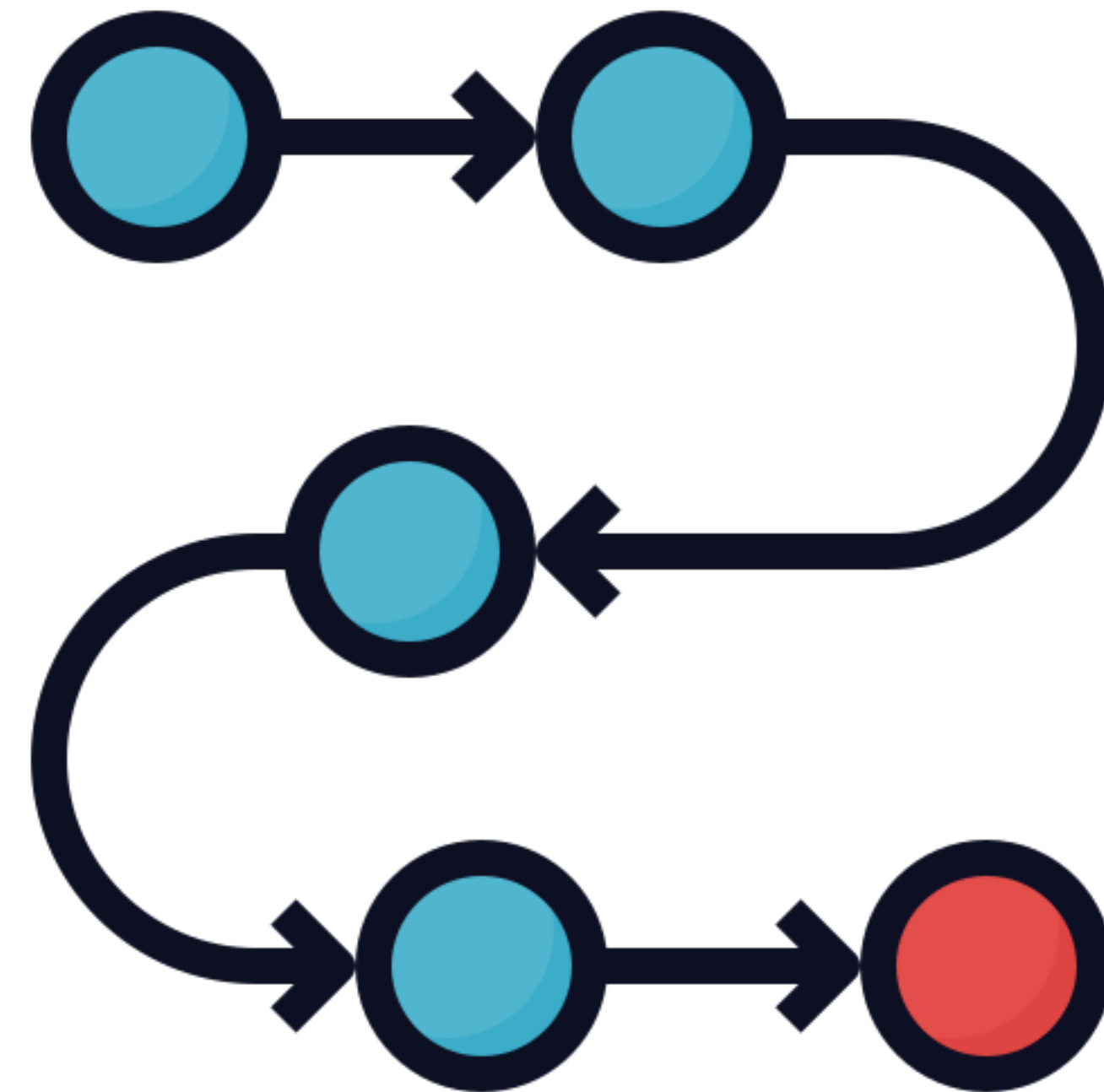
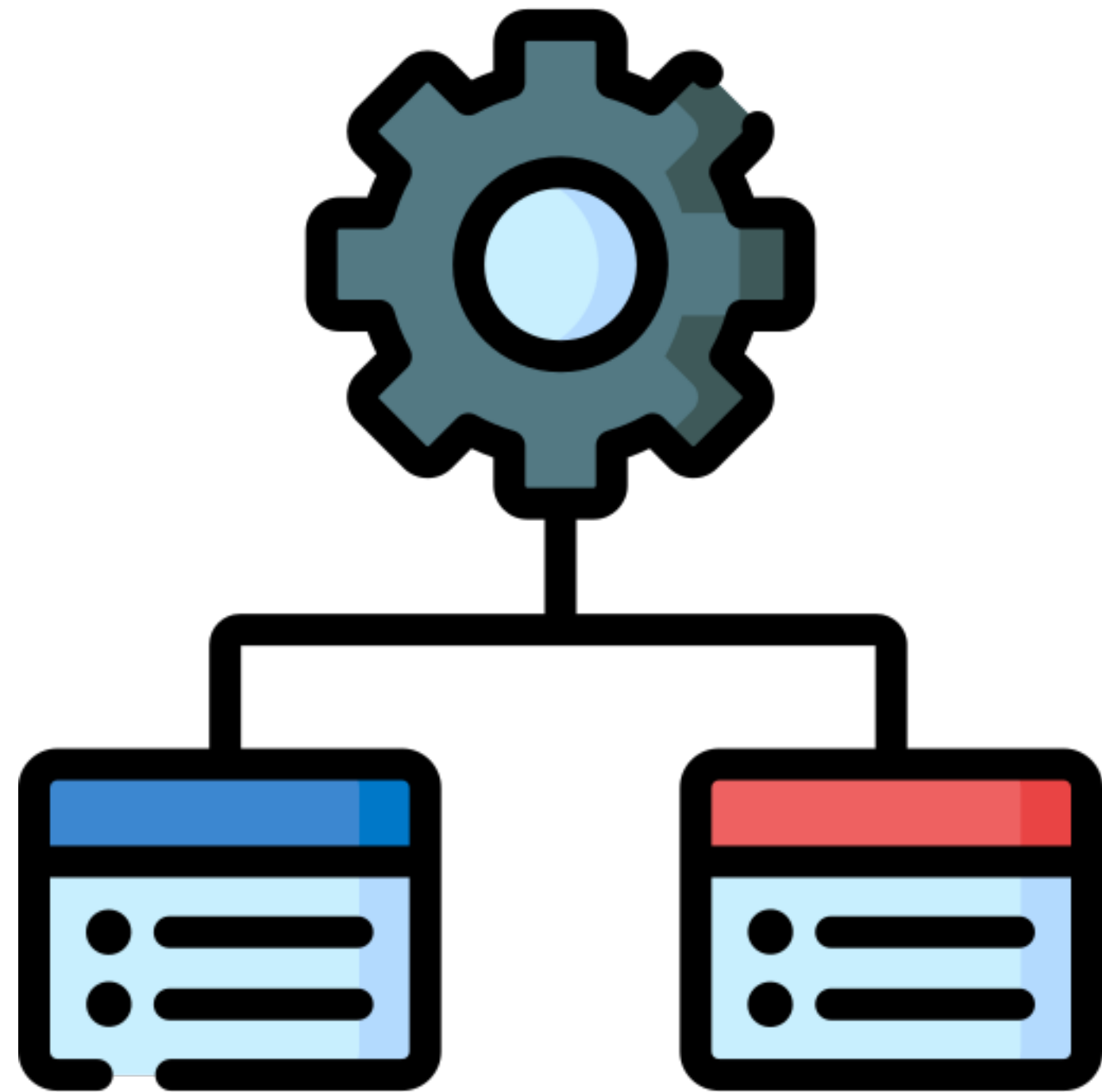
— ??



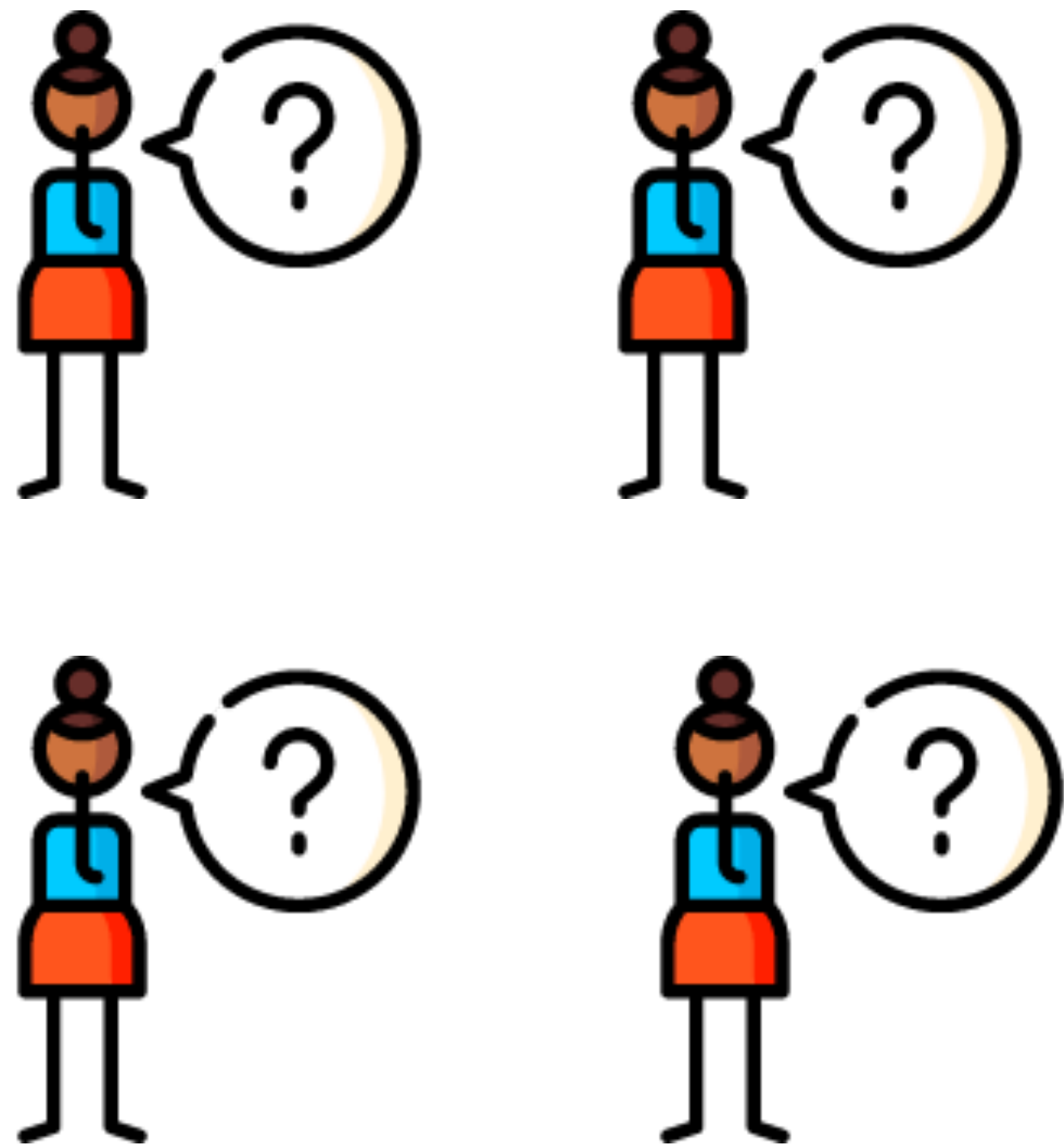
But I Configured It!



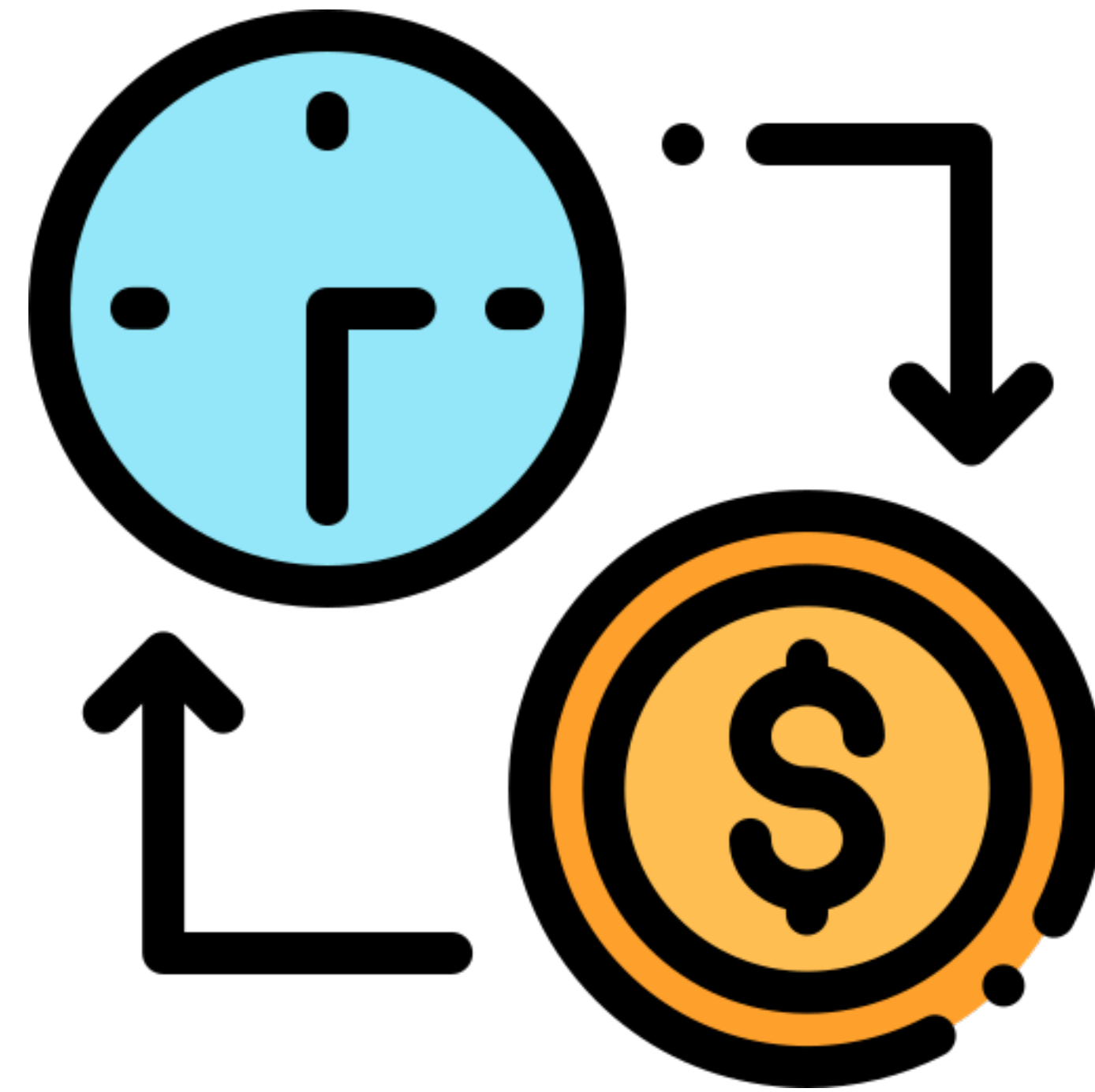
Silos Of Knowledge



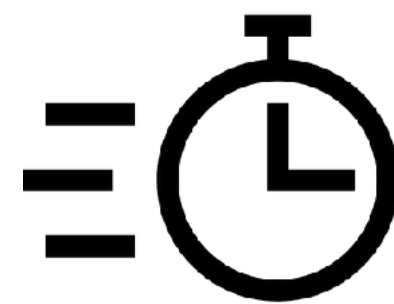
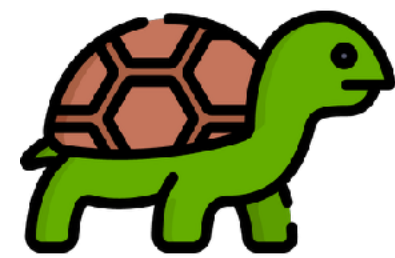
Difficult to Debug



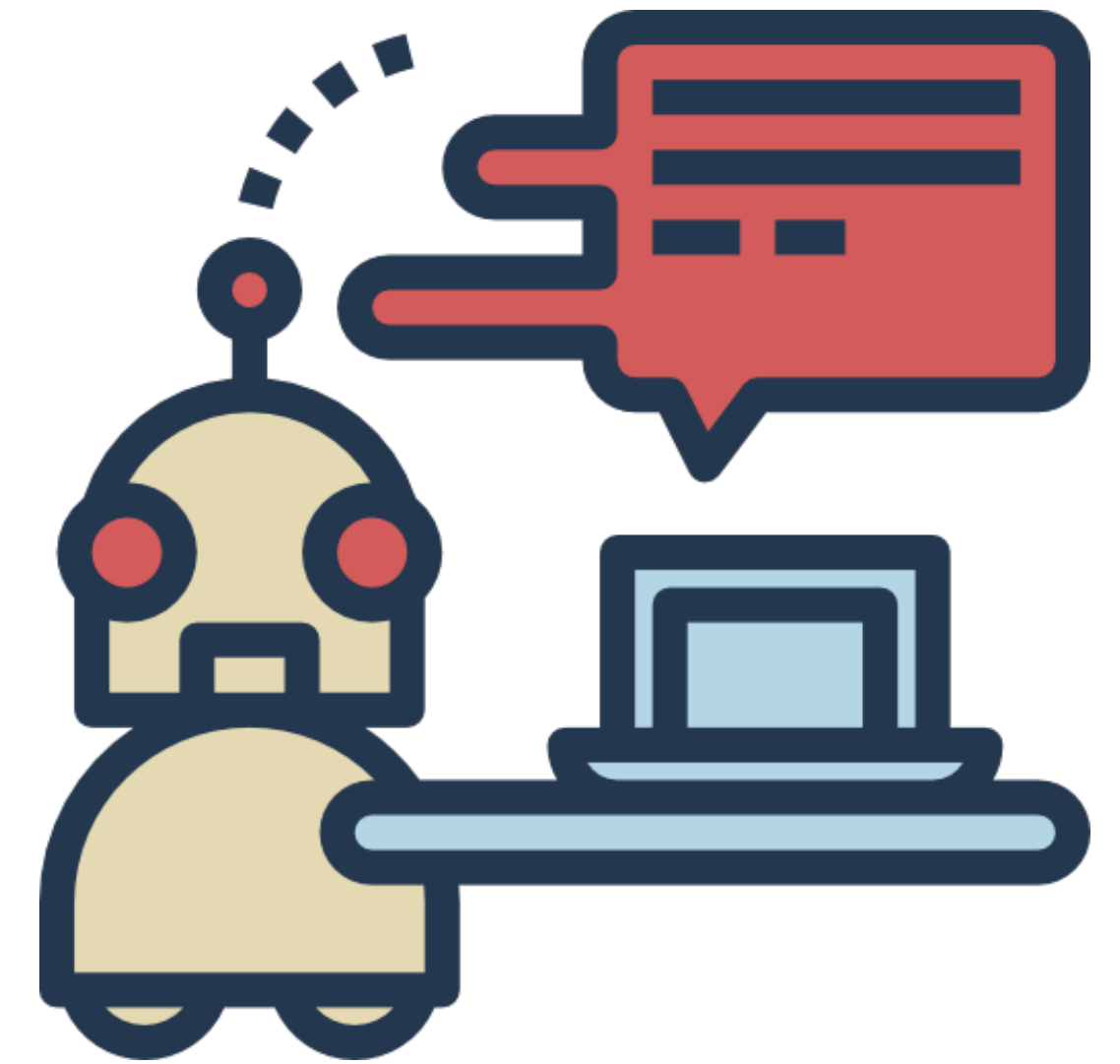
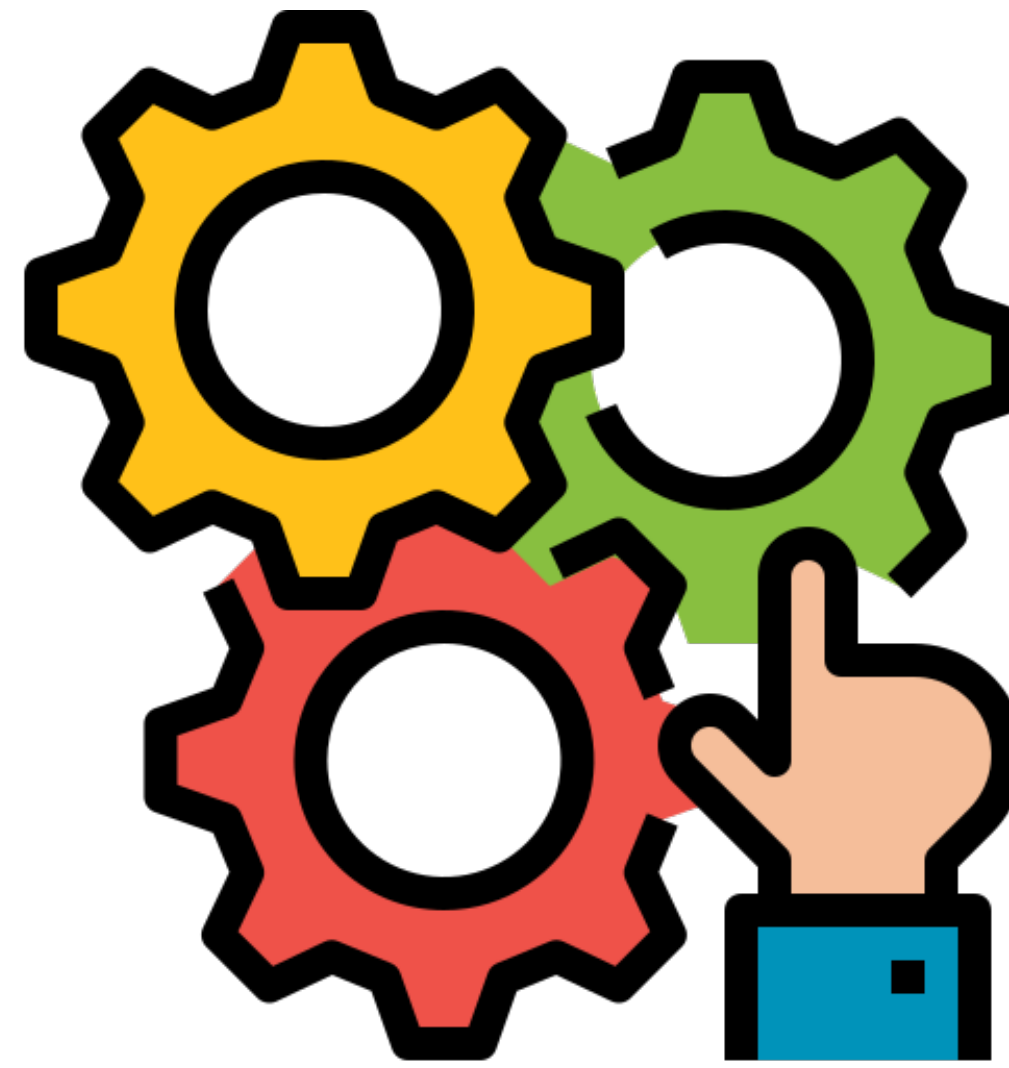
What Is The True Cost?



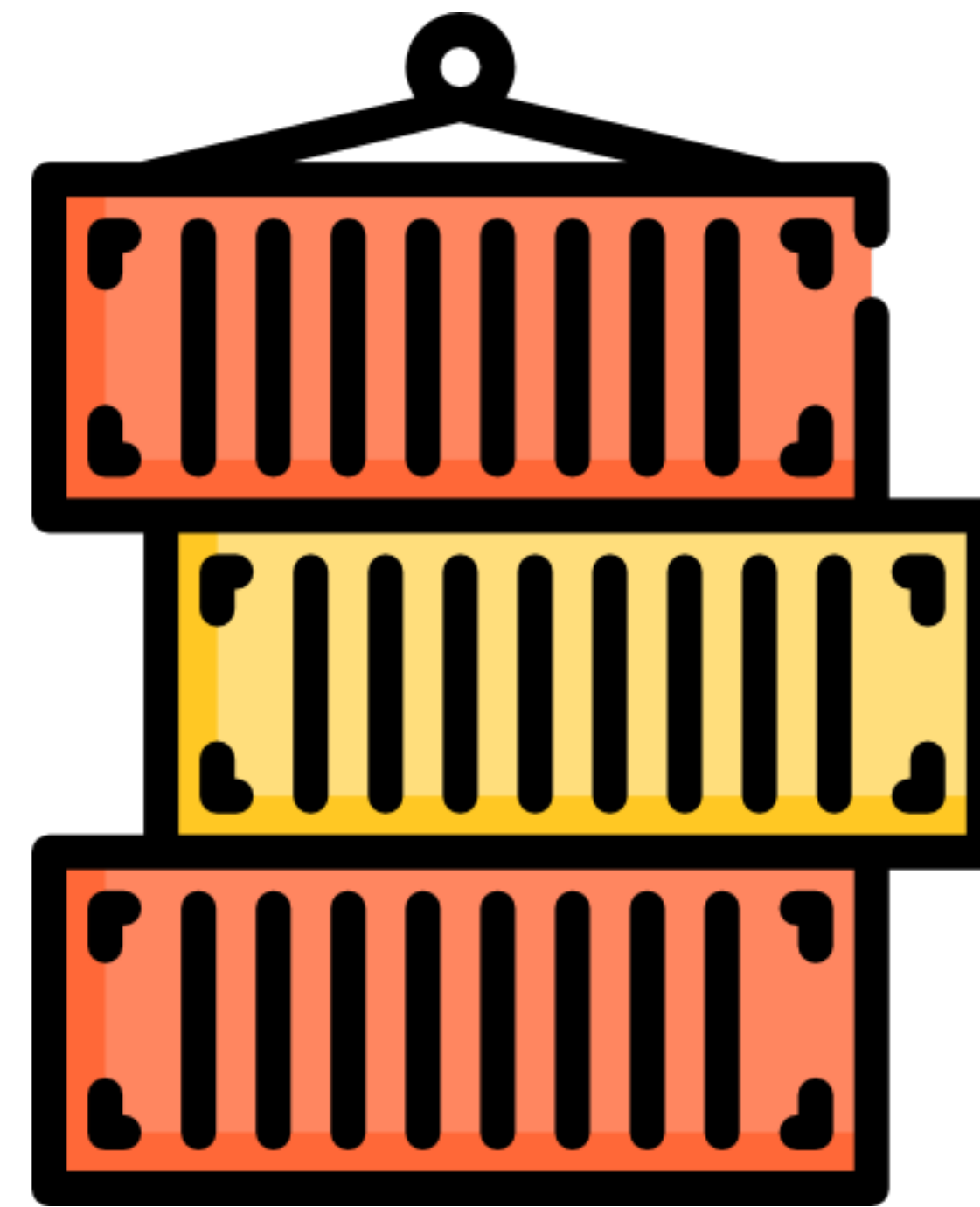
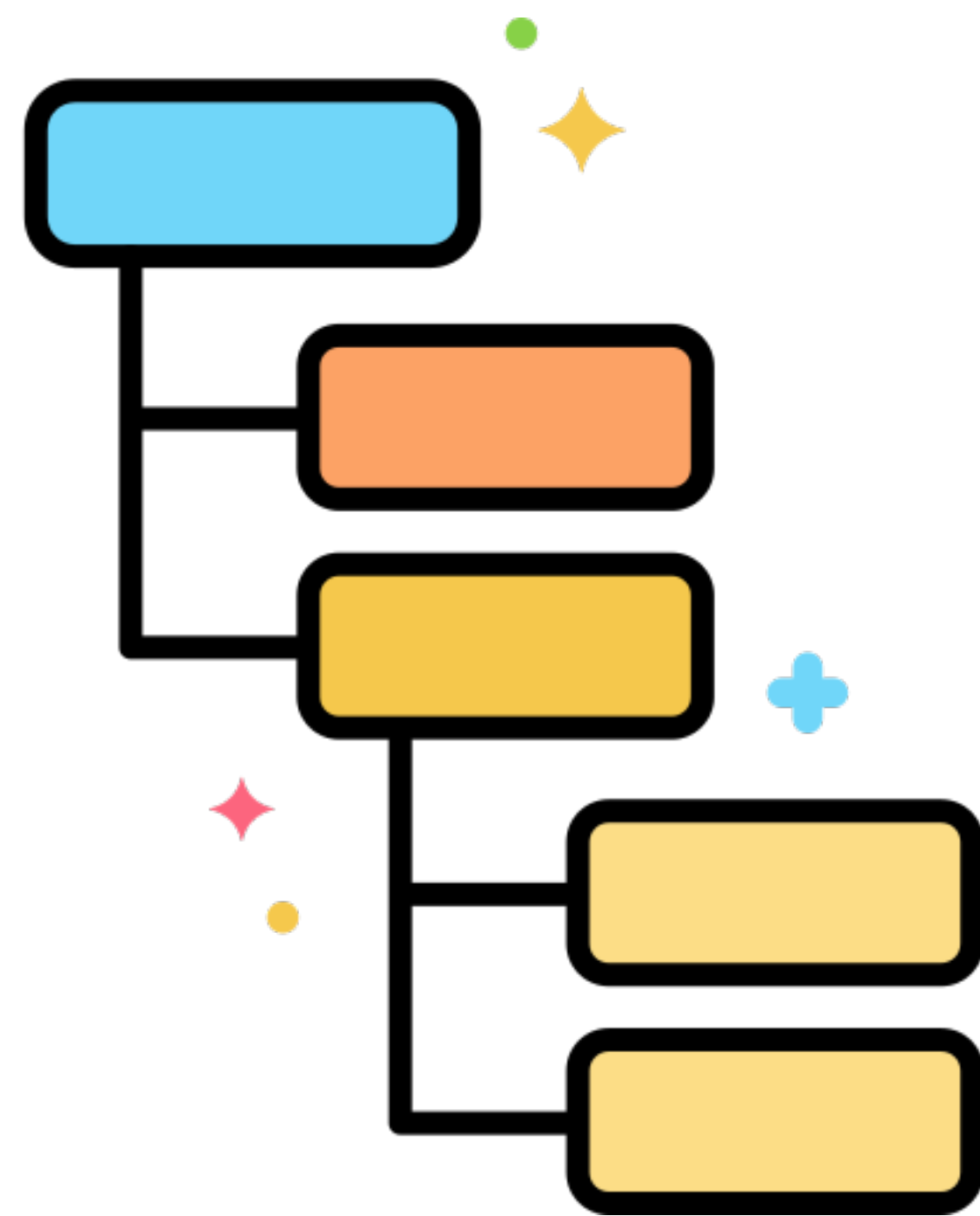
Where Do We Go From Here?



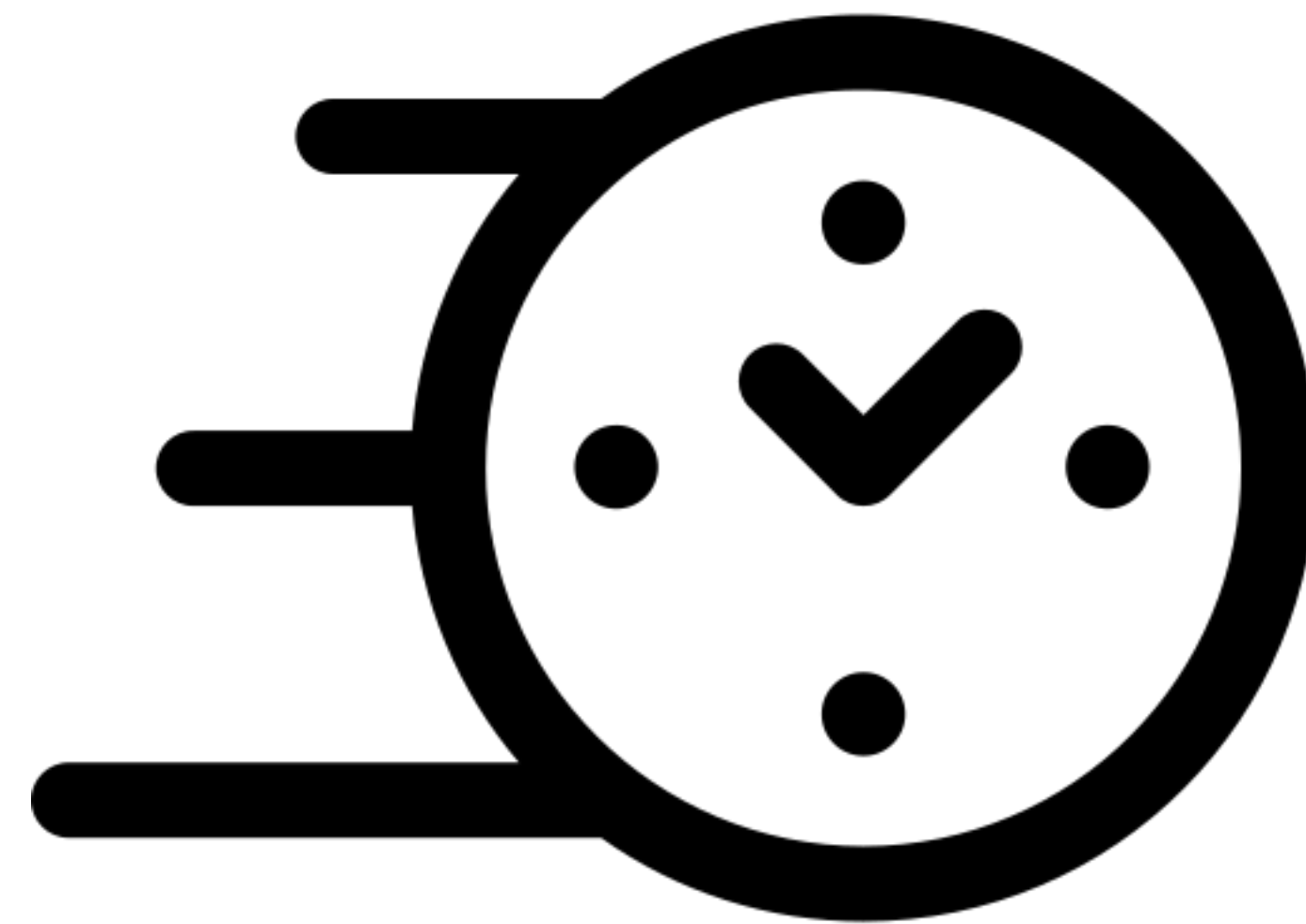
We Are Not Alone



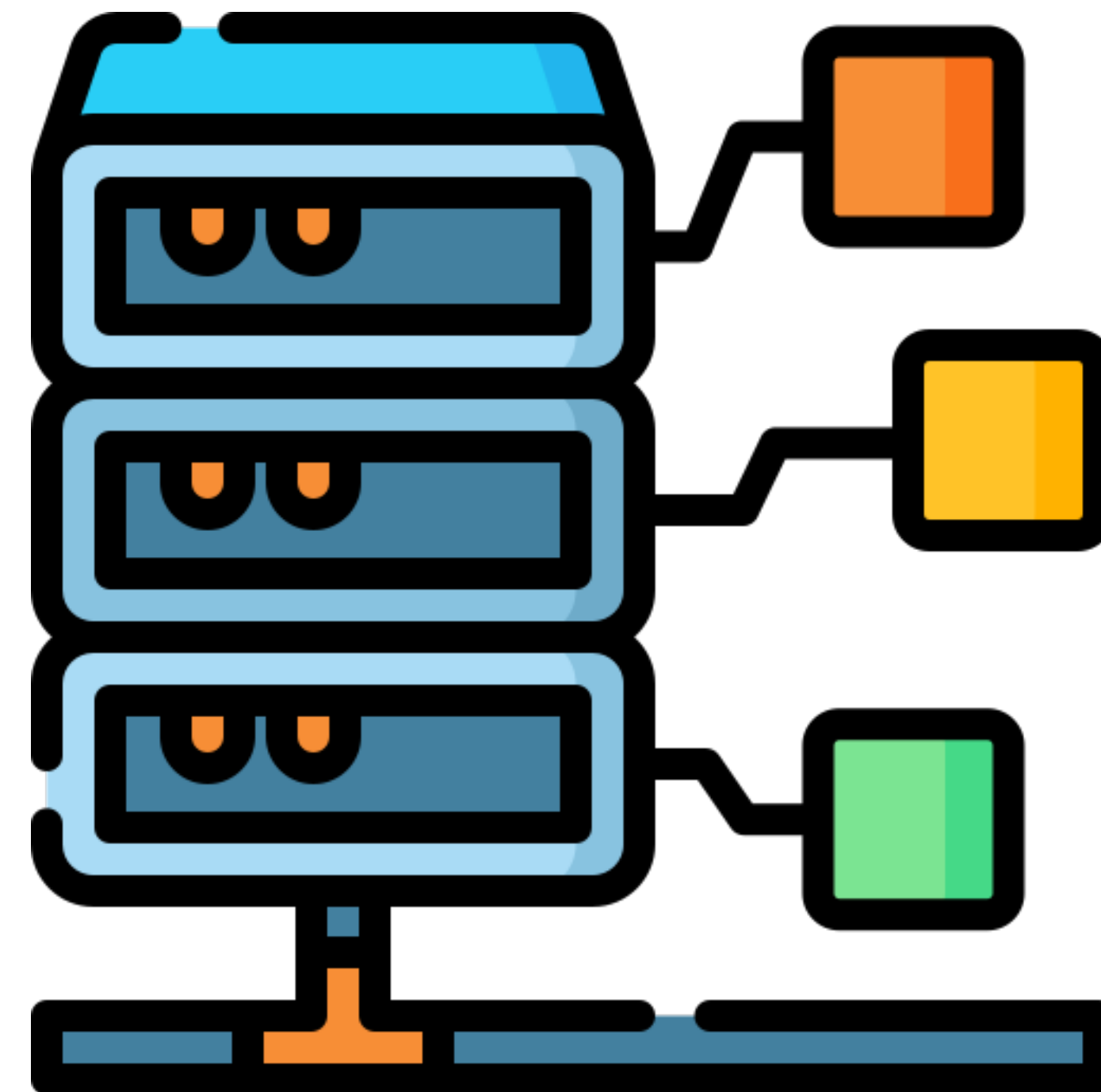
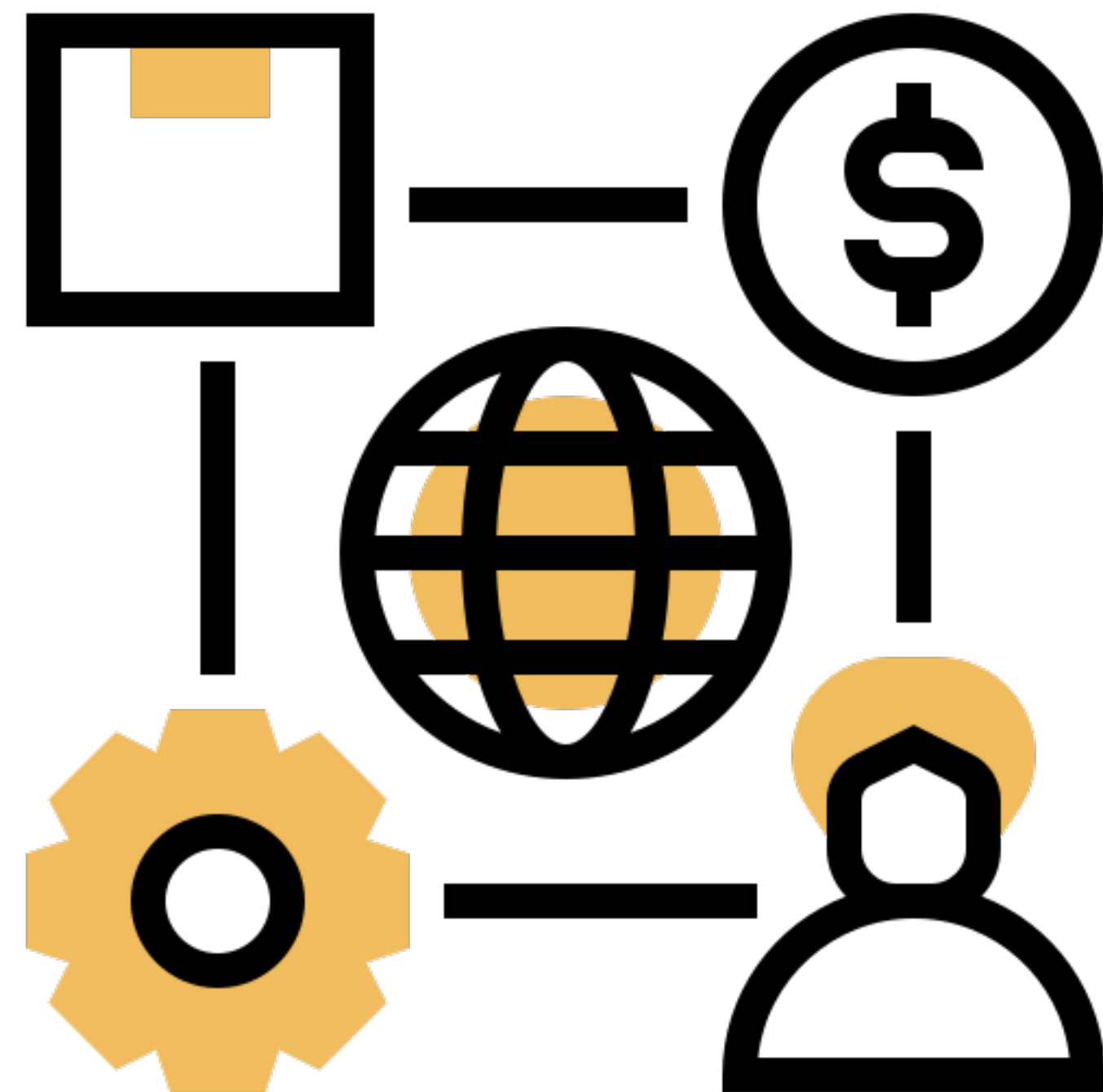
Dependency Management



Fast Provisioning



Did You Add Value?

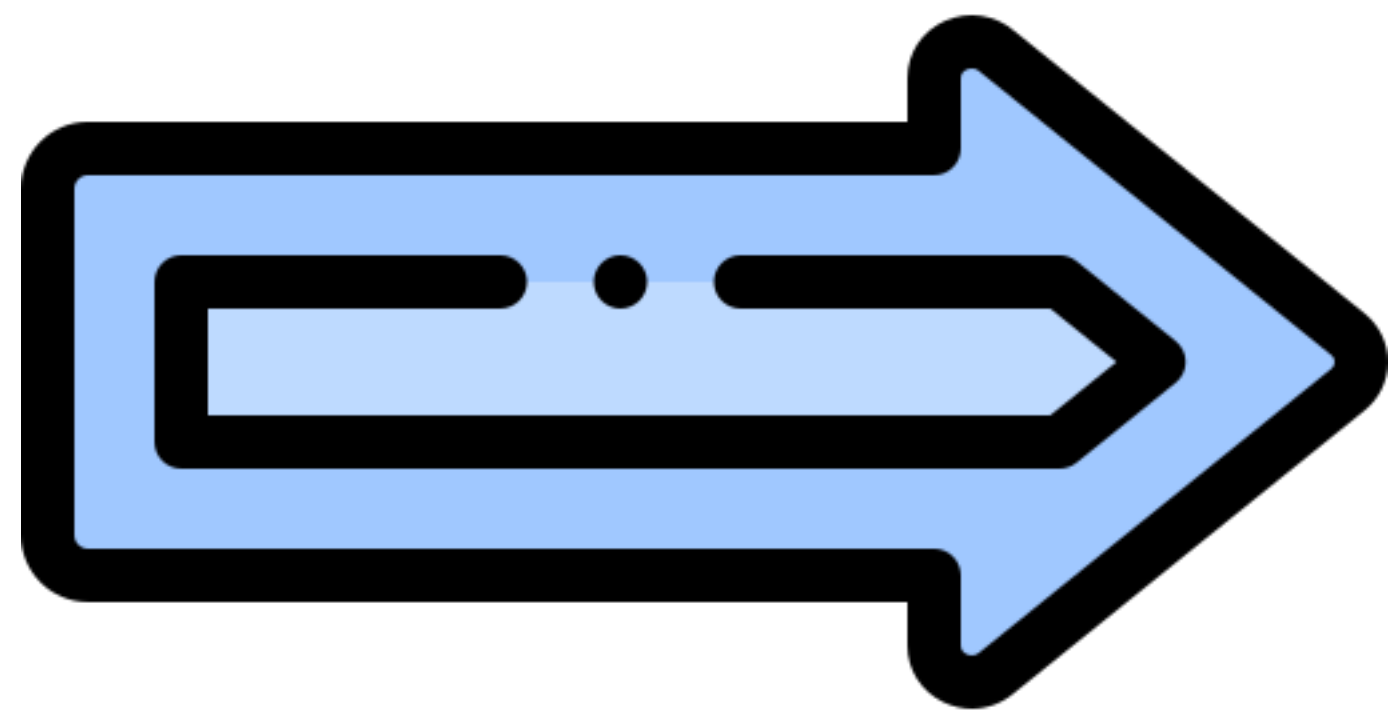


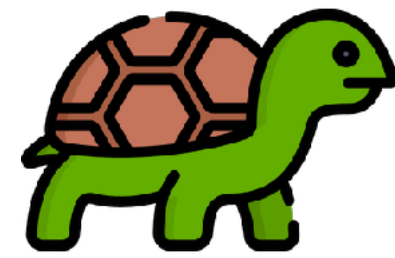
What Is Our Job?

Site reliability engineering (SRE) is a discipline that incorporates aspects of software engineering and applies them to infrastructure and operations problems. The main goals are to create scalable and highly reliable software systems. According to Ben Treynor, founder of Google's Site Reliability Team, SRE is "what happens when a software engineer is tasked with what used to be called operations."



Guidance For Thing.Next





Thank You!



References



- Server Rack, Data Center
- Female Engineer, Male Engineer
- Xen Project Logo
- Icons made by Freepik from www.flaticon.com
- Icons made by ultimatearm from www.flaticon.com
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- Icons made by Nhor Phai from www.flaticon.com
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