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9 December 2015 | Taipei, Taiwan

第三平台上的雲程式開發最佳實務

Senior System Engineer: Shawn Ho

Agenda

- 1 第三平台的出現改變顛覆了傳統業務
 - 2 如何在快速變動下，避免成為被顛覆的一員？
 - 3 VMware 在開發維運(DevOps)與雲程式(Cloud Native) 的創新
 - 4 結論：未來數位業務上五個不變的原則
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新型態的業務破壞了傳統的利基市場

《銀行 3.0》以科技為核心策略：高盛三分之一員工是工程師



2015-12-04 23:02 聯合新聞網 Mash



讚

分享

197



1

由日本野村綜合研究所研究員若尾由美，以及牛津大學教授Michael Osborne所共同完成的研究報告指出，日本境內約49%以人力為主的工作預計在20年後將由機器人取代。

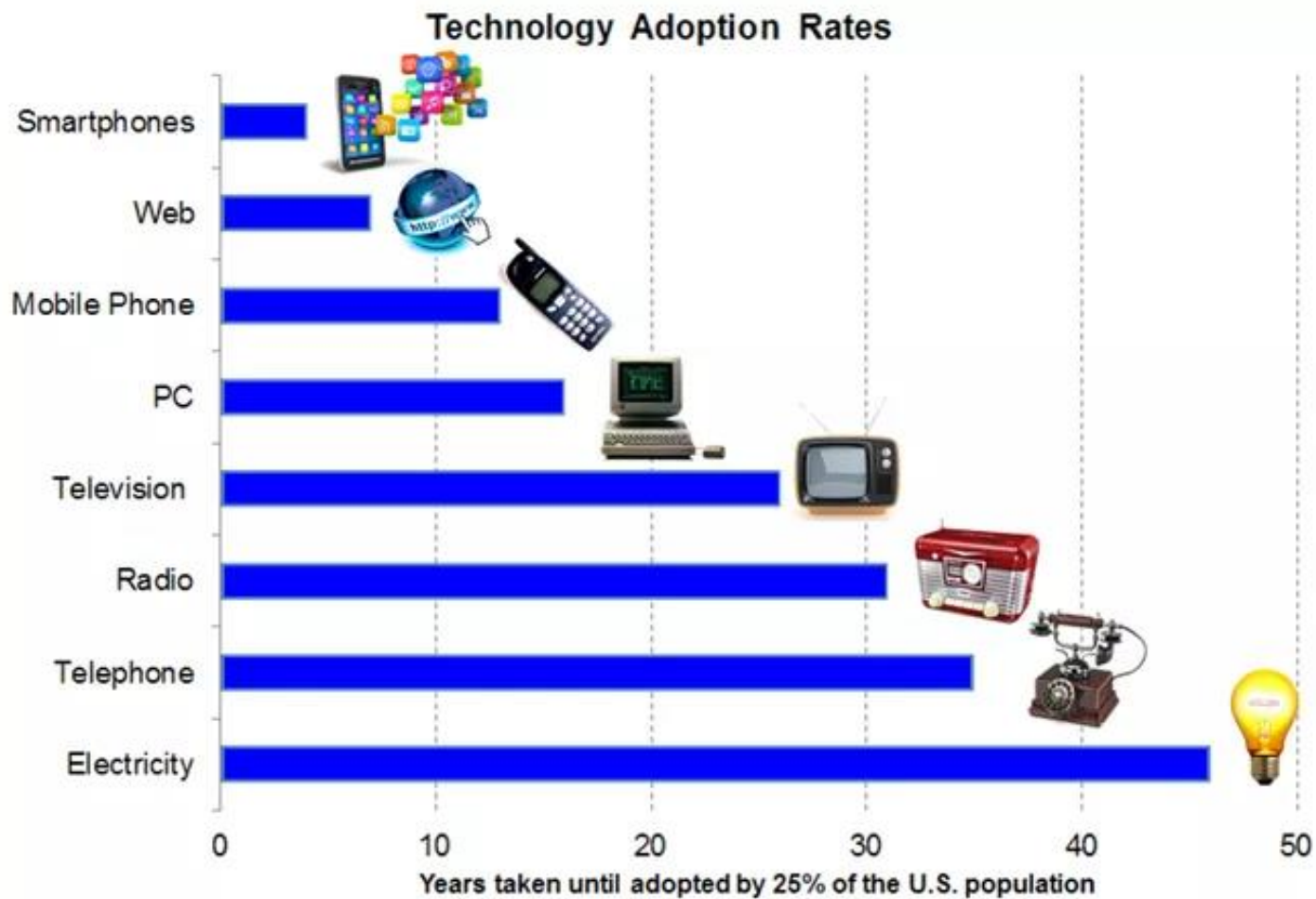


這
意

新型態的業務破壞了傳統的利基市場



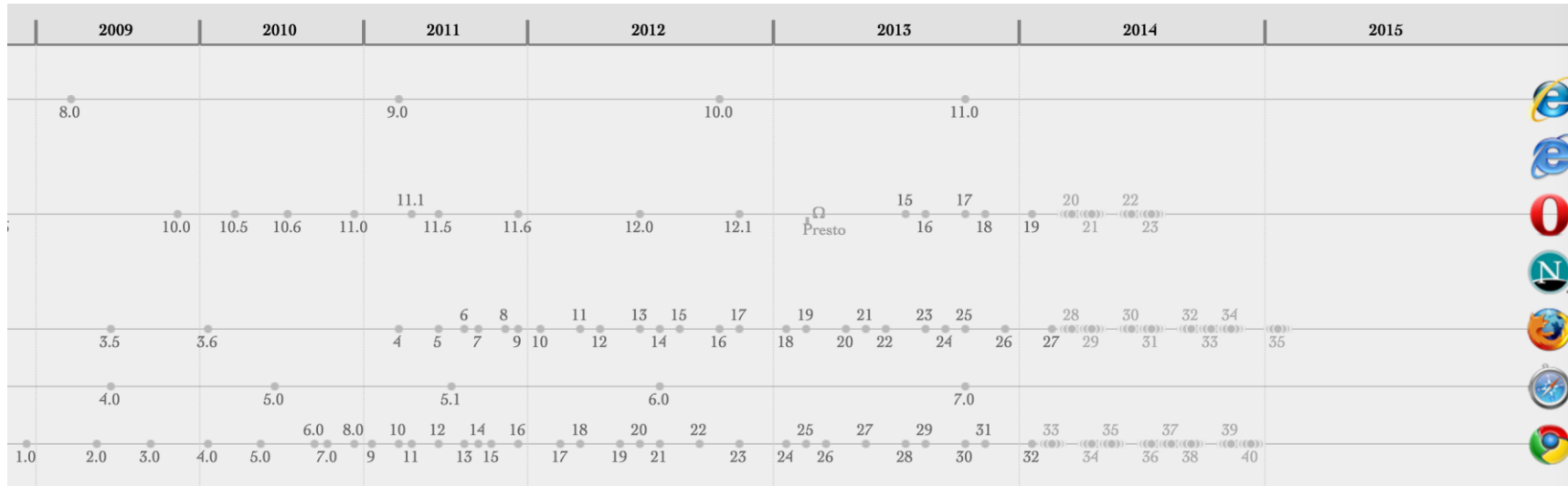
第三平台縮短了新技術被採用的時間



Market Realist[®]

Source: U.S. Census, Wall Street Journal

一個血淋淋的例子：瀏覽器的戰爭

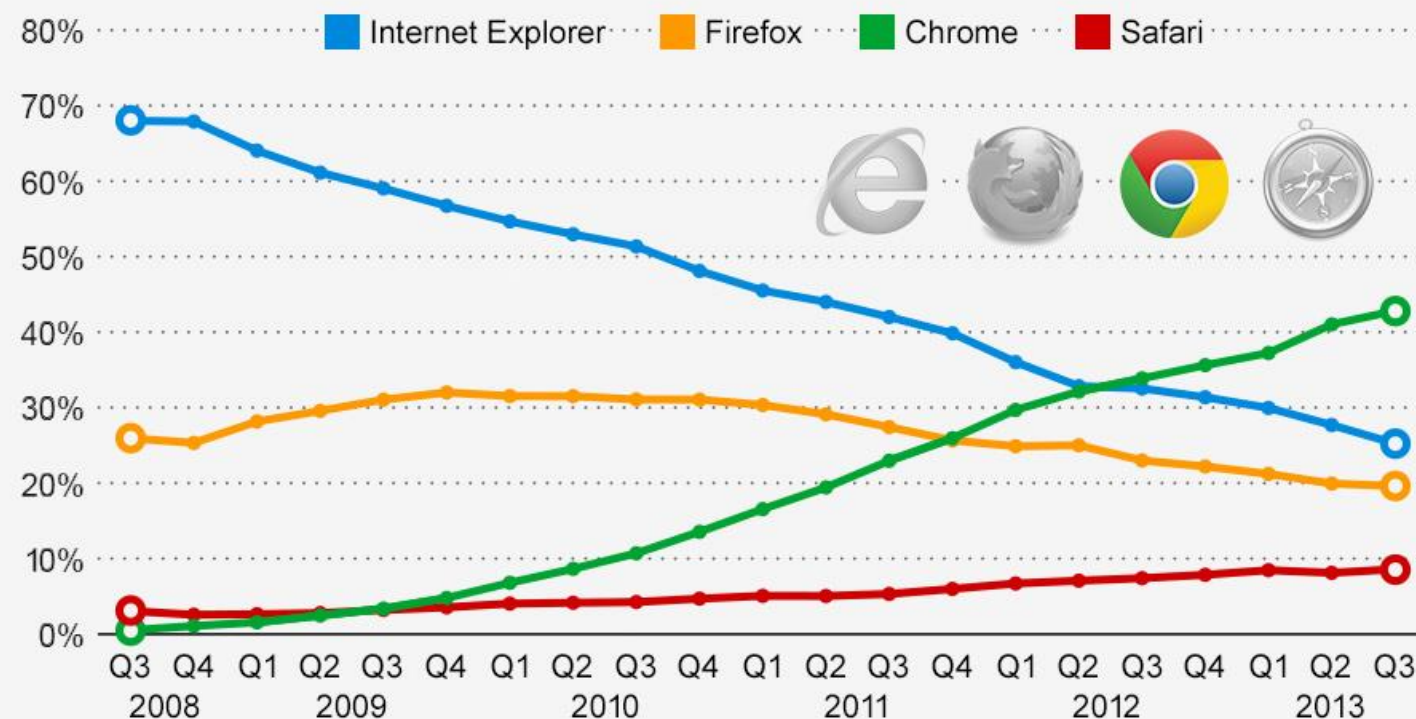


Browser	Release Cycle
Chrome	8 versions/yr, 6 weeks per version
Firefox	8 versions/yr, 6 weeks per version
Opera	Close to 8 versions/yr
Safari/IE	1 version/yr,

一個血淋淋的例子：瀏覽器的戰爭

5 Years After Launch, Chrome is on Top of the Browser World

Worldwide usage share of the most popular web browsers (in %)



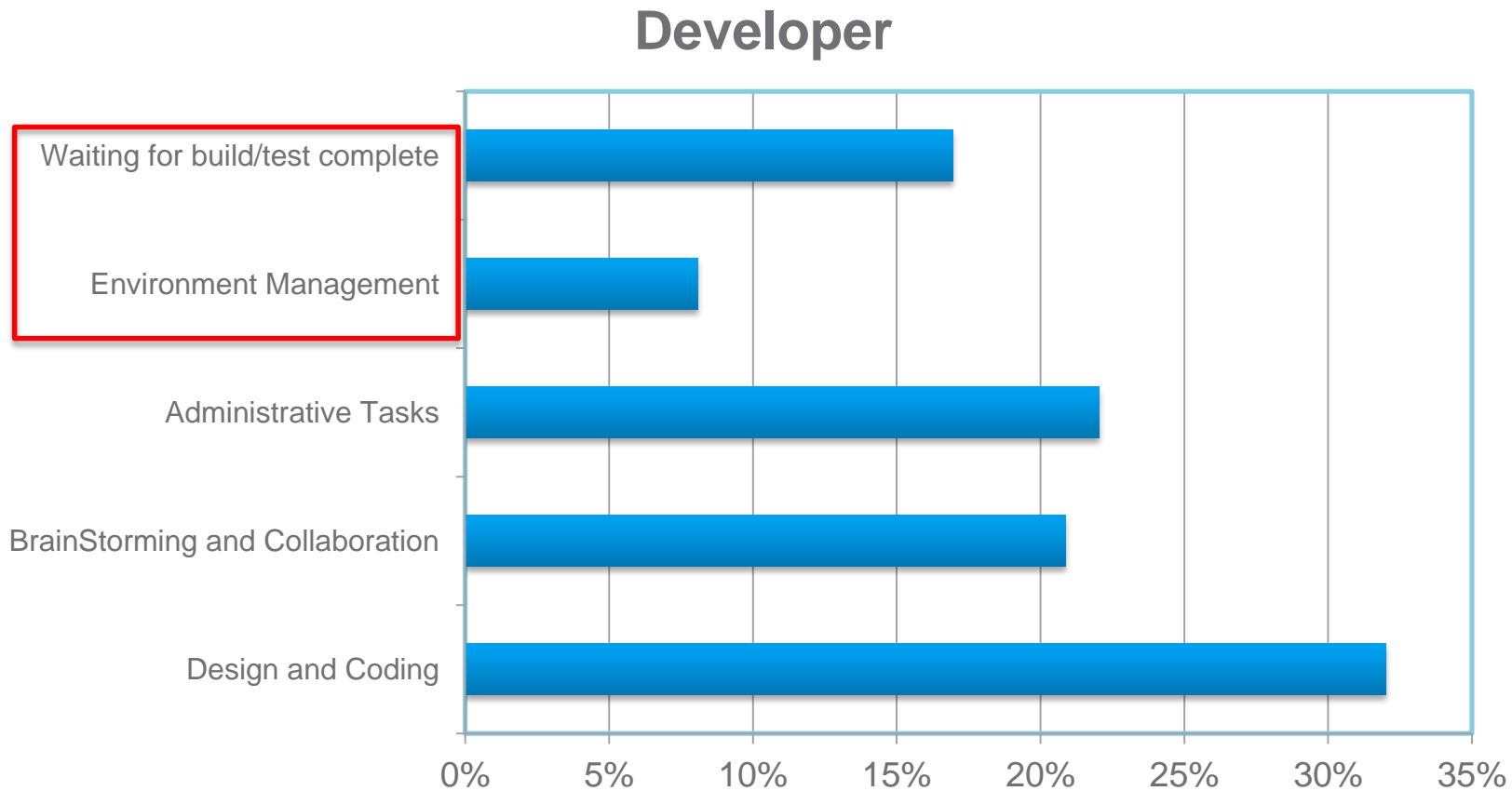
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天下武功，唯快不破



程式設計師如何使用他們的時間？



軟體被交付的流程演變

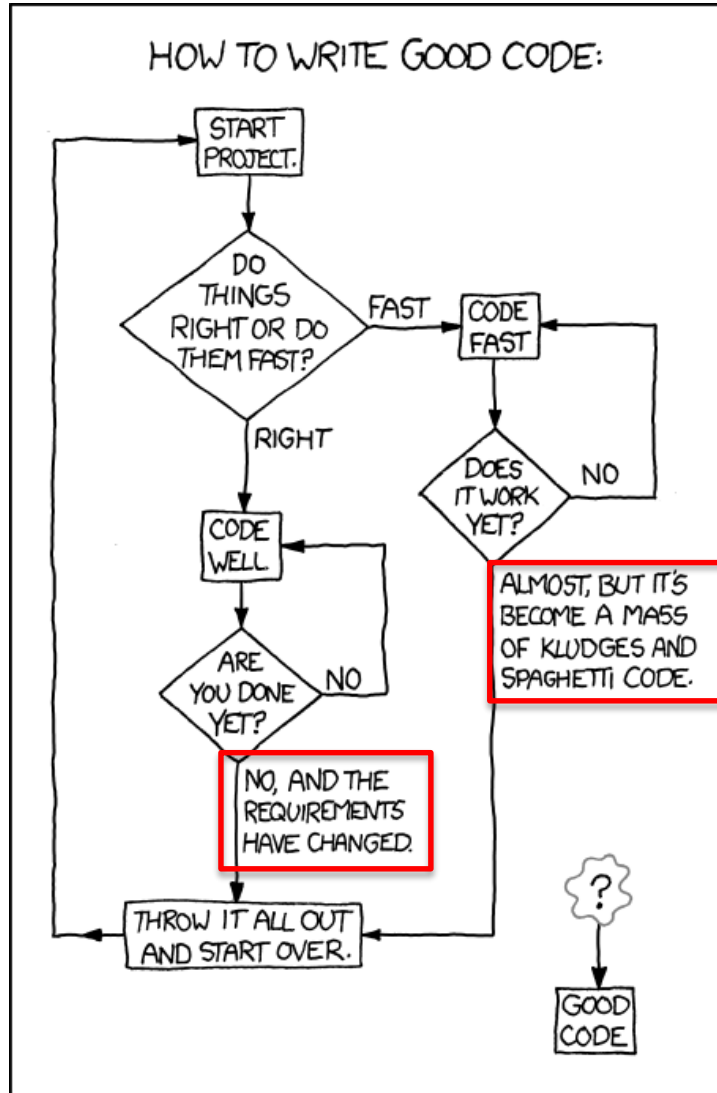


Continuous Integration

- Automated, code integration, testing and builds
- Improved Efficiency & quality
- Shippable software one or more times a day
- Manual deployment

**People, Process, and
Technology change in
each transition**

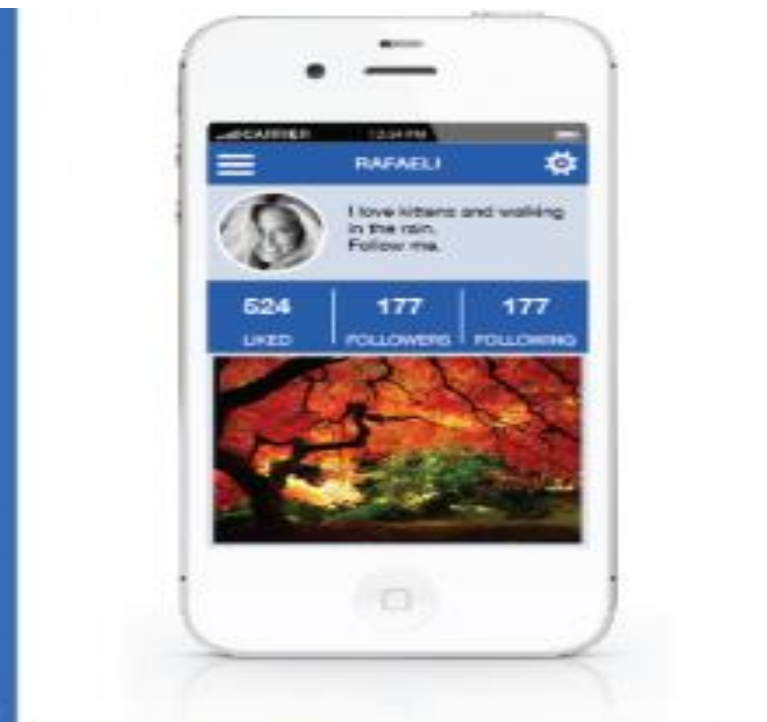
為什麼瀑布(Waterfall)會乾涸？



- Every Operators/Tester/Stakeholders is looking for Good code.
- Good code is hard to find and here is why.

新流程的引進：Lean/Agile 開發

Fail Fast, Fail Often, and Move on

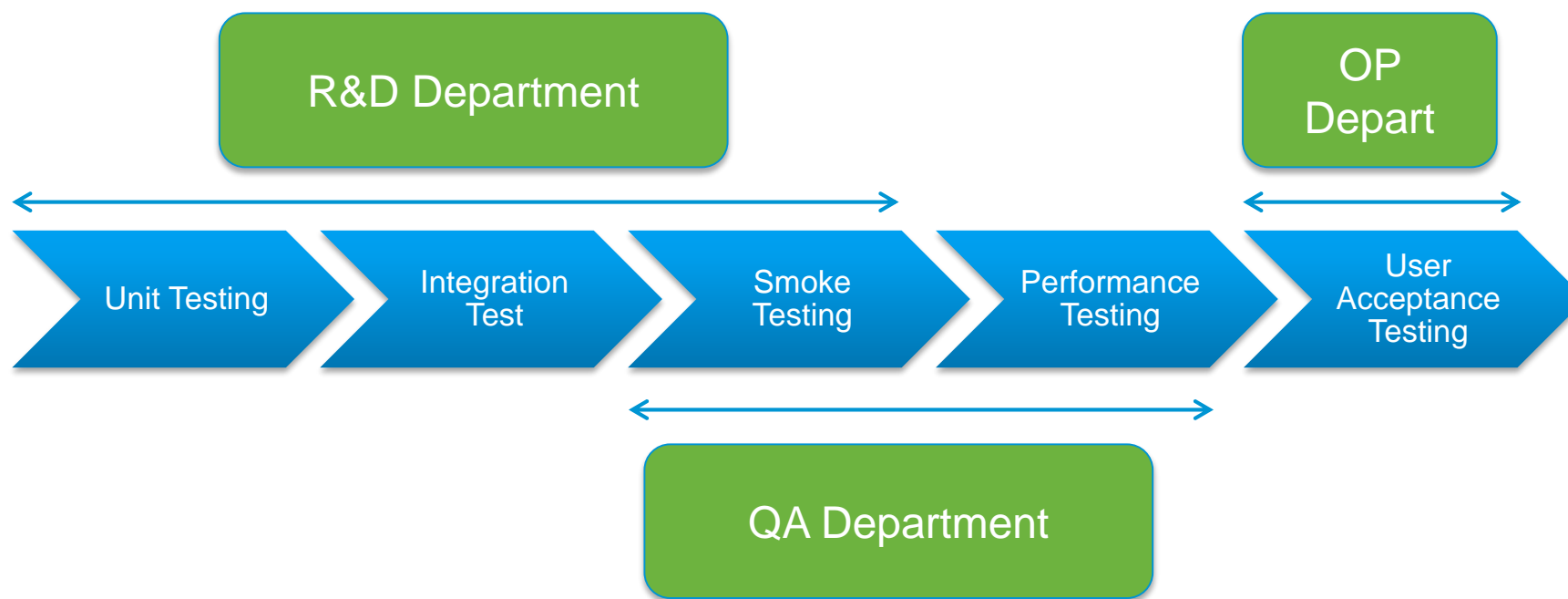


FIDELITY: LOW
SHOW: IDEA, MIND PROCESS
USE: COMMUNICATE, FAIL, THINK, EXPERIMENT, GENERATE IDEAS
HOW: HANDDRAWN

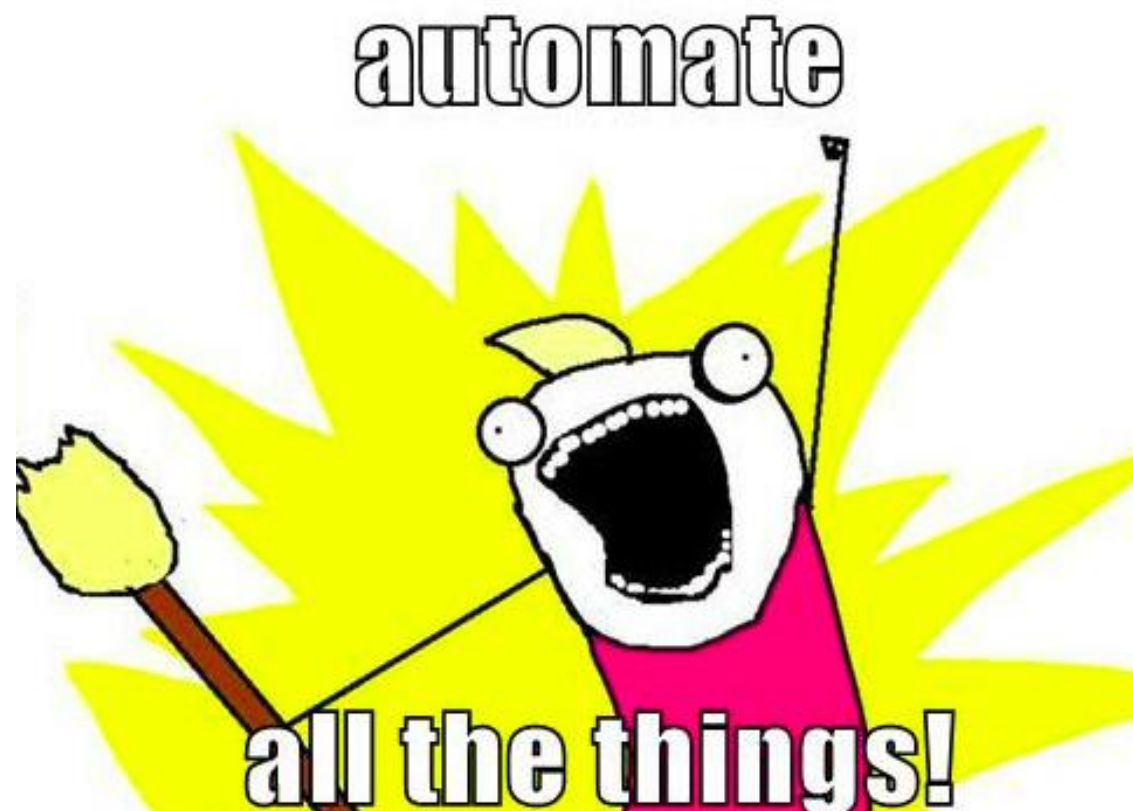
FIDELITY: LOW TO MIDDLE
SHOW: MAIN GROUP OF CONTENT, UI PROPORTION, INFORMATION STRUCTURE
USE: COMMUNICATE, DOCUMENT, INTERACT, TEST, GATHER FEEDBACK
ANALOG: BLUEPRINT
HOW: PHOTOSHOP, ILLUSTRATOR,

FIDELITY: MIDDLE TO HIGH
SHOW: VISUALIZE CONTENT, VISUAL PART OF CONTENT, INFOSTRUCTURE
USE: DOCUMENT, GATHER FEEDBACK, BUY-IN
ANALOG: ARCHITECTURAL LAYOUT
HOW: PHOTOSHOP, ILLUSTRATOR, ANY GRAPHIC TOOL

自動測試 (越多越好)

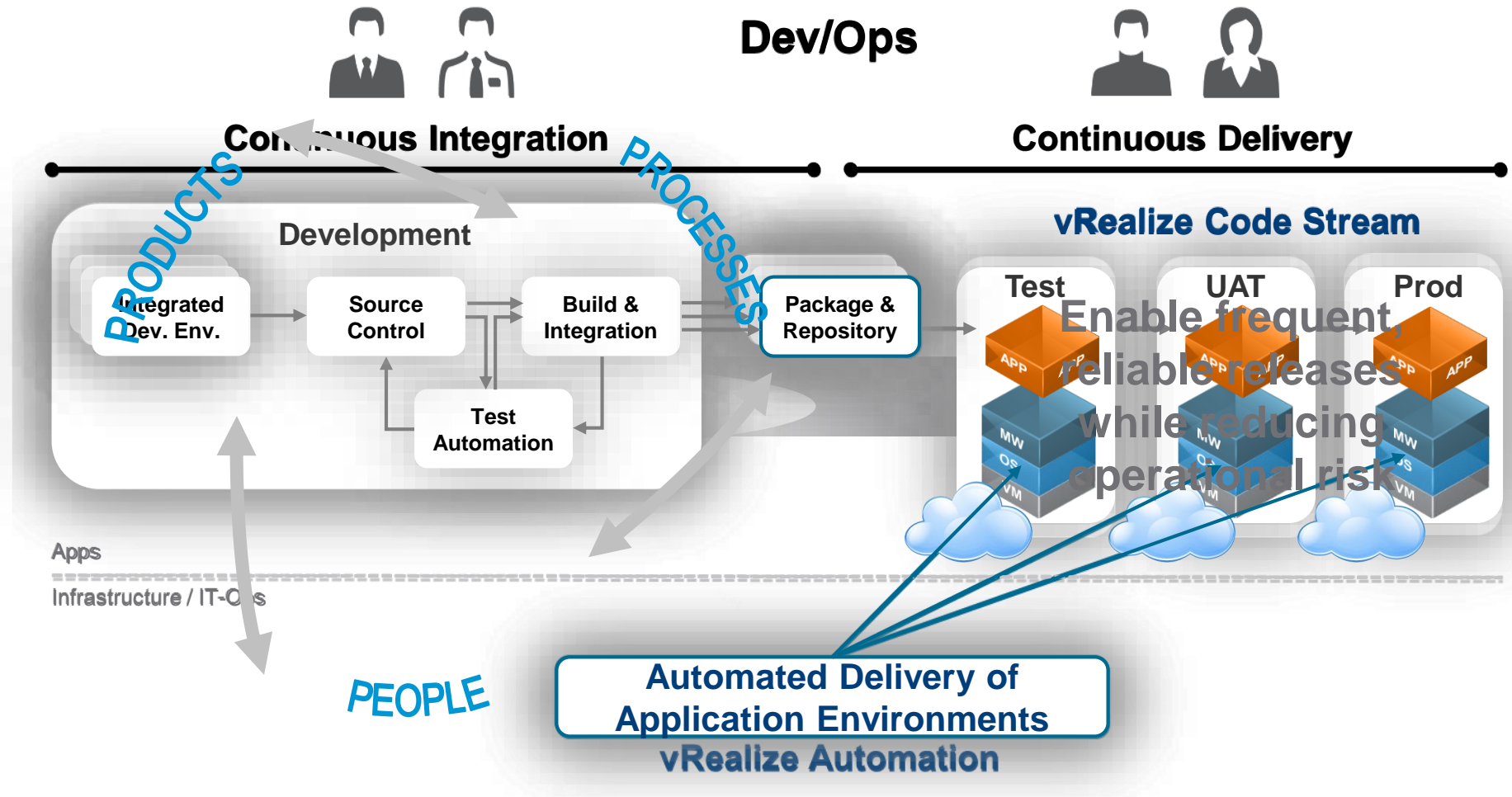


最好能...

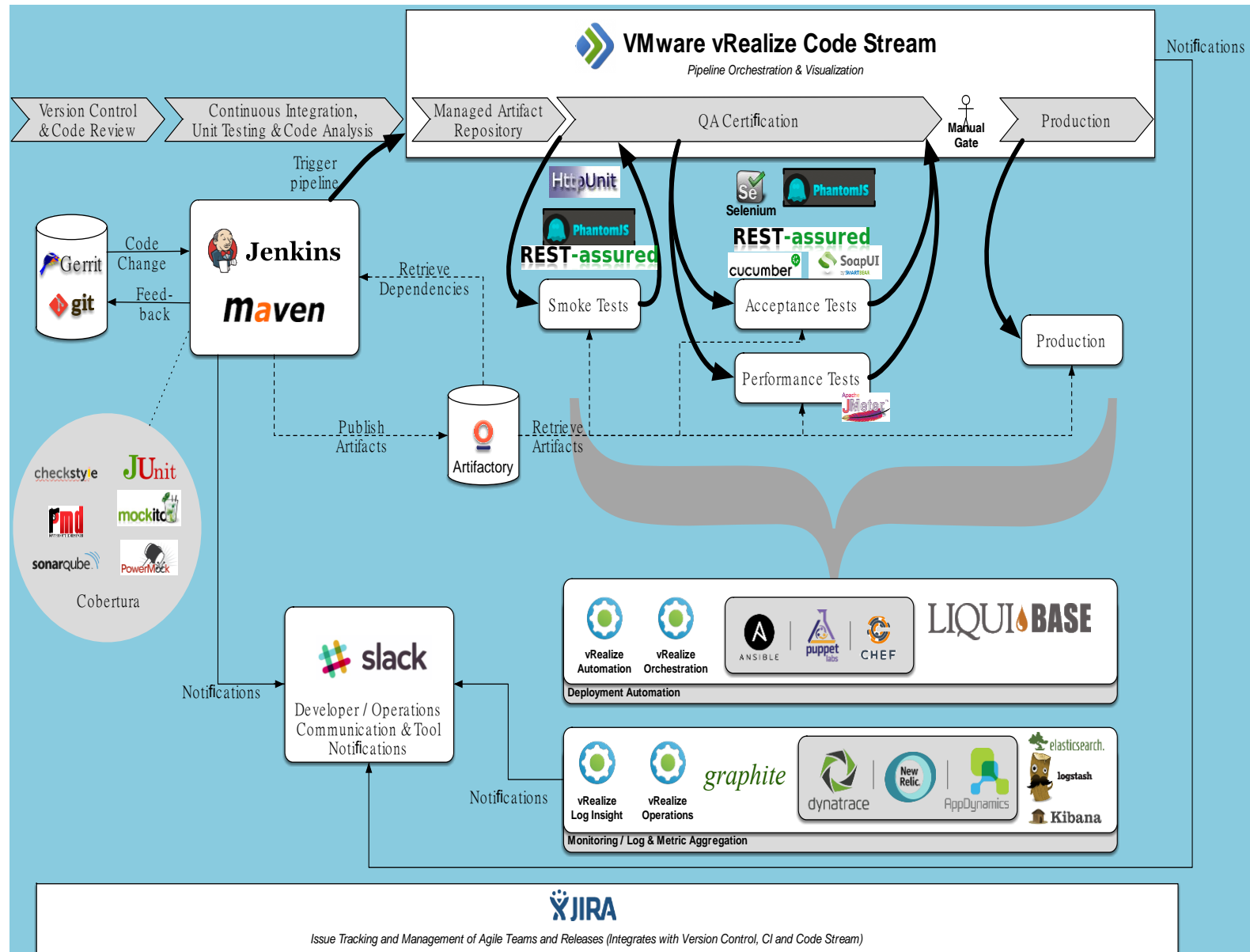


VMware CodeStream 連結CI and CD

加速應用程式的交付增加業務敏捷度



Continuous Delivery Pipeline with CodeStream



CodeStream Release Dashboard

- Provide a consistent view of release status across stages
- Track artifacts to ensure consistent use
- Drill down to execution details

Track the lifecycle of builds across environment & stages

Automated or manual gating rules

Vulcan R3 P1 - release t... Trying action after fixing script Build ID:9816 ✓ Release pipeline COMPLETED 11/6/14 3:39 PM 11/6/14 3:11 PM

UAT

- Retrieve From Artifactory
CUSTOM
3:11:35 pm to 3:13:05 pm
- Provision to vCloud Air
PROVISION
3:13:05 pm to 3:14:31 pm
- Run Selenium tests
TEST
3:14:32 pm to 3:15:58 pm
- Destroy environment
CUSTOM
3:15:58 pm to 3:20:28 pm

Sys Integration Test

- Retrieve From Artifactory
CUSTOM
3:20:28 pm to 3:21:56 pm
- Provision to vCloud Air
PROVISION
3:21:56 pm to 3:23:22 pm
- Deploy via Puppet
CUSTOM
3:23:22 pm to 3:24:48 pm
- Run JMeter tests
TEST
3:24:48 pm to 3:26:19 pm

Staging

- Promote to GoBuild
CUSTOM
3:26:19 pm to 3:27:46 pm
- Retrieve From GoBuild
CUSTOM
3:27:46 pm to 3:29:13 pm
- Deploy via Puppet
DEPLOY
3:29:13 pm to 3:30:40 pm
- Anal Task Result
CUS
3:30:

Production

- Retrieve From GoBuild
CUSTOM
3:32:07 pm to 3:33:33 pm
- Provision on vSphere
PROVISION
3:33:33 pm to 3:35:00 pm
- vRe

Automate artifact retrieval, provisioning, deployment, test and other tasks

View task execution details

Task Result

▼ Result

Status: ✓ COMPLETED Started At: 11/7/14 5:33 AM
Time Taken: 4m 8s Finished At: 11/7/14 5:37 AM
Message: Provisioning task completed successfully.

Machines

Machine Name	IP	Memory (MB)	Storage (GB)	CPU	Lease Ends
DevOps04	10.64.115.185	512	8	1	11/8/14 5:33 AM

Close

客戶案例分享： 國外某政府機關的第三平台演進

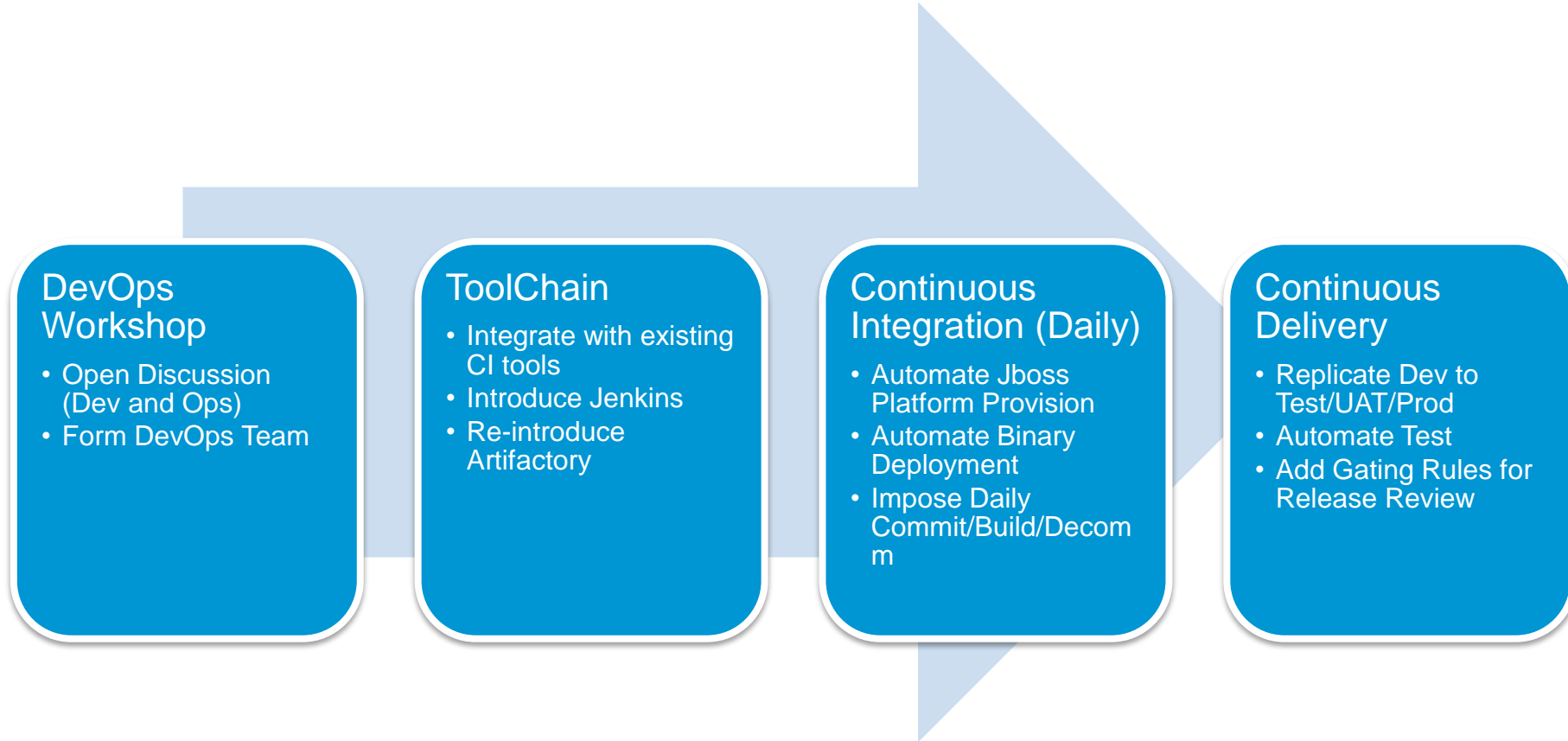
- 目的:
 - Cut Release from **6 Months** to **2~4 Weeks**
 - Reduce Project Risks along with Development Stage
 - Introduce **MicroSegmentation** for all Services
- 背景:
 - A foreign government agency is planning a major transformation to modernize their infrastructure and service delivery within 5 years for several millions budget
 - High-Level virtualization infrastructure platform
 - Most developers are Java coder for Jboss platform
 - Development team uses agile methodologies

國外某政府機關的第三平台演進：遭遇的問題

- Developers could not rely on JBOSS platform configuration within each stage being consistently in alignment with production
- Tests were failing due to platform configuration. **Lack of trust.**
- Reconfiguring / patching / updating was dependent on operational team availability. Production related tasks often added significant delays to release timelines.
- Developers frustration levels **HIGH !**



國外某政府機關的第三平台演進：轉型步驟



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好的開發者通常是懶惰的...

**I will always choose a lazy person to do a difficult job.
Because, he will find an easy way to do it.**



- Bill Gates



is a “Shipping Container” for Code

Developers



because ...

- Frictionless deployment and maximum portability
- **No Need to Deal With Operation Team**

On developer laptop:

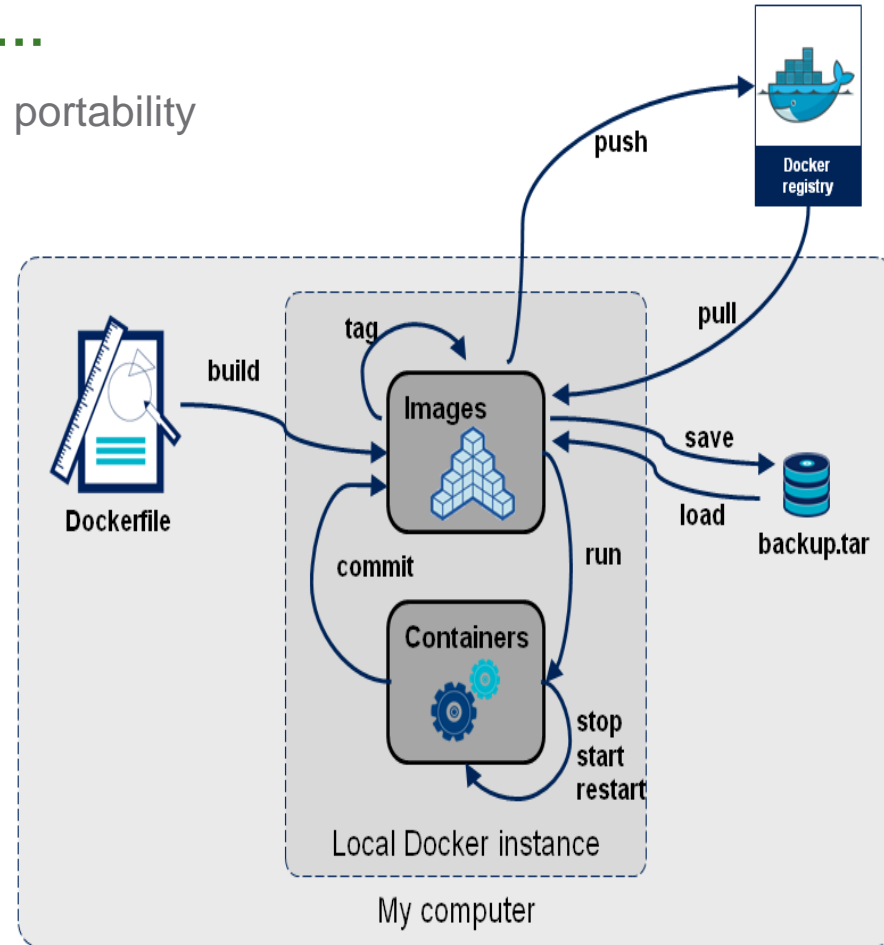
```
~# docker build my_app
~# docker push my_app
~#
```

Then on server:

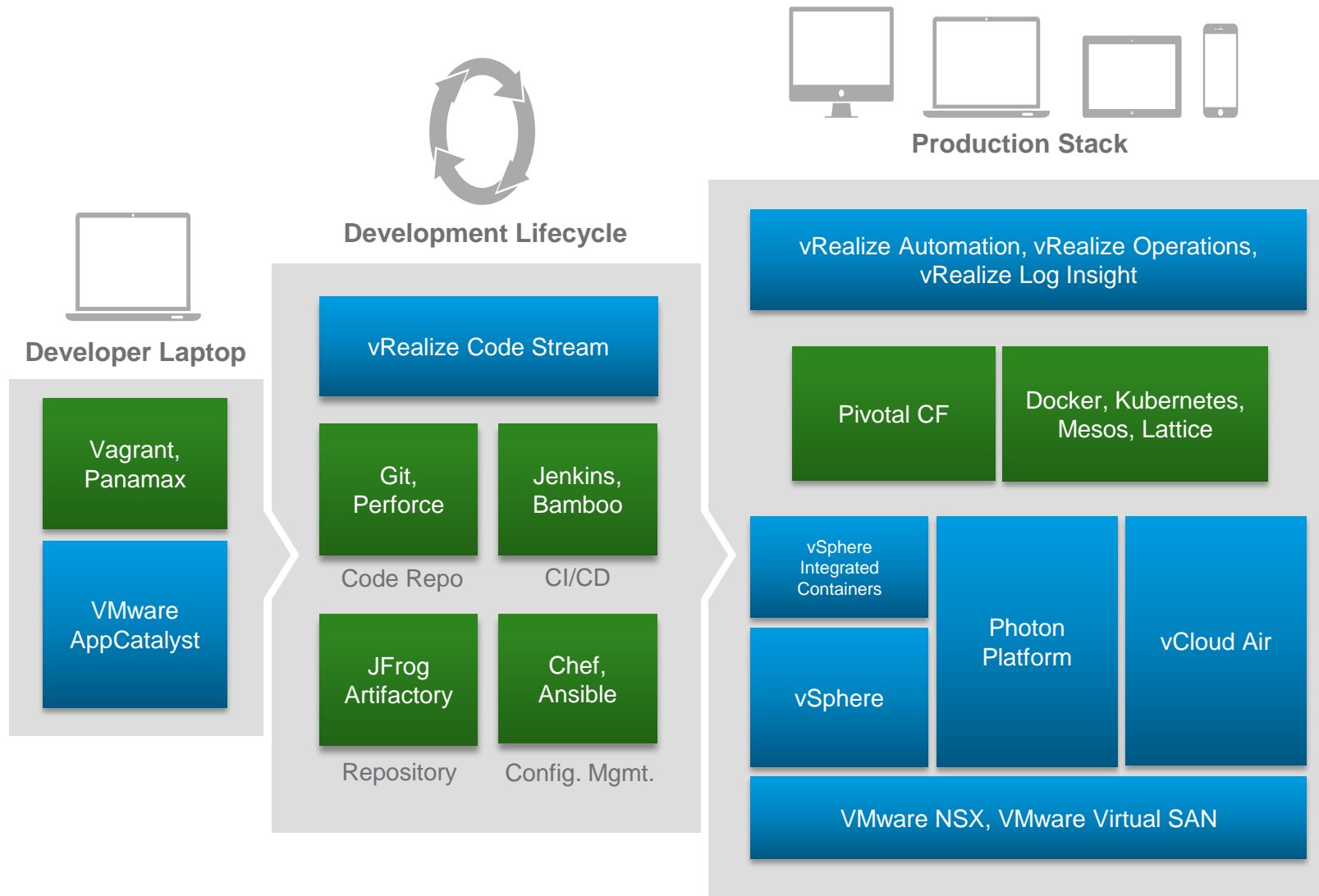
```
~# docker pull my_app
~# docker run my_app
~#
```

That's it!!

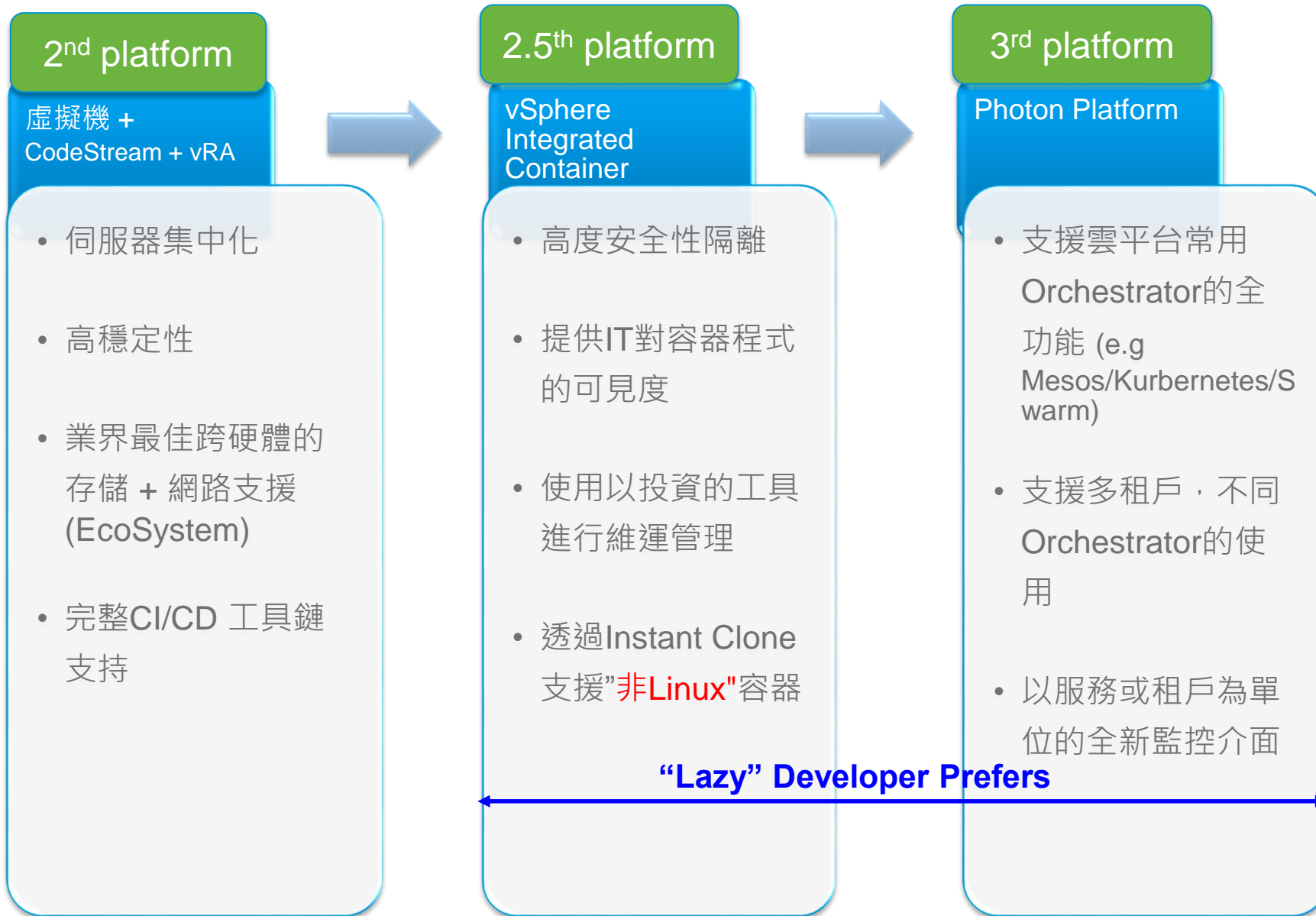
- A natural fit for 3rd Platform, 12 factor, microservices
- It makes DevOps much, much easier



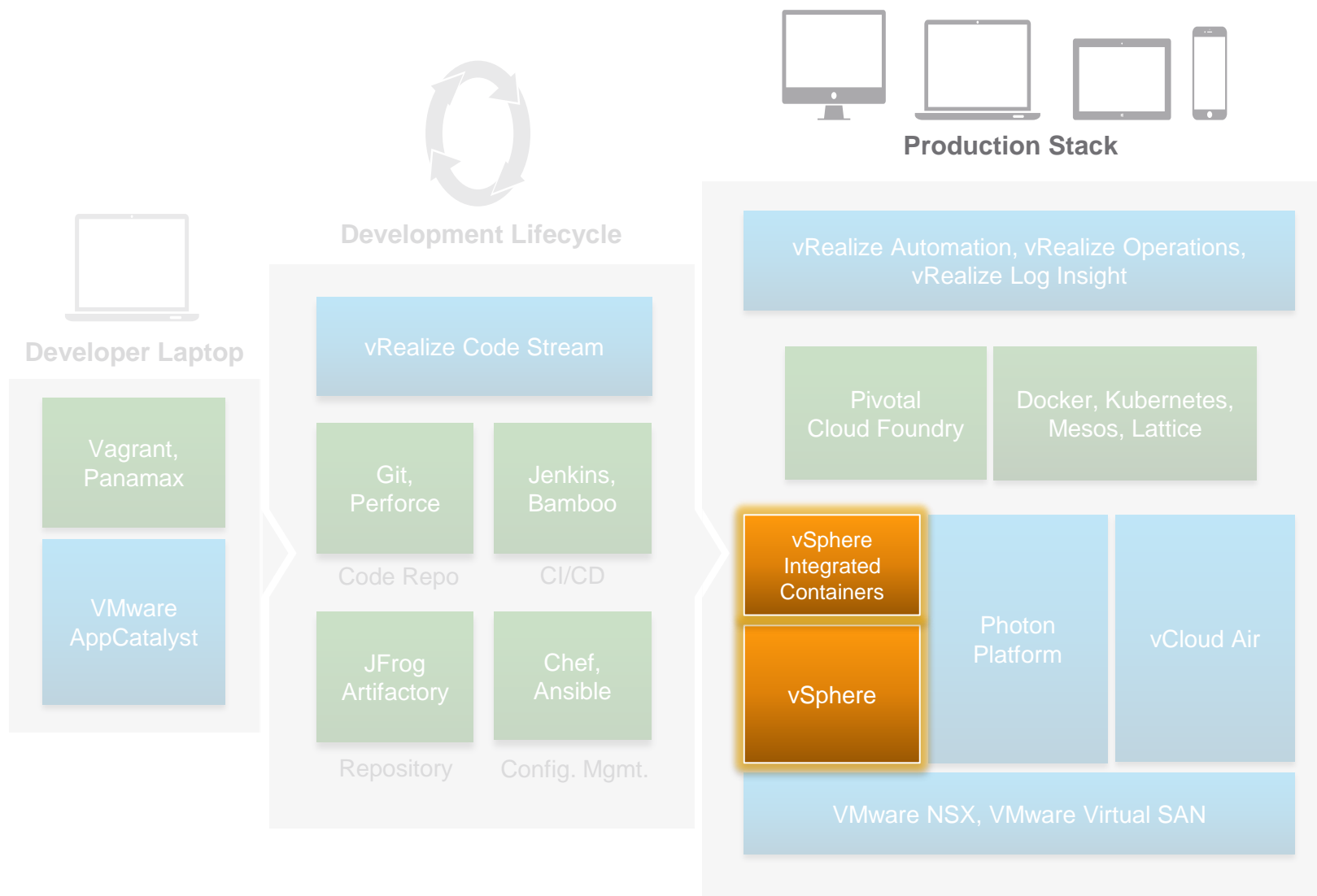
開發工具需要與時俱進：VMware特別針對雲程式開發的工具



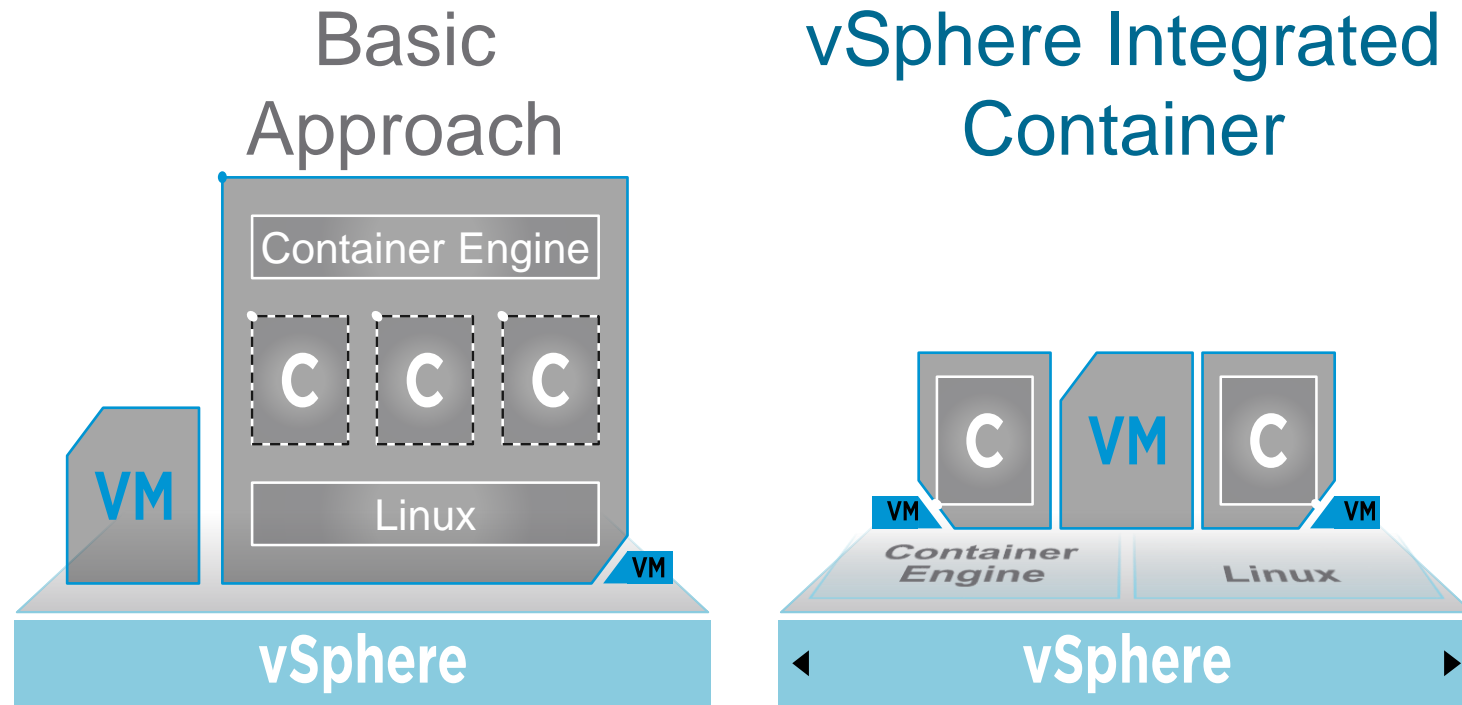
VMware如何帶領客戶踏上雲平台的旅程



VMware 雲平台開發工具

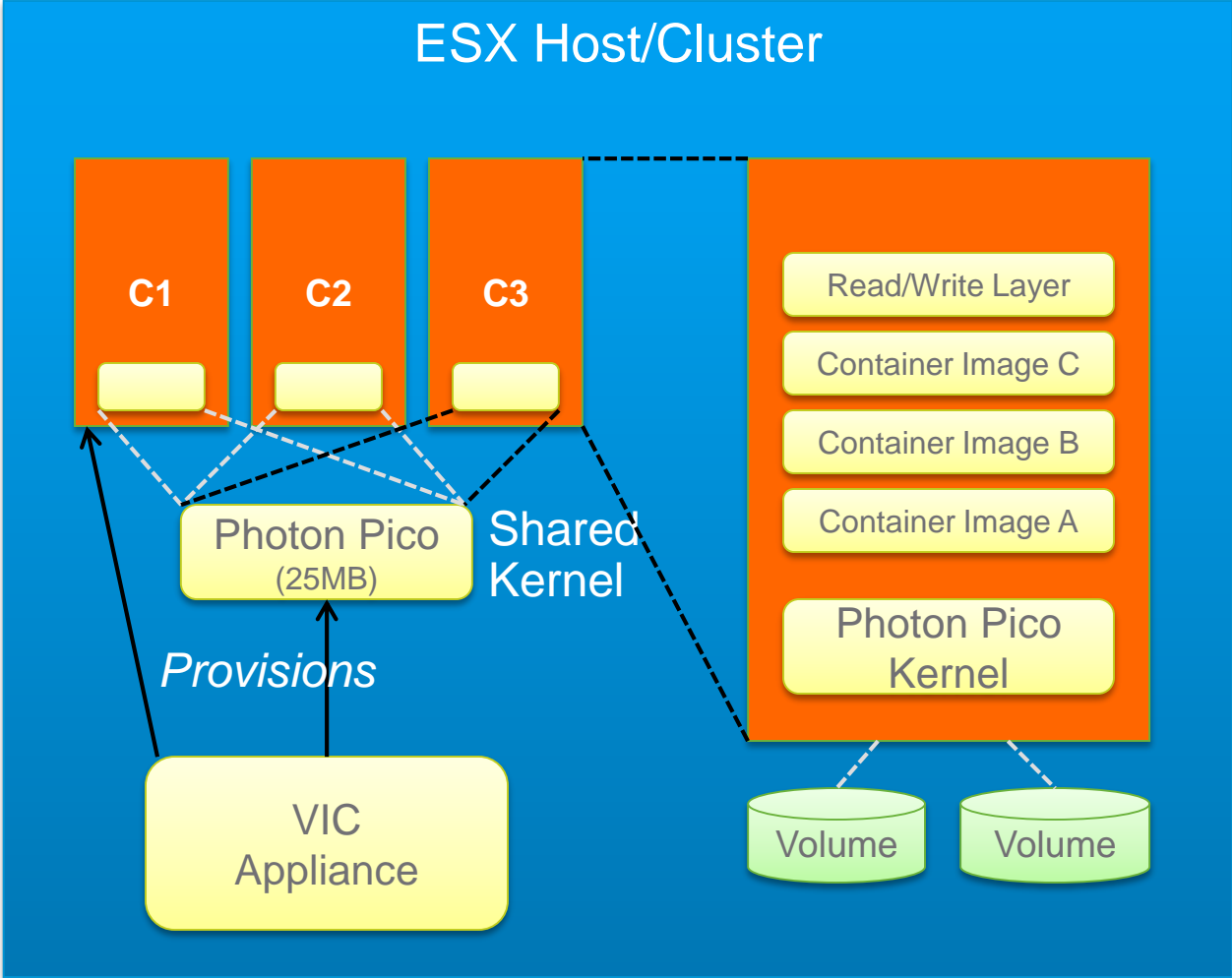


透過vSphere佈建Container



Developers + Operators use the same abstraction

技術深度頗析： Instant Clone and the Shared Linux Kernel



技術預覽：vSphere Integrated Container (VIC)

- Scenario: You will see
 - 透過VIC，開發者可以快速佈建出Docker Container
 - 透過VIC，管理者可以得到前所未有的能力：“監控容器程式”
 - 透過VIC，技術夥伴可以使用Instant Clone的機制，開發出“非 Linux”的原生容器 (使用一個大家都玩過的Doom + MS-DOS為例)

今日為止，容器工具仍有其限制...

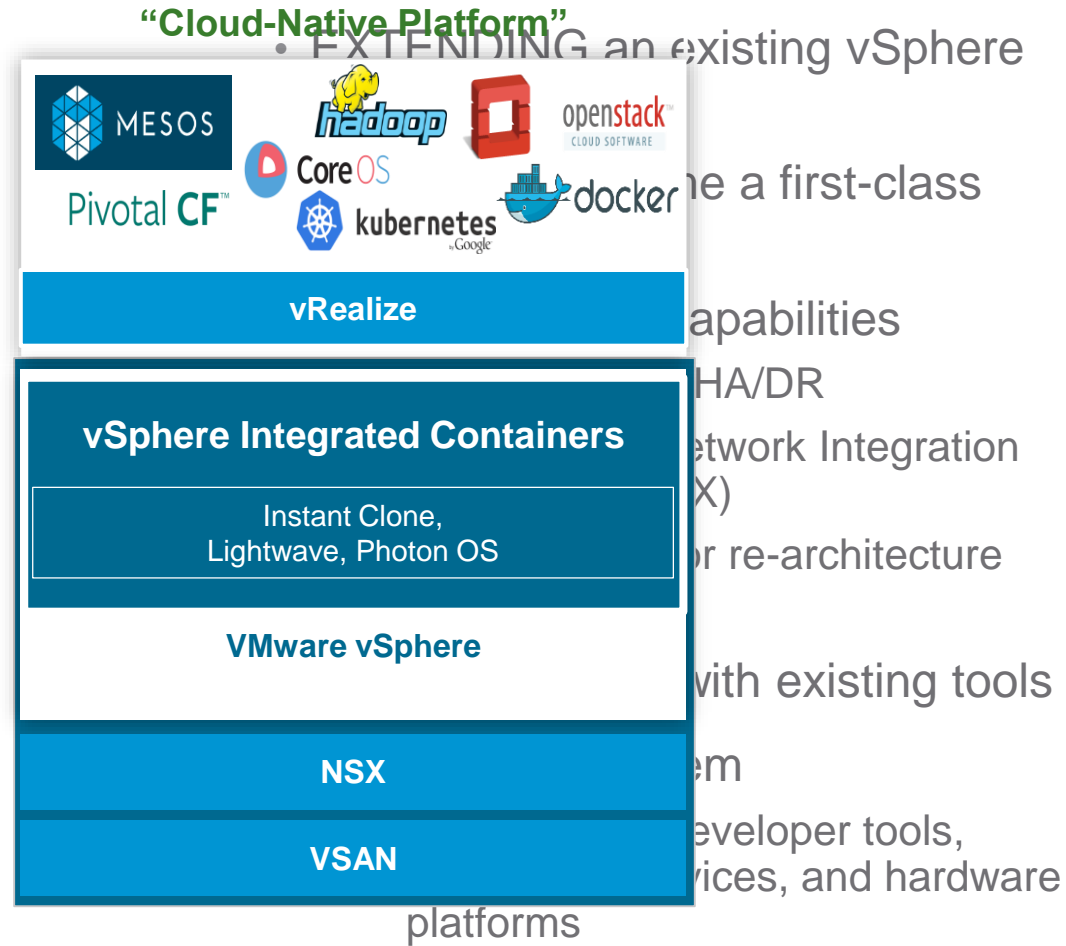
- 資源區隔不佳 (IBM Research Report. July, 2014)

An unsolved aspect of container resource management is the fact that processes running inside a container are not aware of their resource limits [27]. For example, a process can see all the CPUs in the system even if it is only allowed to run on a subset of them; the same applies to memory. If an application attempts to automatically tune itself by allocating resources based on the total system resources available it may over-allocate when running in a resource-constrained container. As containers mature, this limitation is likely to be addressed.

- 安全區隔不良
 - 沒有使用者區隔
 - Docker Daemon具有Root權限
 - 不一致的安全政策

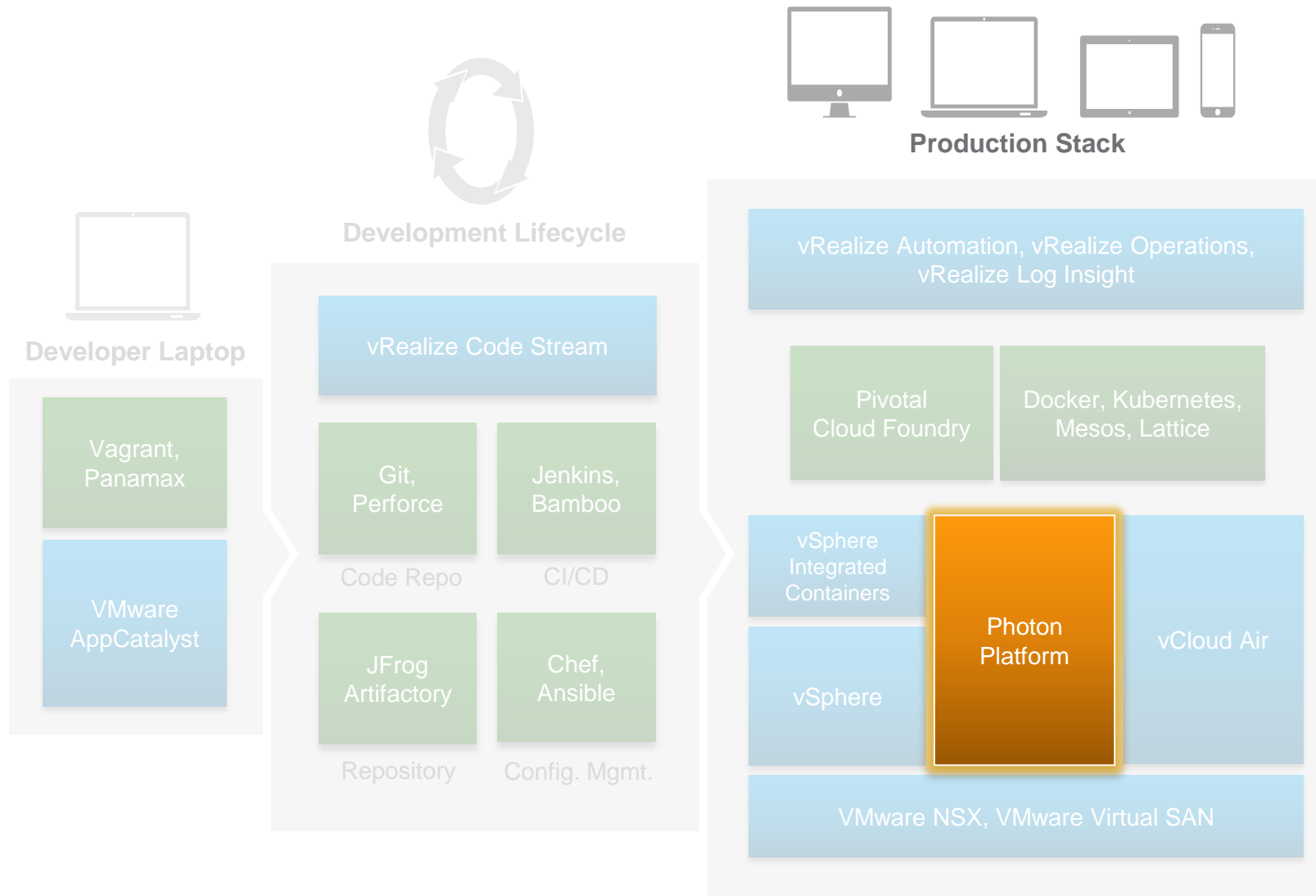
```
[root@14486219ea99 /]# ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
4: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP
    link/ether 02:42:ac:11:00:01 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::42:acff:fe11:1/64 scope link
        valid_lft forever preferred_lft forever
[root@14486219ea99 /]#
[root@14486219ea99 /]# /sbin/ip route | awk '/default/ {print $3}'
172.17.42.1
[root@14486219ea99 /]#
```


Uniting Technologies – Introducing vSphere Integrated Containers

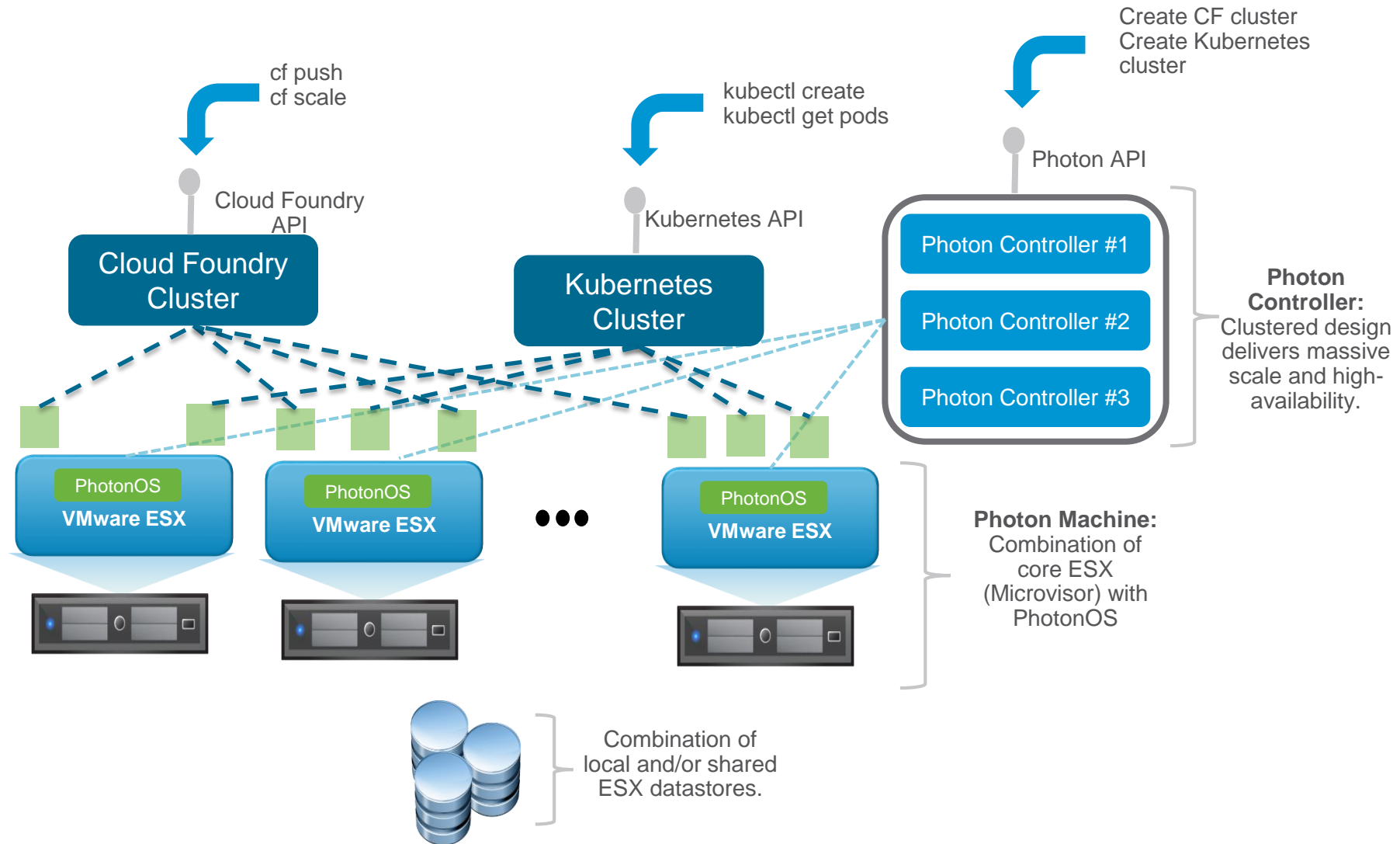


Leverage Your Existing Investments and Enable On-Ramp To Cloud-Native

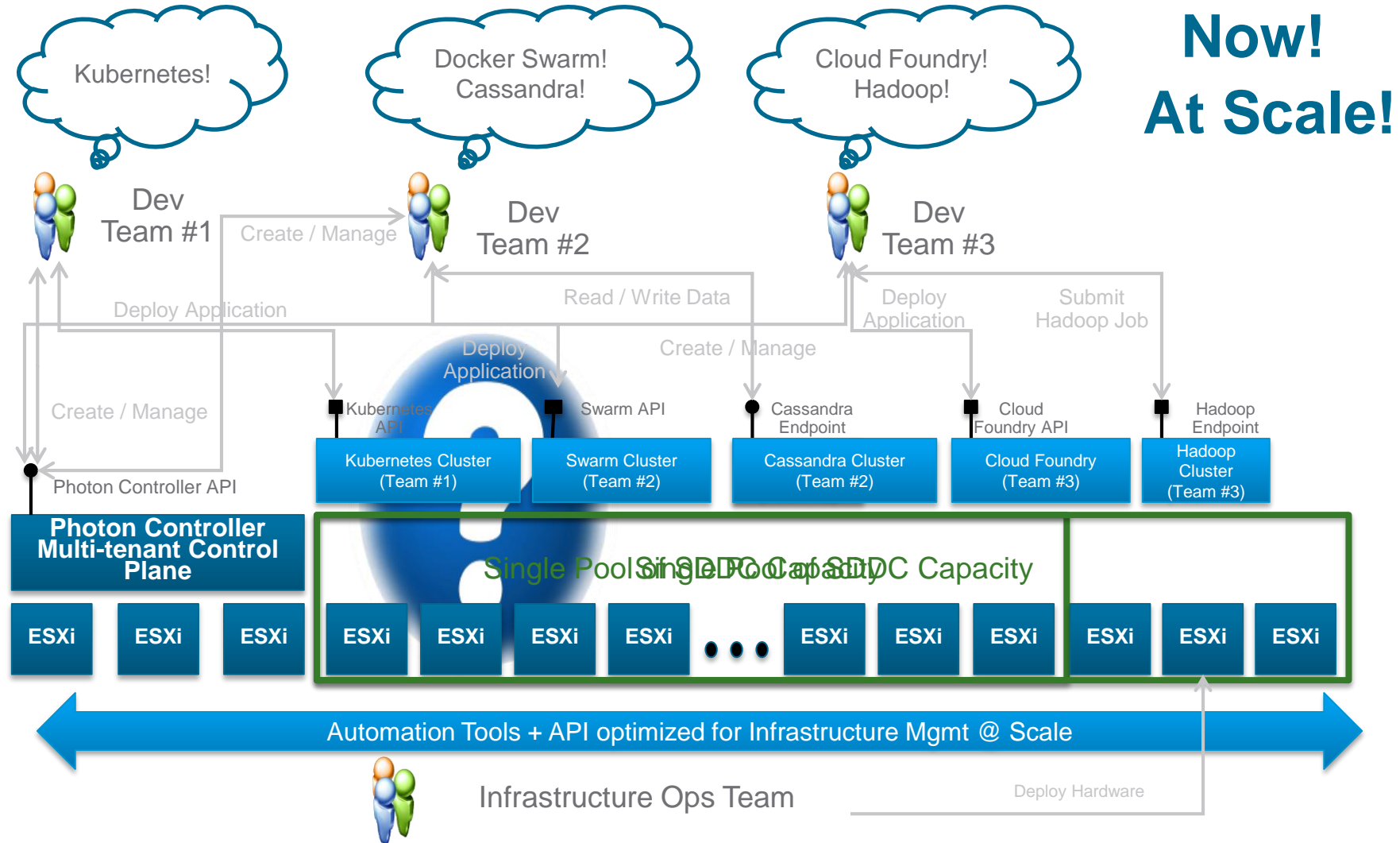
VMware 雲平台開發工具



Photon Platform 架構



What is Photon Controller?



**Now!
At Scale!**

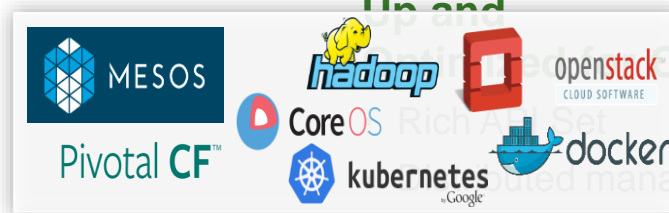
公有雲是否是最佳的第三平台溫床？

糖果屋的故事: Hansel and Gretel



Introducing the VMware Photon Platform

Cloud-Native Platform Built from Ground Up and



Containers

Management

- Streamlined and optimized hypervisor

Photon Controller

Differentiating Benefits

- Speed – Spin-up in seconds
- Scale – Supports hundreds of thousands of containers
- Movement – Fluid and dynamic

Photon Machine

Core Components

- Photon Controller – Distributed Management, Scheduling, Orchestration, Project Lightwave
- Photon Machine – Photon OS, Microvisor

VMware Photon Platform

Redesign Your Infrastructure To Deliver Cloud-Native

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Five Imperatives for Digital Business

Asymmetry in Business

- Innovative Like a Startup, Deliver Like an Enterprise.

Now Entering: The professional Era of Cloud

- Unified Hybrid Cloud Is the Future

The Security Challenge: Protecting People, Apps, and Data

- A Renaissance in Security Has Begun. CARPE DIEM

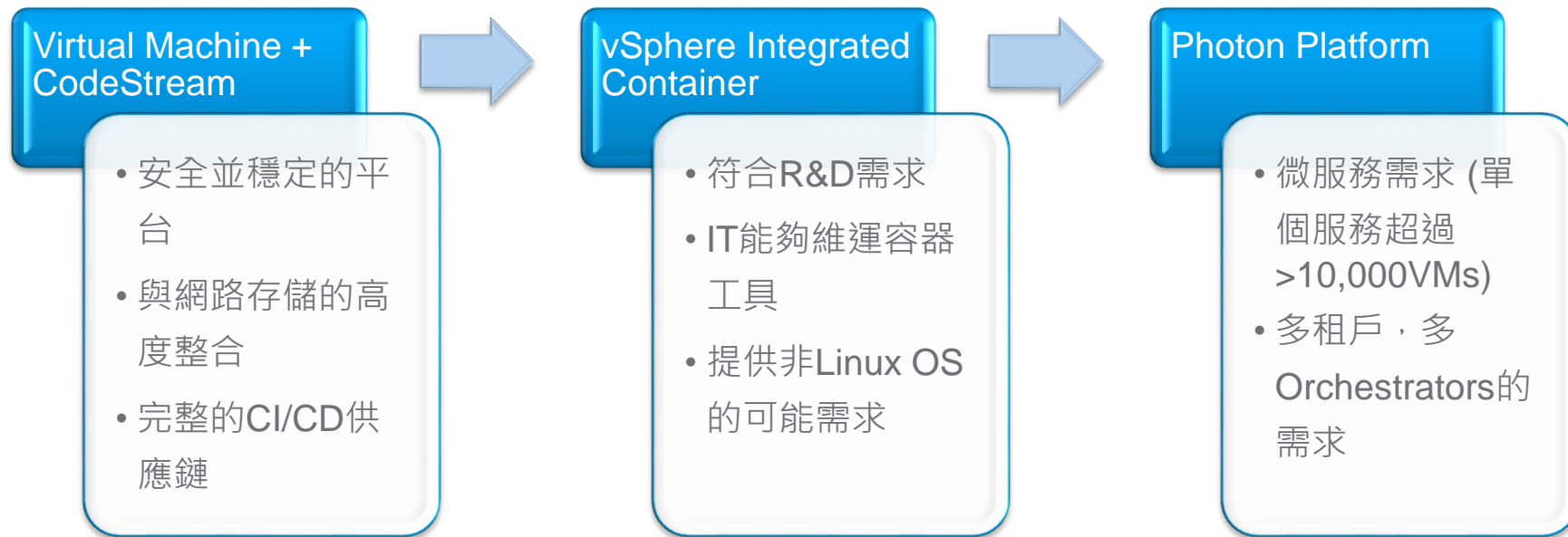
The Next Wave of IT Innovation: Proactive Technology

- Automate Everything. Predict (Almost) Everything.

Tech-Driven Change Reshapes the S&P 500

- Taking Risks = Lowest Risks

各平台的優勢分析



所有的服務都應該使用第三平台嗎？

Looking for a TestDrive? Hopped in

Product	Availability	Download
Photon OS	Public Available	Github
AppCatalyst	Public Available	Github
Lightwave	Public Available	Github
vSphere Integrated Container (VIC)	Beta-Program	RegistrationSite
Photon Controller	Public Available	Github
VMware Docker Machine	Public Available	Github

READY
FOR **ANY**
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