From bottleneck to enabler

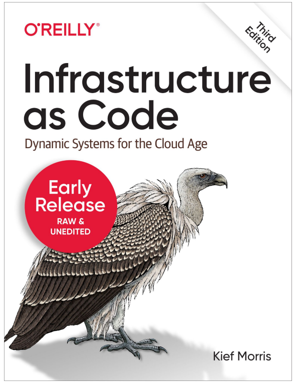
Kief Morris

Pulling infrastructure coding out of the value stream

February, 2025

Config Management Camp

thoughtworks



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Third Edition

Infrastructure as Code

Dynamic Systems for the Cloud Age

Early Release

RAW & UNEDITED

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As an infrastructure consumer

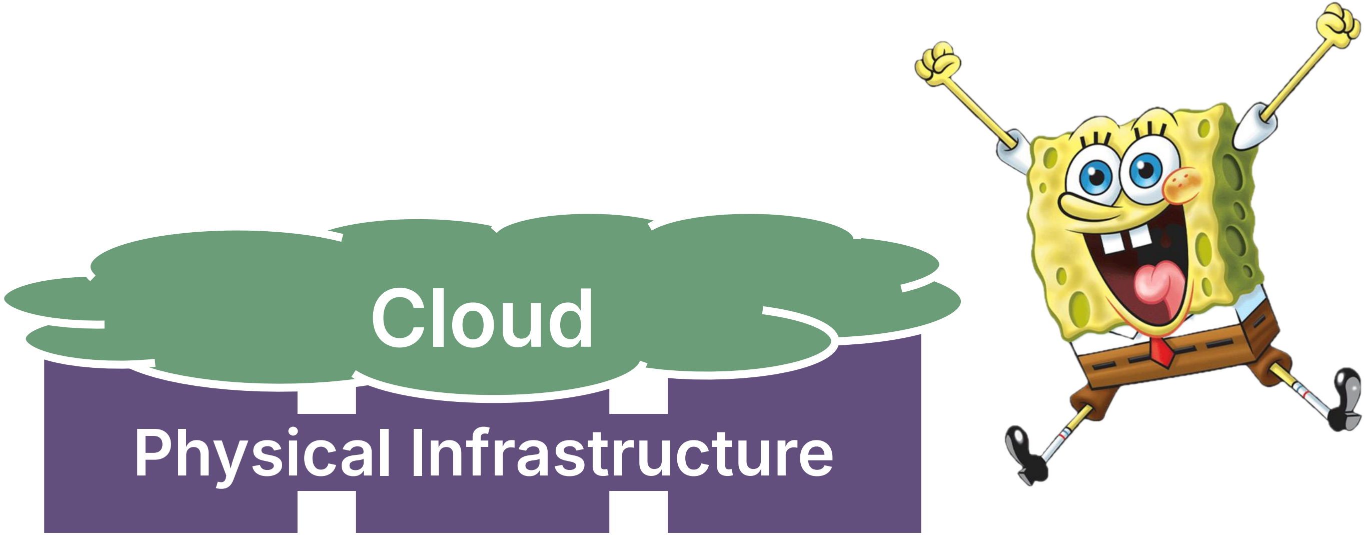
How often are you blocked waiting for infrastructure work to be done?

As an infrastructure engineer

How much of your time do you spend working on low-value stuff?

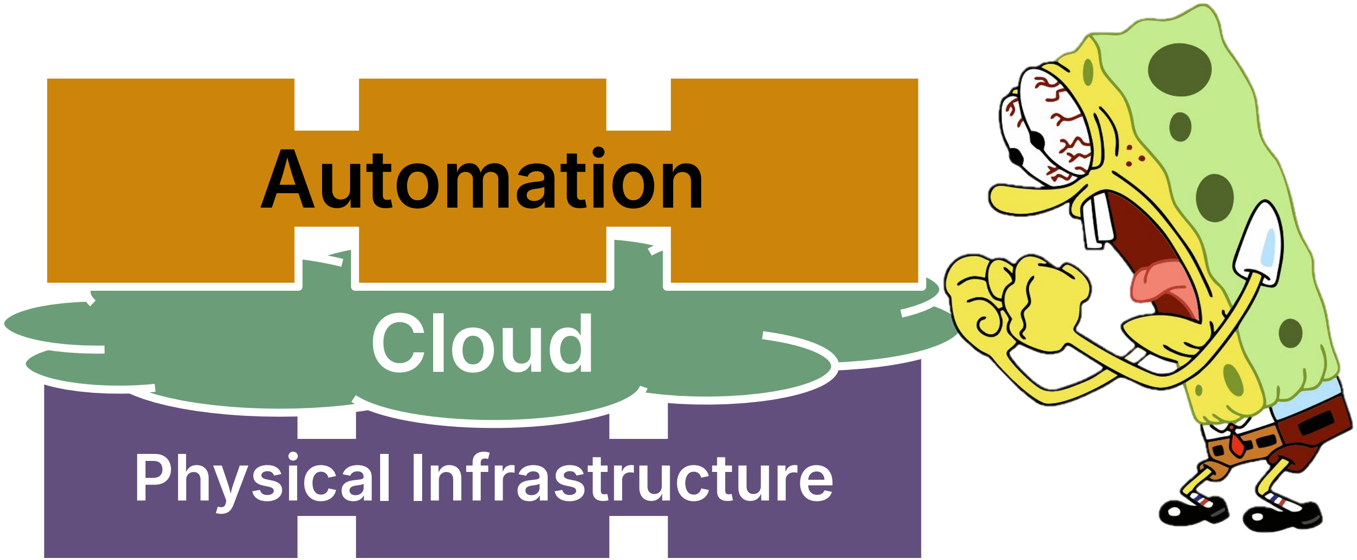
If cloud infrastructure is a bottleneck then we're doing it wrong

Physical Infrastructure



Cloud

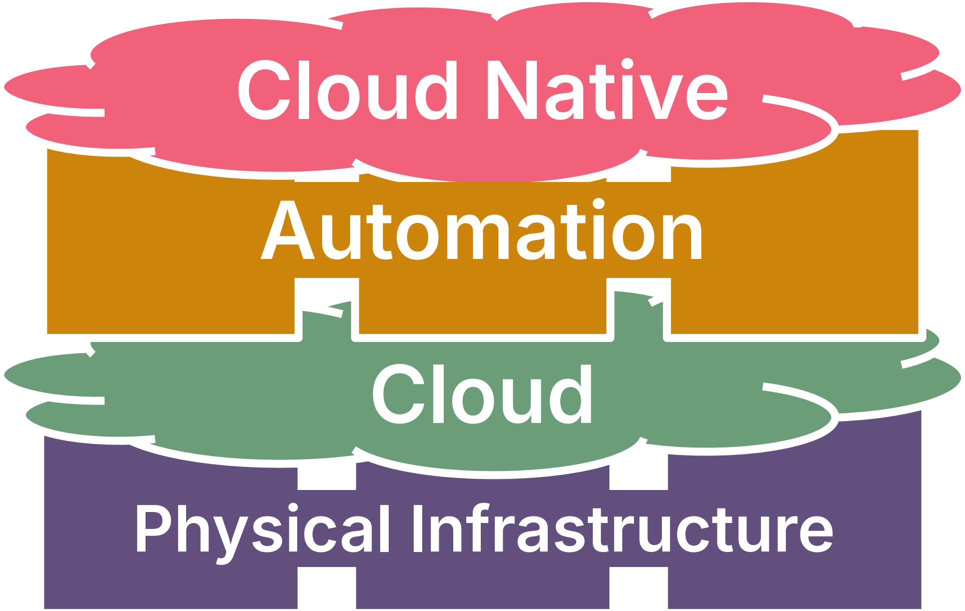
Physical Infrastructure



Automation

Cloud

Physical Infrastructure

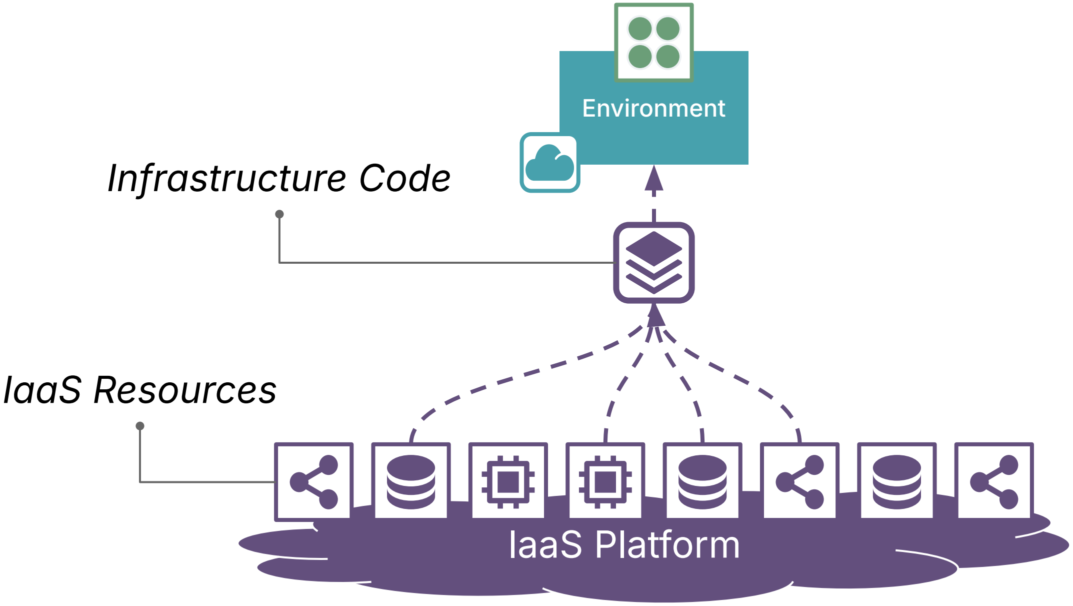


Cloud Native
Automation
Cloud
Physical Infrastructure

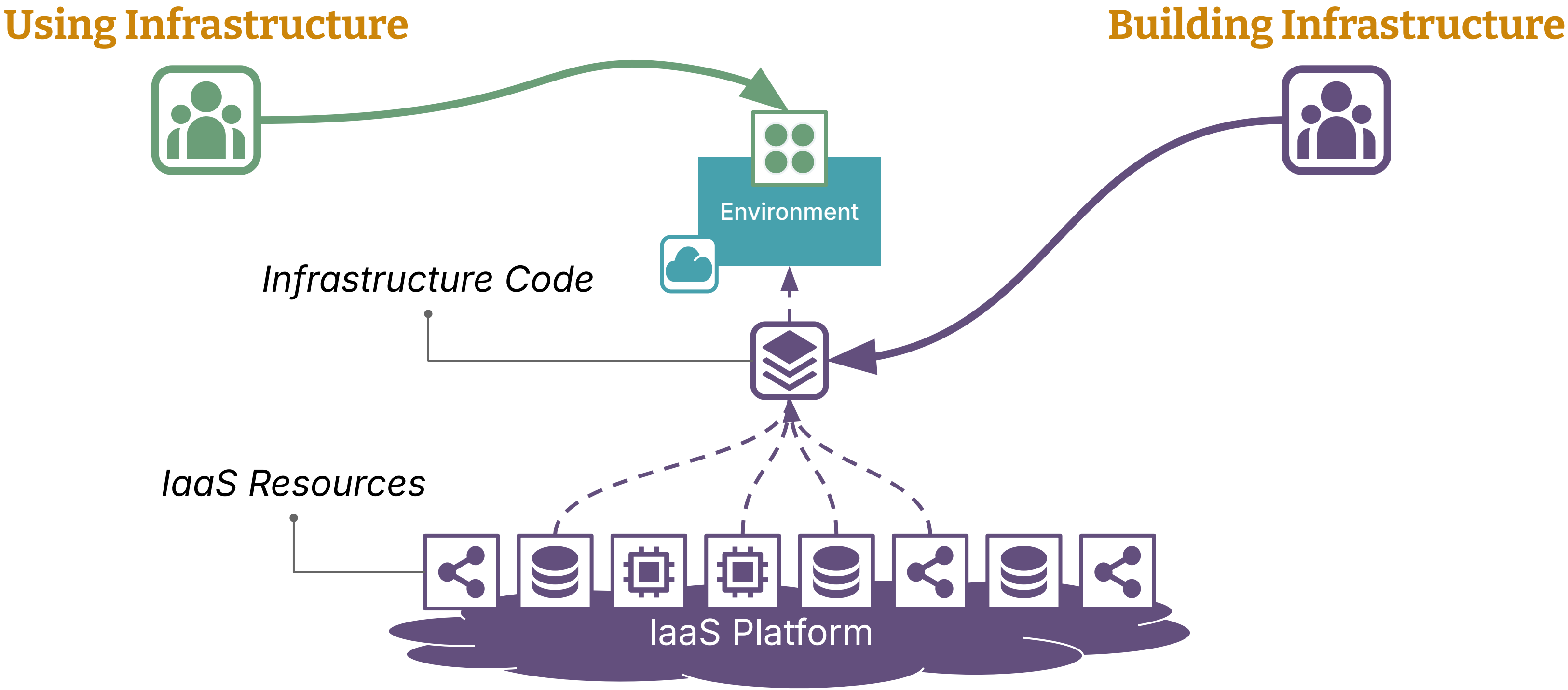
WTF happened?

We used the new tech to work in our old ways

Infrastructure code is low-level



Which creates a gap



How do we handle the gap?

Should we rethink the coding paradigm?

Declarative language

Reflects how an infrastructure engineer sees things

Encourages a static view of systems

Leads to hand-crafted “snowflakes as code”

Imperative language

More accessible to software developers

Doesn’t close the infrastructure knowledge gap

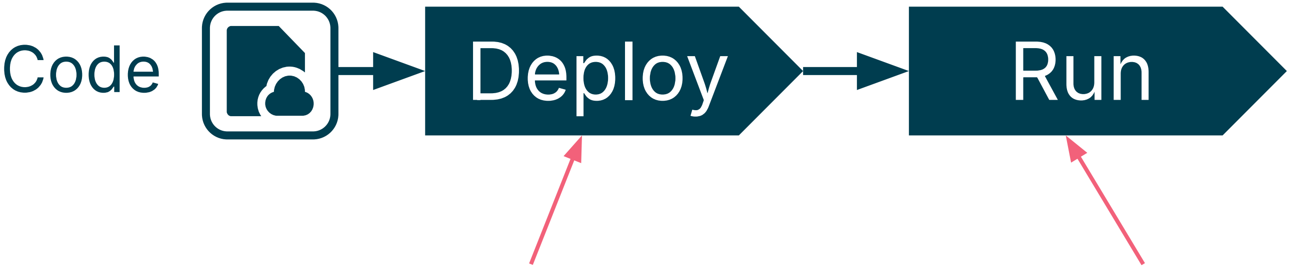
Shift infrastructure work to developers?

Maybe avoids handovers

Doesn’t reduce the effort needed

Makes sense for reusable components

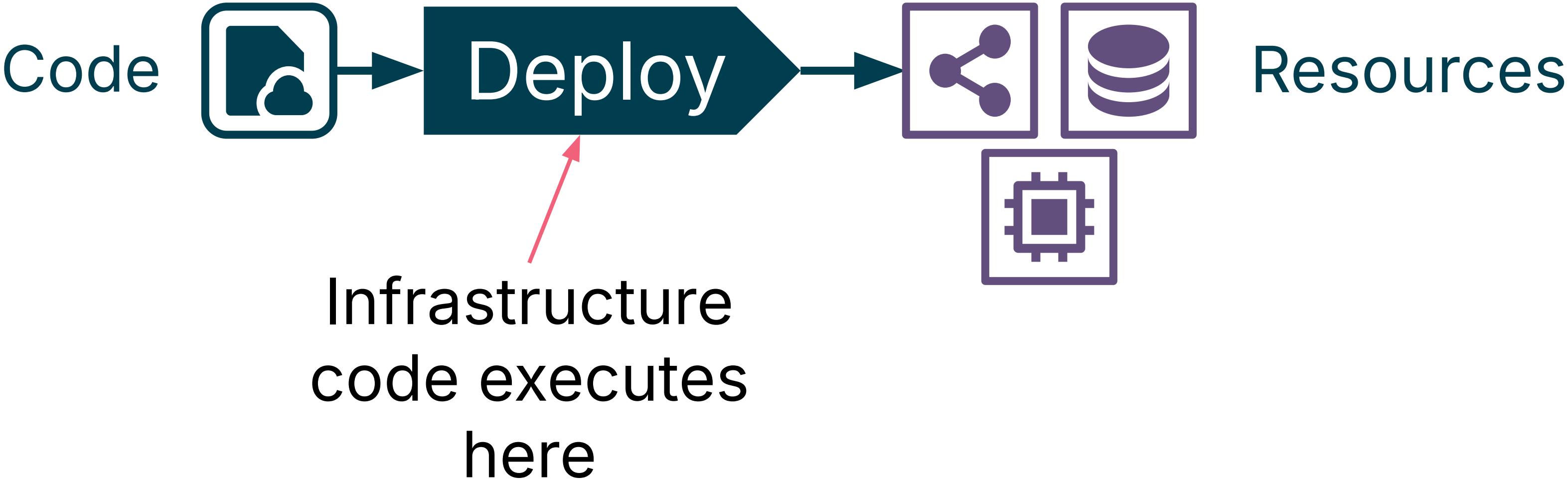
When code executes



Infrastructure code executes here

Application code executes here

When code executes



Infrastructure code executes here

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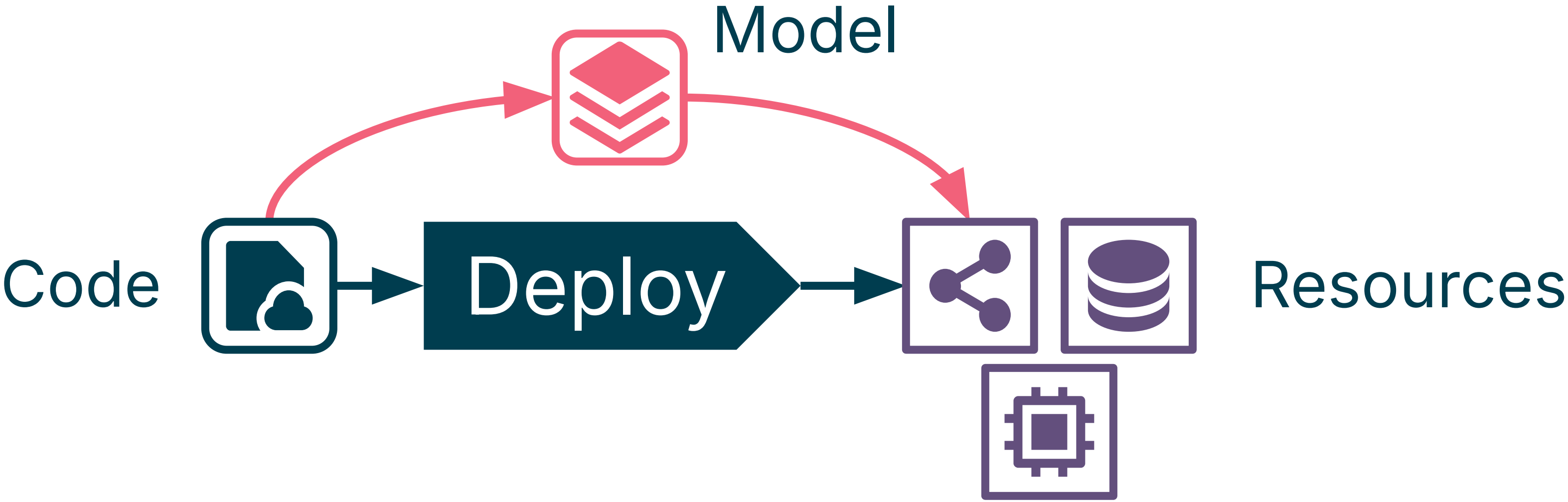
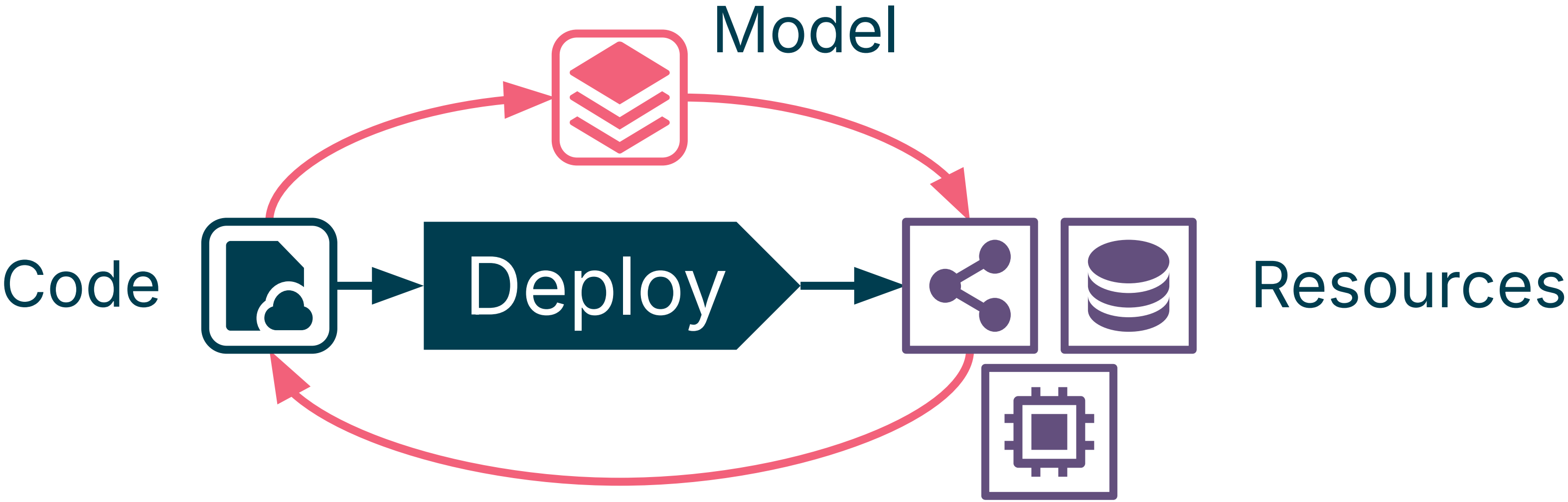
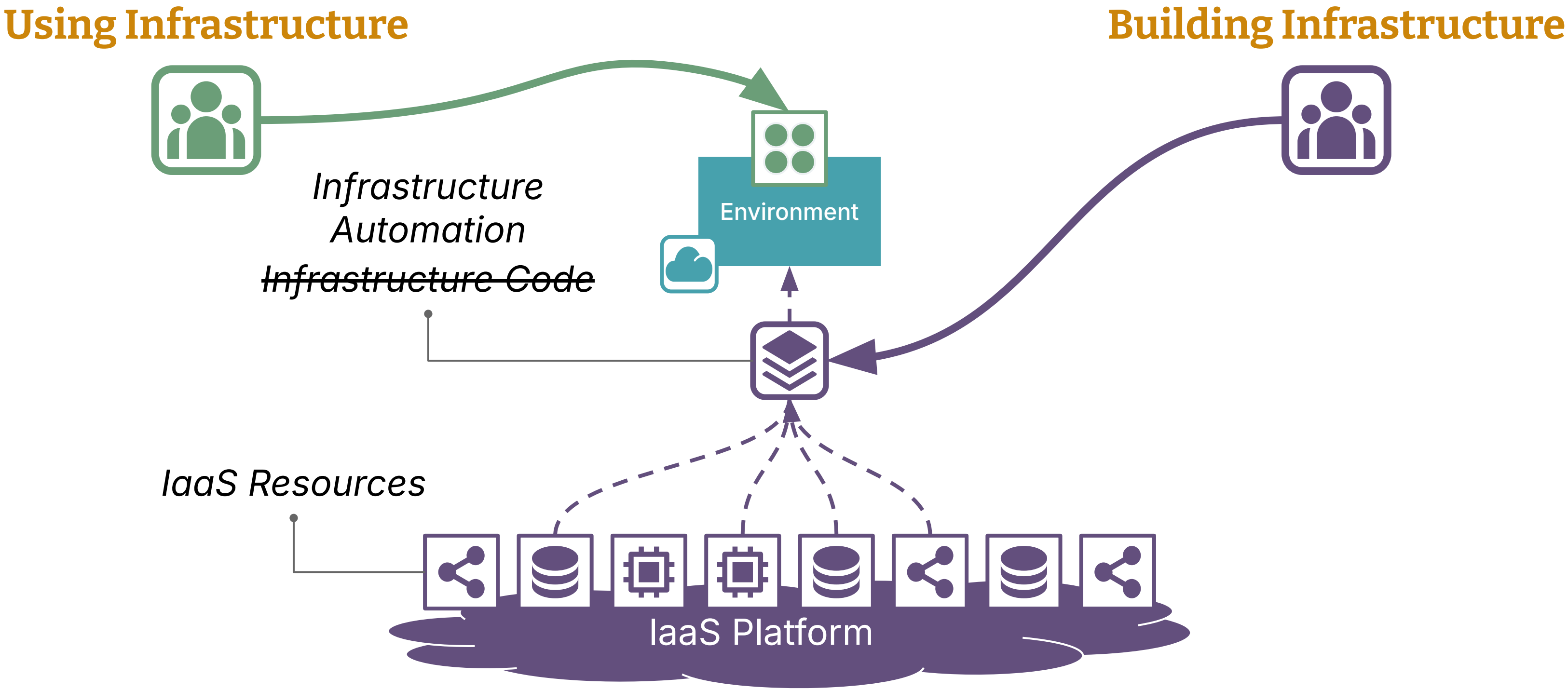
Imperative code, declarative model



Infrastructure as Model



We still have the gap



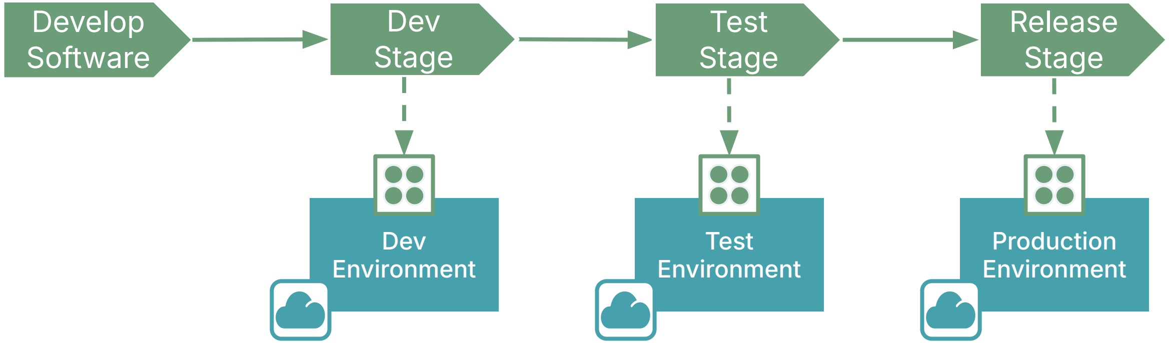
My fear

We will use the new tech to work in our old ways

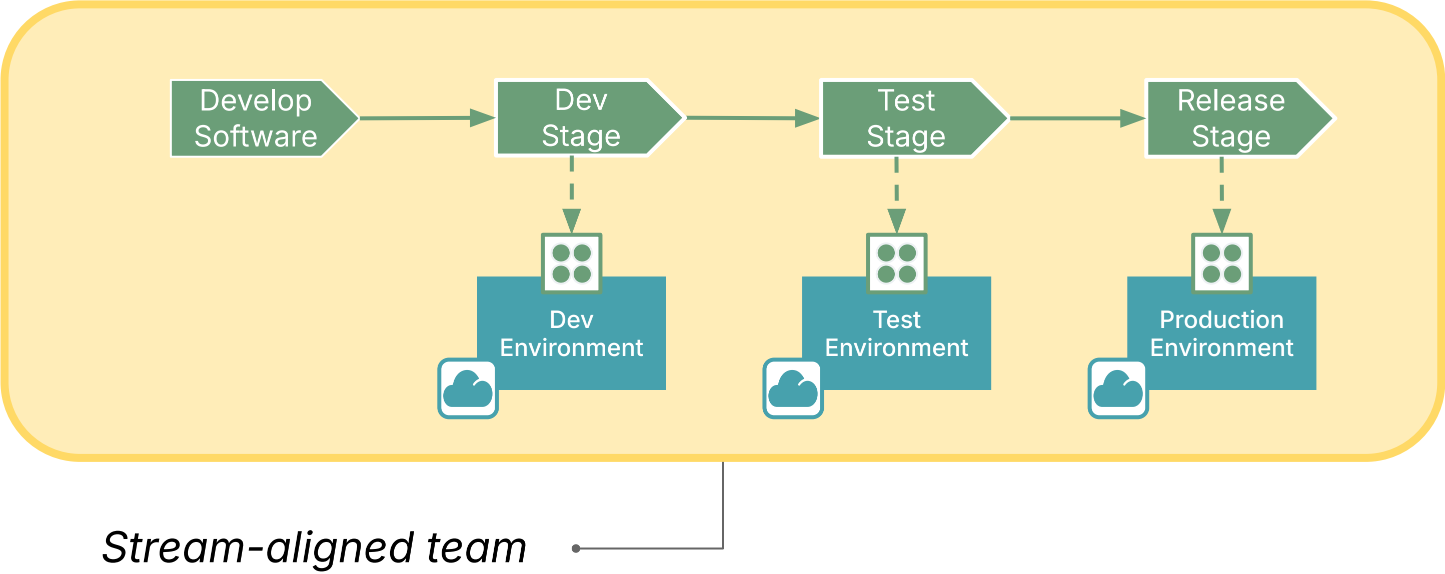
How do we handle the gap?

Maybe we should restructure our teams?

Who builds environments for software delivery?

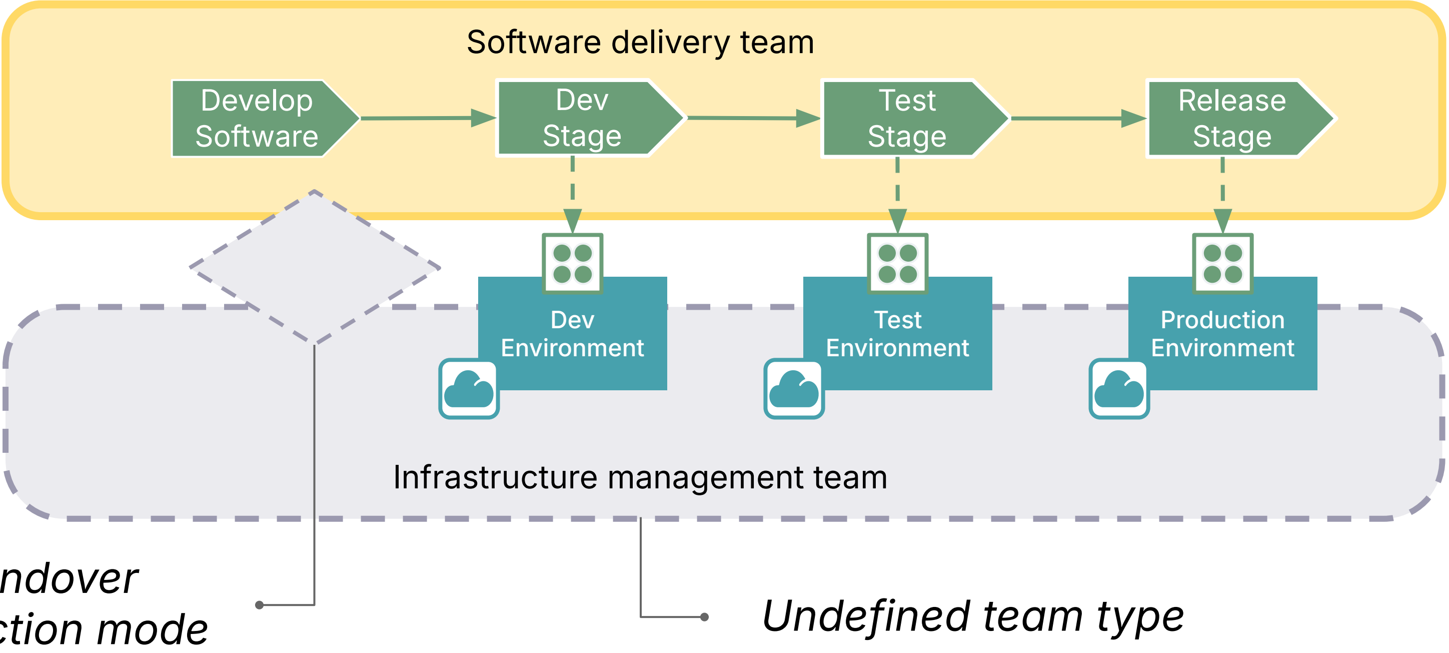


Option 1: Full-stack team

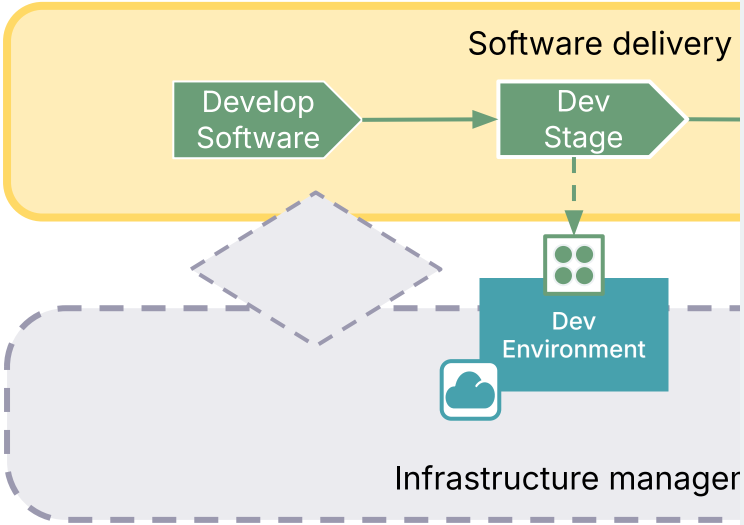


https://teamtopologies.com/

Option 2: Infrastructure management team



Typical infrastructure tasks



Change existing infrastructure

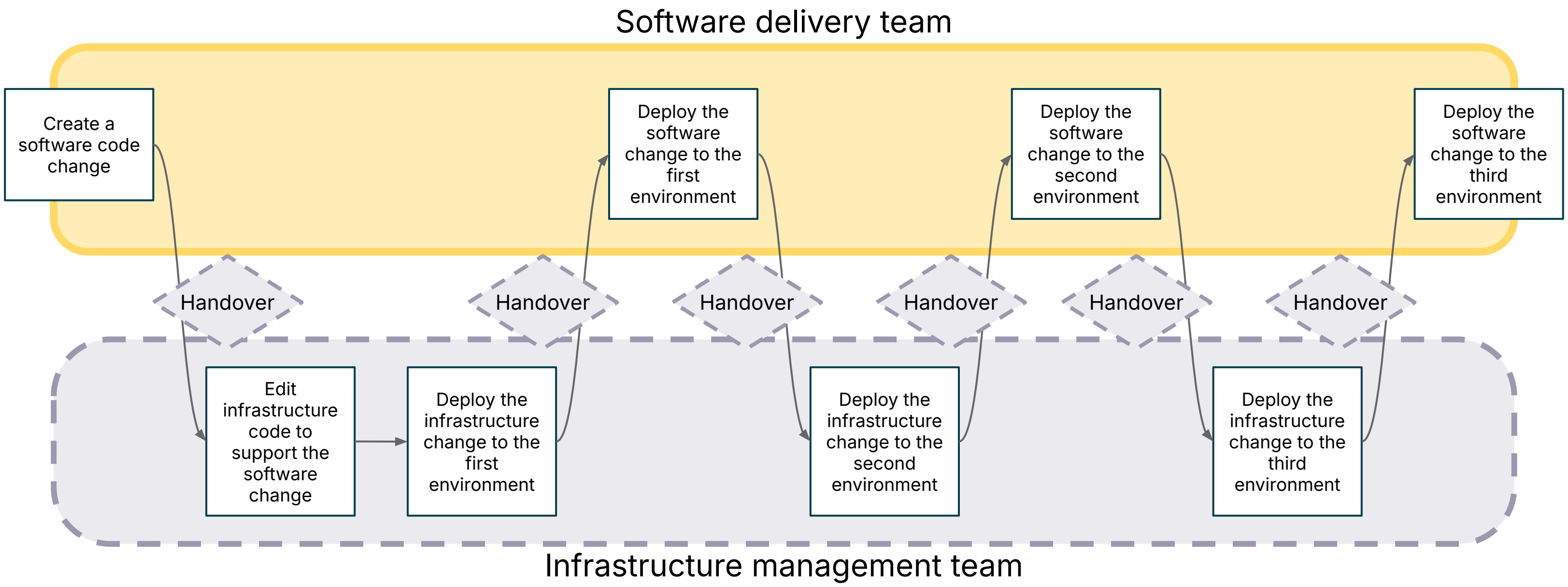
Add new infrastructure for an application

Patch and update systems

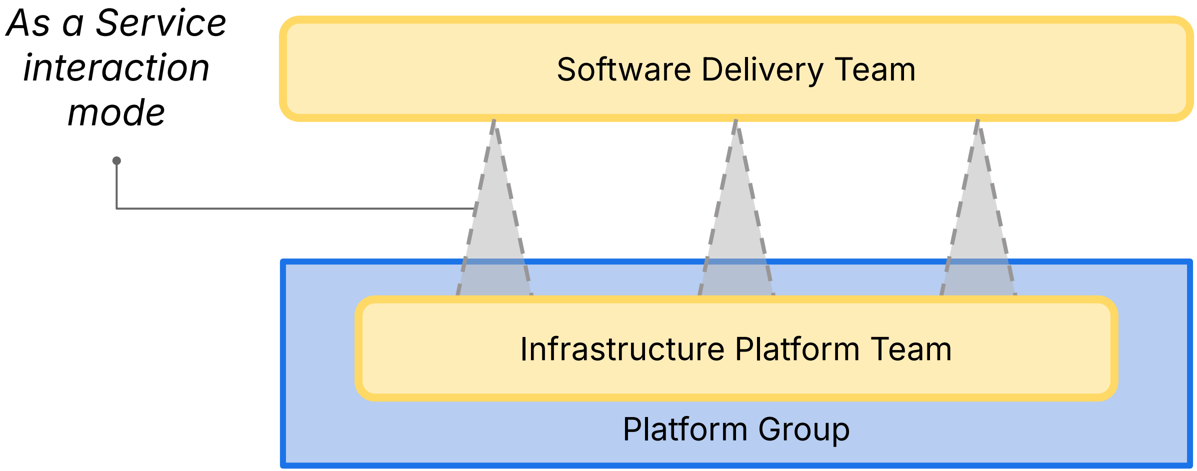
Upgrade systems

Create a new environment

Value stream


Software delivery team
Create a software code change
Deploy the software change to the first environment
Deploy the software change to the second environment
Deploy the software change to the third environment
Handover
Handover
Handover
Handover
Handover
Handover
Edit infrastructure code to support the software change
Deploy the infrastructure change to the first environment
Deploy the infrastructure change to the second environment
Deploy the infrastructure change to the third environment
Infrastructure management team

Option 3: Infrastructure Platform Team



Libraries, components

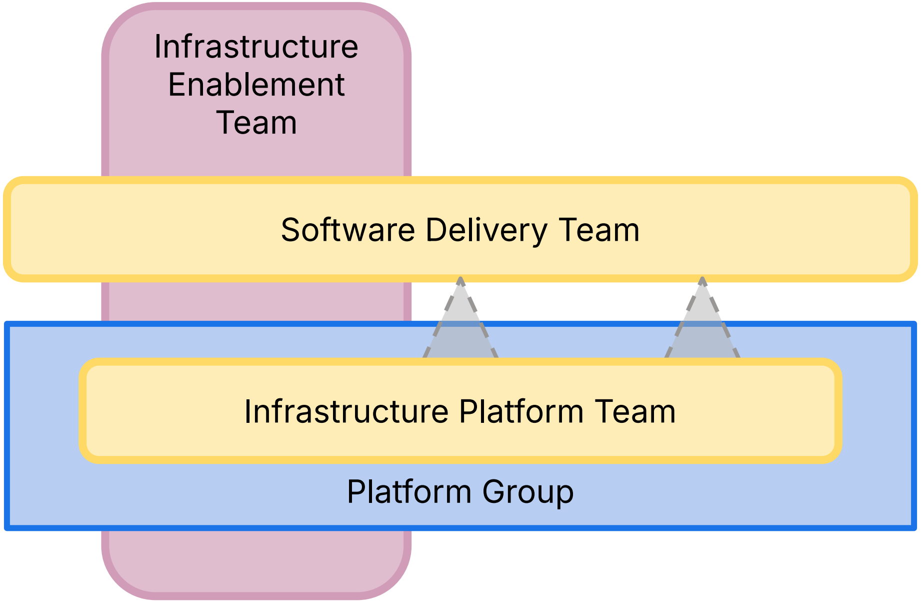
Scripts, tools

APIs

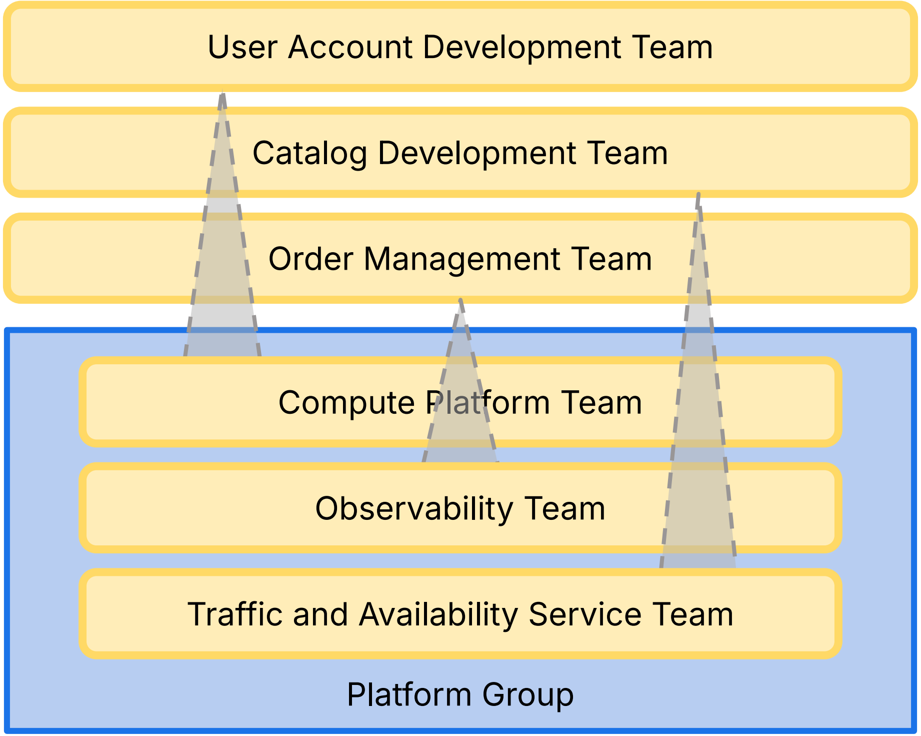
Developer portal, Web UI

Support, troubleshooting

Option 3b: Enablement teams



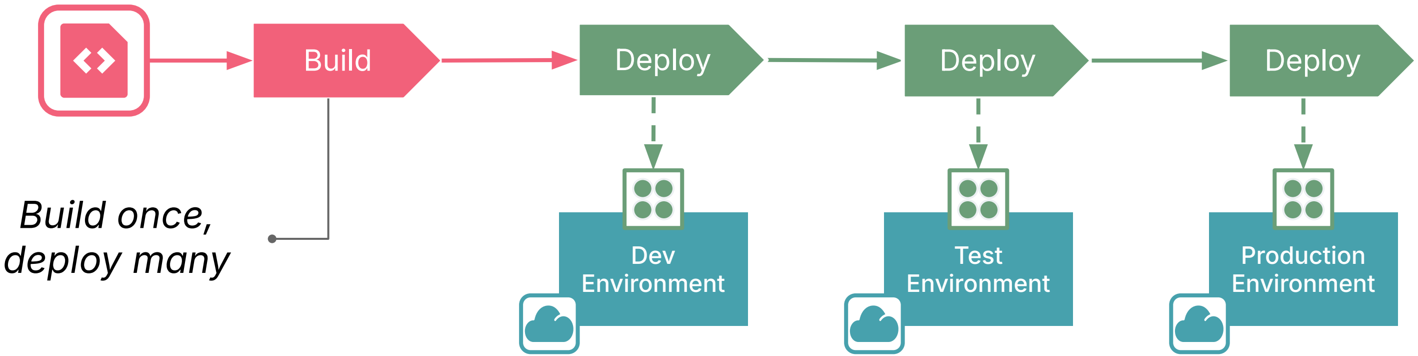
Scaling to multiple teams



How can we create self-service interaction modes?

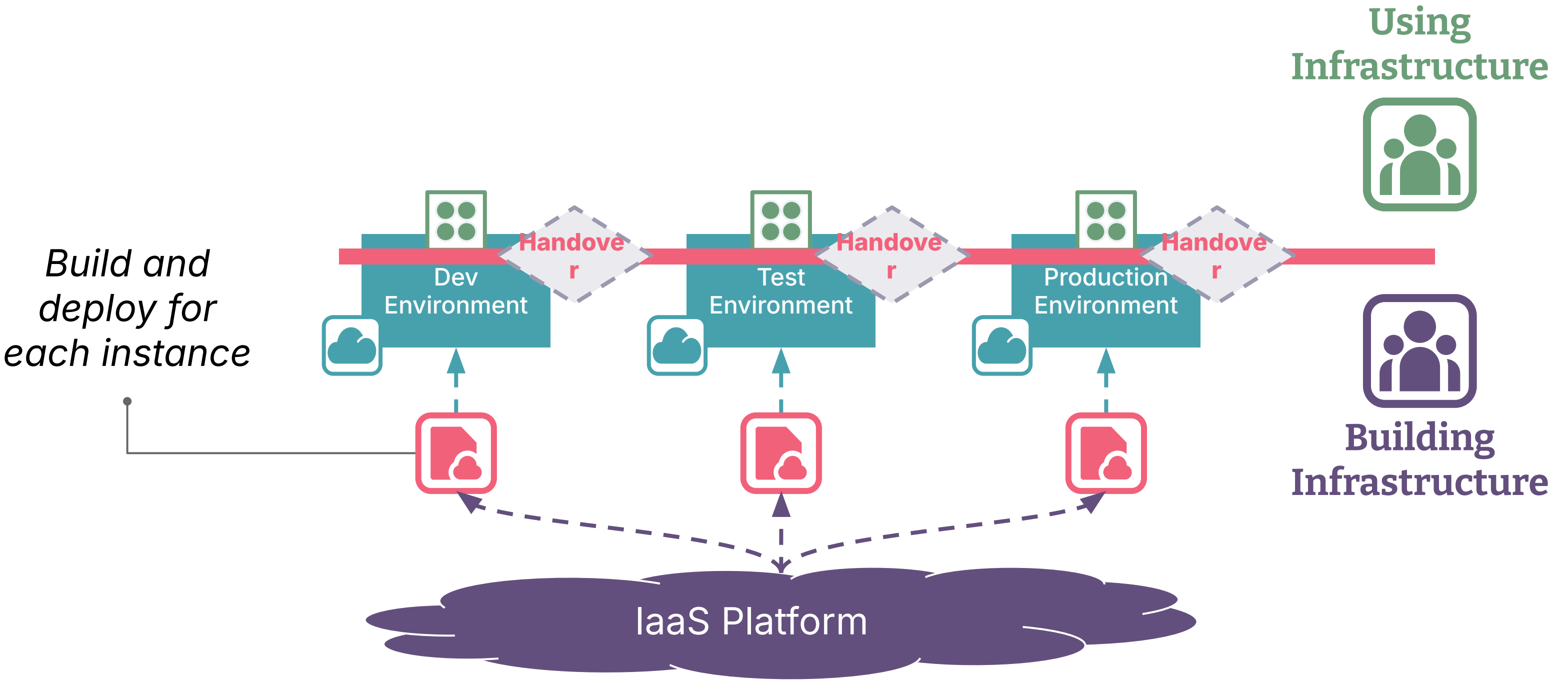
Rethink the infrastructure delivery model

How is software code typically delivered?

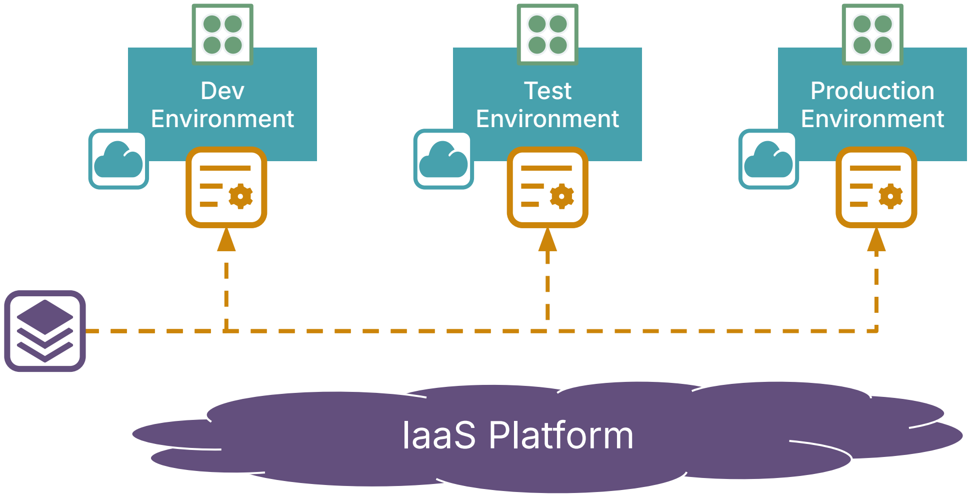


Build once, deploy many

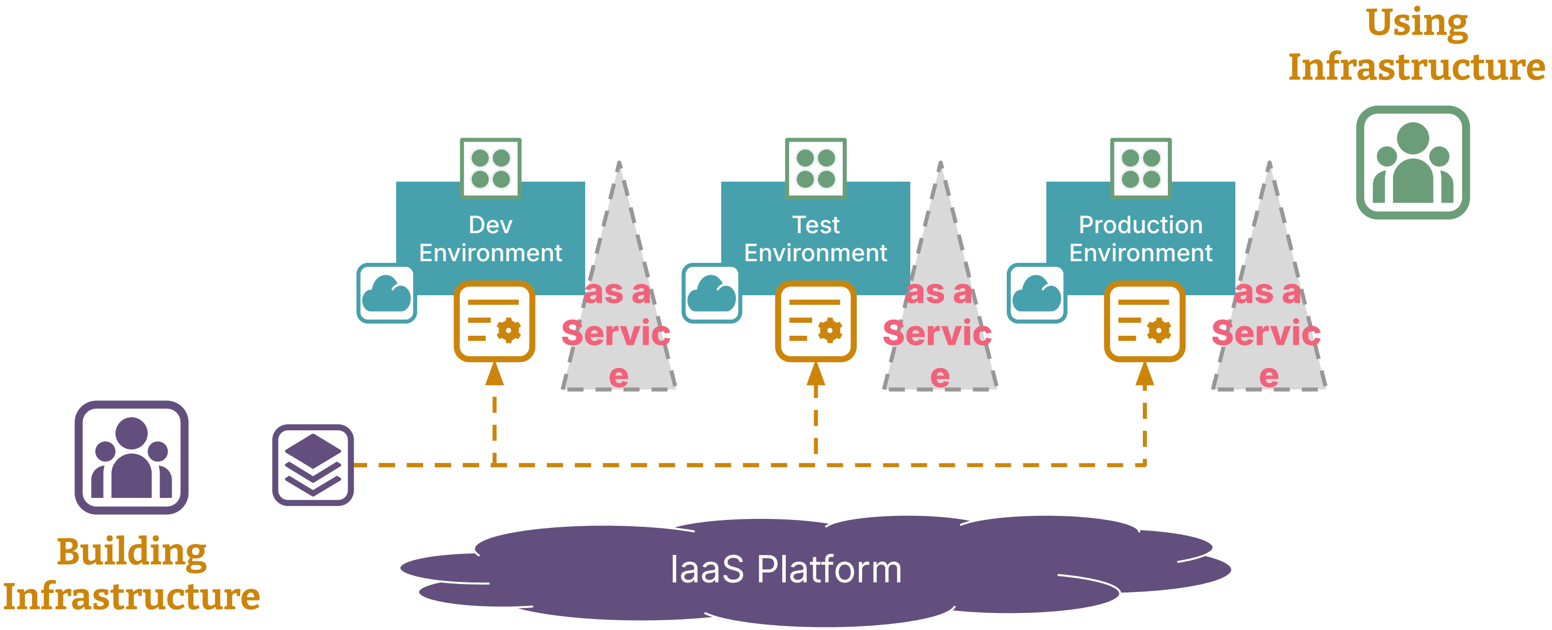
How is infrastructure code typically delivered?



Build infrastructure code once, deploy many



Changes who can carry out different tasks



This might vary by task

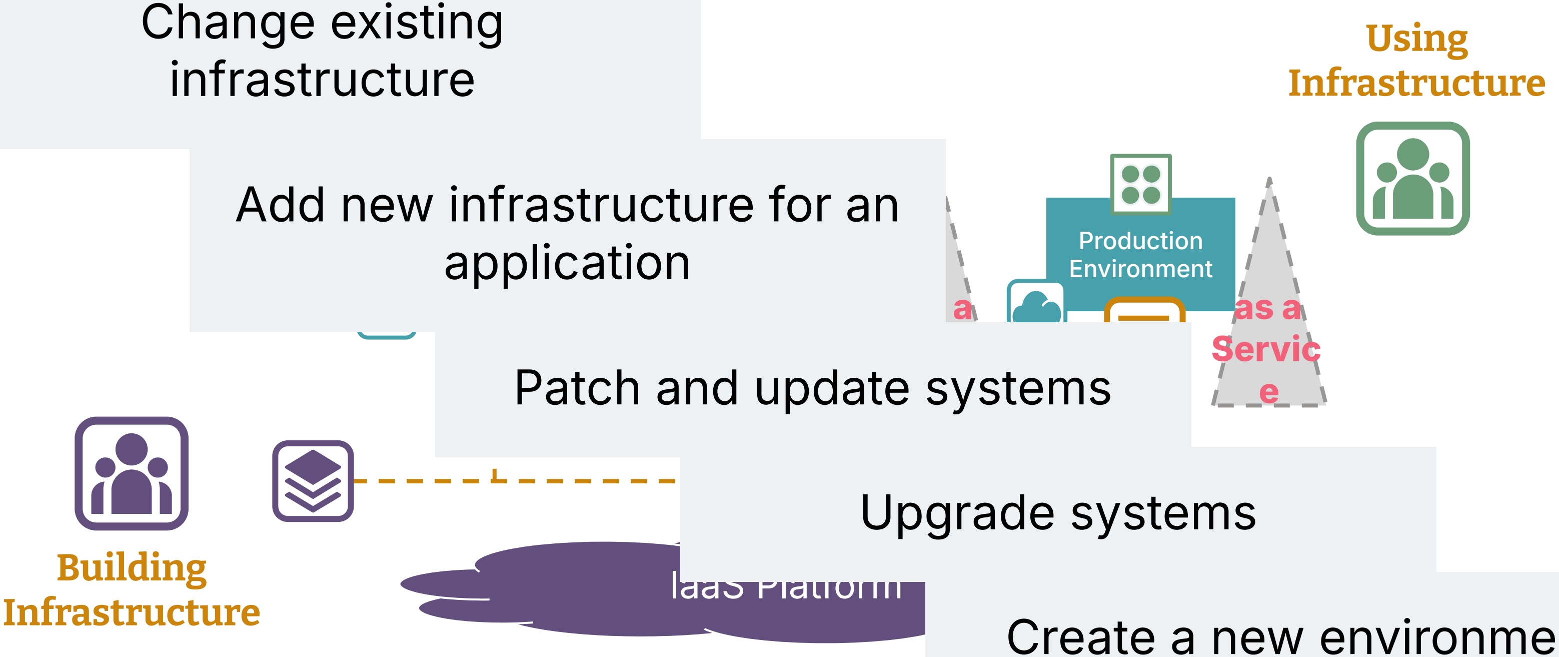
Change existing infrastructure

Add new infrastructure for an application

Patch and update systems

Upgrade systems

Create a new environment



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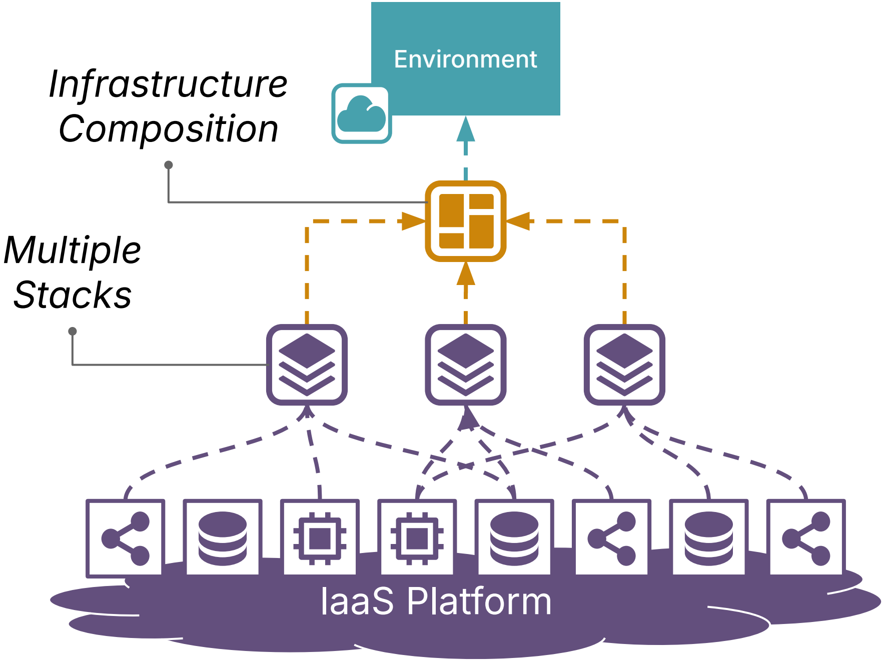
How can we create self-service interaction modes?

Create useful abstractions

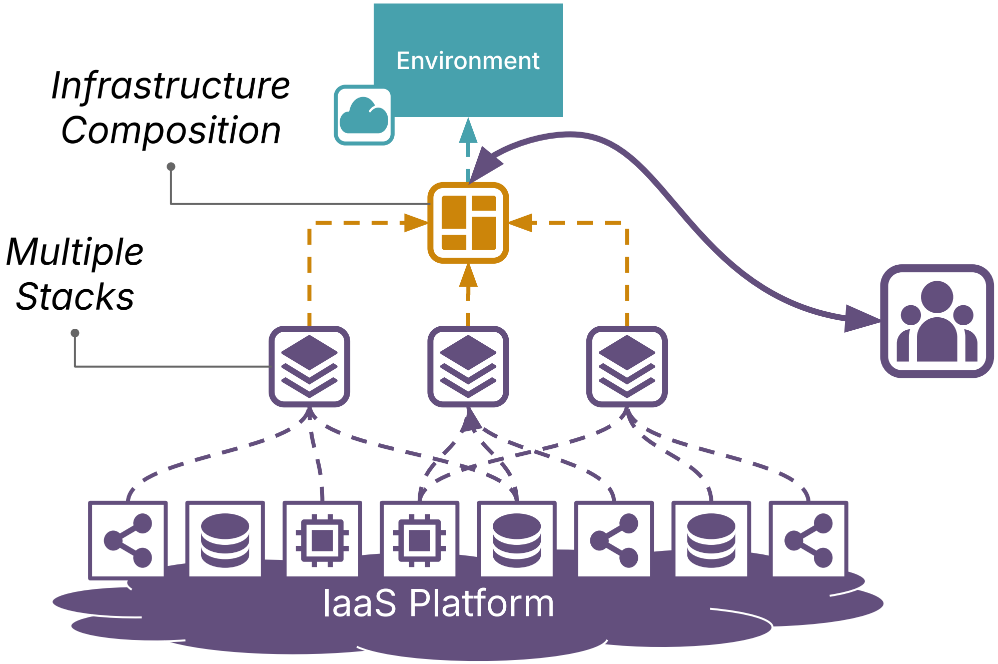
Abstraction is not about limiting what users can do

It's for managing cognitive context

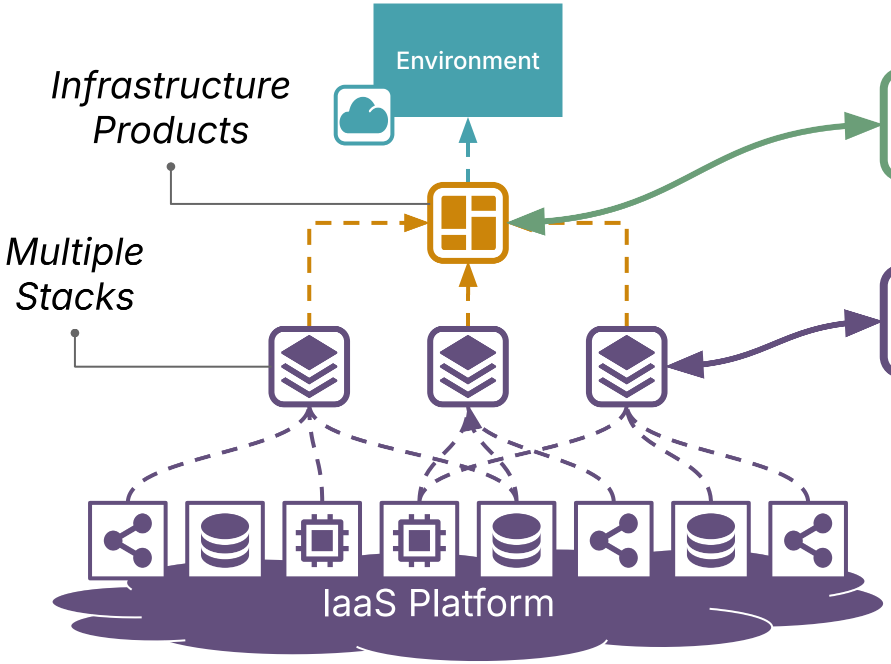
Compositions to assemble low-level components



Most composition frameworks are made for infrastructure builders



We should build infrastructure products



Infrastructure building needs to focus on journeys and outcomes of infrastructure users

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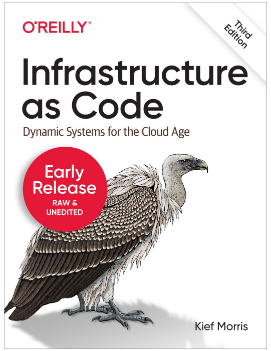
Thank you!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