

# Pivotal

BUILT FOR THE SPEED OF BUSINESS

# Open Source for PaaS: Why it's Hot

Cloud Foundry for Openstack  
Hakchin Kim, Pivotal Korea

2015.02.05



# Agenda

1. Open source 복습
2. PaaS
3. Cloud Foundry & Openstack
4. Open Source PaaS support Open Source

# Open Source 복습

# The Open Source Way

오픈 소스(open source)는 제작자의 권리를 지키면서 원시 코드를 누구나 열람할 수 있도록 한 소프트웨어 혹은 오픈 소스 라이선스에 준하는 모든 통칭을 일컫는다.

- From Redhat website,...

- 자유롭게 코드보기
- 자유롭게 공부하기
- 자유롭게 질문하기
- 자유롭게 개선하기

# Freedom

# Open Source 가 기업에도 중요한 이유들

- Cost Saving

- 심지어는 Redhat, Suse, Pivotal,... 등으로 부터 Enterprise Model을 사용시에도.

- Quality

- Open Source 코드의 품질은 수많은 개발자들의 기여, 검토, 테스트로 부터 완성되며, 매우 견고한 코드를 생산해 냅니다.
- 공개된 표준에 맞추어 호환성을 유지
- 기술 공개 및 검증의 자유로움

- Open source mitigates business risk

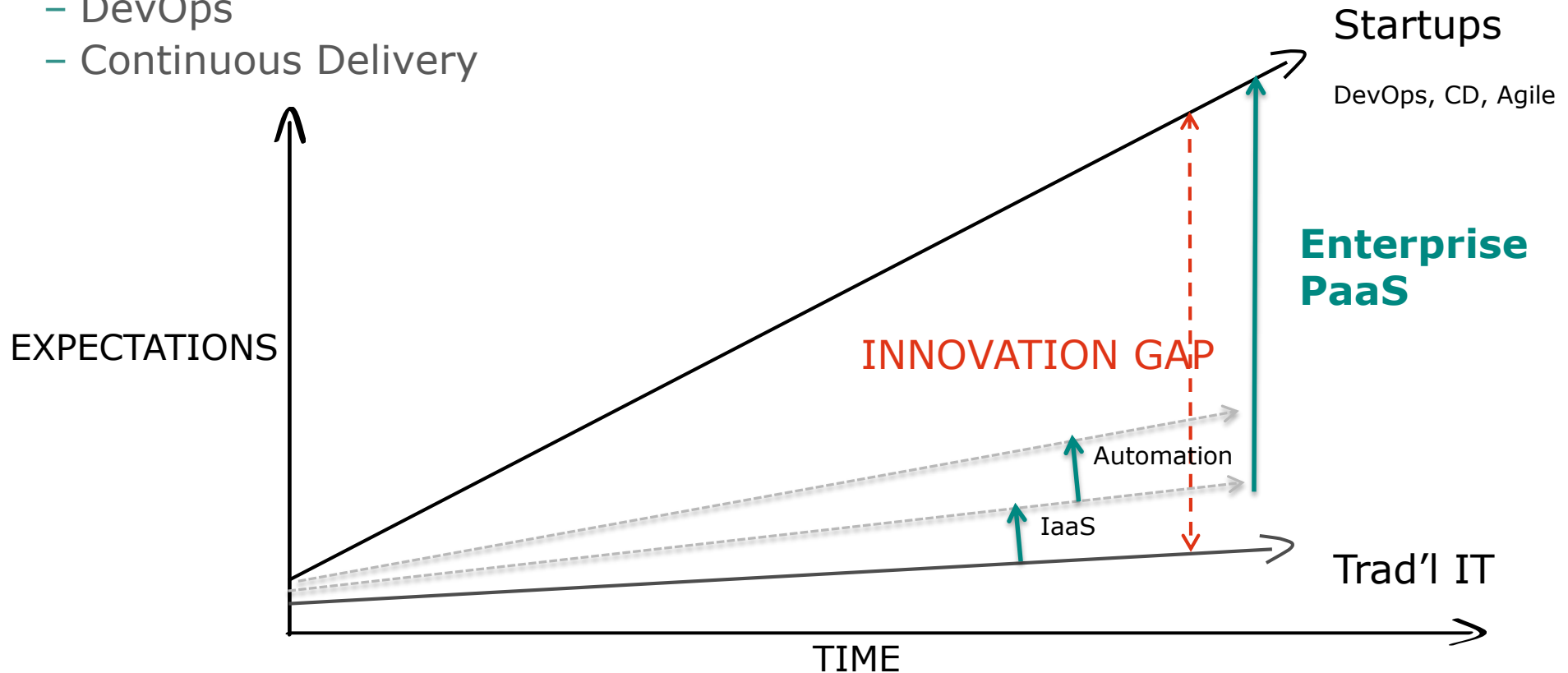
- 상업용제품은 오직 비즈니스 논리에 따라 코드관리가 중단 될 수 있지만 Open source는 자발적 참여자와 Community 에 의하여 보다 지속적으로 지원된다.
- Open source는 벤더 제품의 종속을 피할 수 있다. (No vendor lock-in)

# PaaS

# Consumer Expectations drive New Software Patterns

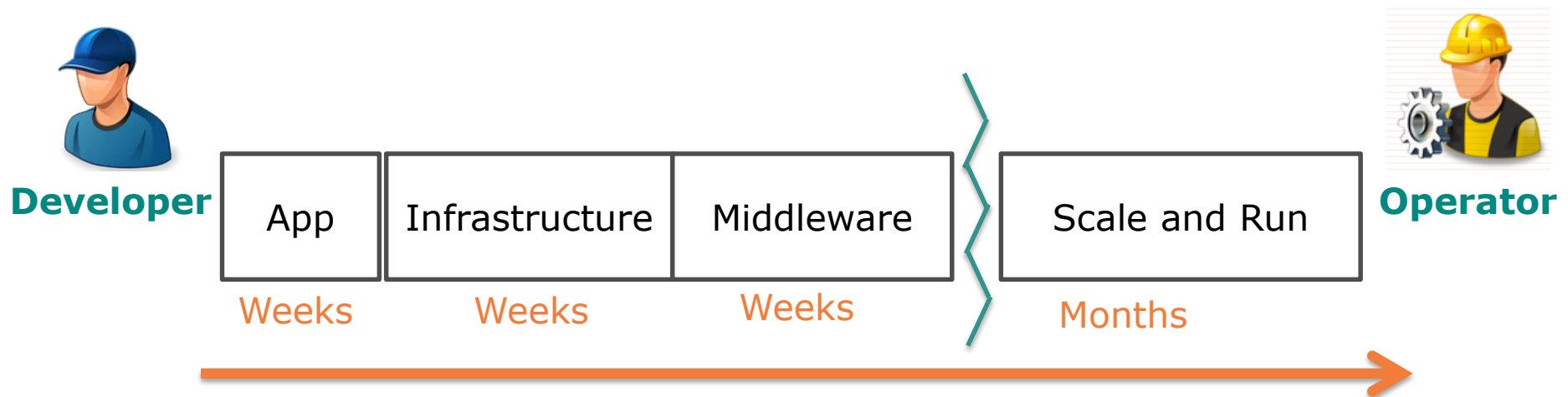
- Changing development and release disciplines

- Agile
- DevOps
- Continuous Delivery





# Traditional App Lifecycle: Results in Lost Revenue



- Release timeframes measured in months
- Typical deployment 75 steps, 9% automated\*
- Lost Revenue Opportunity

*\* Intel and Rakuten sponsored study*

# Rapid Innovation Requires a Combined Approach

## DEVELOPERS



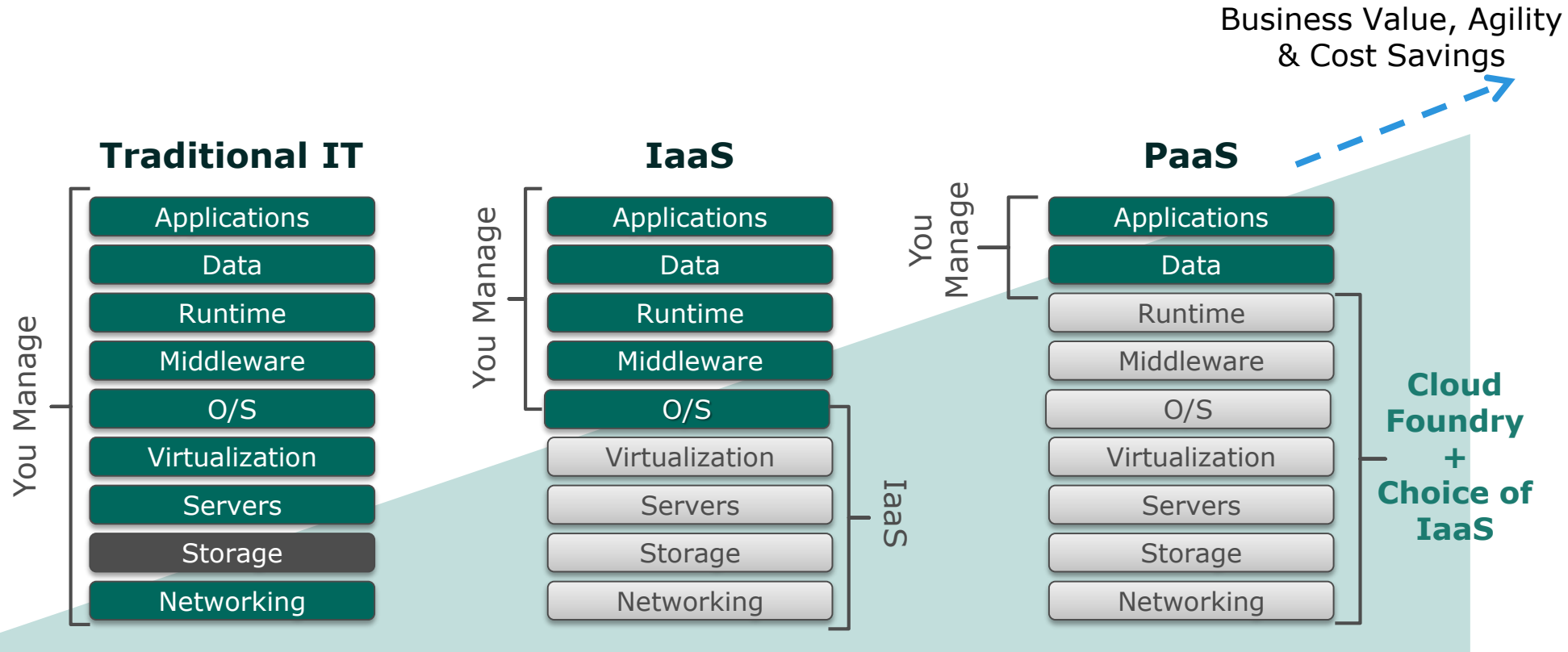
- Dramatically improve developer experience
- Agile teams, rapid iteration
- Microservices, incubate open source advancements (data and apps)

## OPERATORS

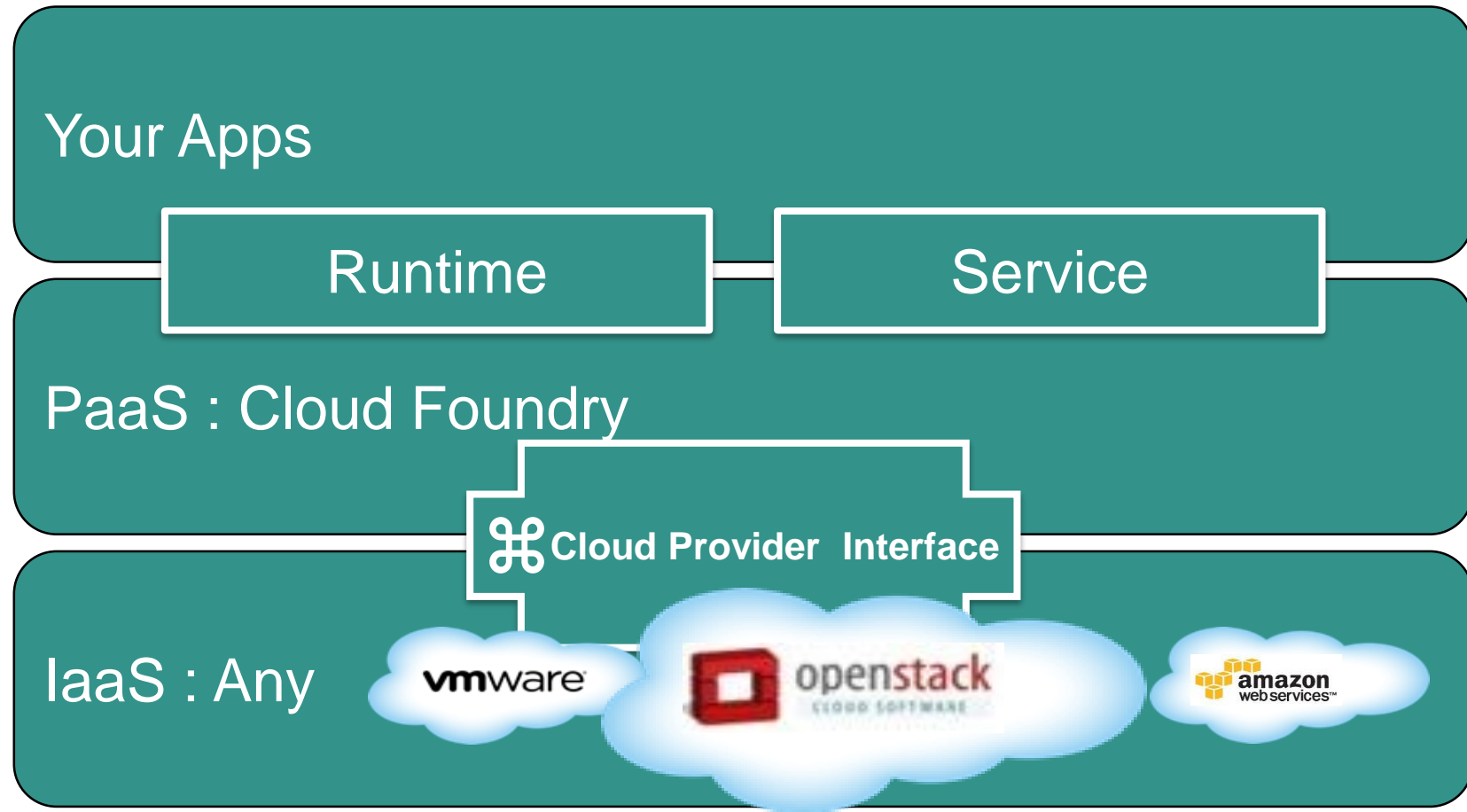


- Continuous delivery, no planned downtime
- Instant scaling of apps and data services
- Automation and deployment consistency at every step

# The Power of PaaS (On Premise & Off Premise)



# PaaS is the Operating System of the IaaS



# PaaS 몇 가지 요건들

- 개방성과 지원 다양성 - PaaS 그 자체가 Open source 이자 Open source 를 적극 지원해야 한다.
  - 다양한 언어의 지원
  - 최신 기술 수용
- 지속성 - PaaS는 IaaS의 OS 이다. 따라서 강력한 커뮤니티의 후원을 받아야 하며, 동시에 파편화 현상이 방지되어야 한다.
  - 초기 Linux는 파편화 현상이 많이 발생
- 독립성(범용성) - IaaS Independent, Java, .Net, Docker 등 모두 수용
- Standard - 다양한 OSS 커뮤니티의 OSS Product이 활용되는 범용적 cloud consumption engine 이어야 한다.
  - No Lock-in

# PaaS 몇 가지 요건들

PaaS는 IaaS가 아니다.

## 적합한 PaaS의 Runtime

Lightweight containers, seconds to thousands of instances

12 Factor Compliant Bindings

Built-in logging

Instant Blue/Green updates

Any cloud

## 적절치 못한 PaaS의 Runtime

Heavy VM overhead and waste, several minutes to change scale

Some in-app configuration files

Retrieve logs from each VM..

DNS changes, Downtime, in hours

Specific cloud only

# Cloud Foundry & Openstack

# ...This Time Around



Timing	Rapid push to launch and open source early
Business Motivation	Create a new open community and build a new company around it
License	Apache 2, Industry standard
Self Interest	Leap of faith to make CF OSS bloom and find the right business along the way--CF Foundation
Collaboration	Github, Dojo and Community Pairs...
Outcome	Looking bright ...



# Cloud Foundry는 Openstack을 강력히 지원합니다

CLOUD COMPUTING, EXECUTIVE

## OpenStack Founding Father McKenty Joins Pivotal's Cloud Foundry Team as CTO

BY [JASON VERGE](#) ON SEPTEMBER 30, 2014

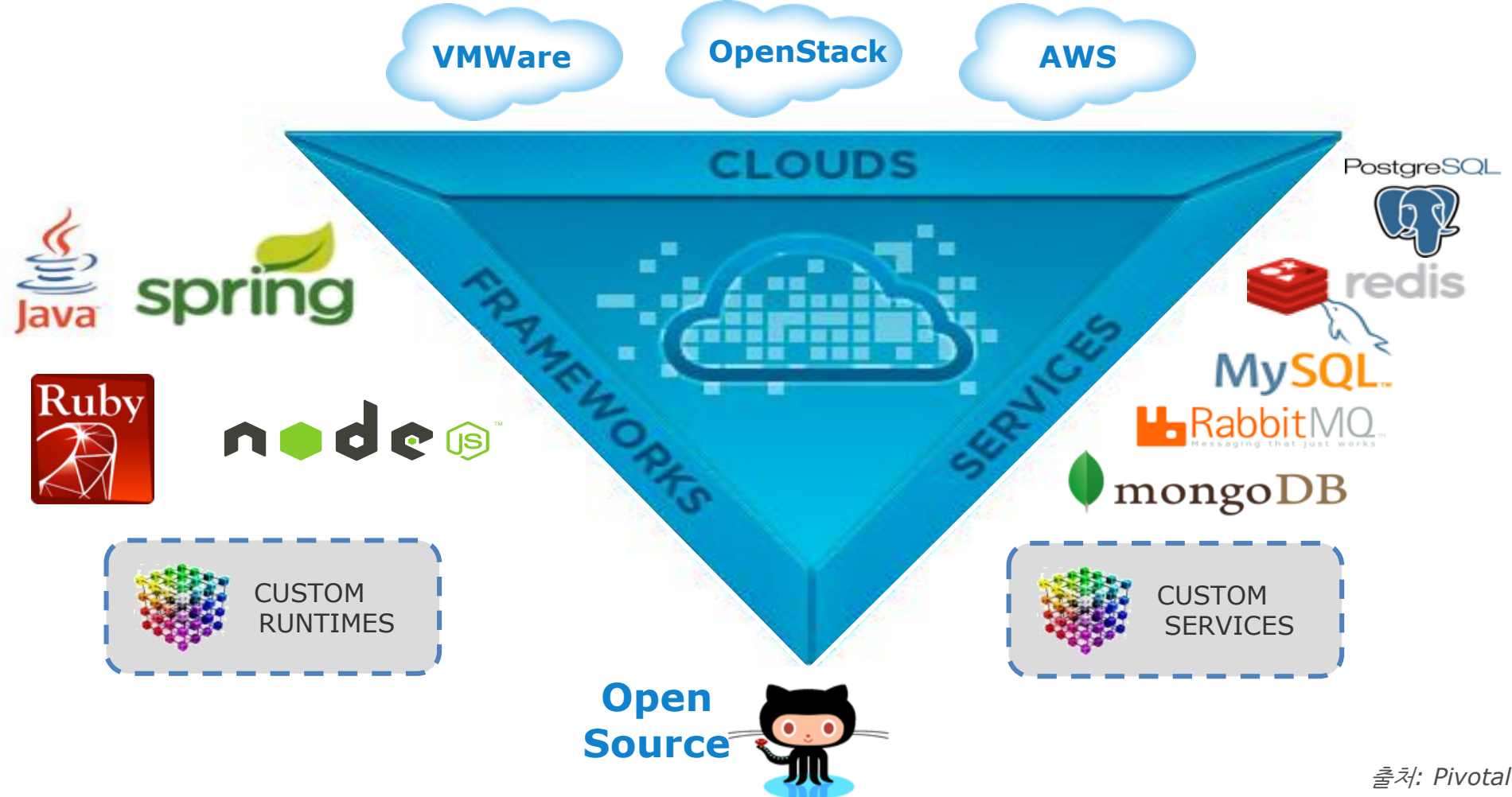
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**Pivotal** has landed major talent in the form of Joshua McKenty, a cloud visionary and one of the original creators of OpenStack. McKenty joins Pivotal as field CTO for Cloud Foundry, the popular open source Platform-as-a-Service.

# CPI, Buildpack, Service 구성요소로 PaaS 제공

특정 IaaS, 언어/프레임워크, Application Service에 대한 Lock-In 배제, 완벽한 개방성 제공.  
개방성을 위하여 추가로 개발하여 통합 가능한 CPI, Buildpack, Service 라는 표준 매카니즘 제공.



출처: Pivotal

# Abstracting and Standardize

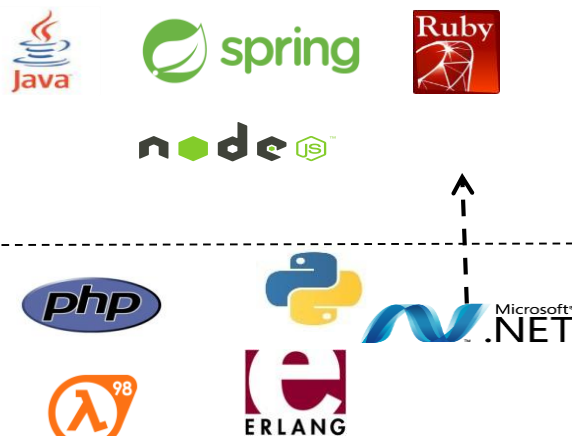
## Clouds

Cloud  
Provider  
Interface



## Runtime/Frameworks

Buildpacks



## App Services

Service Brokers

Pivotal  
HD

GemFire  
XD

PIVOTAL  
MySQL Dev

PIVOTAL  
RabbitMQ

ORACLE  
DATABASE



PostgreSQL



Open Source

... and Custom Clouds

... and Custom Runtimes

... and Custom Services

# Largest Language support

## Built-in

6



## Community

24

Jetty  
Virgo  
Clojure  
Haskell  
Mono  
Jboss(alpha)  
Websphere  
Erlang  
nginx

## Third party

37

C	Lua
Lisp	.NET
Dart	Null
Elixir	Perl
Emacs	R
Erlang	Sphinx
Factor	PhantoJS
Fakesu	

<https://github.com/cloudfoundry-community/cf-docs-contrib/wiki/Buildpacks>

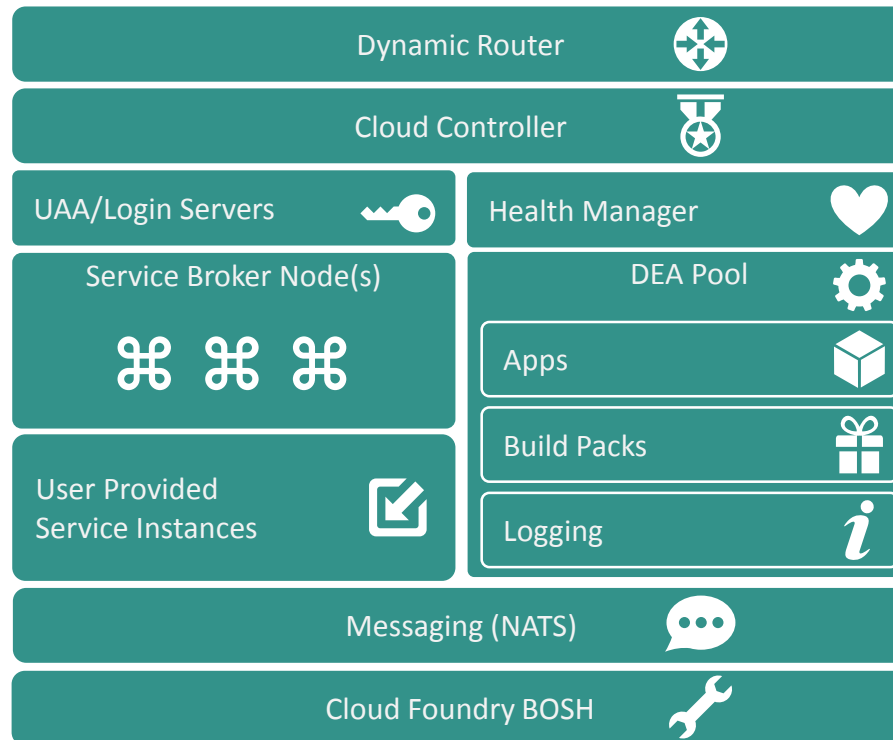
# Cloud Foundry Architecture

components

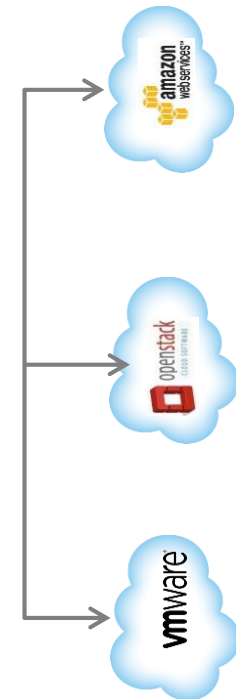
## Internet



## PaaS

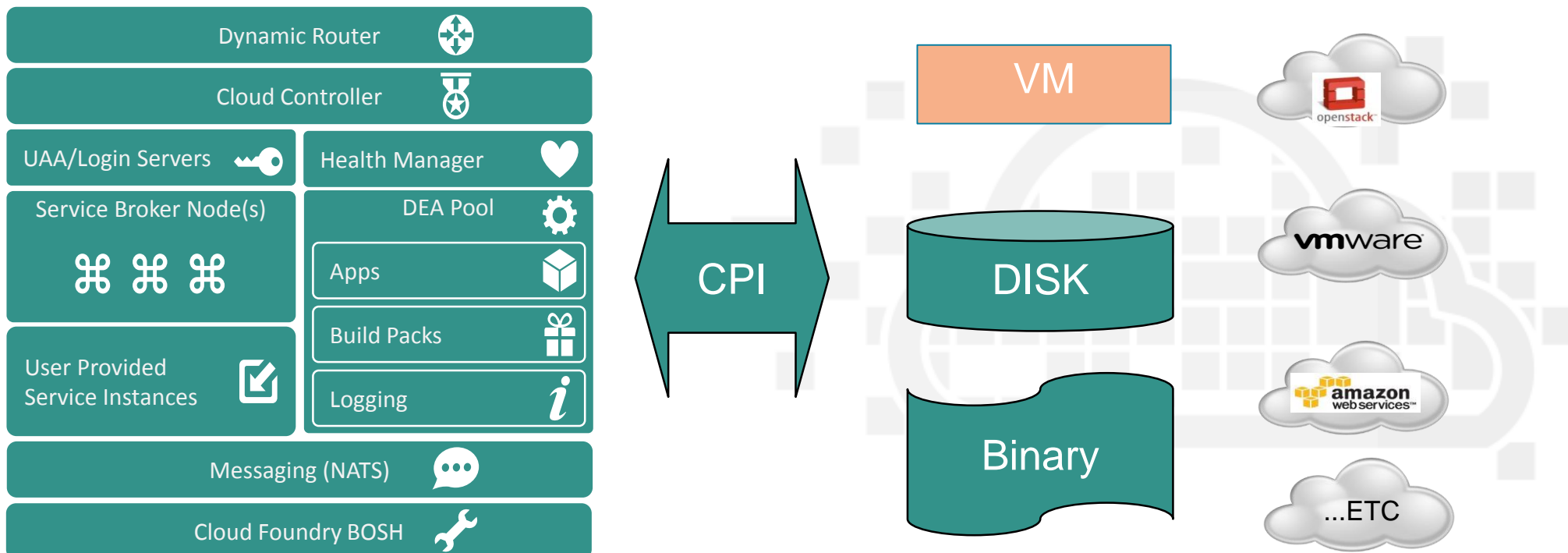


## Infrastructure



# Cloud Provider Interface

IaaS Neutral



# Buildpacks

## Runtimes

OpenJDK



## Containers

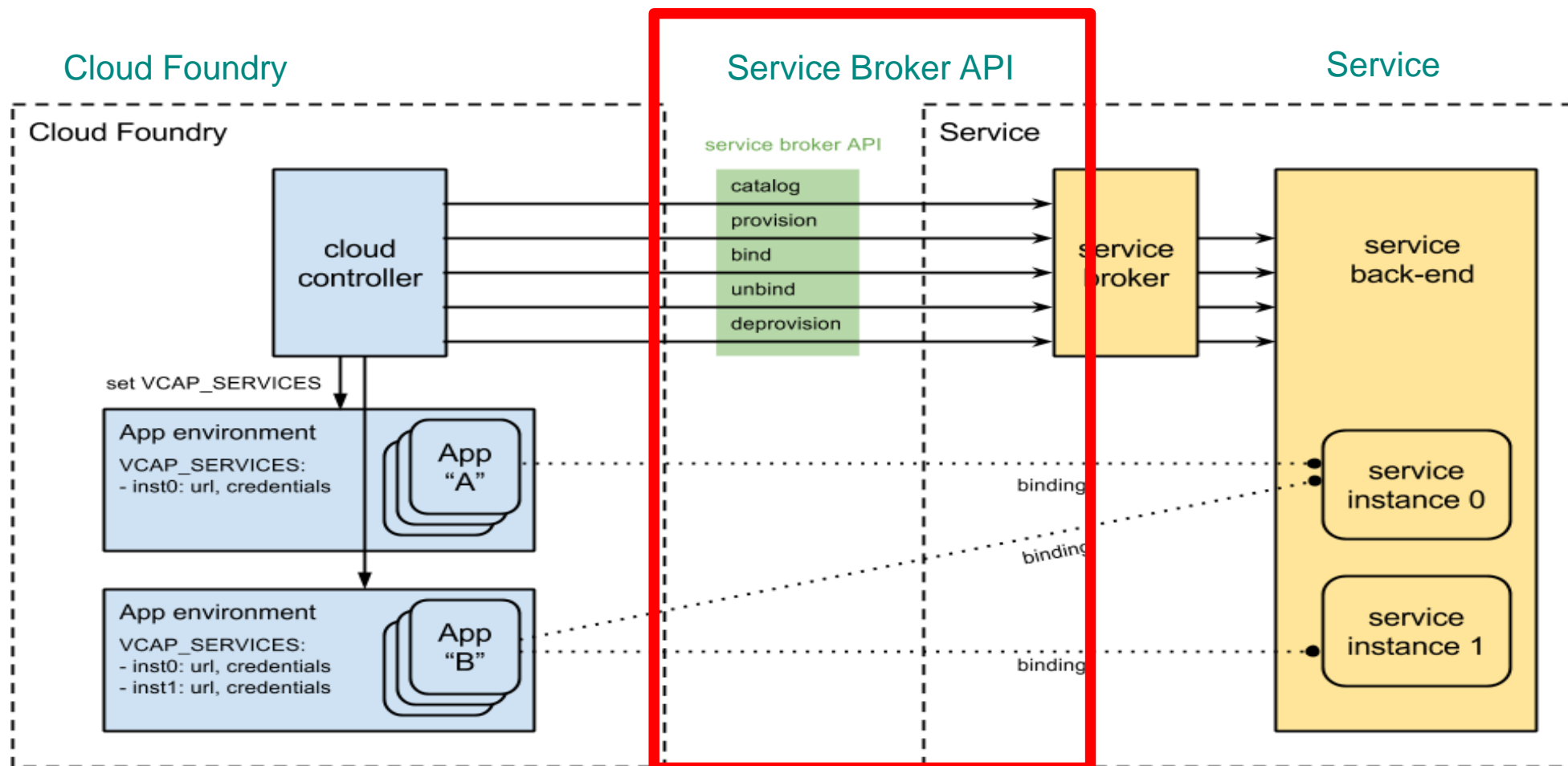


## Frameworks



# Service Broker API

## Architecture





# Management Productivity

## Operator

```
cf-iaas.yml  
provision <my cloud>  
add_capacity <my cloud>
```

 Cloud Deployment: 2-4 hours

## Developer

```
target <my cloud>  
push <my app>  
create <my services>  
bind <my services>  
scale <my app> +100
```

 App Deployment: 30-90 seconds

# Open Source PaaS support Open Source

**OPEN SOURCE  
IS THE NEW  
OPEN STANDARD**



**NO ONE WANTS  
TO BE LOCKED IN**





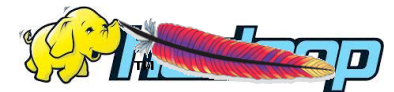


**STRATEGIC  
OPEN SOURCE**

# Open Source at Pivotal



**aspectj**



# Cloud Foundry Open Source Dojo

## Collaboration



- Pair programming with IBM, SAP, Swisscom, Altoros, Cloud Credo: all send developers to San Francisco HQ of Pivotal for intensive 8 week residencies
- Work directly on the CF OSS engineering team and innovate together with us

# Software is Eating the World: You need PaaS

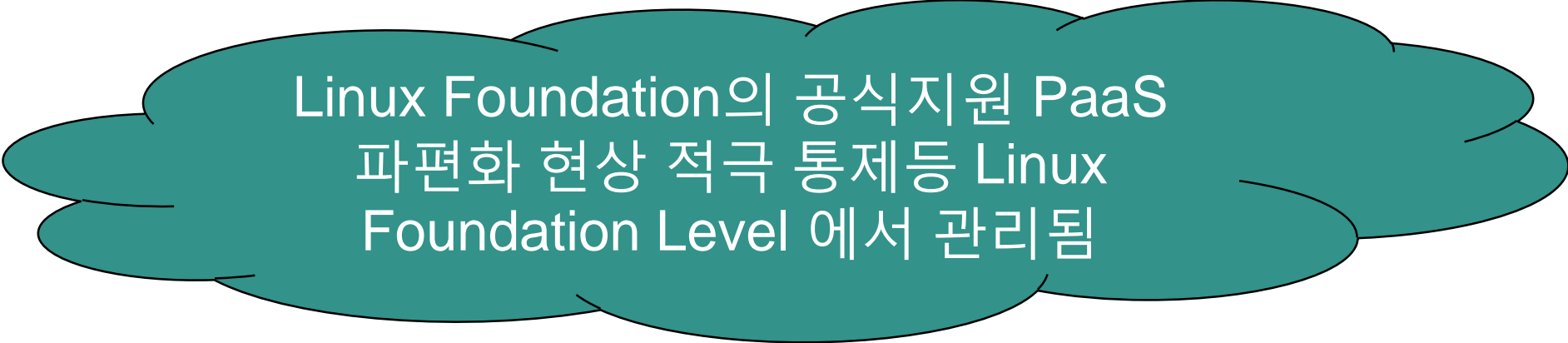
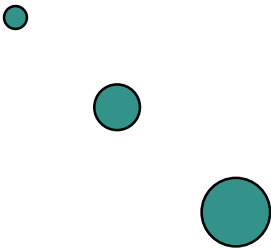
- **Developer Agility:** End-to-end platform where cloud services enable them to build and update applications easily
- **Operational Agility:** Built-in operational benefits to de-risk new projects: HA, logging, APM, auditability, ID integration, etc..
- **Choice of Infrastructure:** Optimize efficiency, cost, geographic distribution, capacity planning and regulatory compliance





# Linux Foundation 의 지원

- Linux Foundation takes over operations of Cloud Foundry Foundation. Dec 11, 2014



Linux Foundation의 공식지원 PaaS  
파편화 현상 적극 통제등 Linux  
Foundation Level 에서 관리됨

# Cloud foundry is the **linux** of the PaaS

**Cloud Foundry Foundation** - Largest Open PaaS Ecosystem



# Pivotal

A NEW PLATFORM FOR A NEW ERA