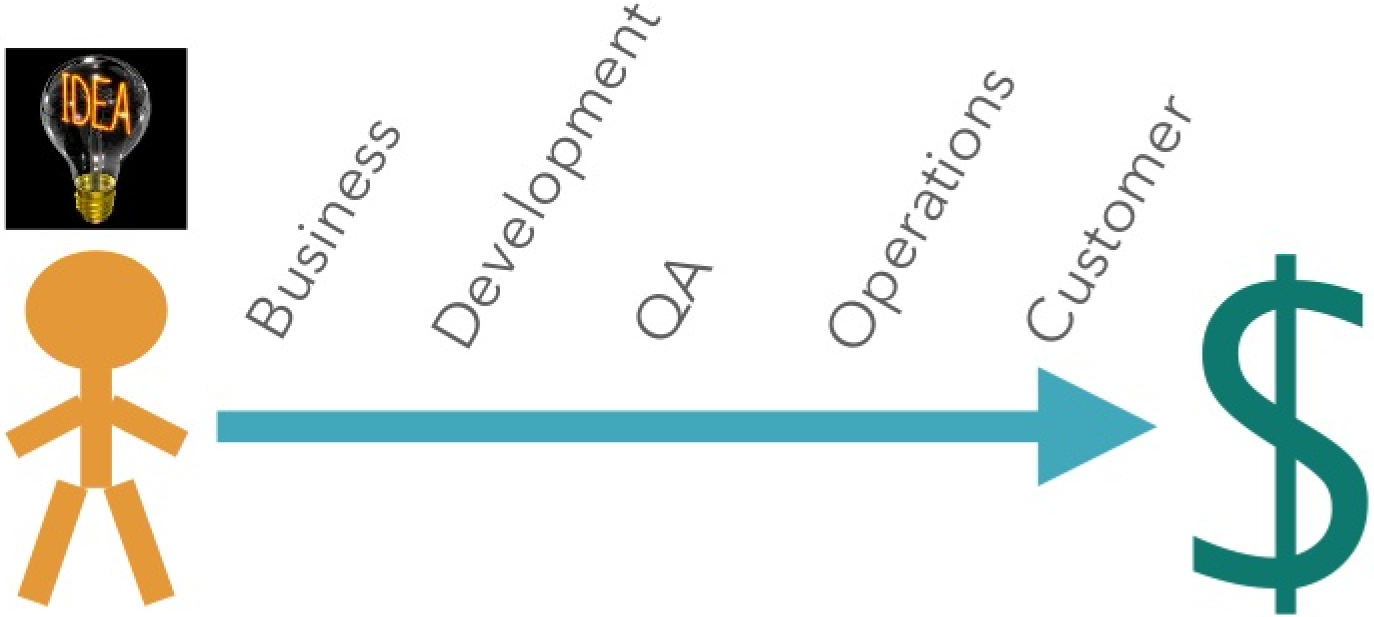
Architecting for Continuous Delivery

Microservices with Pivotal CF and Spring Cloud

Pivotal

What is Continuous Delivery?



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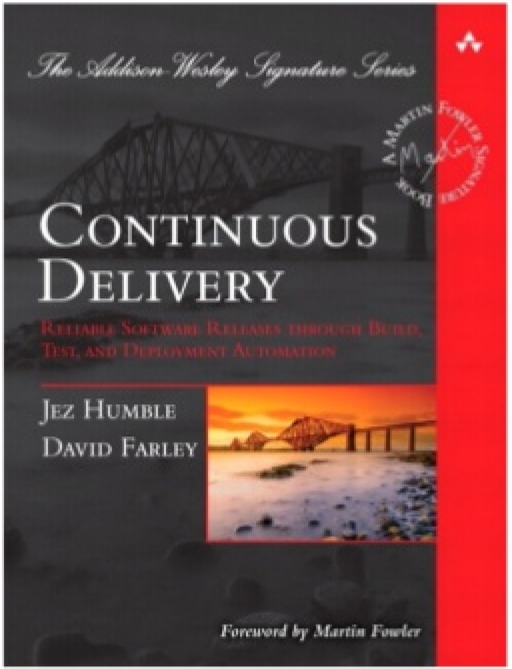
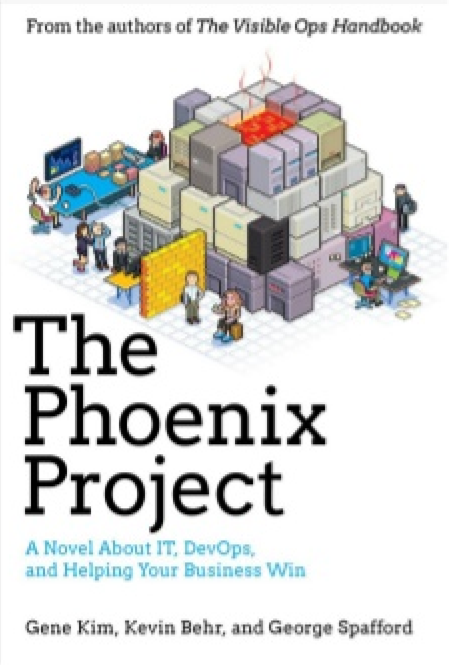
What is Continuous Delivery?

Continuous Delivery - How?


The Addison Wesley Signature Series
A Martin Fowler Signature Book
Continuous Delivery
Reliable Software Releases through Build, Test, and Deployment Automation
Jez Humble
David Farley
Foreword by Martin Fowler

The Pragmatic Programmers
Release It!
Design and Deploy Production-Ready Software
Michael T. Nygard


From the authors of The Visible Ops Handbook
The Phoenix Project
A Novel About IT, DevOps, and Helping Your Business Win
Gene Kim, Kevin Behr, and George Spafford

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Warner Music: Software Factories

Warner Software Factory Platform

- New applications and major updates
  - **Before**: 6 months, team of 10 developers
  - **After**: 6 weeks, same team
  - **Speed/Agility**: 400% faster on new platform
  - **HR Hard Savings:** $1.1M per application update delivered

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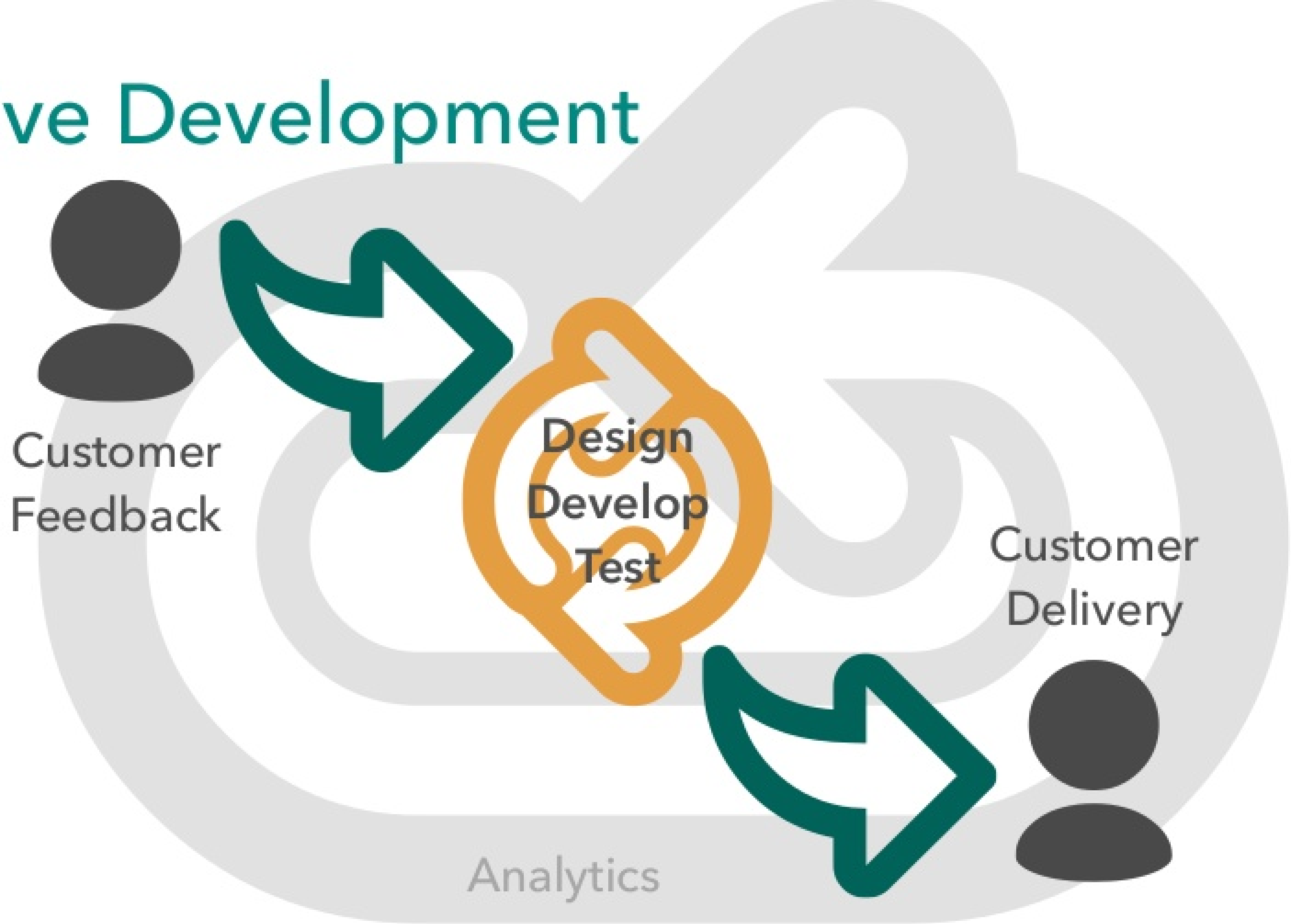
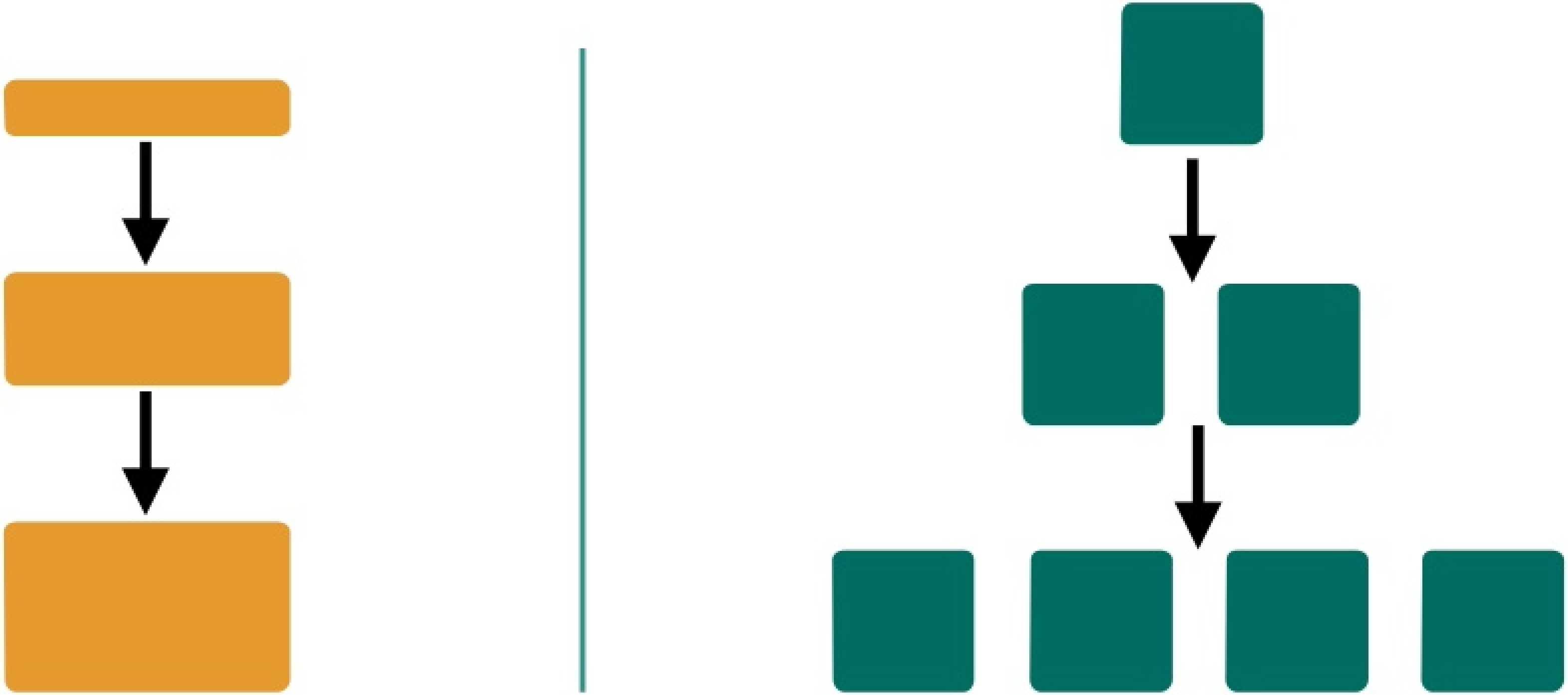
Iterative Development



Horizontal Scale



Slow/Expensive

Fast/Cheap

Diversity of Clients

In January 2014, mobile devices accounted for 55% of Internet usage in the United States. Apps made up 47% of Internet traffic and 8% of traffic came from mobile browsers.

http://money.cnn.com/2014/02/28/technology/mobile/mobile-apps-internet/

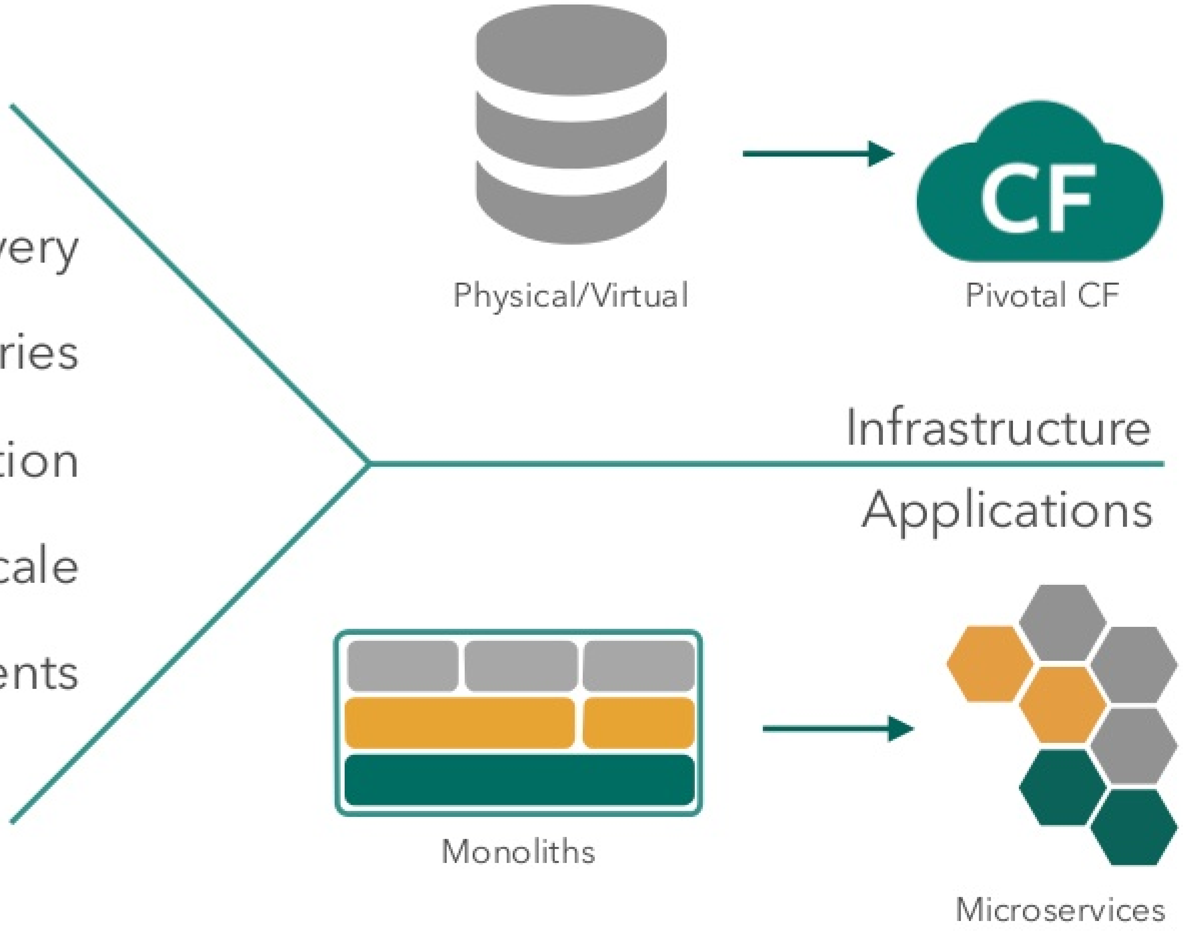
Continuous Delivery

Software Factories

Feedback → Rapid Iteration

Horizontal Scale

Diversity of Clients



Physical/Virtual

Pivotal CF

Infrastructure

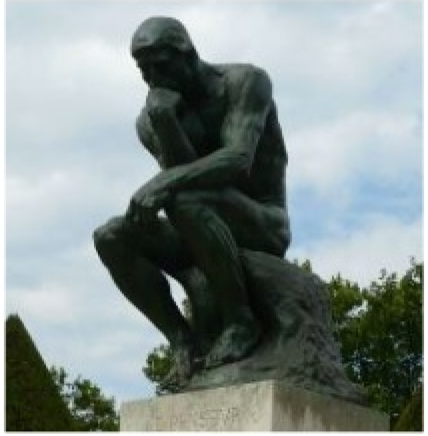
Applications

Monoliths

Microservices

New Architectural Constraints

- Pivotal CF optimizes for 12 Factor Linux applications



Twelve Factors

THE TWELVE-FACTOR APP

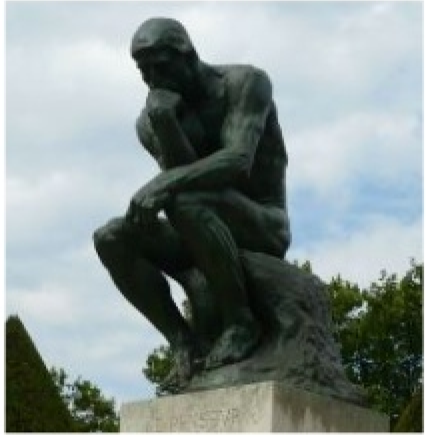
- One Codebase/Many Deploys
- Explicit Isolated Dependencies
- Config via Environment
- Attached Backing Services
- Separate Build/Release/Run
- Stateless Processes
- Export Services via Port Bindings
- Scale Out via Processes
- Disposable Instances
- Dev/Prod Parity
- Logs == Event Streams
- Admin Tasks == Processes

http://12factor.net

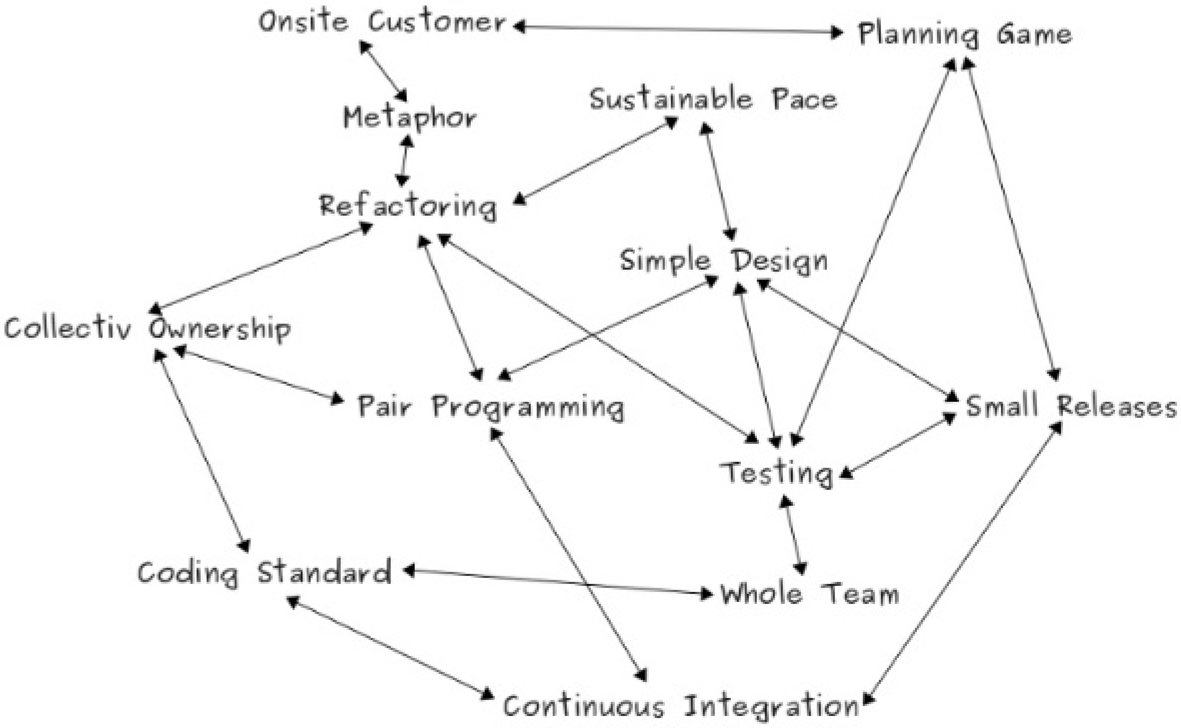
Pivotal

New Architectural Constraints

- Pivotal CF optimizes for 12 Factor Linux applications
- Microservices: a radical departure from traditional monolithic applications
- In both cases, the enterprise is forced to "think different."

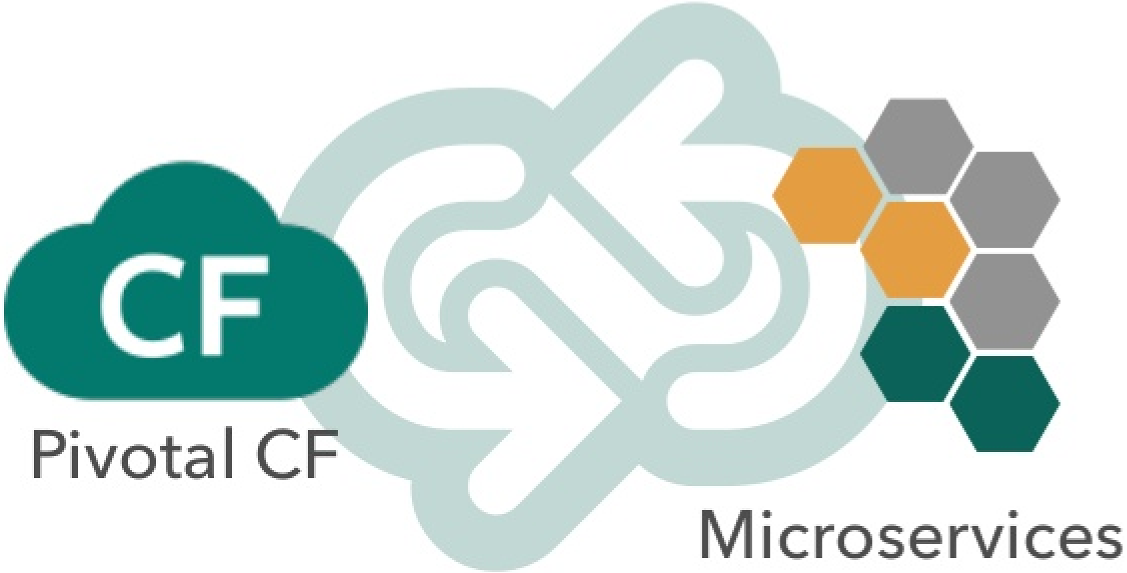


How XP Practices Support Each Other



http://www.kusmin.eu/wiki/index.php/How_XP_Practices_Support_Each_Other

A Mutualistic Symbiotic Relationship…



http://en.wikipedia.org/wiki/Symbiosis#Mutualism

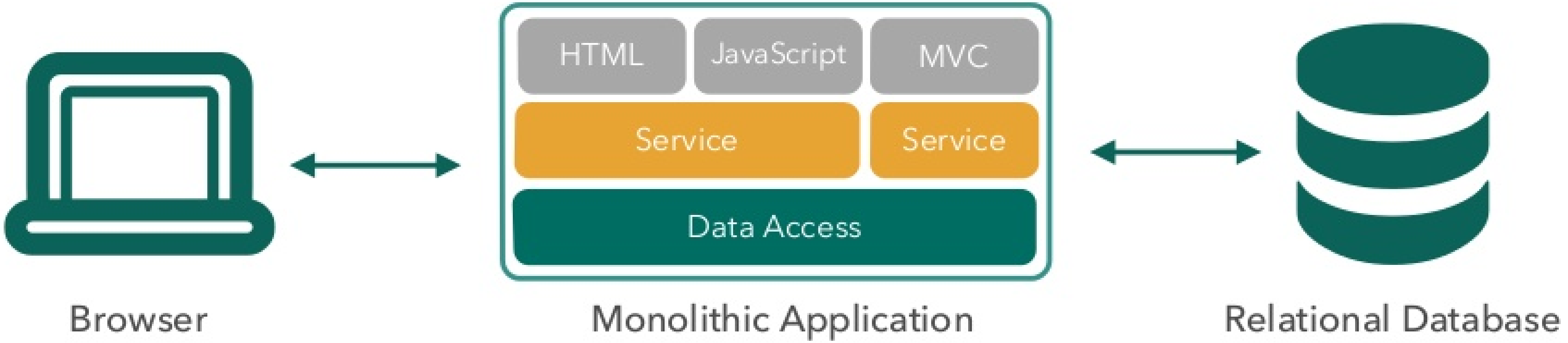
Microservices Overview

Simple vs. Easy

- **Simple**
  - *sim- plex*
  - one fold/braid
  - vs complex

- **Easy**
  - *ease < aise < adjacens*
  - lie near
  - vs hard

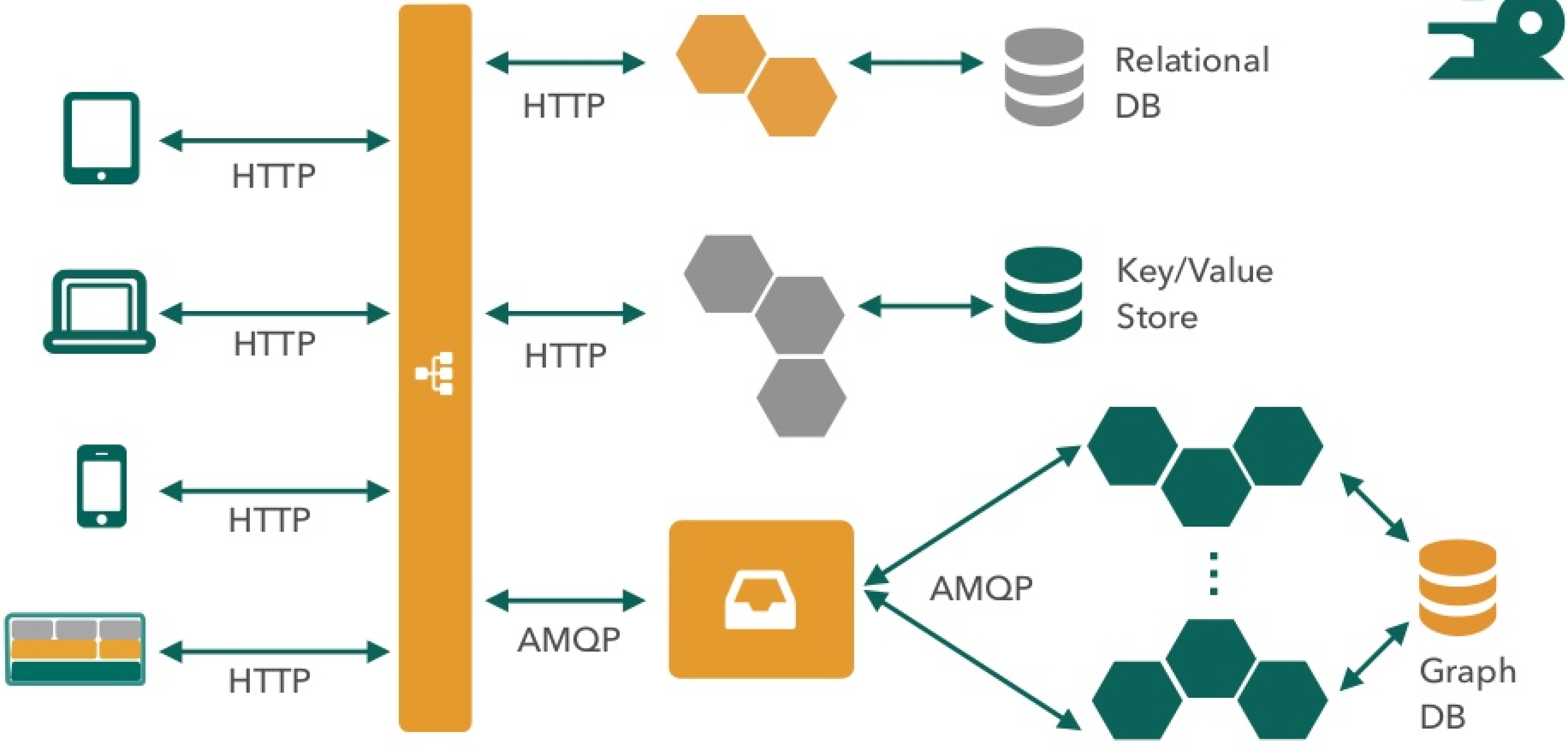
Monolithic Architecture



Monolithic Architectures

- Complex / Easy
- Modularity Dependent Upon Language / Frameworks
- Change Cycles Tightly Coupled / Obstacle to Frequent Deploys
- Inefficient Scaling
- Can Be Intimidating to New Developers
- Obstacle to Scaling Development
- Requires Long-Term Commitment to Technical Stack

Microservice Architecture



Microservice Architectures

- Simple / Hard
- Modularity Based on Component Services
- Change Cycles Decoupled / Enable Frequent Deploys
- Efficient Scaling
- Individual Components Less Intimidating to New Developers
- Enables Scaling of Development
- Eliminates Long-Term Commitment to Technical Stack