

a Diminishing Delta between Development & Delivery

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the Macro of Microservices

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the Pivotal project

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say open source!



Josh Long (龙之春)

the Spring Developer Advocate

Introduction



Building Microservices with Spring Boot LiveLessons

with Josh Long & Phillip Webb

Addison-Wesley

livelessons
video instruction from technology experts

- <http://cloudnativejava.io>

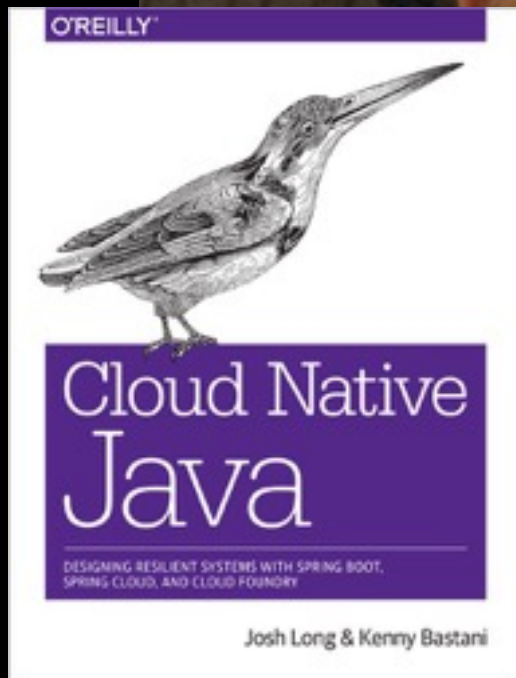
- @starbuxman

- jlong@pivotal.io

- Java Champion

- open-source contributor

(Spring Boot, Spring Cloud, Spring Integration, Vaadin, Activiti, etc etc)



Pivotal



redis



CLOUD
FOUNDRY™

spring 

 RabbitMQ™

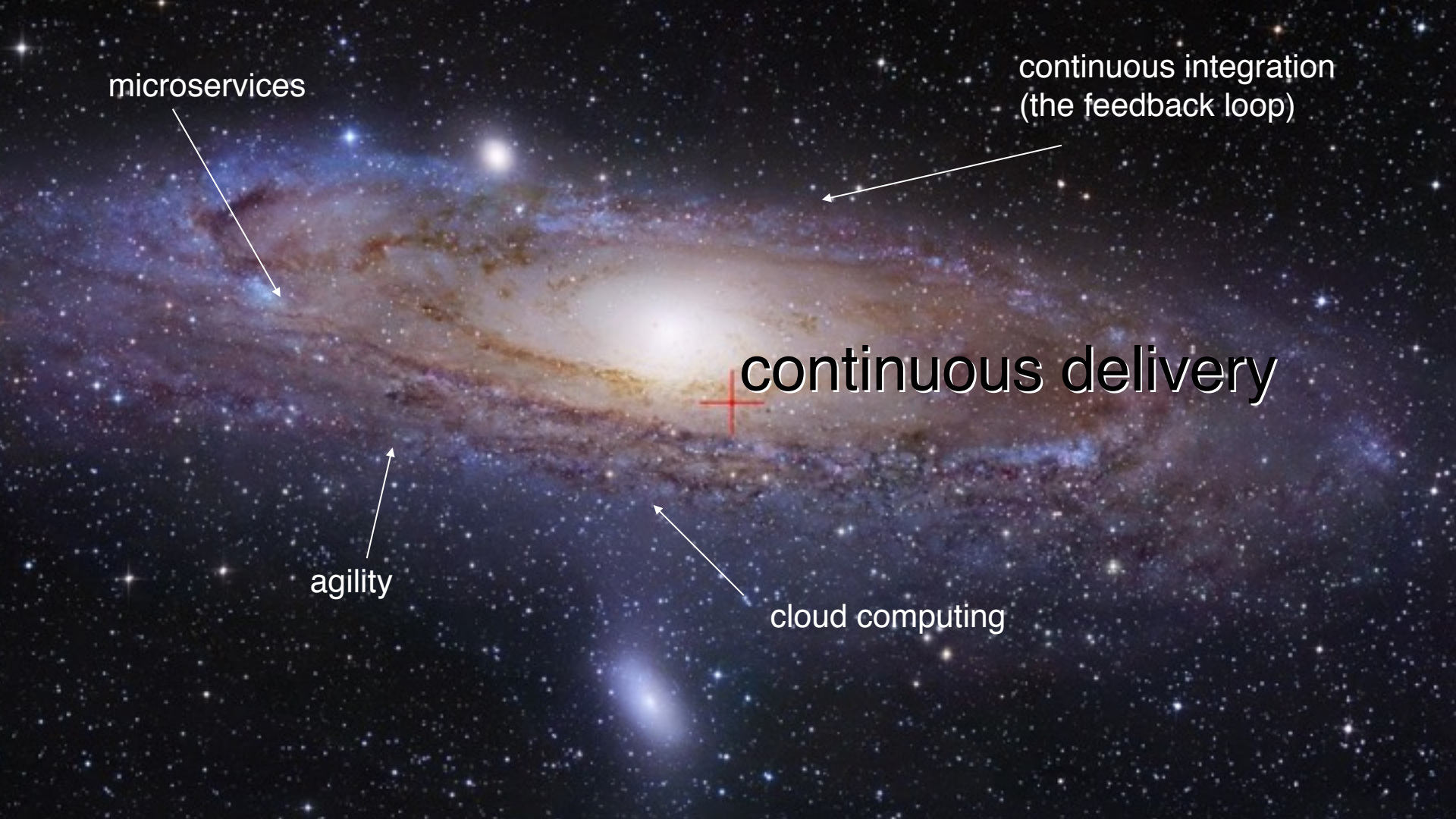
microservices

continuous integration
(the feedback loop)

continuous delivery

agility

cloud computing

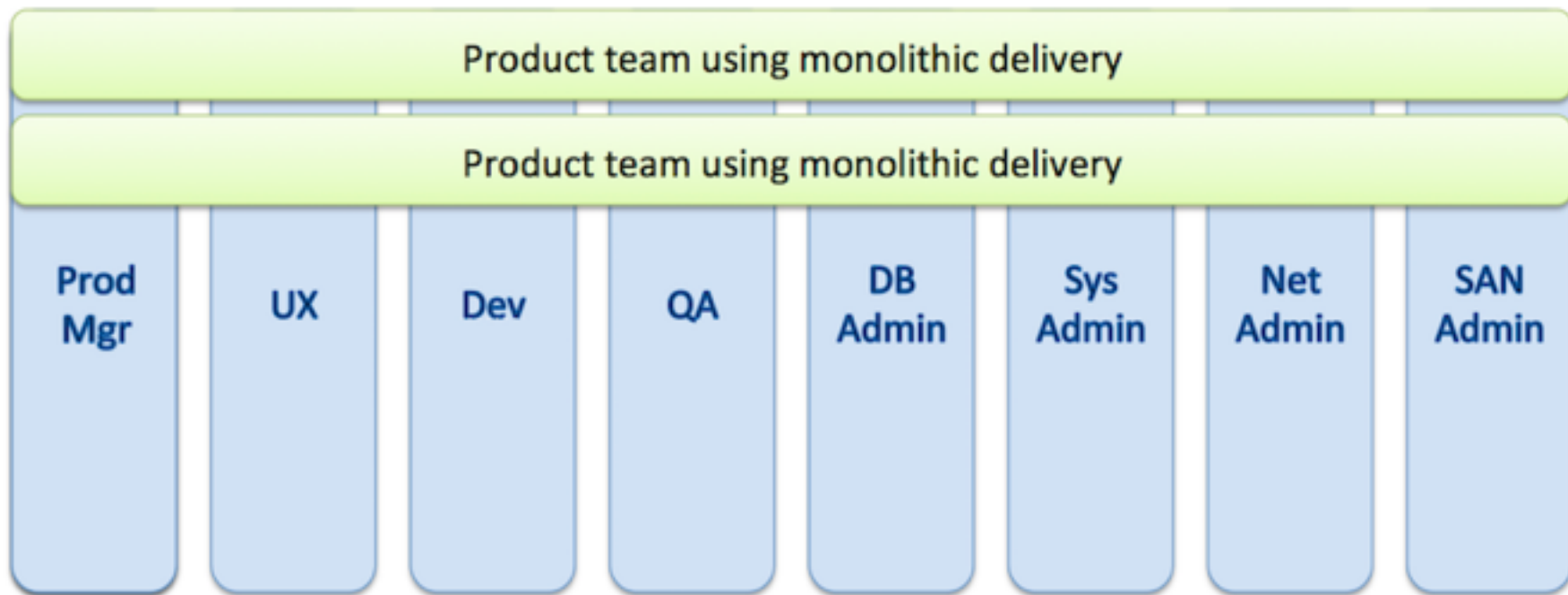




We follow these principles:

- Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
- Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
- Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
- Business people and developers must work together daily throughout the project.
- Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
- The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
- Working software is the primary measure of progress.
- Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
- Continuous attention to technical excellence and good design enhances agility.
- Simplicity--the art of maximizing the amount of work not done--is essential.
- The best architectures, requirements, and designs emerge from self-organizing teams.
- At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

to the cloud!

**Source:**

Adrian Cockcroft

<http://www.slideshare.net/adrianco>

devops - it's about systems thinking

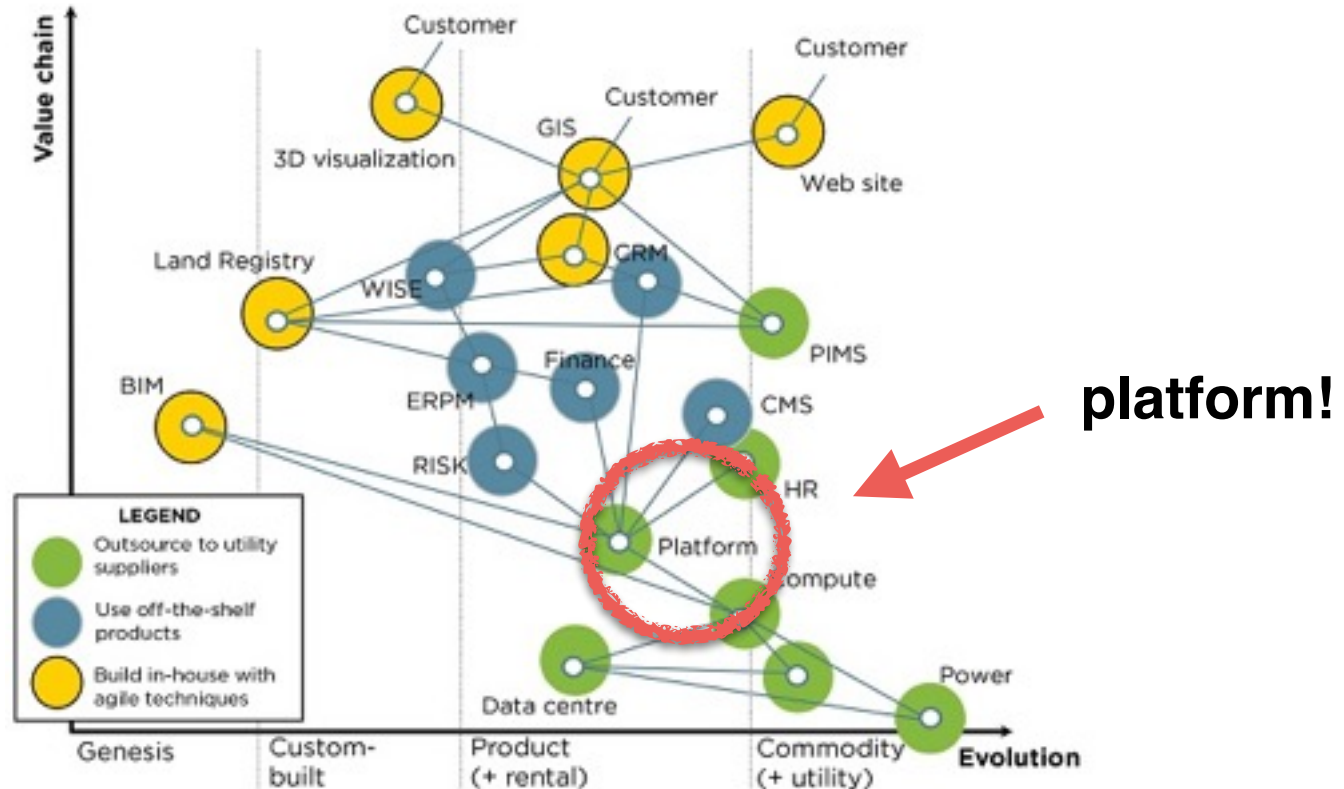


The First Way emphasizes the performance of the entire system, as opposed to the performance of a specific silo of work or department — this can be as large as a division (e.g., Development or IT Operations) or as small as an individual contributor (e.g., a developer, system administrator).

Gene Kim - “the Devops Handbook”

<http://itrevolution.com/the-three-ways-principles-underpinning-devops/>

cloud helps automate operations



Simon Wardley, Value Chain Mappings

<http://www.computerweekly.com/opinion/Value-chain-mapping-learning-to-use-IT-as-a-strategic-weapon>



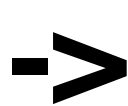
Amazon.com created AWS to reduce communication cost

Bezos: Approximately nine years ago we were wasting a lot of time internally because, to do their jobs, our applications engineers had to have daily detailed conversations with our networking infrastructure engineers. Instead of having this fine-grained coordination about every detail, we wanted the data-center guys to give the apps guys a set of dependable tools, a reliable infrastructure that they could build products on top of.

The problem was obvious. We didn't have that infrastructure. So we started building it for our own internal use. Then we realized, "Whoa, everybody who wants to build web-scale applications is going to need this." We figured with a little bit of extra work we could make it available to everybody. We're going to make it anyway—let's sell it.

Amazon CEO Jeff Bezos

http://www.wired.com/magazine/2011/11/ff_bezos/all/1



IBM Bluemix™

HP Helion

Pivotal



..)

“ Imagine if architects had to be the janitor for every building they designed. This is how the development team felt prior to moving to Windows Azure. ”

Duncan Mackenzie - Nov 07, 2011

<http://infoq.com/articles/Channel-9-Azure>



the platform improves governance

...less tickets, more software, faster, safer

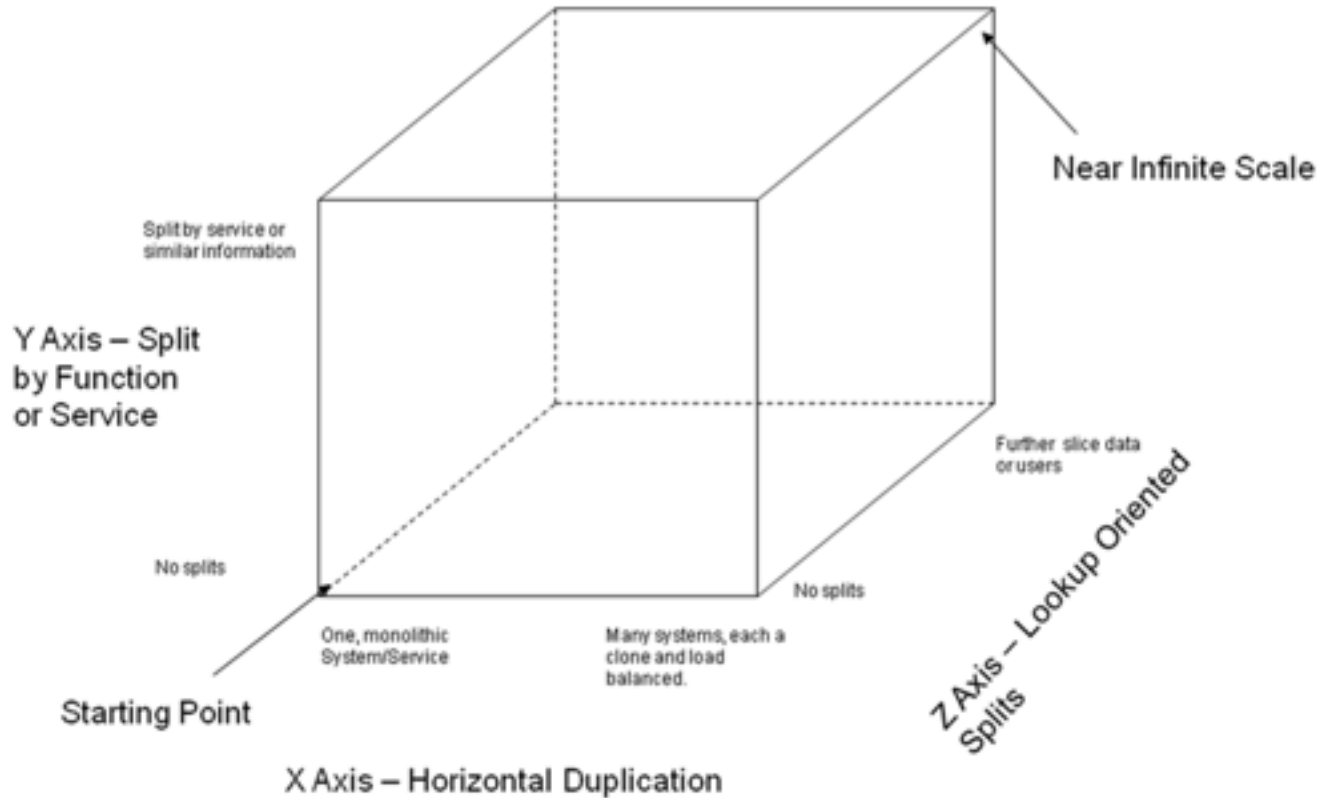


writing cloud-native software

a monolith might be the right answer

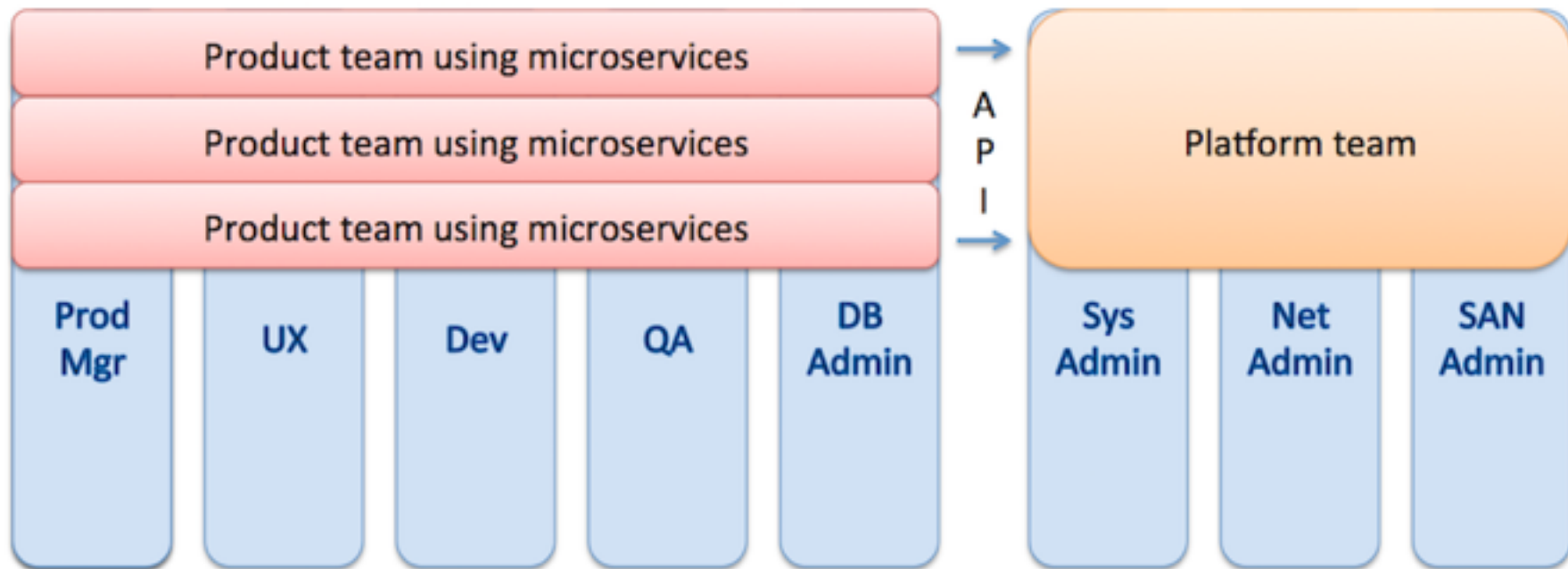


microservices enable runtime scale



Martin L. Abbot, Michael T. Fisher, *the Art of Scalability*

<http://theartofscalability.com/>

**Source:**

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<http://www.slideshare.net/adrianco>

Mel Conway's law:

..organizations which design systems are constrained to produce designs which are copies of the communication structures of these organizations

corollary:

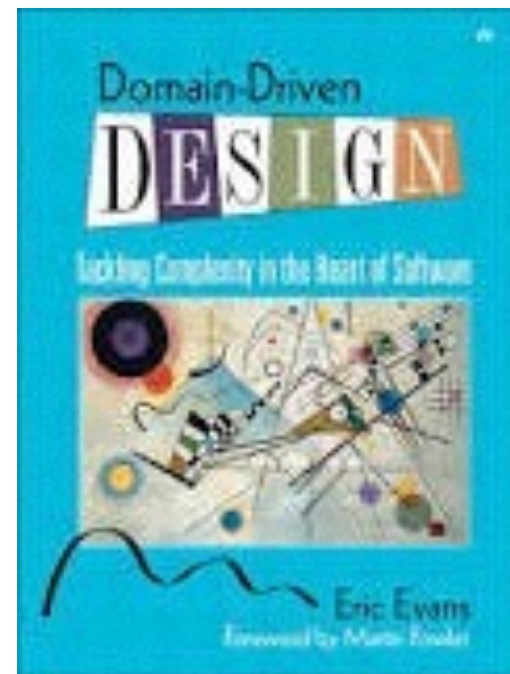
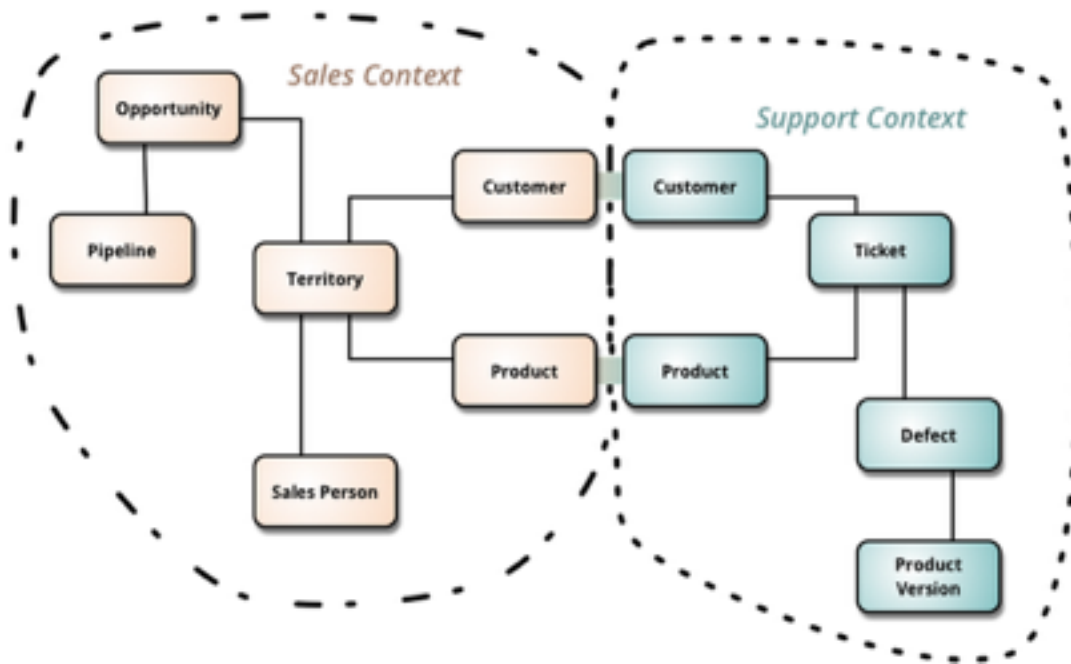
you can refactor your organization to improve your systems



Martin Fowler
15 January 2014

microservices enable bounded contexts

Bounded Context is a central pattern in Domain-Driven Design. It is the focus of DDD's strategic design section which is all about dealing with large models and teams. DDD deals with large models by dividing them into different Bounded Contexts and being explicit about their interrelationships.



modern computer science values **quantity, velocity** over **quality**

- agile programming

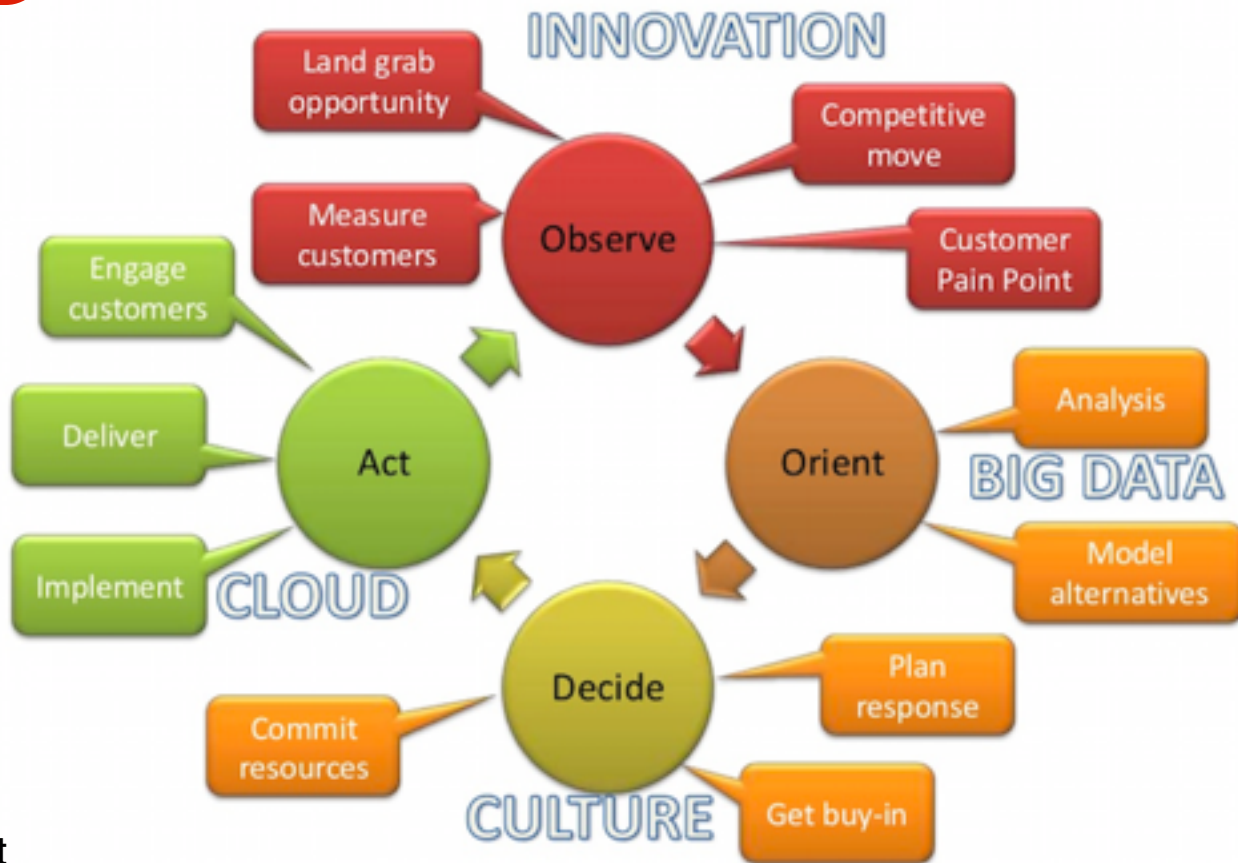
- unit testing & TDD

- scrum

- continuous integration

- ...

**if you wait for all the data to make an informed decision,
it may be too late to make any decision at all**



Source:

Adrian Cockcroft

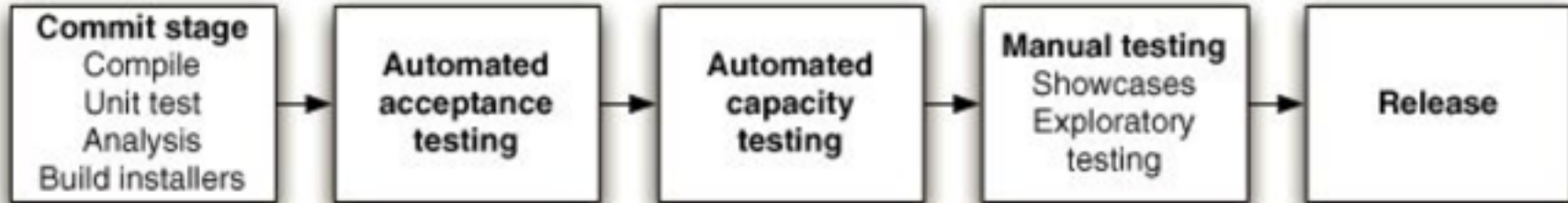
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Jenkins

OODA requires continuous delivery

Travis CI



source:

Continuous Delivery: Reliable Software Releases Through Build, Test, and Deployment Automation / Jez Humble, David Farley.

ISBN 978-0-321-60191-9

“ We may deploy 20 times a day, but we wouldn't deploy 20 times a day if we went down 20 times a day. The only reason we got to 20 times a day, is that the first time we deployed 5 times a day, it worked out.”

John Allspaw - Flickr (not Etsy)

<http://www.slideshare.net/jallspaw/10-deploys-per-day-dev-and-ops-cooperation-at-flickr>

so how do i build it?

it's going to take an API.. lots of them!

spring boot

supports rapid development of
production-ready applications
and services

The screenshot shows the Spring Initializr web application in a browser window. The browser's address bar shows 'start.spring.io'. The page has a dark header with the text 'SPRING INITIALIZR' and 'Bootstrap your application now'. Below the header, the page is divided into two main sections: 'Project metadata' and 'Project dependencies'.

Project metadata

- Group:
- Artifact:
- Name:
- Description:
- Package Name:
- Type:
- Packaging:
- Java Version:
- Language:
- Spring Boot Version:

Project dependencies

Core

- ☐ Security
- ☐ AOP
- ☐ Atomikos (JTA)
- ☐ Bitronix (JTA)

Web

- ☐ Web
- ☐ Websocket
- ☐ WS
- ☐ Jersey (JAX-RS)
- ☐ Vaadin
- ☐ Rest Repositories
- ☐ HAL/JSON
- ☐ Mobile

Template Engines

- ☐ Freemarker
- ☐ Velocity
- ☐ Groovy Templates
- ☐ Thymeleaf
- ☐ Mustache

Data

- ☐ JDBC
- ☐ JPA
- ☐ MongoDB
- ☐ Redis
- ☐ Gormfire
- ☐ Solr
- ☐ Elasticsearch

Cloud

- ☐ Cloud-Connectors
- ☐ Cloud-Bootstrap
- ☐ Config Client
- ☐ Config Server
- ☐ Eureka
- ☐ Eureka Server

Database

- ☐ H2
- ☐ HSQLDB
- ☐ Apache Derby
- ☐ MySQL
- ☐ PostgreSQL

- **service registration & discovery?**
(and **client-side load balancing**)
- **joined up views** of data?
- **centralized configuration** management?
- distributed **tracing**?
- **stream processing**?
- single **sign-on**

distributed systems are hard



don't reinvent the wheel





spring cloud



Apache Zookeeper



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Netflix, amazon.com, Apache Software Foundation, Cloud Foundry, Hashicorp
they are ALL great organizations and we love their open-source and their APIs!!



CONSUL

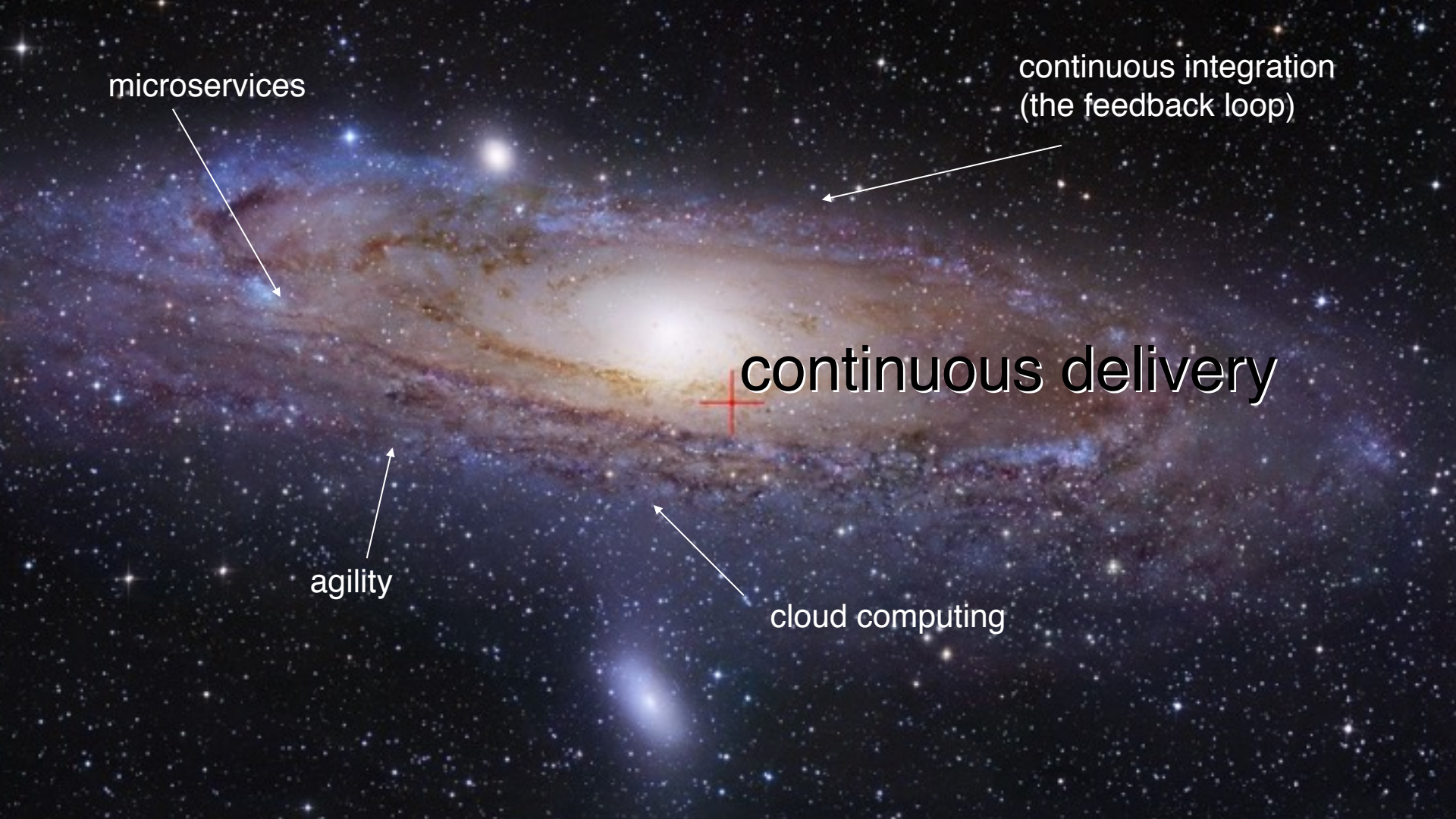
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Pivotal

A NEW PLATFORM FOR A NEW ERA

Questions?

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<http://spring.io>