



Our Transition from IT Craftsmanship to IT Manufacturing

SHAWN WELLS

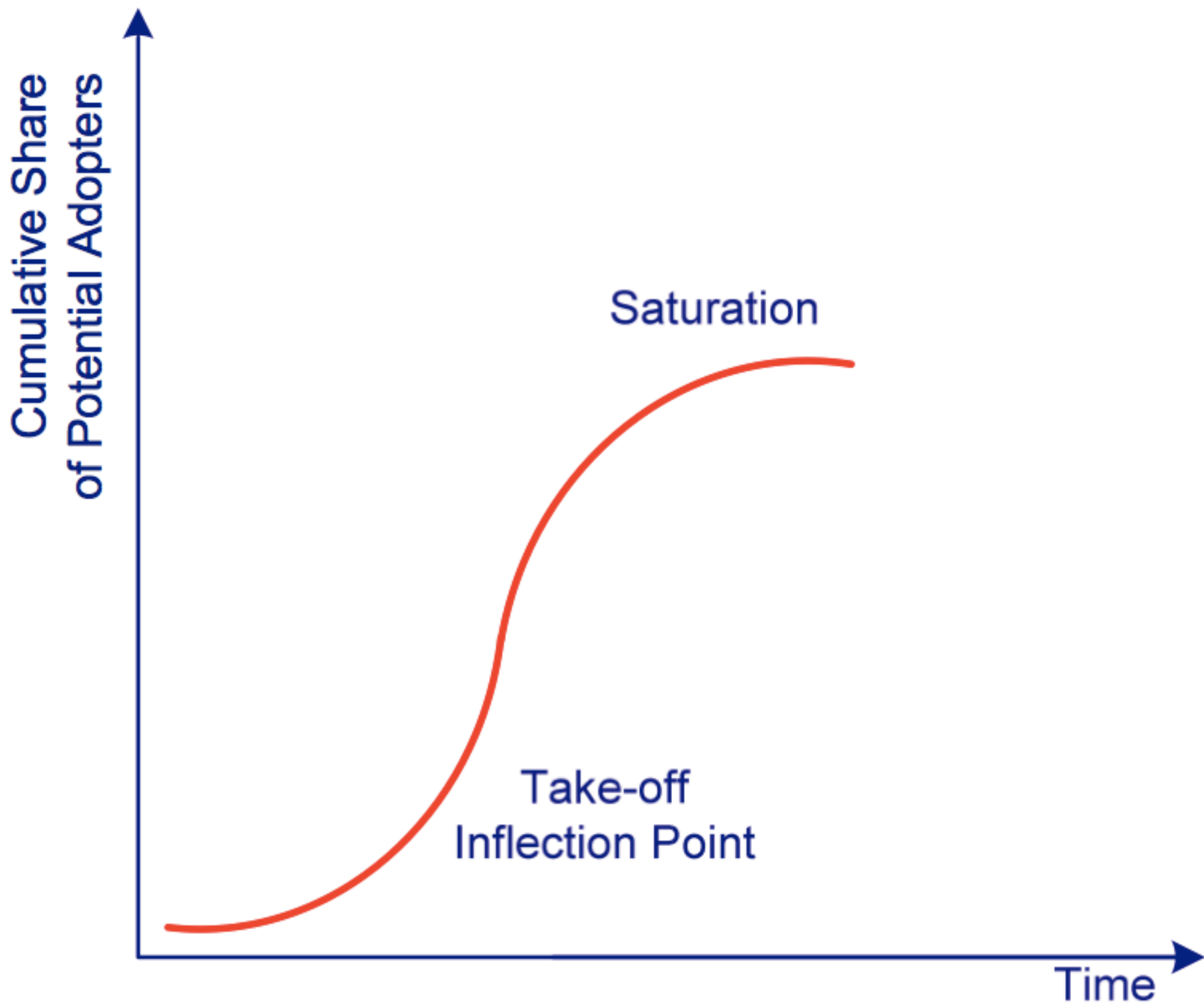
Director, Innovation Programs, U.S. Public Sector

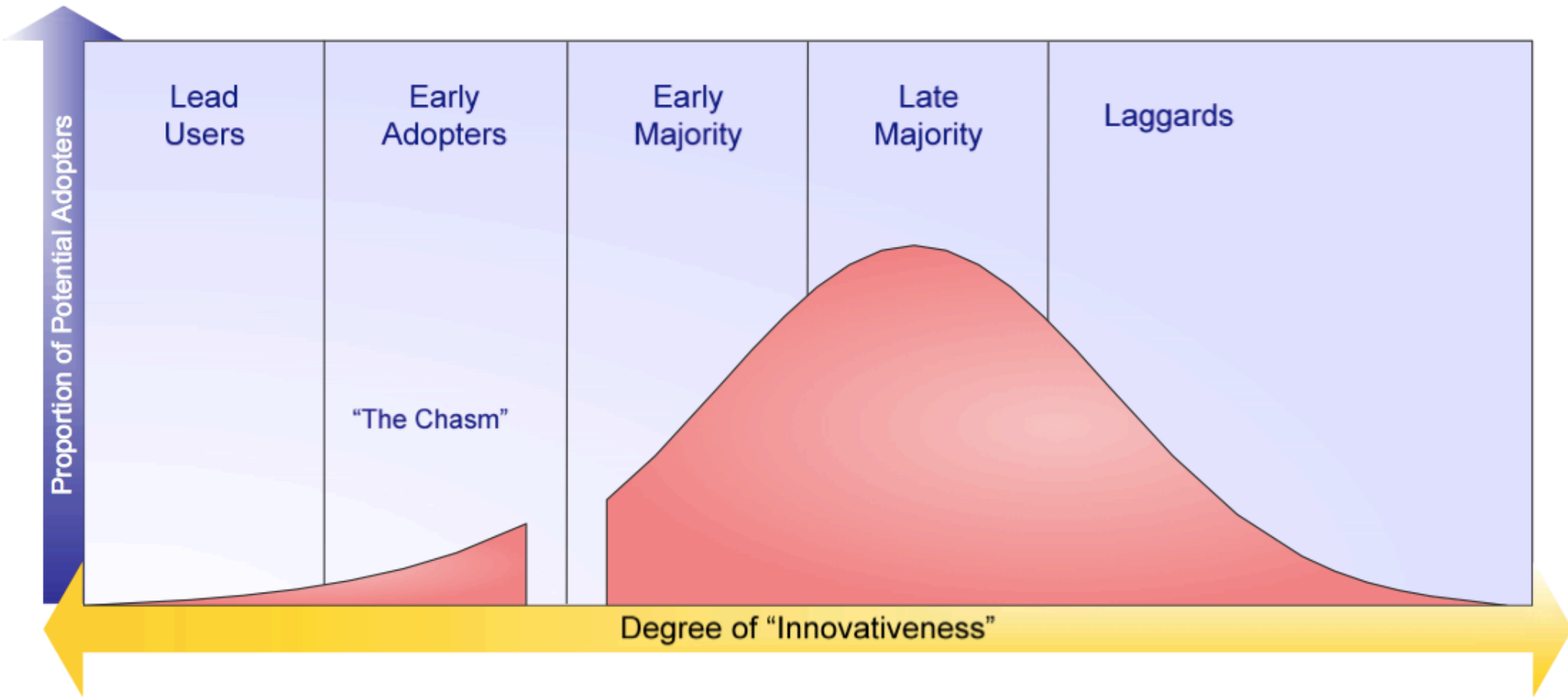
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FORWARD LOOKING STATEMENTS

Various remarks that we may make during this presentation about the company's future expectations, plans, and prospects including the statements containing the words believe, anticipate, plan, project, estimate, expect, intend, or will constitute forward-looking statements for the purposes of the Safe Harbors provisions under the Private Securities Litigation Reform Act of 1995. Actual results may differ materially from those indicated by these forward-looking statements as a result of various important factors including those discussed in the company's most recent quarterly report on Form 10-Q filed with the SEC.

In addition, any forward-looking statements represent our estimates or views only as of today, May 7, 2014, and these estimates or views may change. While the company may elect to update forward-looking statements at some point in the future we specifically disclaim any obligation to do so even if our estimates or views do change and therefore you should not rely on these forward-looking statements as representing our estimates or views as of any date subsequent to today.





“Innovation Programs”

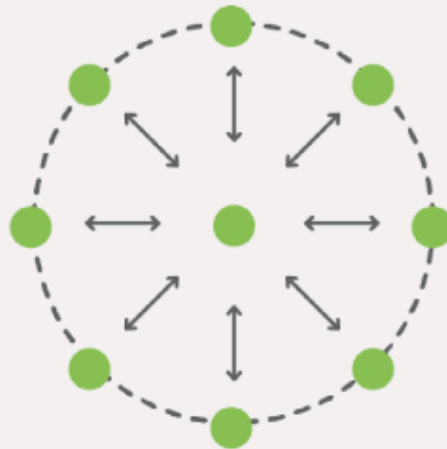
**Focus of next
30 minutes**

- **How does Open Compute fit within Red Hat’s strategy?**
- **IaaS vs PaaS vs Cloud?**
- **What tech. projects are next?**

OPEN CODE

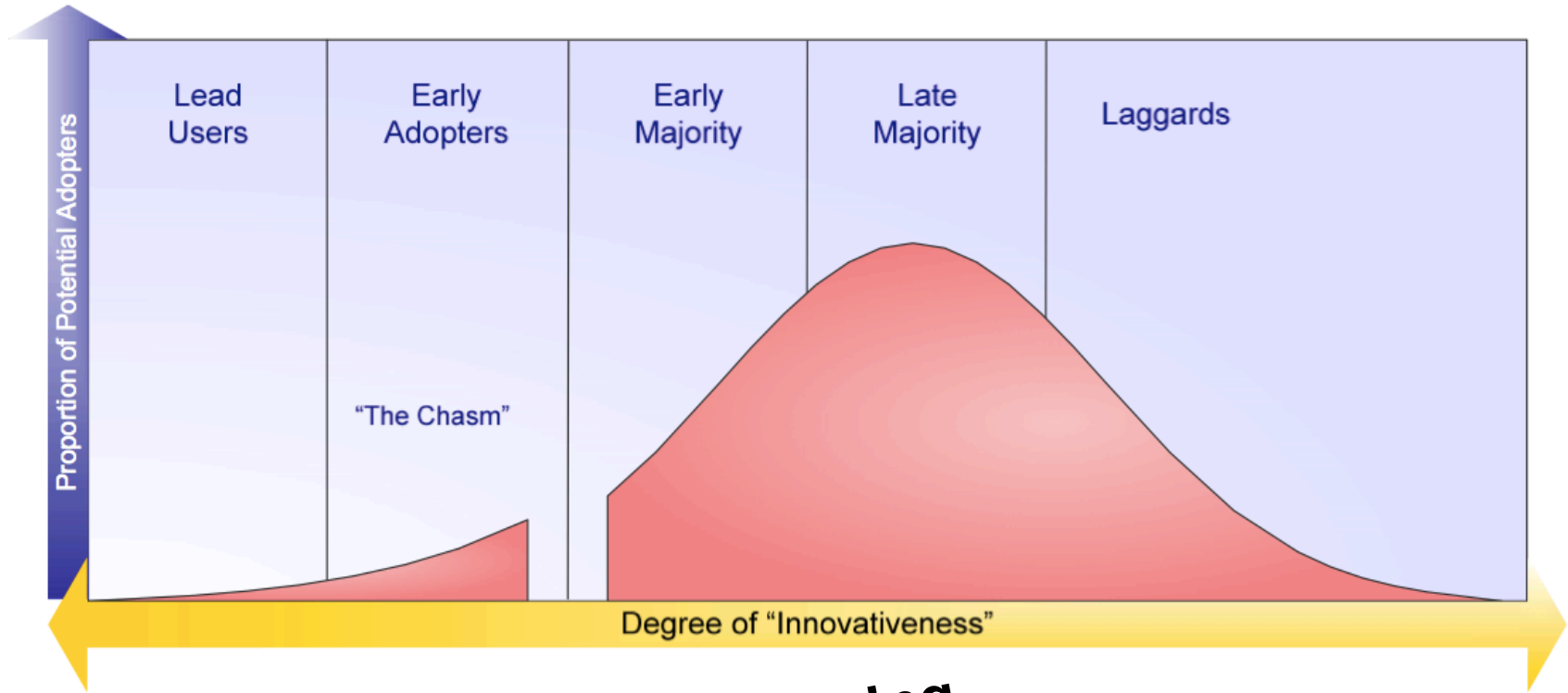
```
ANCE(CONF->MULTIPATHS[  
READ(&RDEV->NR_PENDIN  
>BDEV);ATOMIC_INC(&RDE  
DEV_DEC_PENDING(RDEV  
MULTIPATH_UNPLUG (STRU  
A);}STATICINTMULTIPATH_  
ST_QUEUE*Q,STRUCTBIO*  
=MDDEV_TO_CONF(MDDEV
```

MASS PARTICIPATION



EXPLOSION OF INNOVATION





Crossing the chasm

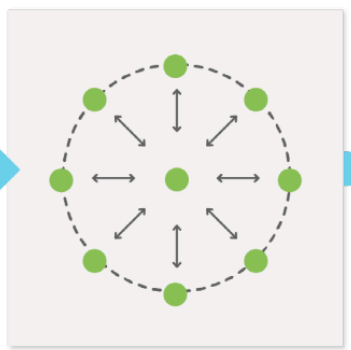


OPEN CODE

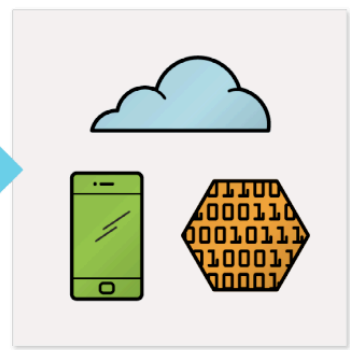
```

NCE(CONF->MULTIPATHS[
READ(&RDEV->NR_PENDIN
BDEV);ATOMIC_INC(&RDE
DEV_DEC_PENDING(RDEV
MULTIPATH_UNPLUG (STRU
A));STATICINTMULTIPATH
ST_QUEUE*Q,STRUCTBIO*
=MDDEV_TO_CONF(MDDEV
  
```

MASS PARTICIPATION



EXPLOSION OF INNOVATION



**BUSINESS DEMAND
FOR INNOVATION**

The graph features a vertical y-axis and a horizontal x-axis. Two lines originate from the y-axis. The upper line, labeled 'BUSINESS DEMAND FOR INNOVATION', starts at a low point and curves upwards with an increasing slope, ending in an arrowhead pointing towards the top right. The lower line, labeled 'CAPABILITY FOR INNOVATION ON TRADITIONAL INFRASTRUCTURE', starts at a higher point than the first line and curves downwards with a decreasing slope, ending in an arrowhead pointing towards the bottom right. The vertical distance between these two lines is labeled 'I.T. INNOVATION GAP'.

I.T. INNOVATION GAP

**CAPABILITY FOR INNOVATION
ON TRADITIONAL INFRASTRUCTURE**

**BUSINESS DEMAND
FOR INNOVATION**

I.T. INNOVATION GAP

**CAPABILITY FOR INNOVATION
ON TRADITIONAL INFRASTRUCTURE**

**OPEN
HYBRID
CLOUD**



OPEN HYBRID CLOUD

Open technology is standardized, interoperable, and modular.

Open prevents lock-in and promotes innovation.

OPEN HYBRID CLOUD

A hybrid environment unifies resources—public and private.

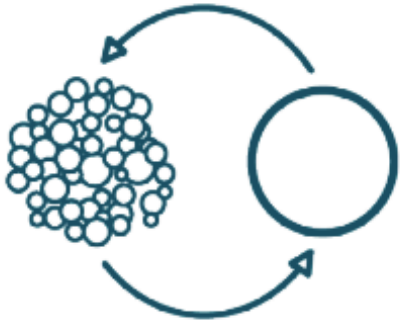
A hybrid environment offers new business capabilities and is open to new advances.



OPEN HYBRID CLOUD

Cloud abstracts and balances workloads across physical and virtual systems.

Cloud provides a future-proof path towards technology evolution.



UNIFIED SYSTEMS

create efficiency



PORTABLE WORKLOADS

create flexibility



OPEN STANDARDS

ensure your organization
is future-proof

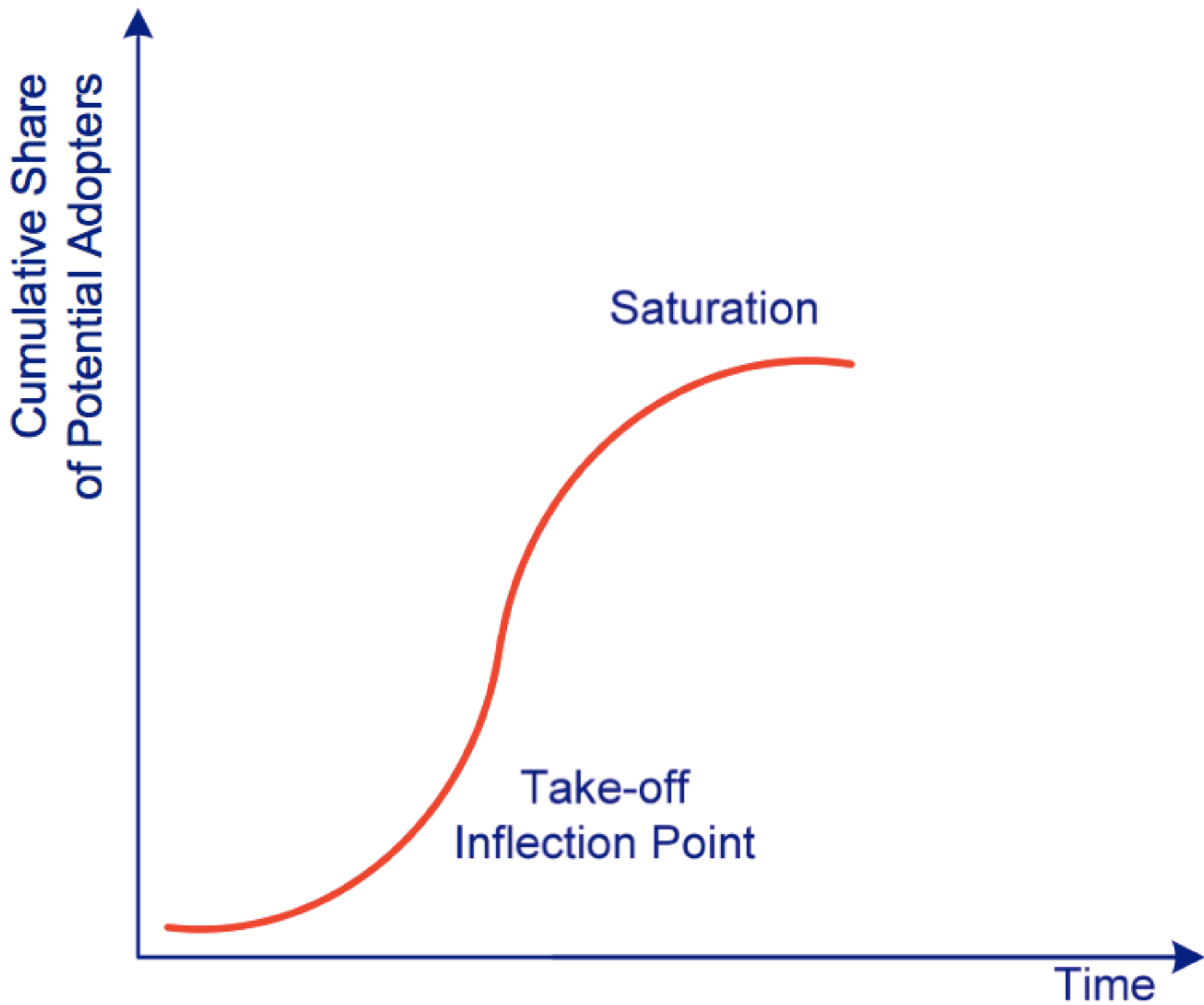
Should we be the best?



Should we be unique?



Can we do both?



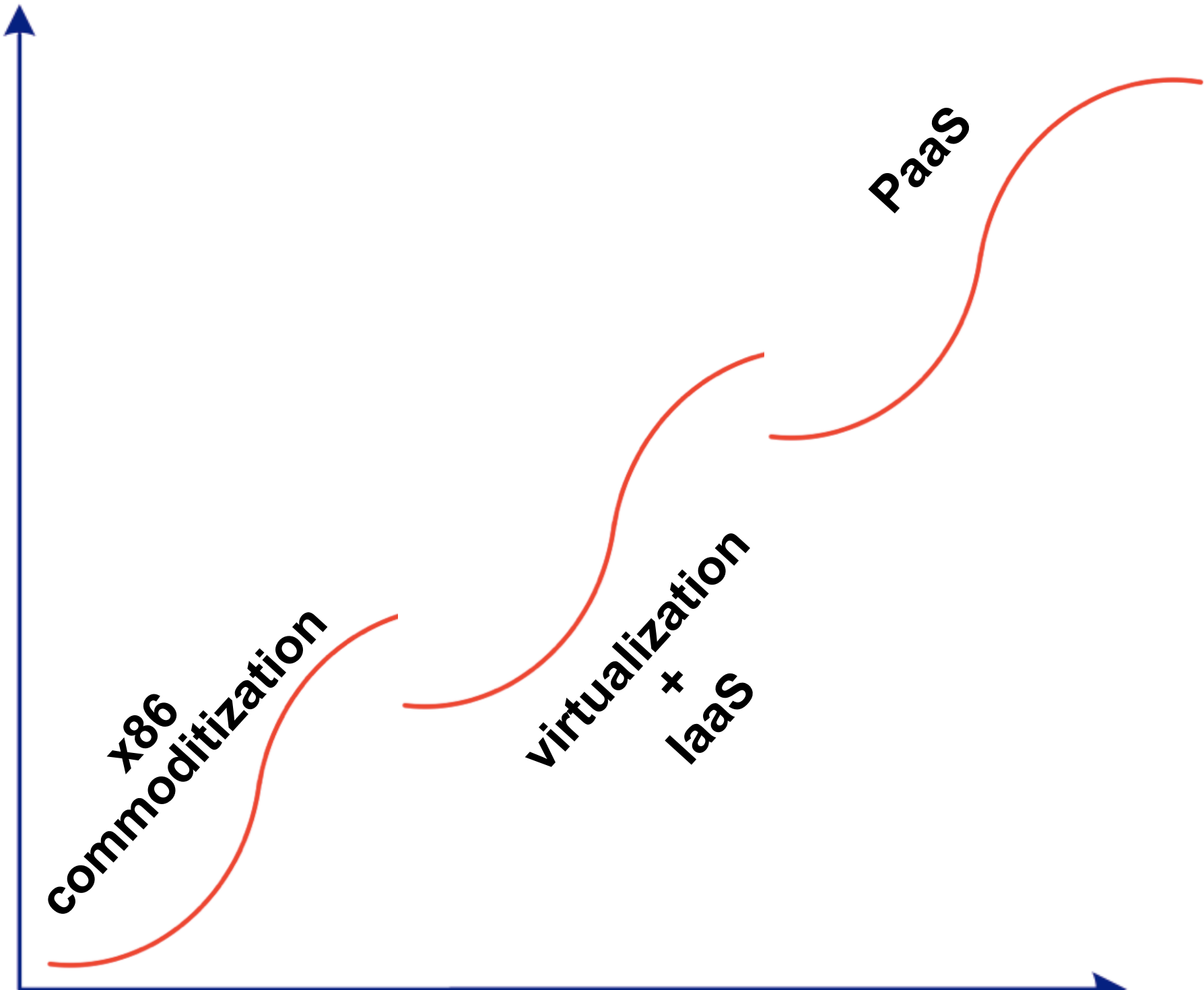
Cumulative Share
of Potential Adopters

x86
commoditization

virtualization
+
IaaS

PaaS

Time



YES, WE STILL HAVE INFRASTRUCTURE.



AWS / CloudForms / OpenStack (IaaS) / RHEV (Virt) / Bare Metal

RHEL IS THE FOUNDATION.



OpenShift is Built on Instances of
Red Hat Enterprise Linux (RHEL)

RHEL

RHEL

RHEL

RHEL

AWS / CloudForms / OpenStack (IaaS) / RHEV (Virt) / Bare Metal

A BROKER MANAGES NODES.



Nodes are where User Applications live.
Brokers keep OpenShift running.

RHEL

Brokers

RHEL

Node

RHEL

Node

RHEL

Node

AWS / CloudForms / OpenStack (IaaS) / RHEV (Virt) / Bare Metal

RHEL GIVES US MULTI-TENANCY.

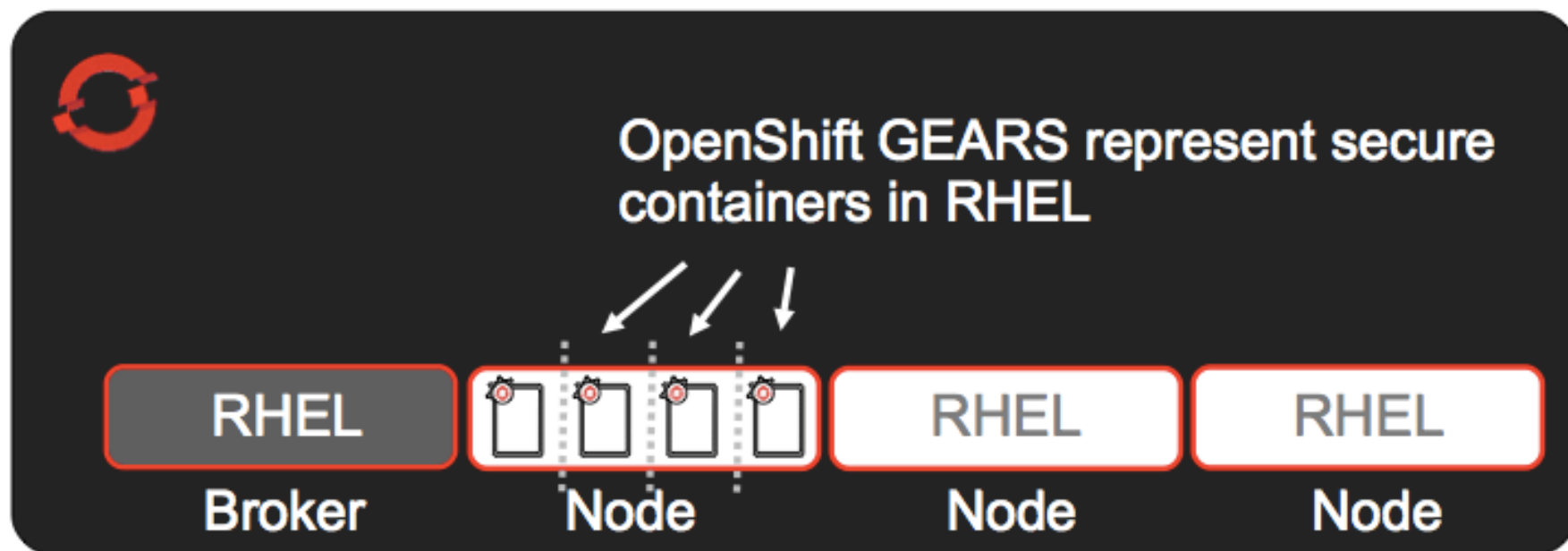


SELinux Policies securely subdivide the Node instances.



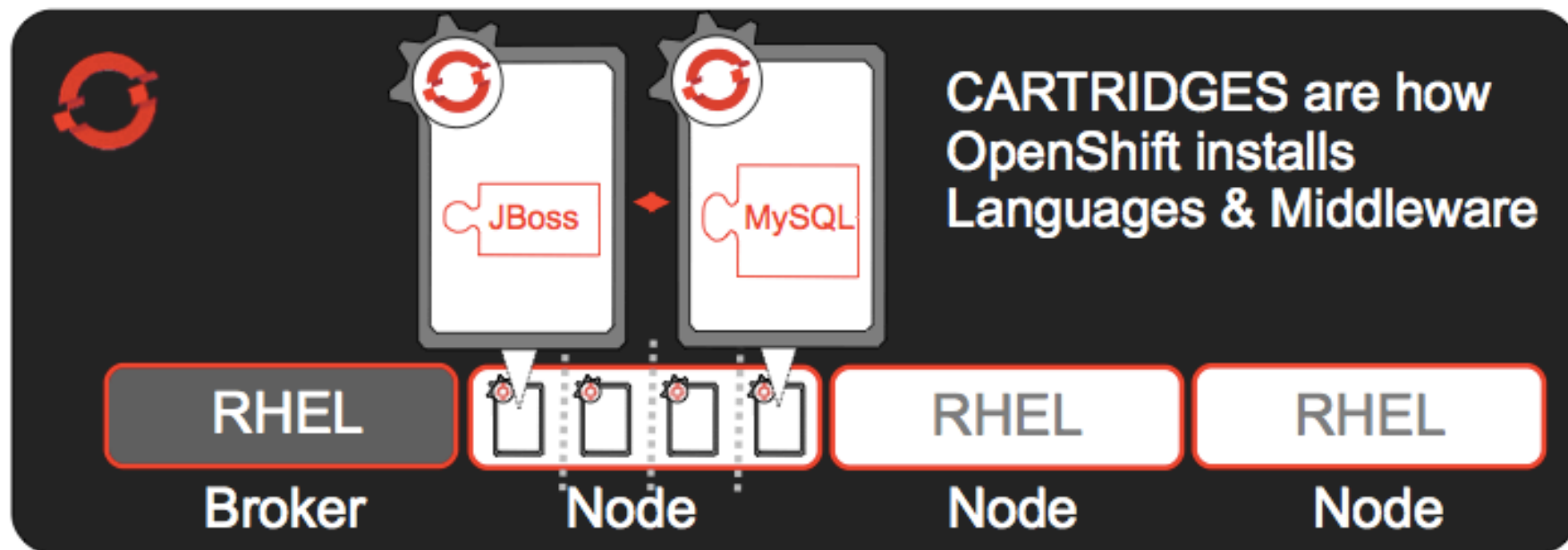
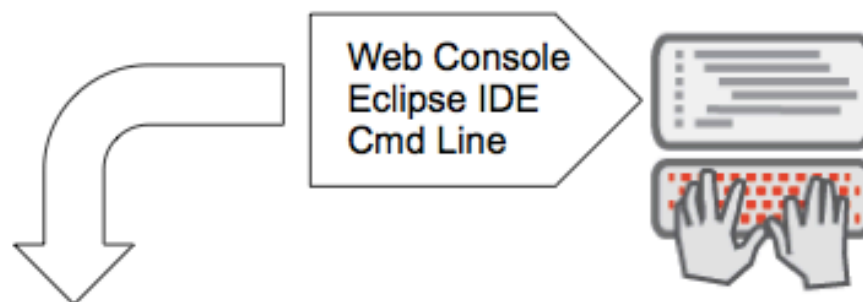
AWS / CloudForms / OpenStack (IaaS) / RHEV (Virt) / Bare Metal

GEARS, NOT SERVERS.




AWS / CloudForms / OpenStack (IaaS) / RHEV (Virt) / Bare Metal

CARTRIDGES LIVE IN GEARS



AWS / CloudForms / OpenStack (IaaS) / RHEV (Virt) / Bare Metal

YES, YOU CAN BUILD YOUR OWN.



OpenShift Default Cartridges

Java	MySQL
PHP	Postgres
Python	Etc.
Ruby	
Etc.	

CUSTOM

Developers can add custom language, data-store, or middleware with with a custom Cartridge.

AWS / CloudForms / OpenStack (IaaS) / RHEV (Virt) / Bare Metal

QUICKSTARTS

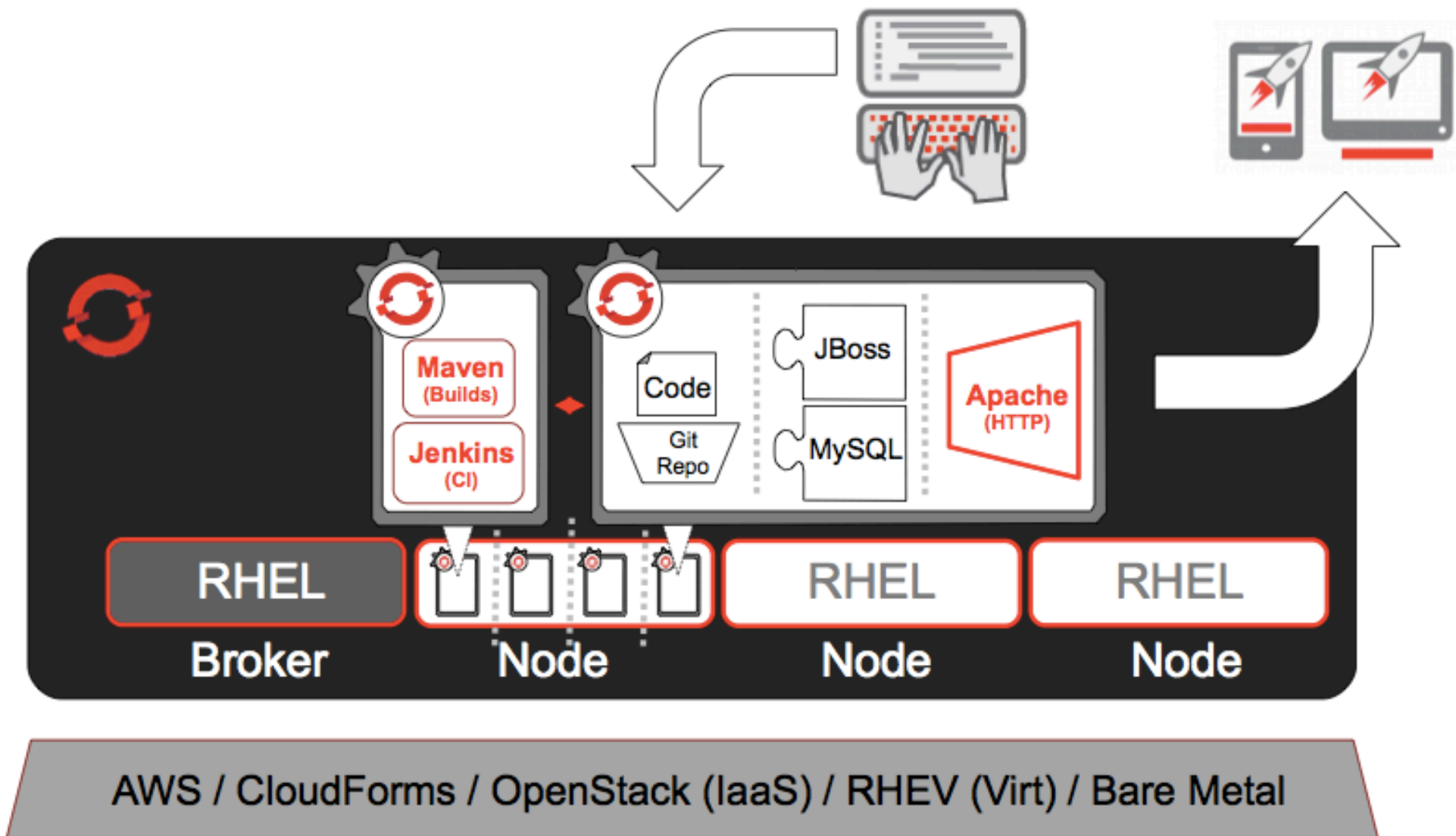


Java	MySQL	Web App Template
PHP	Postgres	Mobile App
Python	Msging	Legacy Middleware
Ruby	NoSQL	Departmental App
Perl	Cache	BI App
Node.js	ESB	?

Enable a Cartridge Library that will allow self-service for apps and Tech that are needed in your organization.

AWS / CloudForms / OpenStack (IaaS) / RHEV (Virt) / Bare Metal

AUTOMATE BUILD, TEST, PUSH.





Simple container management across systems

geard is a command-line client and agent for integrating and linking Docker containers into Linux's systemd. It can:

- Install a Docker image into systemd with network and environment configuration
- Start, stop, and restart individual containers
- Build, rebuild, and test Docker images
- Create private network links between containers for easy configuration
- Stream logs, download container data and images, and monitor container status
- Enable SSH to containers, distribute public keys, and create and manage Git repositories
- Deploy applications directly from the CLI
- Integrate with application orchestrators through an API

<http://openshift.github.io/geard/>



Simple container management across systems

geard takes JSON as input. This file describes the container, and how/if any are linked. To setup RockMongo webapp and MongoDB backend:

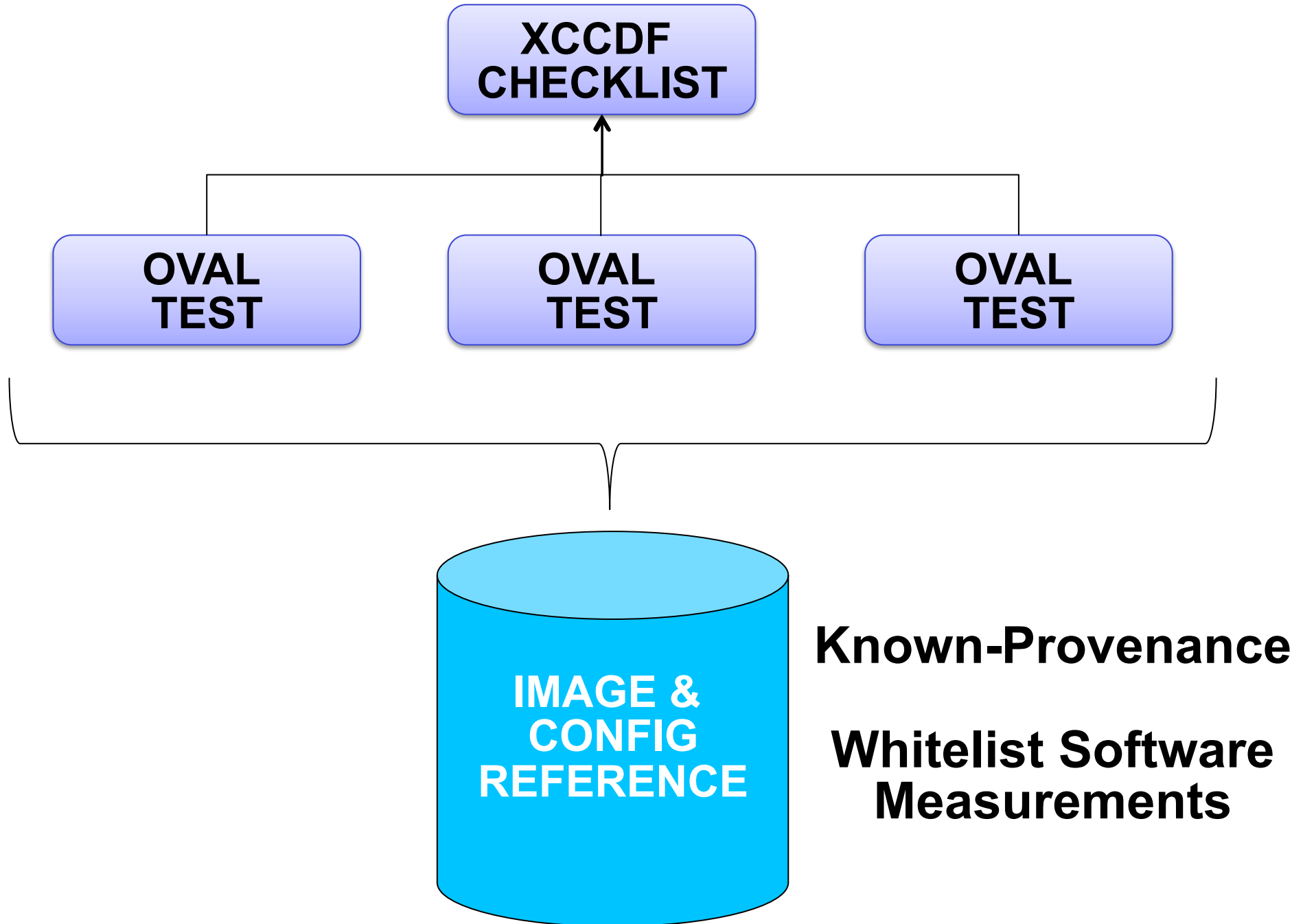
```
$ curl -O https://raw.githubusercontent.com/openshift/geard/master/deployment/fixtures/rockmongo_mongo.json
$ cat rockmongo_mongo.json
{
  "containers": [
    {
      "name": "rockmongo",
      "count": 1,
      "image": "openshift/centos-rockmongo",
      "publicports": [{"internal": 80, "external": 6060}],
      "links": [{"to": "mongodb"}]
    },
    {
      "name": "mongodb",
      "count": 1,
      "image": "openshift/centos-mongodb",
      "publicports": [{"internal": 27017}]
    }
  ]
}
```



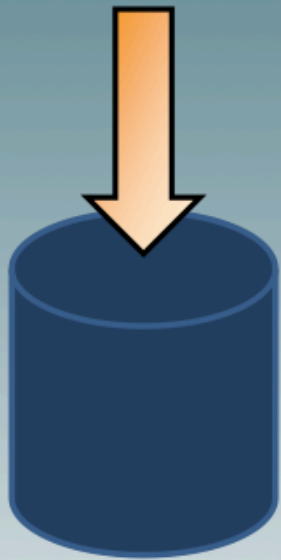
Simple container management across systems

And now to deploy:

```
$ sudo gear deploy rockmongo_mongo.json
==> Deploying rockmongo_mongo.json
local PortMapping: 80 -> 6060
local Container rockmongo-1 is installed
2014/05/05 17:36:53 ports: searching block 41, 4000-4099
2014/05/05 17:36:53 ports: Reserved port 4000
local PortMapping: 27017 -> 4000
local Container mongodb-1 is installed
==> Linking rockmongo: 127.0.0.1:27017 -> localhost:4000
local Container rockmongo-1 starting
local Container mongodb-1 starting
==> Deployed as rockmongo_mongo.json.20140505-173653
```



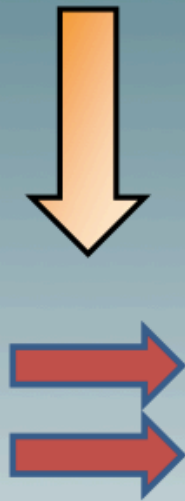
Known-Provence
Whitelist Software
Measurements



Pre-
established
Reference
Image



SCAP-derived
Configuration
Settings



Defined and
Verified
Configuration
Settings



SCAP-derived
Vulnerability
Testing



More Secure, Reliable IT on a
Continuously Monitored
basis = ***Unprecedented
Operational Readiness***

Threat
Intelligence
Feeds



**WE CAN DO MORE
WHEN WE WORK
TOGETHER**





redhat[®]

SHAWN WELLS

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