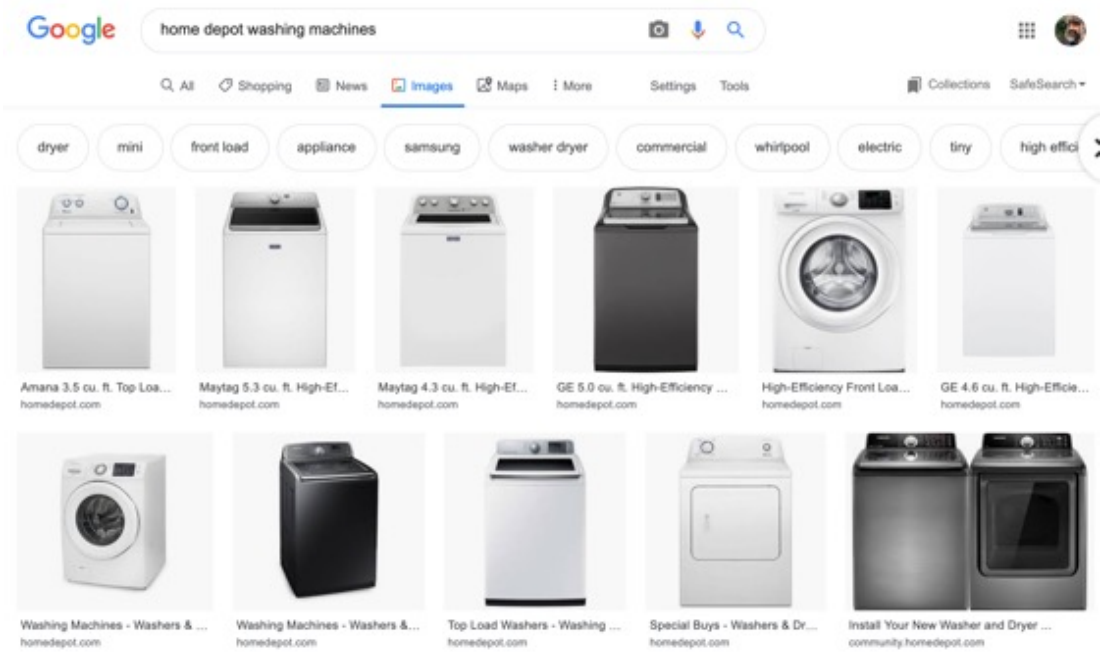
Daily Builds: Improving Software Delivery Speed and Quality

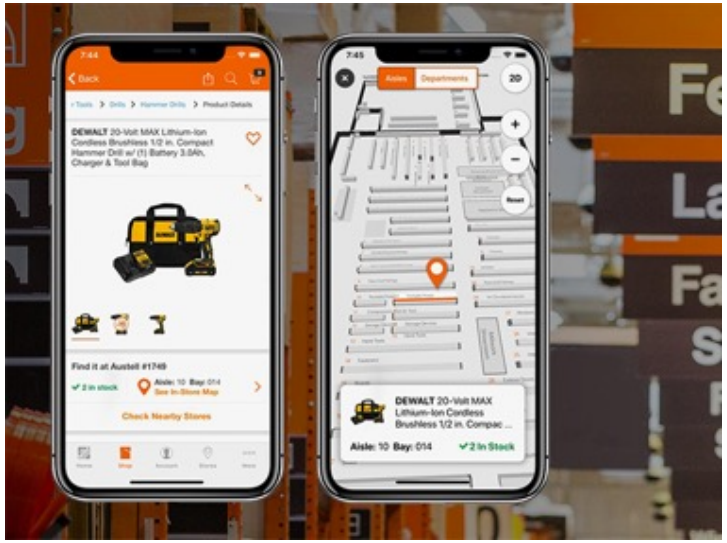
Building a Path to Production: A Guide for Managers and Leaders in Platform Engineering, Episode 01

Bryan Ross & Coté

Fall, 2023

vmware®

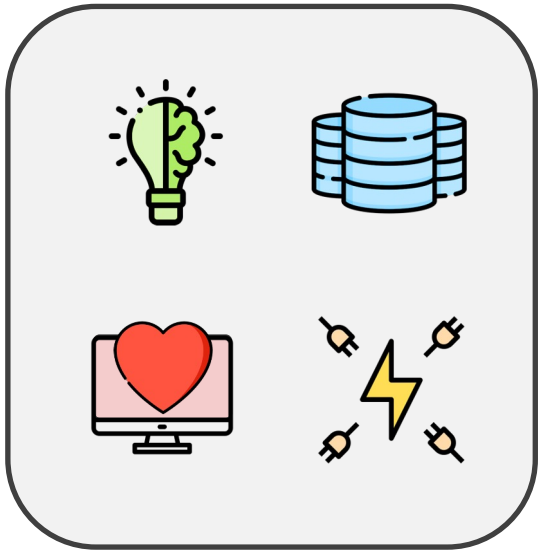




Source: case study and further references in *The Business Bottleneck*.

From monoliths to cloud native apps

Monolith

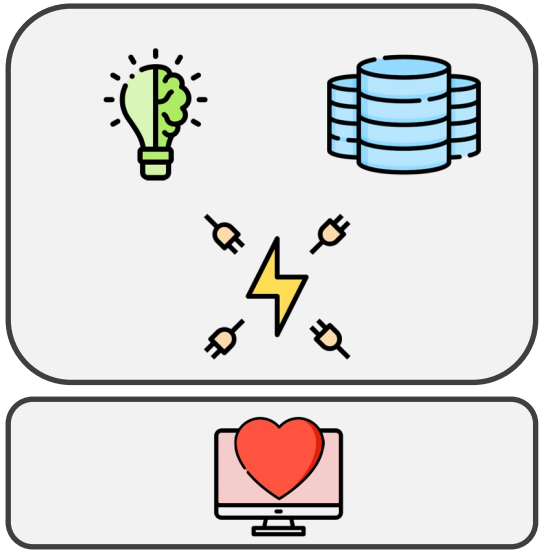


All components in one runtime.

All processing takes place in that runtime.

No network reliance.

Client Server



Access components run in client runtime.

All other app components run in one runtime.

Processing takes place in client and in app component runtime.

Client to Server communications over network.

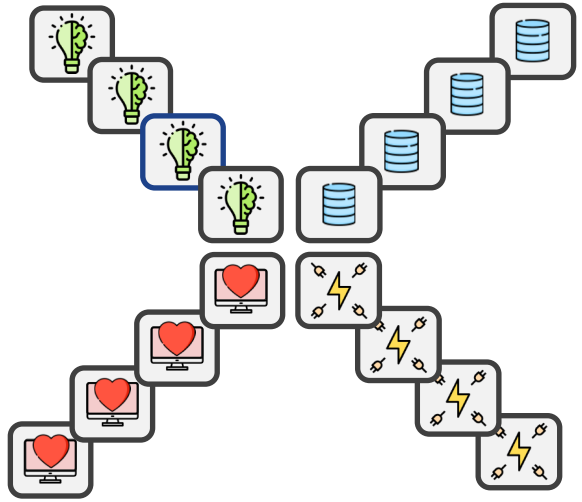
N-Tier

Each component in separate runtime.

Processing takes place in each runtime.

Components communicate over a network.

Cloud Native



Each component broken down into services all running in own runtime.

Processing takes place in individual runtime.

High network dependency for all components to communicate over network.

Source: "The Power of a Path-to-Production Workshop," Bryan Ross, Sep 2023.

VMware Tanzu App Engine and App Spaces

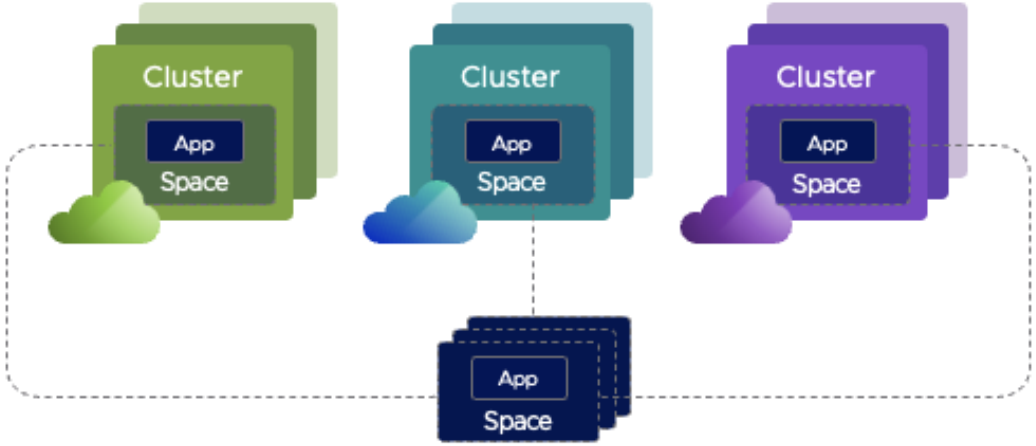
Platform Engineer

Create and Manage **Profiles**

App Developers

Space **Self-Service** and Deploy App

Each role interacts with just a slice of the overall model at any one time



Operations Teams

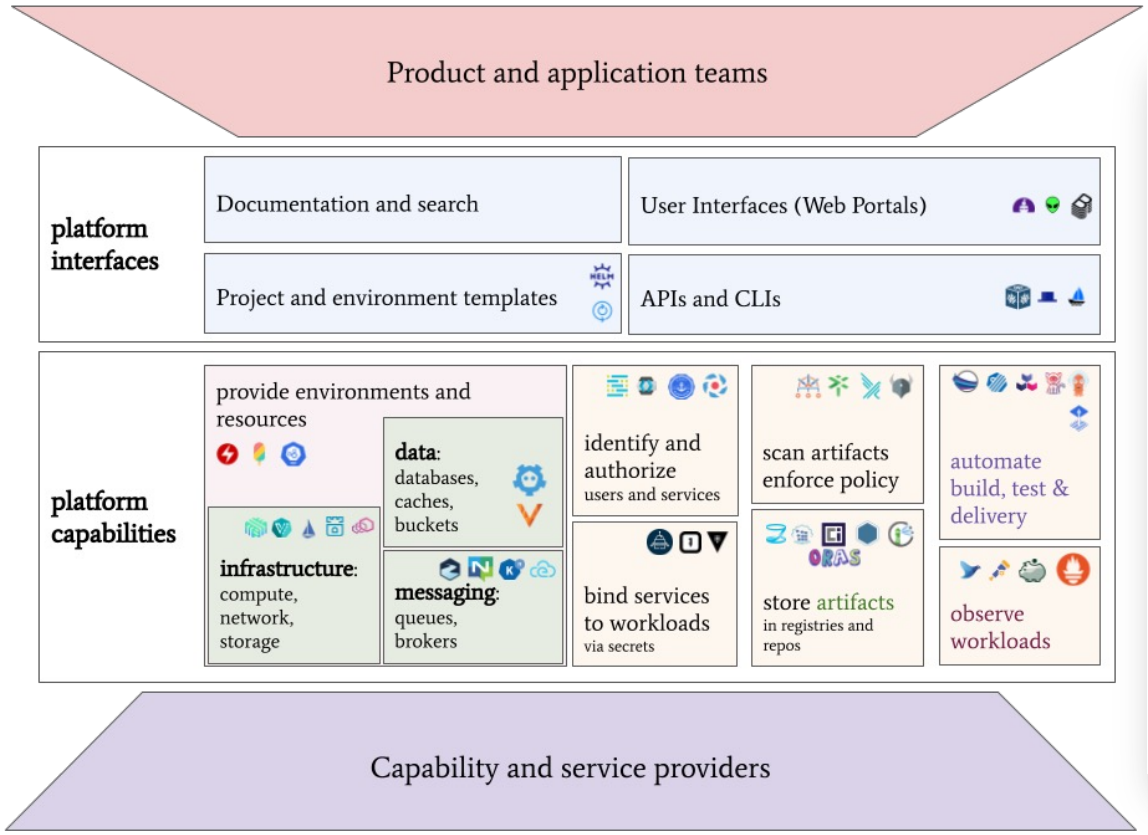
Create and Manage **Traits**

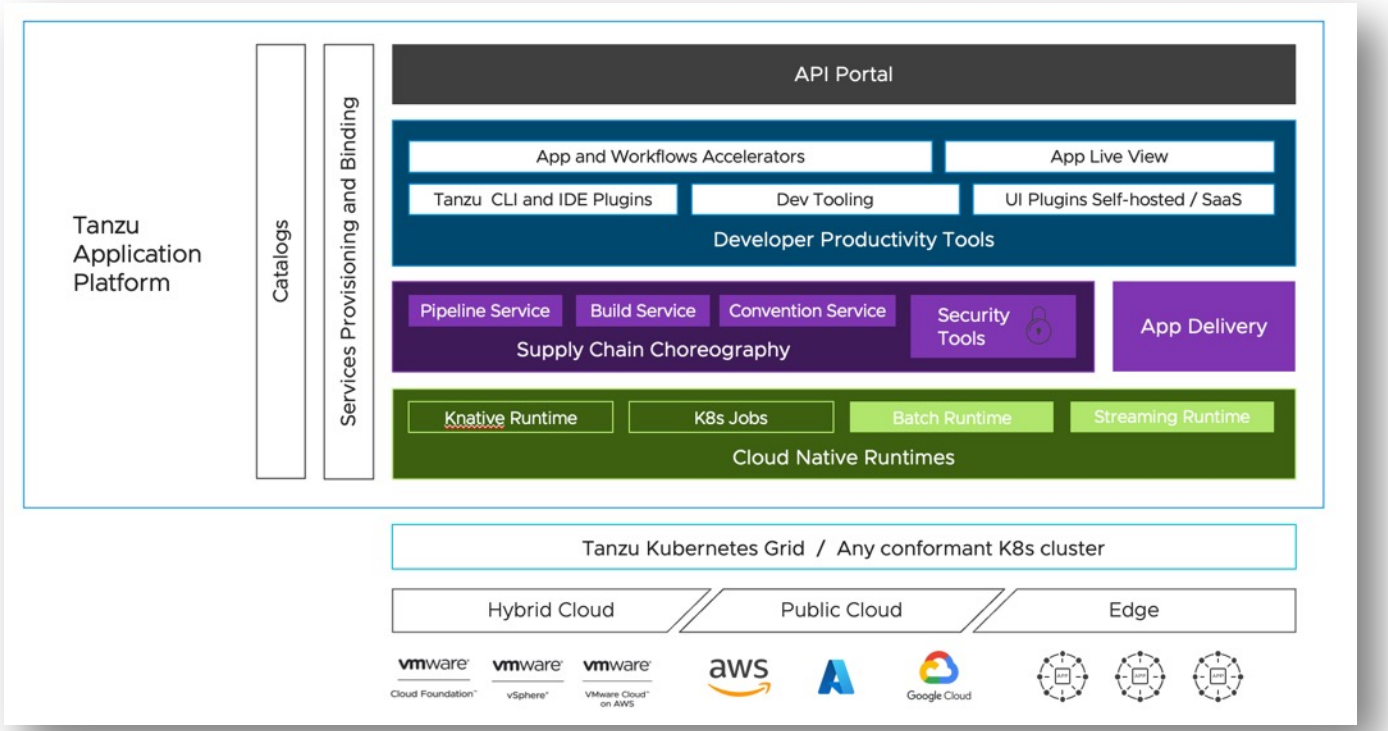
Operations teams work in parallel maximizing workflow efficiency

Clear Separation of Concerns | **Low-Friction Workflows** | **Boundaries of Self-Service APIs**

Source: "Designing VMware Tanzu Application Engine to Increase Collaboration, App Velocity, and Compliance," Darin Zook.

Platforms.





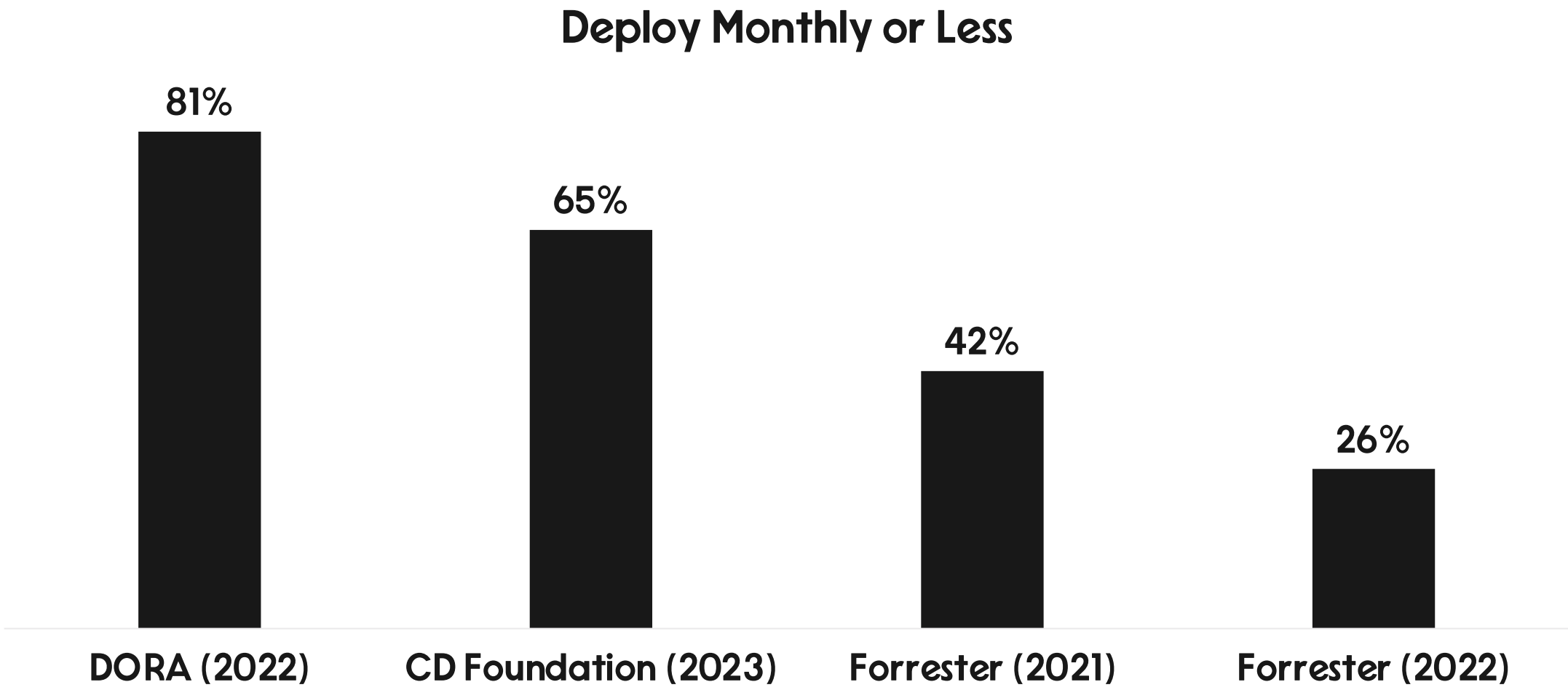
Sources: CNCF Platforms White Paper and Oct 2022 diagram draft; VMware Tanzu Application Platform.

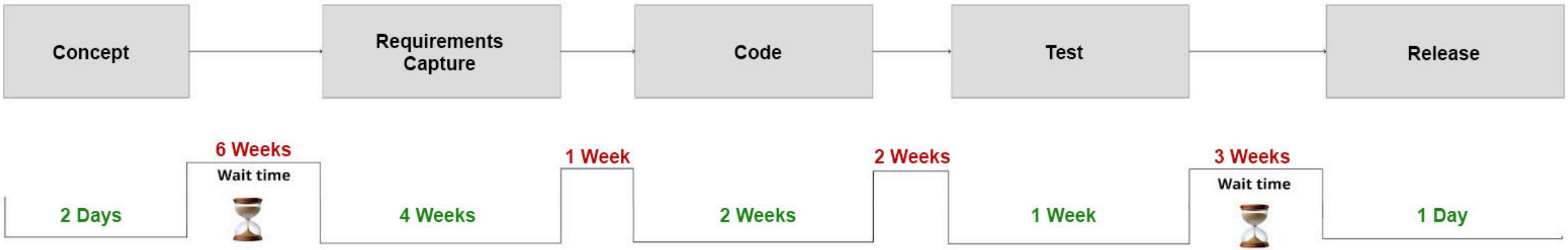
“We are building this platform not for us, we are building it for Mercedes-Benz developers.”

Thomas Müller, Mercedes-Benz

vmware

Accounts of deployment rates vary wildly



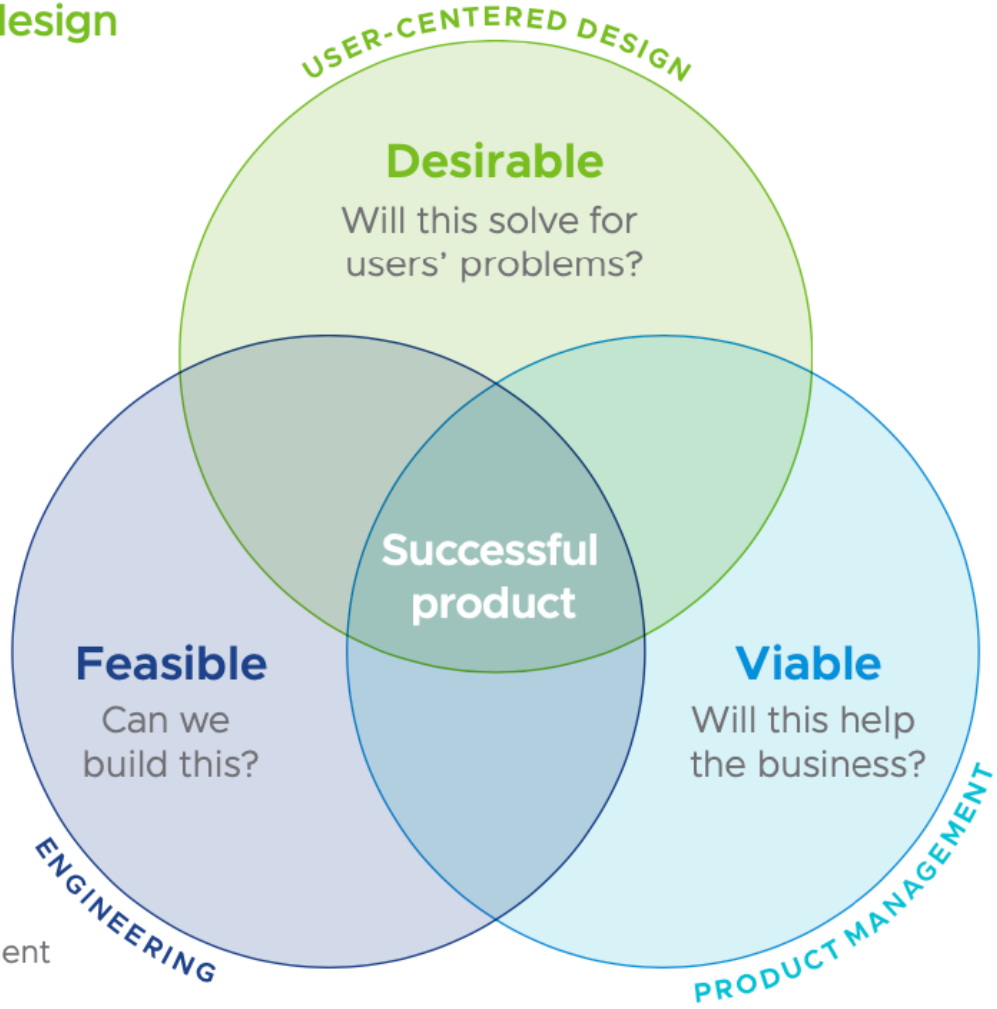

Concept
Requirements Capture
Code
Test
Release
2 Days
6 Weeks
Wait time
4 Weeks
1 Week
2 Weeks
2 Weeks
1 Week
3 Weeks
Wait time
1 Day

What to do next.

User-centered design

ACTIVITIES:

User interviews
Ethnography
Define personas
Usability testing
Service Design
UI / UX
Visual design



Agile / XP

ACTIVITIES:

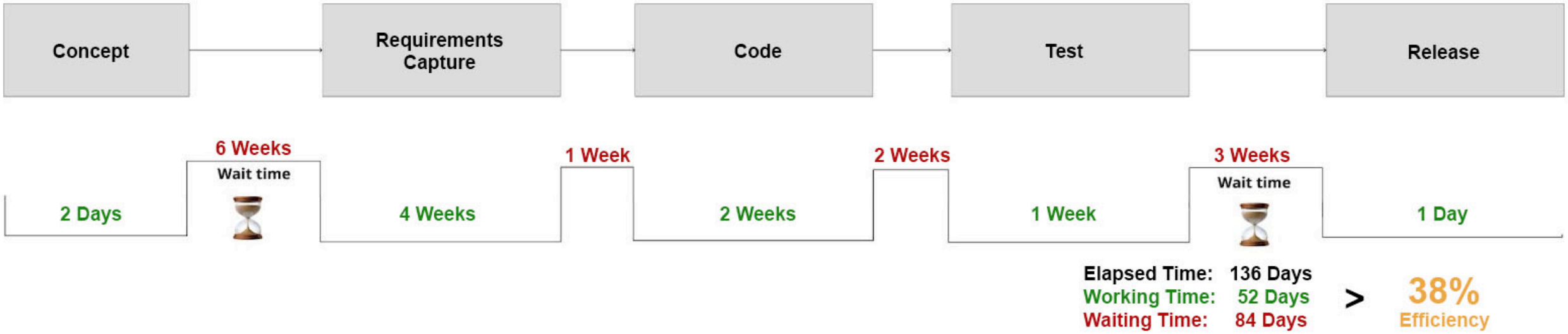
Test-driven development
Pair programming
Evolutionary design
Collective code ownership
Retros
Short interations
CI / CD

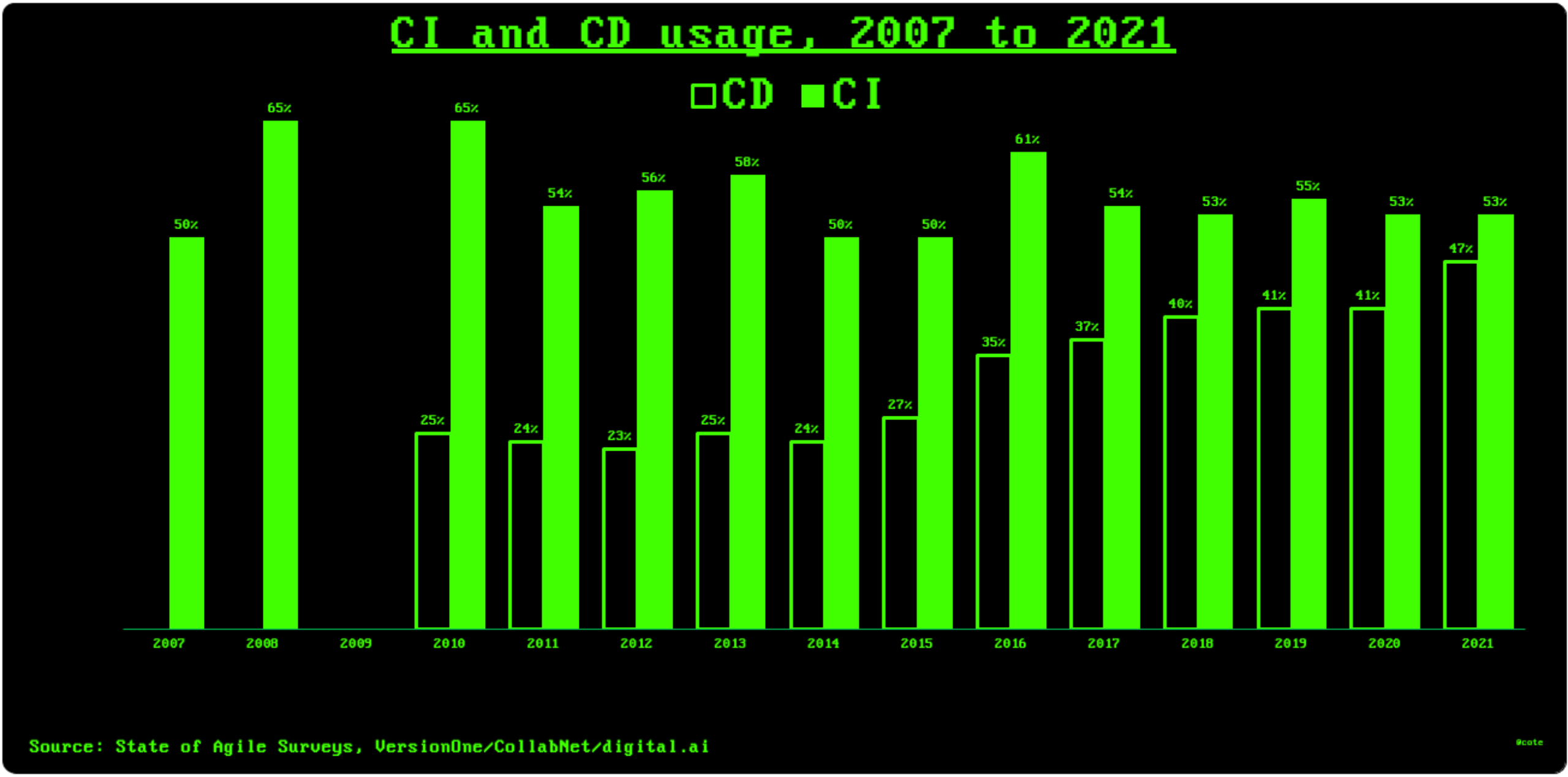
Lean Startup

ACTIVITIES:

Define product vision, strategy and roadmap
Define business model
Define minumum viable product
Identify and test assumptions
Release real product often
Understand customers
Adjust direction based on data
Constrain resources and time

Sources: "The Product Manager Playbook," VMware Tanzu Labs.


Concept
Requirements Capture
Code
Test
Release
2 Days
6 Weeks
Wait time
4 Weeks
1 Week
2 Weeks
2 Weeks
1 Week
3 Weeks
Wait time
1 Day
Elapsed Time: 136 Days
Working Time: 52 Days
Waiting Time: 84 Days
>
38%
Efficiency

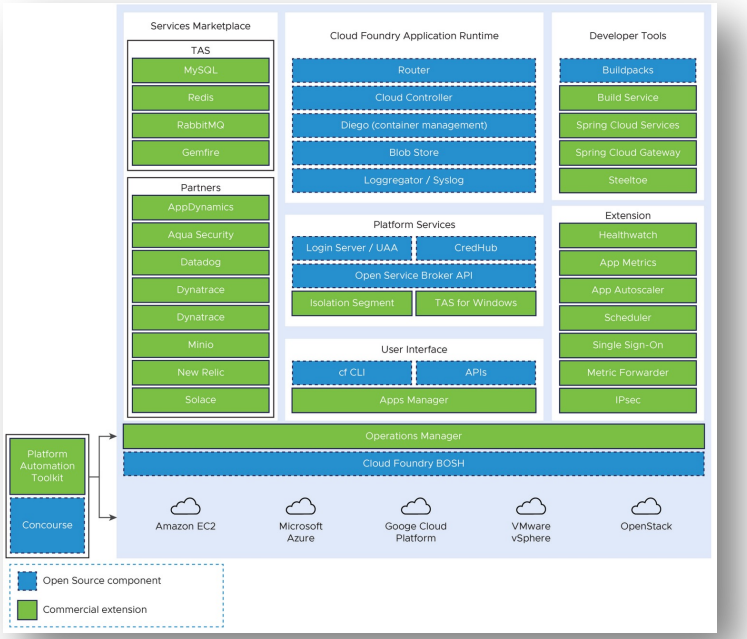

CI and CD usage, 2007 to 2021
CD
CI
50%
65%
25%
65%
24%
54%
23%
56%
25%
58%
24%
50%
27%
50%
35%
61%
37%
54%
40%
53%
41%
55%
41%
53%
47%
53%
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Source: State of Agile Surveys, VersionOne/CollabNet/digital.ai
@cote

Find the Developer Toil, Confusion, Blockers

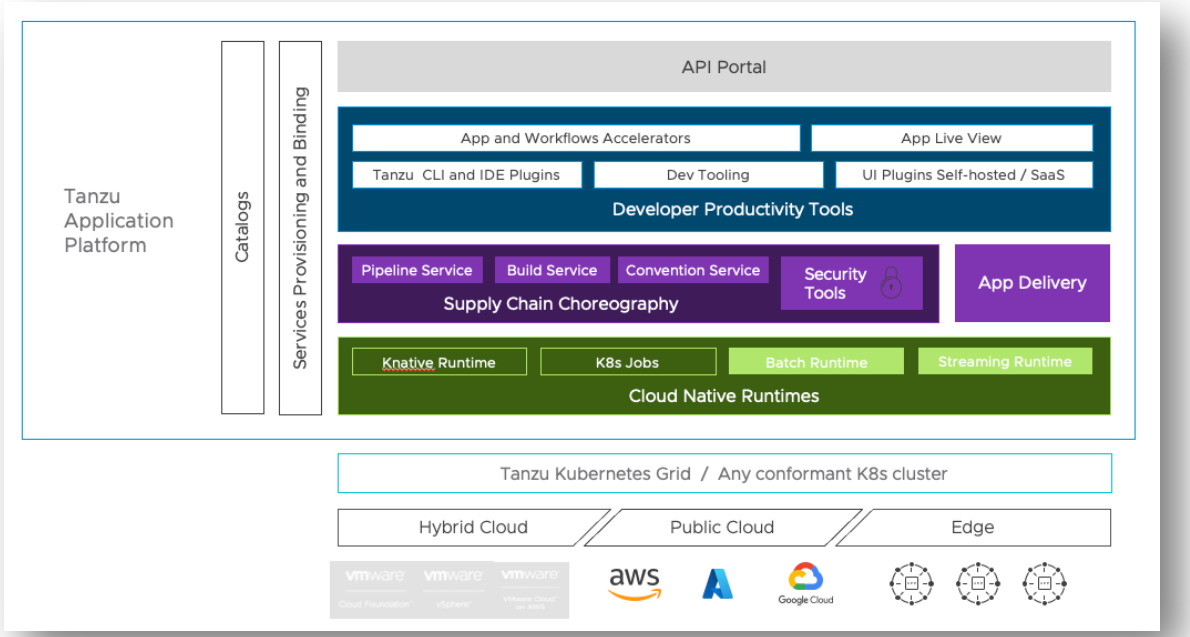
- What are we making?
- We have a strong vision for our product, and we're doing important work together every day to fulfill that vision.
- I have the context I need to confidently make changes while I'm working.
- I am proud of the work I have delivered so far for our product.
- I am learning things that I look forward to applying to future products.
- My workstation seems to disappear out from under me while I'm working.
- It's easy to get my workstation into the state I need to develop our product.
- What aspect of our workstation setup is painful?
- It's easy to run our software on my workstation while I'm developing it.
- I can boot our software up into the state I need with minimal effort.
- What aspect of running our software locally is painful? What could we do to make it less painful?
- It's easy to run our test suites and to author new ones.
- Tests are a stable, reliable, seamless part of my workflow.
- Test failures give me the feedback I need on the code I am writing.
- What aspect of production support is painful?
- We collaborate well with the teams whose software we integrate with.
- When necessary, it is within my power to request timely changes from other teams.
- I have the resources I need to test and code confidently against other teams' integration points.
- What aspect of integrating with other teams is painful?
- I'm rarely impacted by breaking changes from other tracks of work.
- We almost always catch broken tests and code before they're merged in.
- What aspect of committing changes is painful?
- Our release process (CI/CD) from source control to our story acceptance environment is fully automated.
- If the release process (CI/CD) fails, I'm confident something is truly wrong, and I know I'll be able to track down the problem.
- Our team releases new versions of our software as often as the business needs us to.
- We are meeting our service-level agreements with a minimum of unplanned work.
- When something is wrong in production, we reproduce and solve the problem in a lower environment.

Sources: "Developer Toil: The Hidden Tech Debt," Susie Forbath, Tyson McNulty, and Coté, August, 2022. See also Michael Galloway's interview questions for platform product managers.

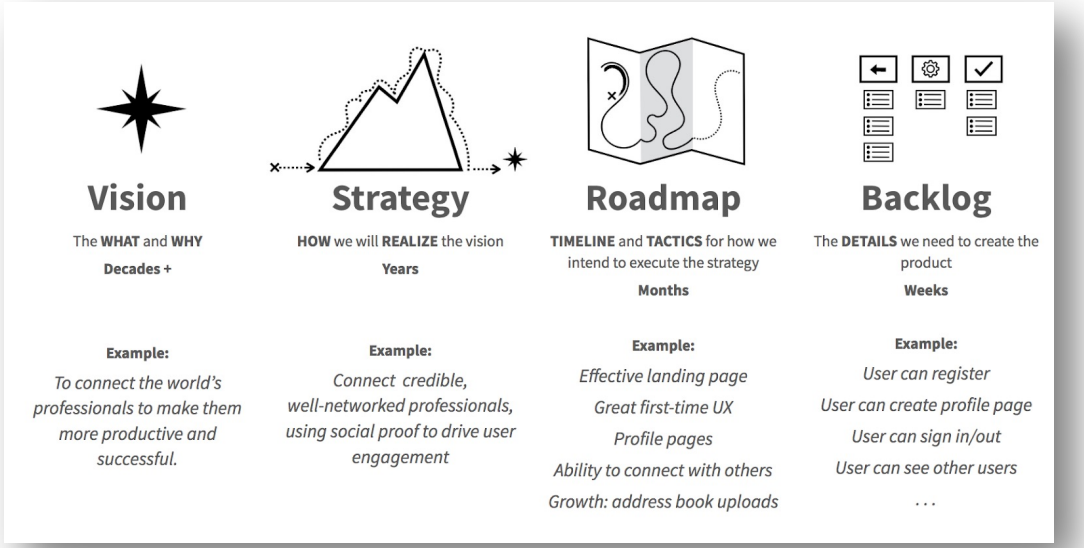
Tanzu Application Service



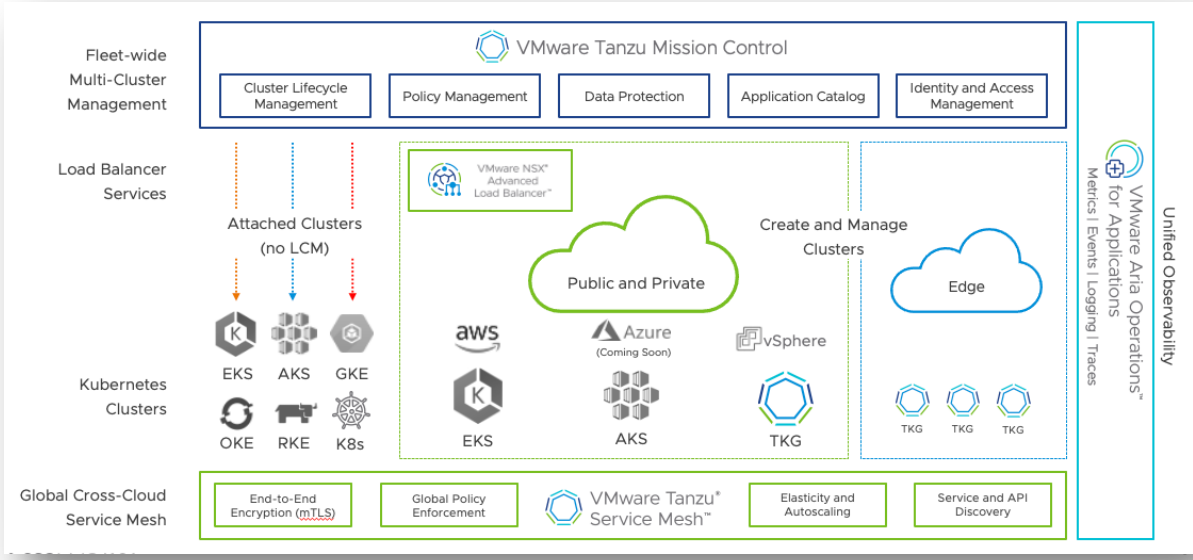
Tanzu Application Platform



Tanzu Labs



Tanzu for Kubernetes Operations



A Successful Developer Experience (1/2)

1. Customer Focus: Treat internal developers like clients
2. Build, nourish and embrace a community around your platforms
3. Focus on end-to-end & deliver an integrated experience
4. Culture is critical
5. Cloud Blueprints
6. Cloud Parties
7. Self-service everything

Build a customer-centre culture.
"15 Proven Techniques to Improve Customer Experience (CX)"
Blog by Snigdha Patel on the revechat.com platform

A Successful Developer Experience (2/2)

8. Clear responsibility model, boundaries and platform contract
9. Operationally stable, reliable, and has well-defined SLOs
10. Inherently secure
11. Streamline tooling for CI/CD
12. Enable innovation through managing risk
13. Automate, automate, automate!
14. Short time to Hello World!
15. Partner for success

Gaia Application Platform Speeds and Feeds

>1522 Production Applications

"LARGEST CLOUD FOUNDRY DEPLOYMENT IN THE WORLD... BY FAR!" VMWARE

>206k Container Workloads

>331k Running Memory

37 Pools 16 Data Centers / 3 regions

~15k Deployments /Day

Gaia Kubernetes Platform Speeds and Feeds

>100 GLOBAL CLUSTERS

>700 TB Memory Capacity Deployed

>4000 SERVERS SUPPORTED

>345 PRODUCTION APPS

~300 OS REPAVES PER DAY

Source: "Improving JPMorgan Chase's Developer Experience on the Cloud," Nadi Awad, July, 2022.