Continuous Release and Deployment to compress delivery cycles

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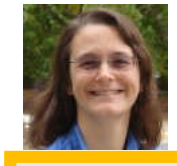
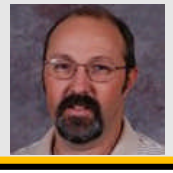
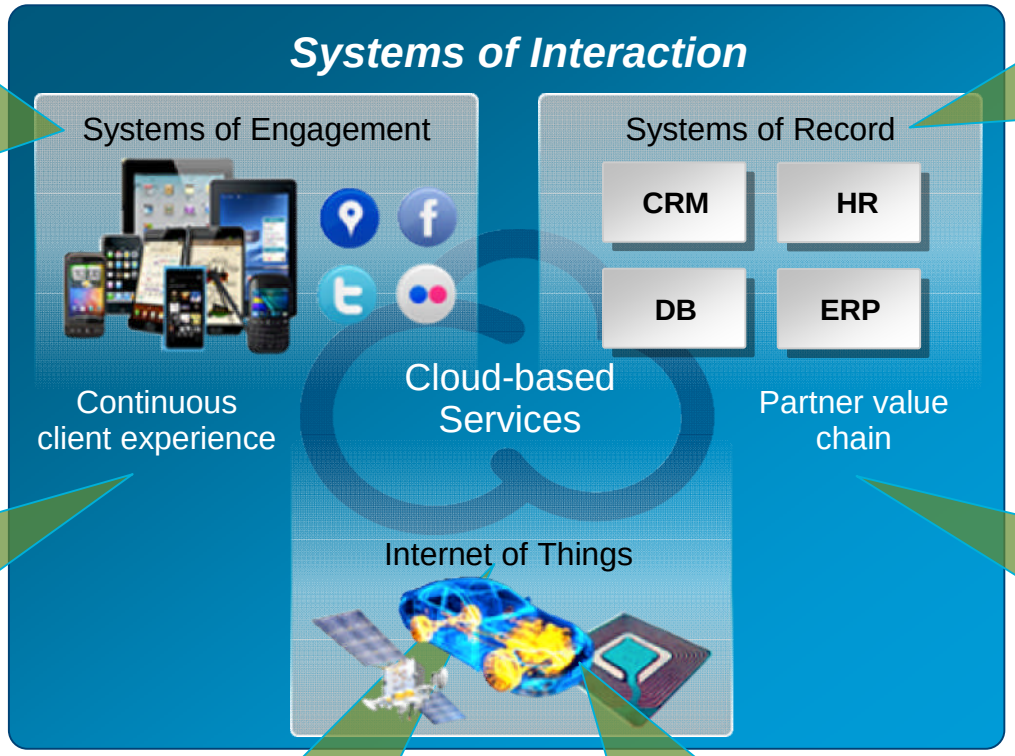
 	**IBM DevOps solution: Continuous Business Planning to get cost out and agility in** *Presenters: Rick Slade, Richard Szulewski*	**Aug 14, 2013**
 	**IBM DevOps solution: Collaborative Development to Spark Innovation and Integration among Teams** *Presenters: Tim Hahn, Danny Mace*	**Sep 4, 2013**
 	**IBM DevOps solution: Continuous Testing to save costs and improve application quality** *Presenters: Rosalind Radcliffe, Marty Shelton*	**Sep 11, 2013**
 	**IBM DevOps solution: Continuous Release and Deployment to compress delivery cycles** *Presenters: David Myers, Mike Baskey*	**Sep 18, 2013**

Business innovations are increasingly driven by software

Rapidly deliver differentiating applications and services to grow revenues, market share and obtain new customers



Integrate, evolve and maintain stability of services and comply with regulations

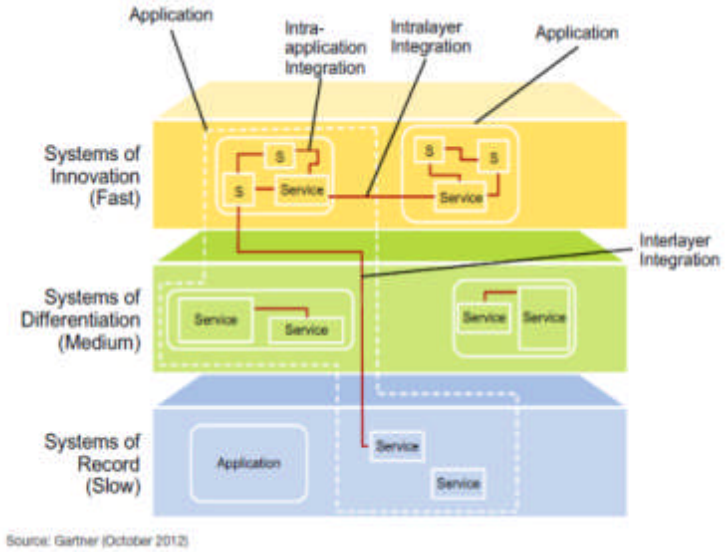
Provide differentiating client experience to meet the needs of empowered users

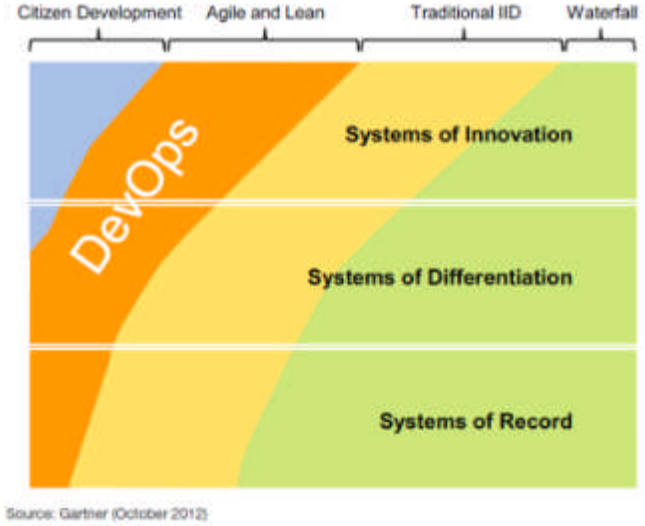
Leverage a software supply chain to lower cost and accelerate services

Leverage cloud to enable flexibility and offer new services

Deliver software based innovation to enable smarter infrastructure and millions of devices

Evolving customer and market expectations

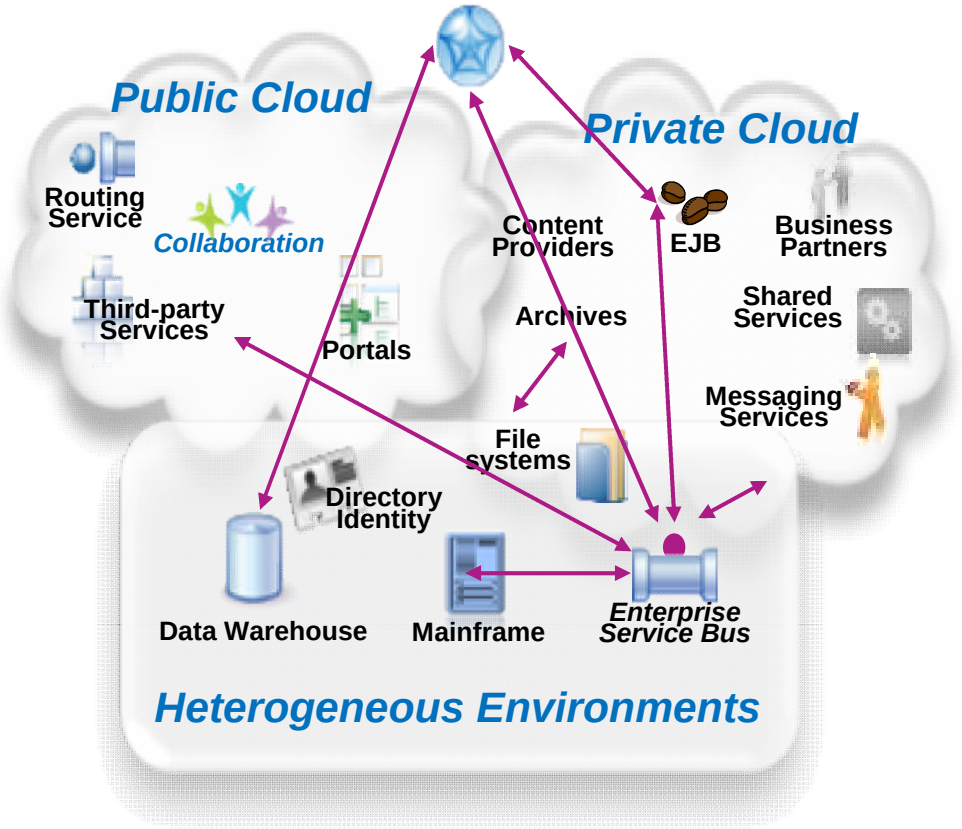




Capabilities and User Experience	Today	Emerging
Primary Workload Types	**Systems of Record** *Transactional*	**Systems of Interaction** *Big Data, Analytics, Mobile/Social Channels, Transactional*
Time to Value	Planned	Opportunistic
Release Frequency	**Months to Years**	**Hours to Days, based on business opportunity**
Integration Frequency	Weeks	Continuous
Service Sourcing	Develop	Consume and Assemble (Public and Private)
Operational Model	Systems Management	Built in to application, Recovery Oriented Computing, Continuous Availability
Infrastructure Deployment	Days	Minutes
Risk Profile	Big-Bang (High Risk)	Incremental

Enterprise Applications are ***complex***

- Interdependent applications and services
- Multi-tier
- Multi-architecture
- Multi-team
- Insourced/outsourced/partners
- Compliance/audit processes
- …




IT WORKED FINE IN TEST
OPS PROBLEM NOW

A lack of continuous delivery impacts the entire business

CHALLENGES

Costly, error prone manual processes and efforts to deliver software across an enterprise

Slow deployment to development and test environments leave teams **waiting and unproductive**

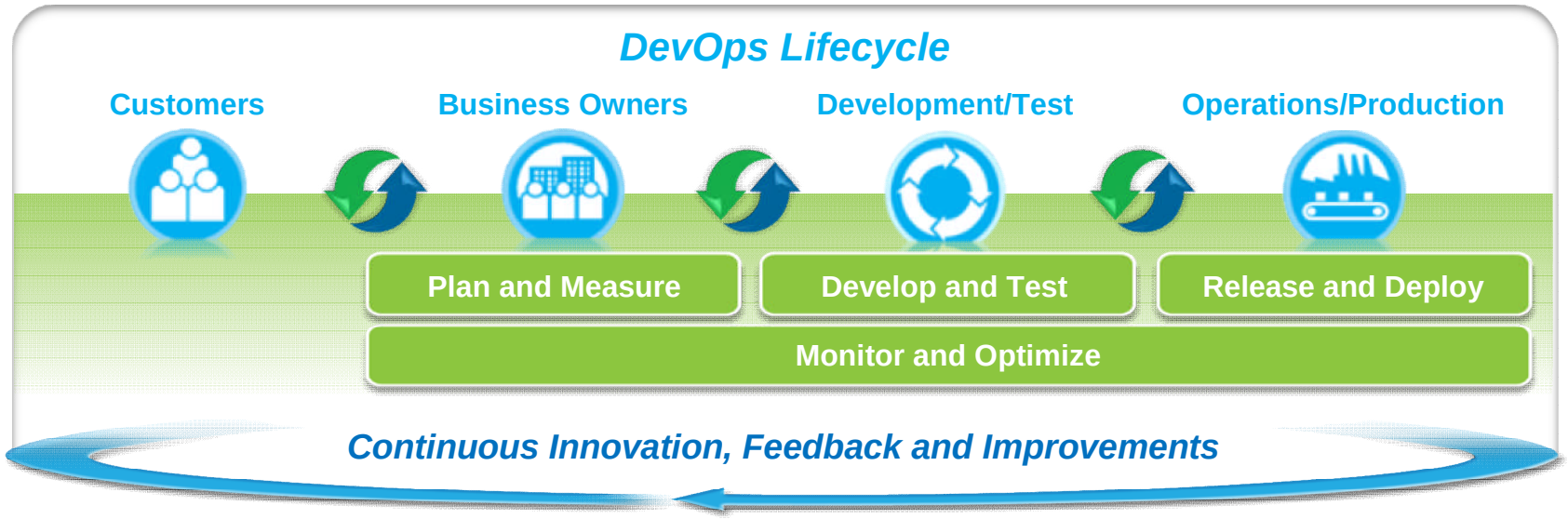
Upgrade risk due to managing multiple application configurations and versions across servers

Software glitch costs trading firm Knight Capital $440 million in 45 minutes

New Zealand's biggest phone company, Telecom paid out **$2.7 million** to some **47,000 customers who were overcharged** after a software glitch

A bad software upgrade at RBS Bank left **millions unable to access money for four days**

DevOps - *Enterprise capability for continuous service delivery that enables clients to seize market opportunities and reduce time to customer feedback.*



Accelerate Service Delivery

Expanding collaboration to include customers, LOB and others to eliminate organization silos

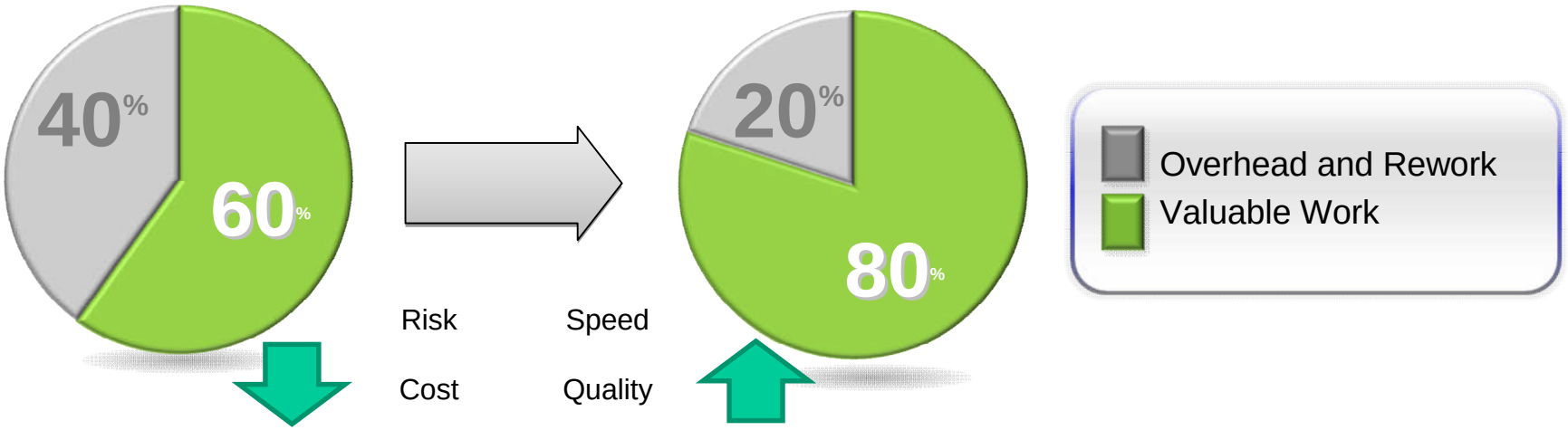
Balance speed, cost, quality and risk

Automating manual processes across delivery lifecycle to eliminate waste/delays and compliance tracking

Reduce time to customer feedback

Enabling a customer feedback loop for continuous improvement

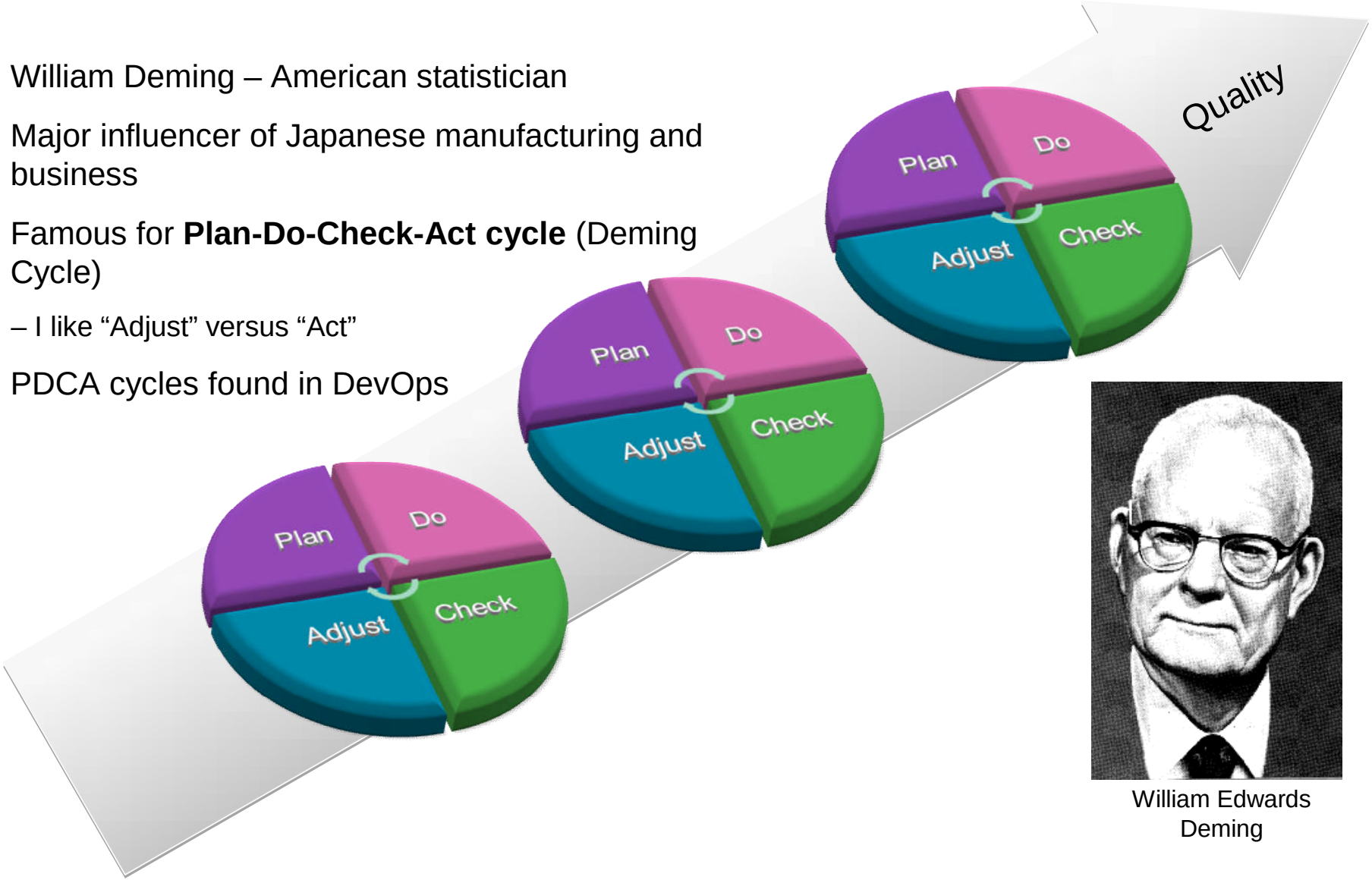
Removing waste is key to success



- Waste of overproduction
- Waste of time and resources waiting
- Waste of processes themselves (overhead)
- Waste of poor quality products

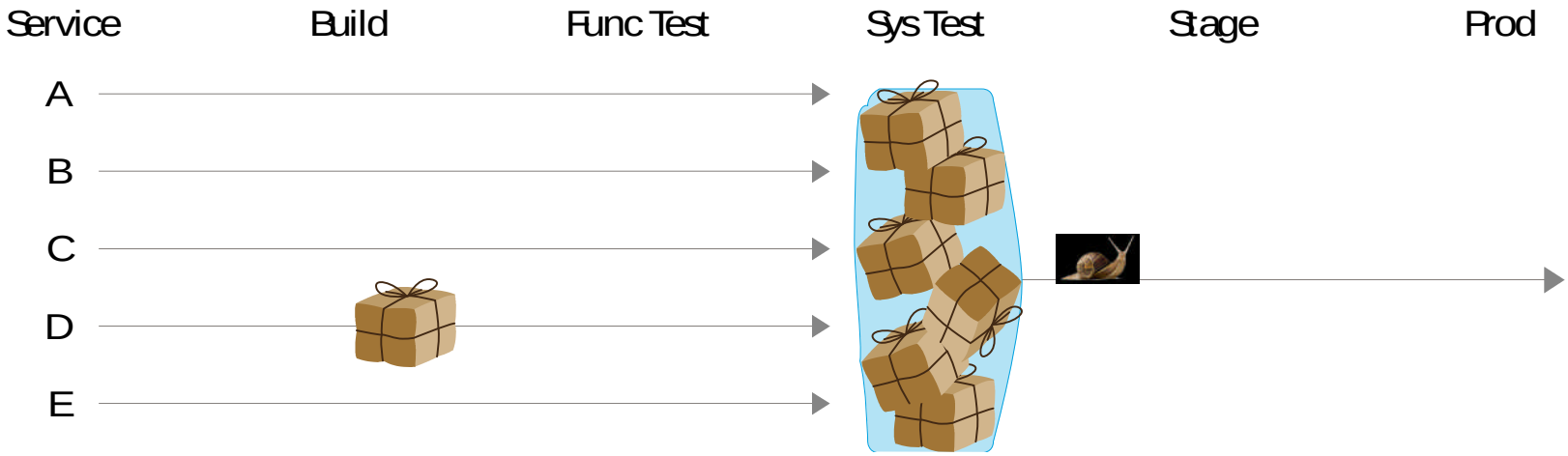
Deming Cycles

- William Deming – American statistician
- Major influencer of Japanese manufacturing and business
- Famous for **Plan-Do-Check-Act cycle** (Deming Cycle)
  - I like “Adjust” versus “Act”
- PDCA cycles found in DevOps



William Edwards Deming

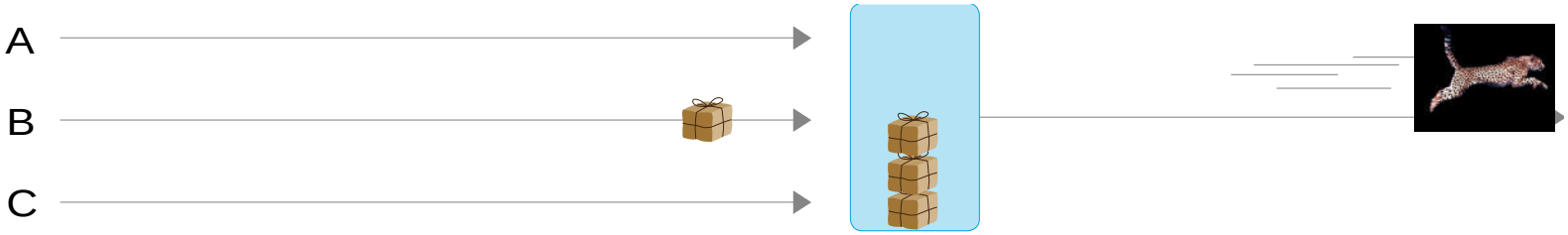
Large Releases Increase Risk



Large Batch Sizes

- Services: Many
- Dependencies: Many
- Changes: Many
- Complexity: Large
- Impact of Failure: Large
- Failure Analysis: Difficult

New Calculus for Release and Risk



Small Batch Size

- Services: Few
- Dependencies: Few
- Changes: Few
- Complexity: Small
- Impact of Failure: Small
- Failure Analysis: Simple

DevOps Principles and Values

Develop and test against a production-like environments

IBM SmartCloud

Iterative and frequent deployments using repeatable and reliable processes

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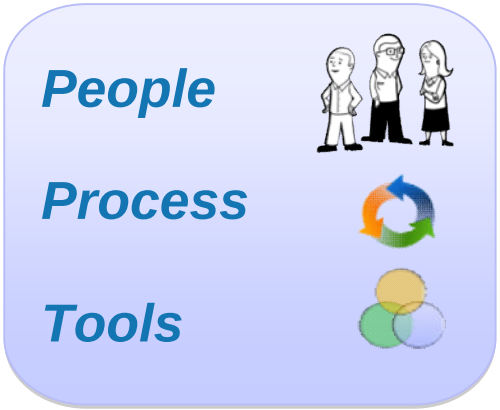
Continuously monitor and validate operational quality characteristics in all environments

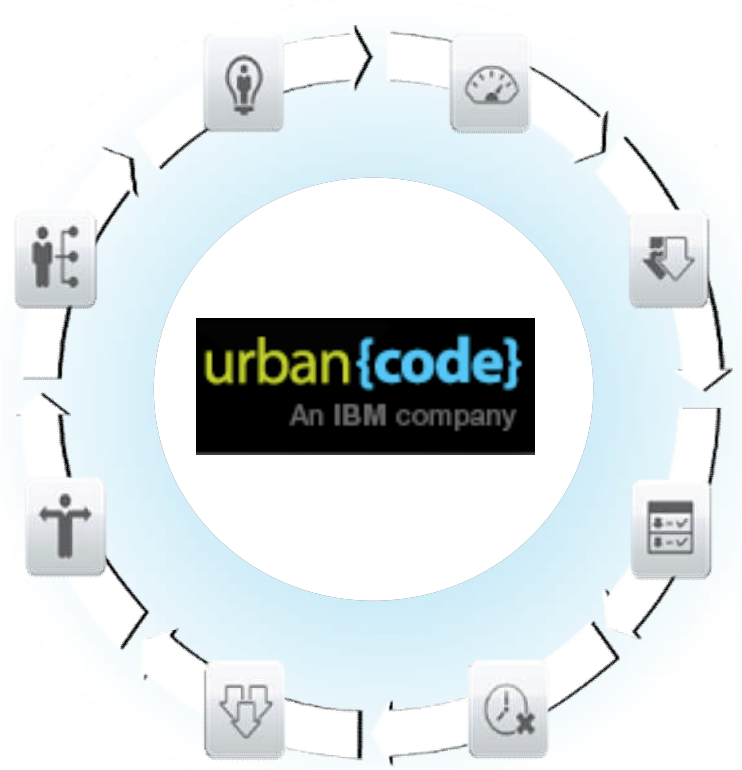
Monitor and improve



IBM UrbanCode

Enabling clients to more rapidly deliver mobile, cloud, big data analytics and traditional applications with complementary DevOps capabilities

- **Drive down costs**
  - Reduce the amount of manual labor, resource wait-time, and rework
- **Speed time to market**
  - Increase frequency of software delivery
- **Reduce risk**
  - Deliver higher quality application releases with increased compliance

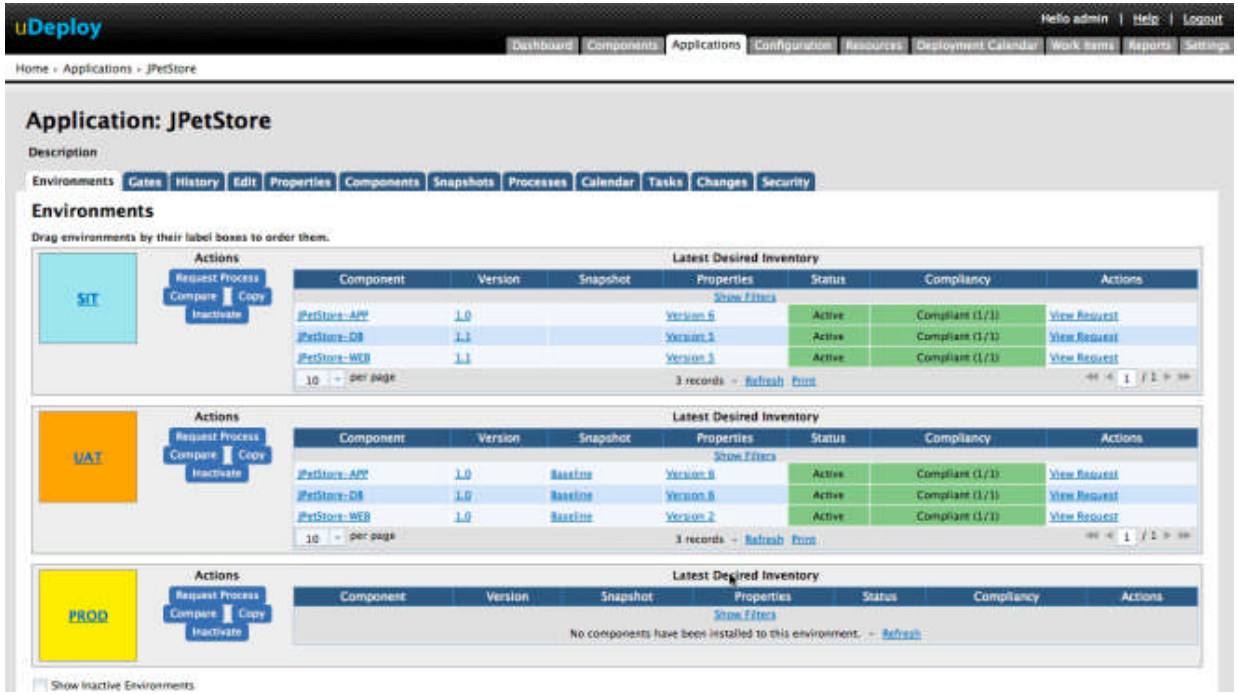


"Mobile development moves more quickly than most enterprises are accustomed to. The coordination required, and the pace being driven by mobile, is a big factor driving DevOps in the enterprise."

- Eric Minick, **UrbanCode**.

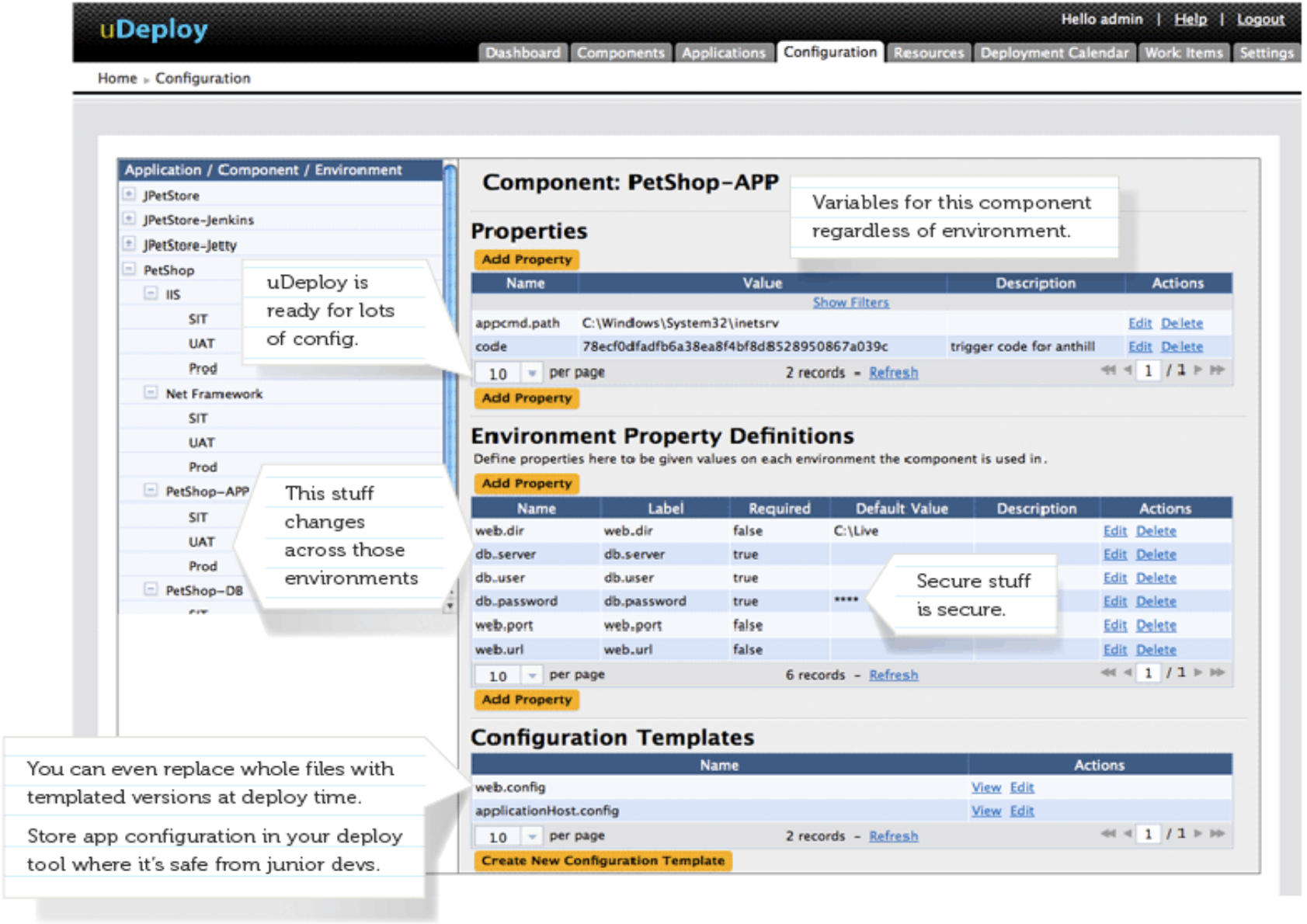
Application Deployment Automation

Deployment of Applications across Environments

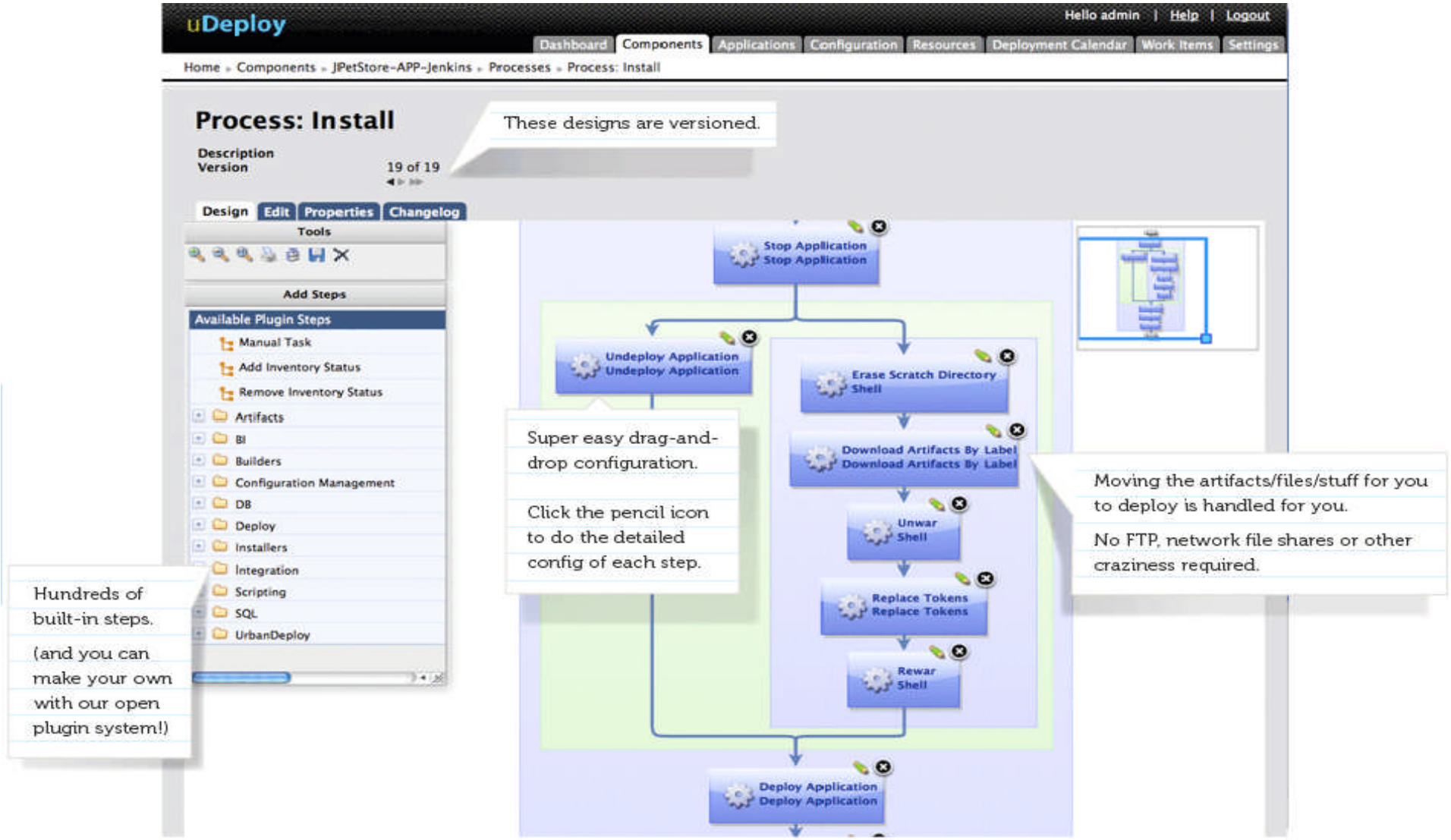


- Manage application components and versions
- Manage environment configuration from dev/test through production
- Compliance: audit trails quality gates
- Easy to use process designer
- Inventory: what is where

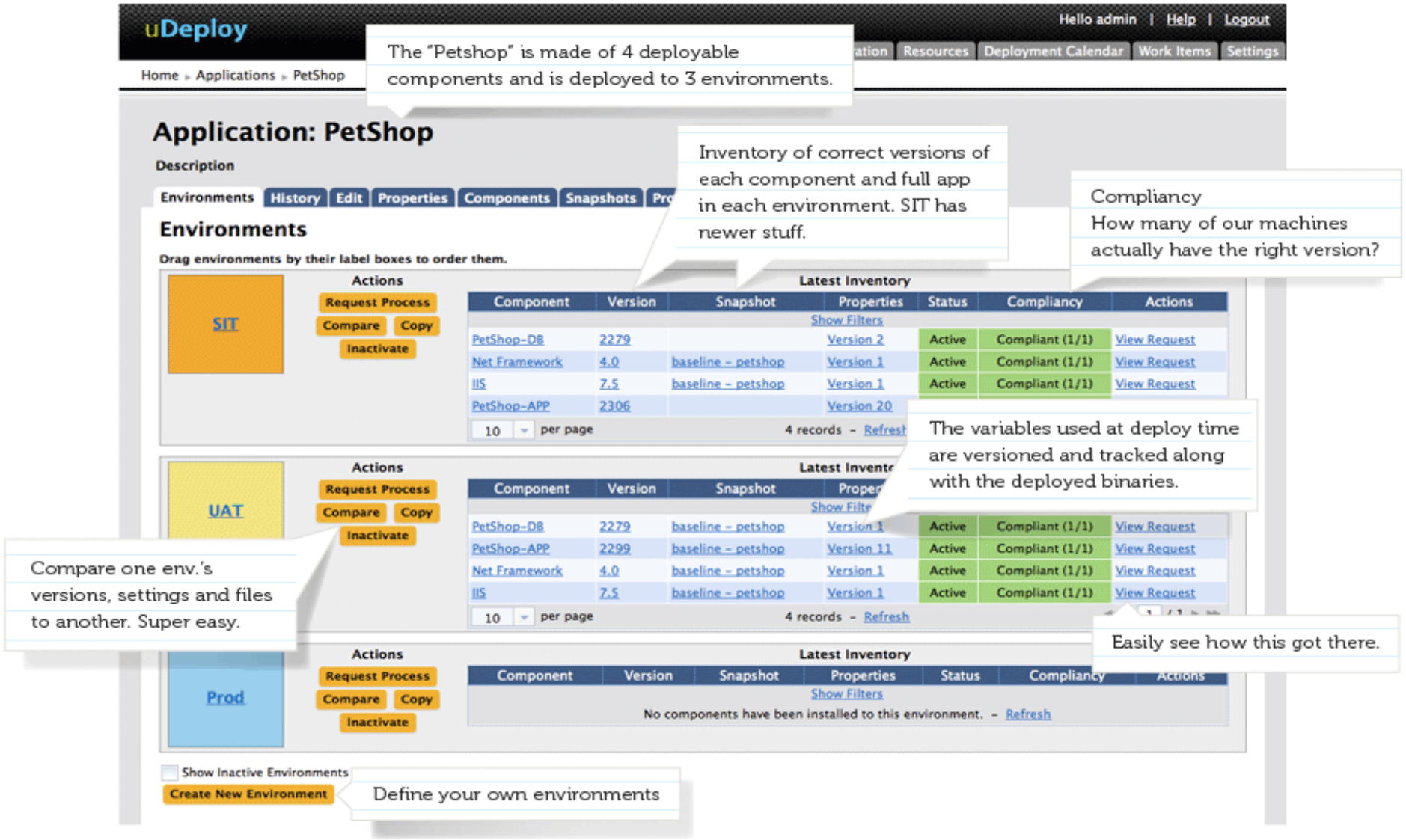
IBM UrbanCode Deploy configuration settings



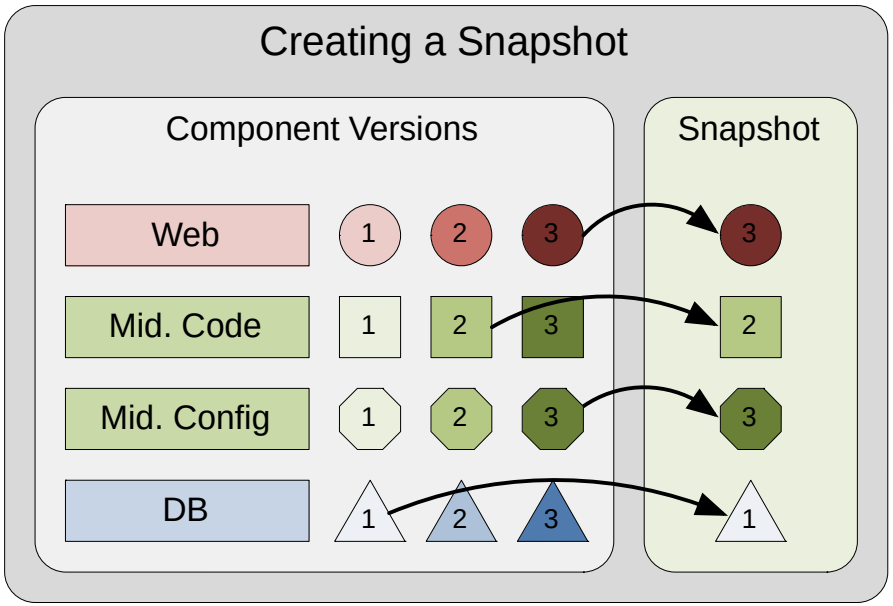
IBM UrbanCode Deploy process designer

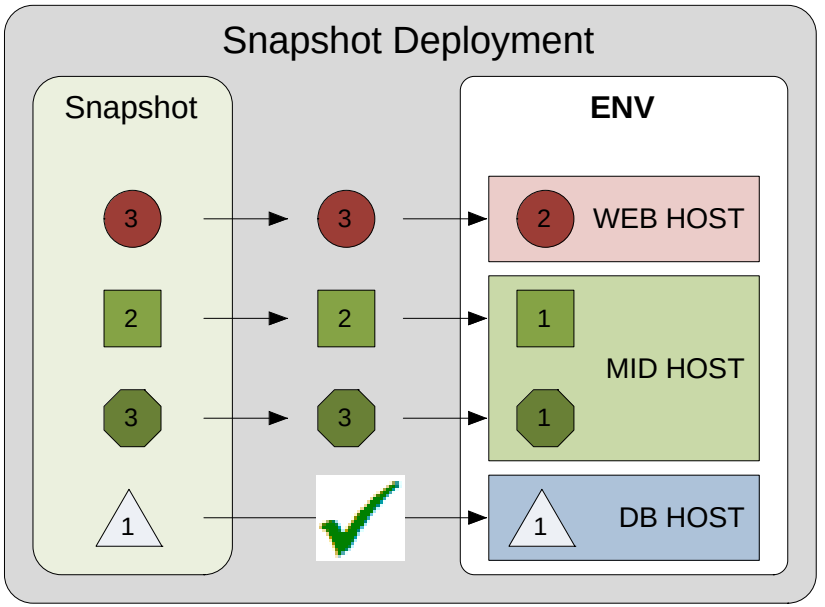


IBM UrbanCode Deploy Application environment inventory



Snapshots – A Version of the App





Contents of environments that pass tests

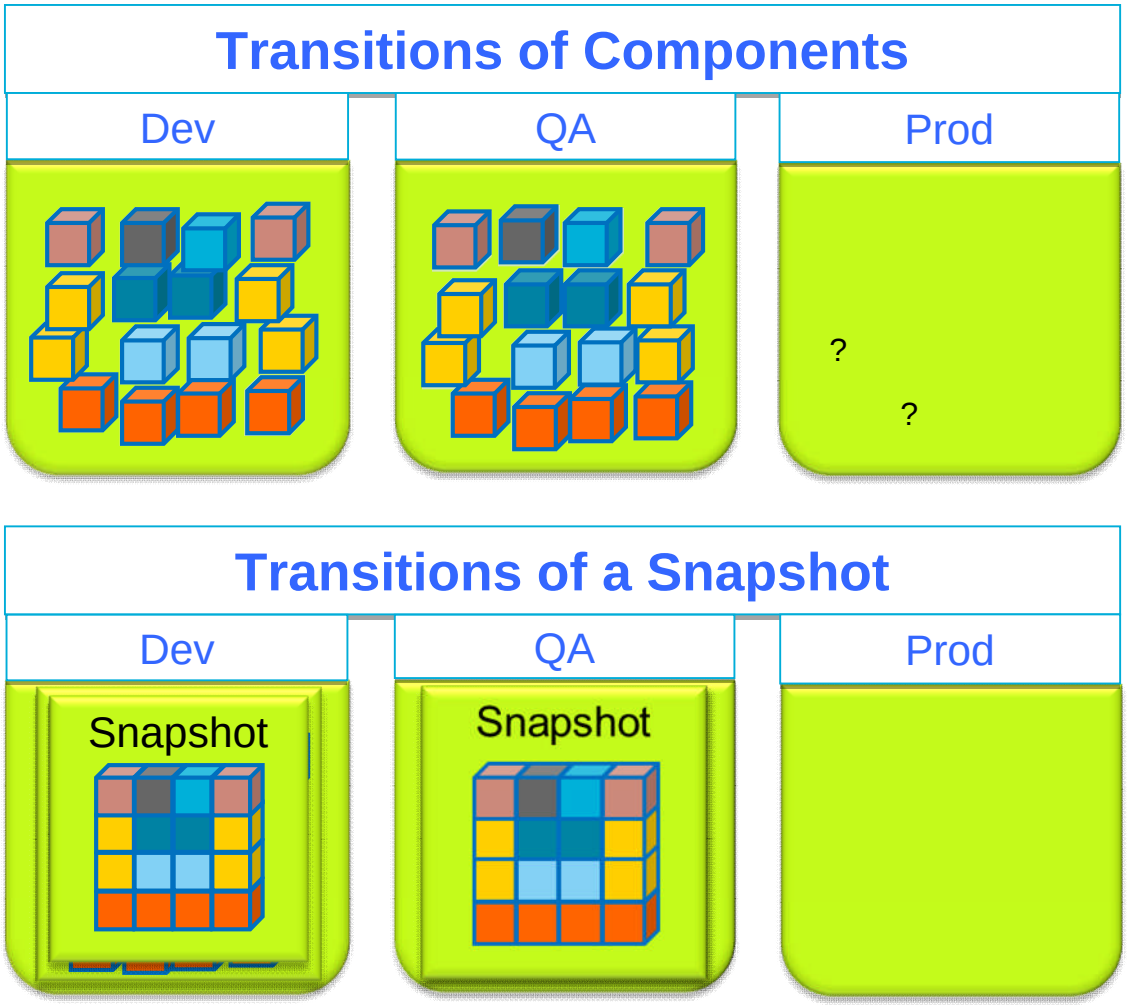
- contain deployable version and configuration

Deployments are based on deltas

They help with:

✓ Automation, Audit, and Visibility

Snapshots


Transitions of Components
Dev
QA
Prod
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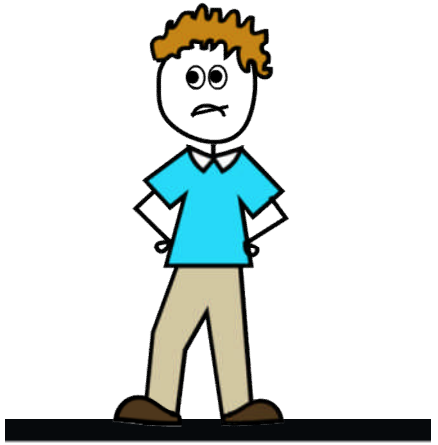
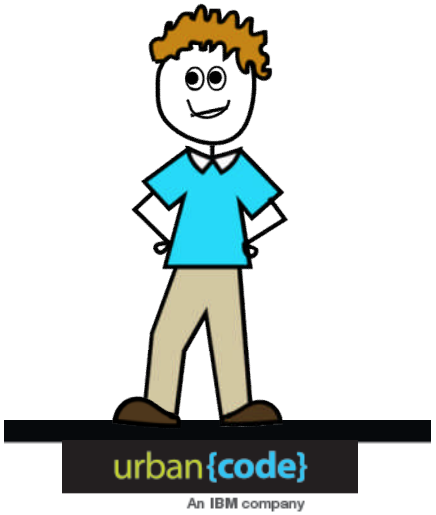
?
Transitions of a Snapshot
Dev
QA
Prod
Snapshot
Snapshot

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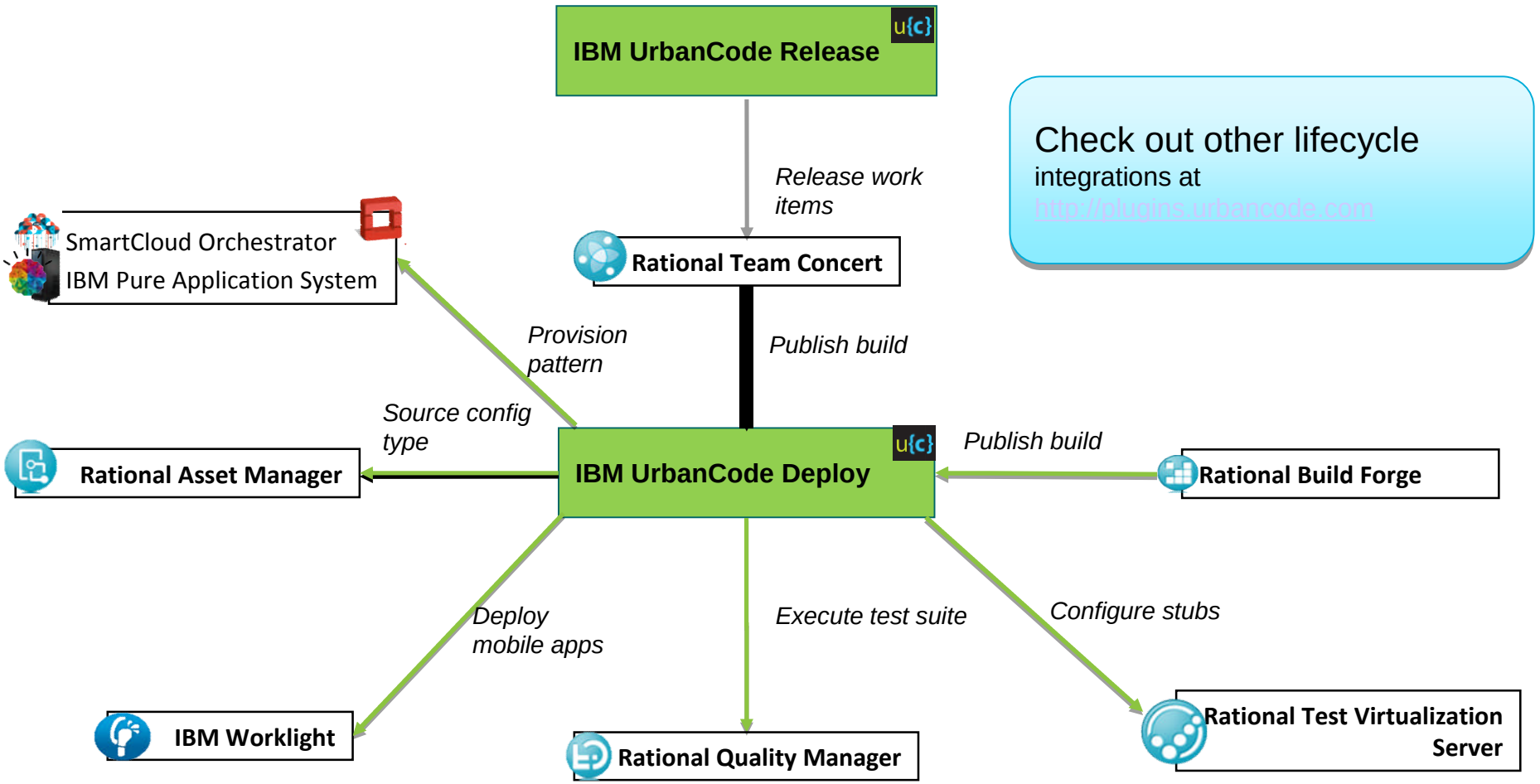
New Application Lifecycle Integrations

Providing richer linked data integrations across the entire application lifecycle



Release and Deployment solutions

Deliver measureable business results

International Investment Firm
Driving Down Costs

Release process required considerable effort and delayed by manually-introduced errors

- Solution: Automated release process
- Results: Cost avoidance of over $2.3M/year, reduced release time from 2-3 days to 1-2 hours and virtually eliminated test team “down-time”

Online Retailer
Speeding Time-to-Market

Significant delays getting application changes to production

- Solution: Scaled up continuous deployment
- Results: Deployment time reduced by over 95% with easy scale and deploying to over 250 servers within 2 months of implementation

Higher Education
Speeding Time-to-Market

Agile development teams constrained by slow deployment to dev. and test environments

- Solution: Accelerate deployment by enabling development teams to self deploy with automation
- Results: Deployments cut from hours to minutes and a greater number of servers with fewer resources

SaaS Software Provider
Reducing Risk

Difficulty managing multiple customer configurations and versions of software deployed across servers

- Solution: Automate managing configuration and version deployment
- Results: Execute customer specific releases, reduced deployment outages by over 90%

Our experience tells us that Enterprise Clouds need to be ***Workload Optimized*** to maximize business outcomes

- Workloads have unique requirements
- Successful cloud deployments:
  - ✓ Build requirements **awareness** into the workloads
  - ✓ Provide **intelligence** to manage service levels
  - ✓ Leverage **patterns** for workload optimization

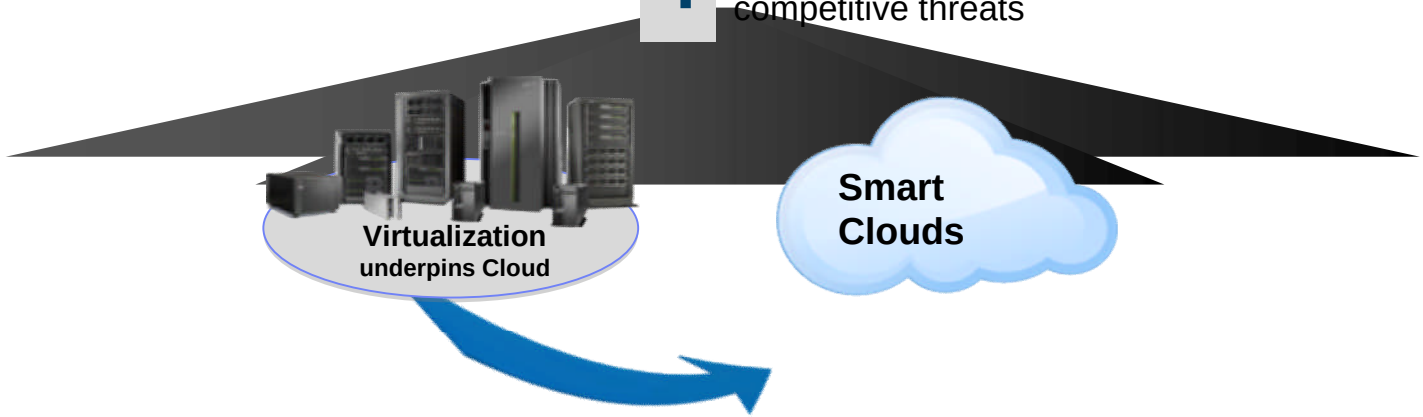
1 in 5 data centers can allocate more than 50% of their IT budget to delivering new capabilities

Most Efficient Data Centers		Least Efficient Data Centers
83%	Move VMs to Perform Maintenance	25%
58%	Meet SLAs	1%

Source: 2012 IBM Data Center Study

As enterprises move beyond virtualization to higher value stages of Cloud, having Cloud Management is critical to their success.

Key Capabilities		Extended Value
Virtualization Optimization	+	Get Maximum value out of your zVM, VMware or other virtualized environment.
Cloud Enabled Data Center	+	Enable Infrastructure Agility and Automate cross domain service delivery across your entire data center
DevOps	+	Accelerate application updates to respond faster to stakeholder demands and competitive threats



The IT challenges

Infrastructure

We have lots of tools, to manage **isolated automation tasks**

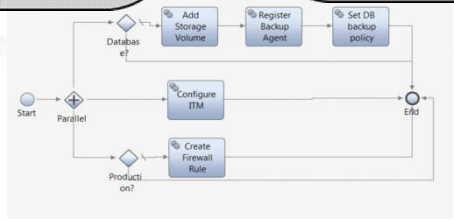
But getting everything coordinated is challenging and **takes a lot of time**

Operations

Releasing a new application in production **is a lot more then creating a virtual machine.**

And after deployment, I need to mange its **entire lifecycle**.

I need to link different tools, people, departments. **It takes weeks.**



Development

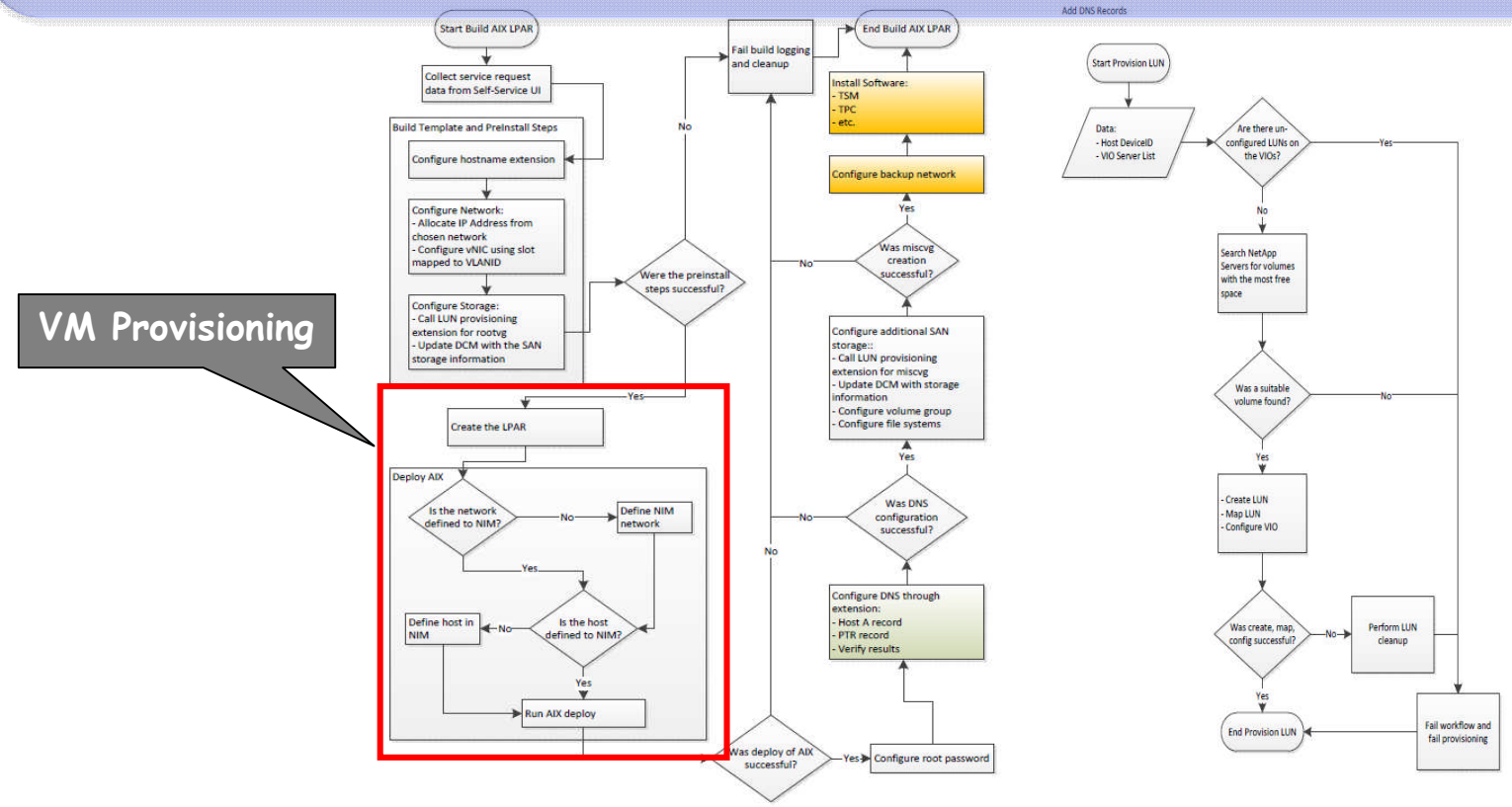
I need to **accelerate delivery** and improve feedback between development and production.

Business

I need to **react quickly to market demand**. IT is not fast enough to support my strategy and is slowing down innovation

Why do clients need an Orchestrator ?

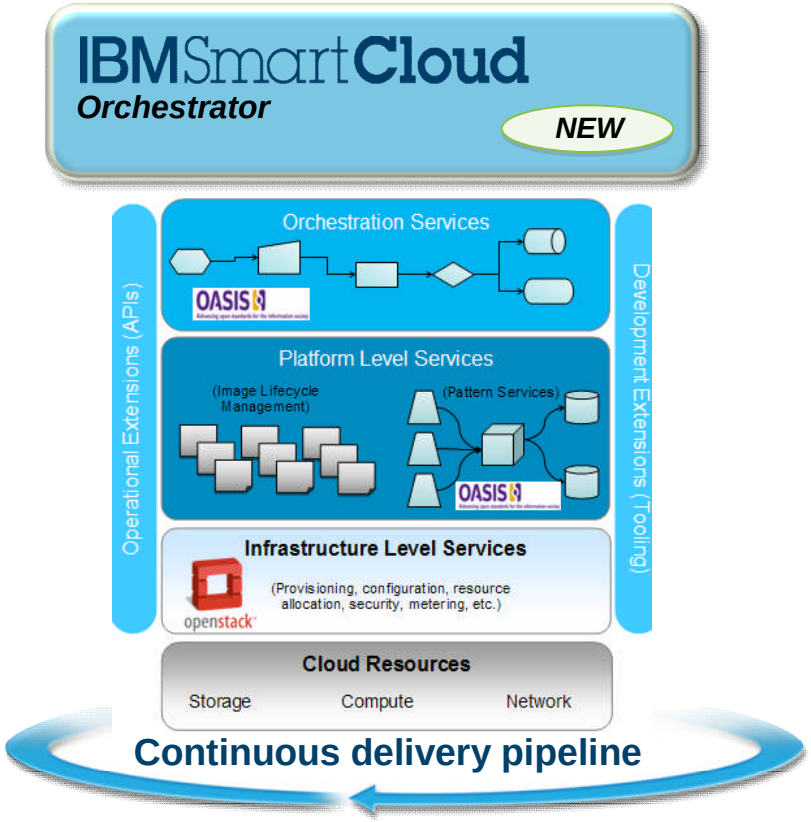
Automated	Customers are looking for end to end automation of cloud service delivery Provisioning play a key role, but is just one of many steps that must be automated
Standardized	Deliver “services”: repeatable and controlled process, simplified consumption, auditable
Flexible	Each customer has unique requirements to integrate with existing data center processes and tools.



Real customer example

SmartCloud Orchestrator

Open, dynamic orchestration of resources, workloads and services

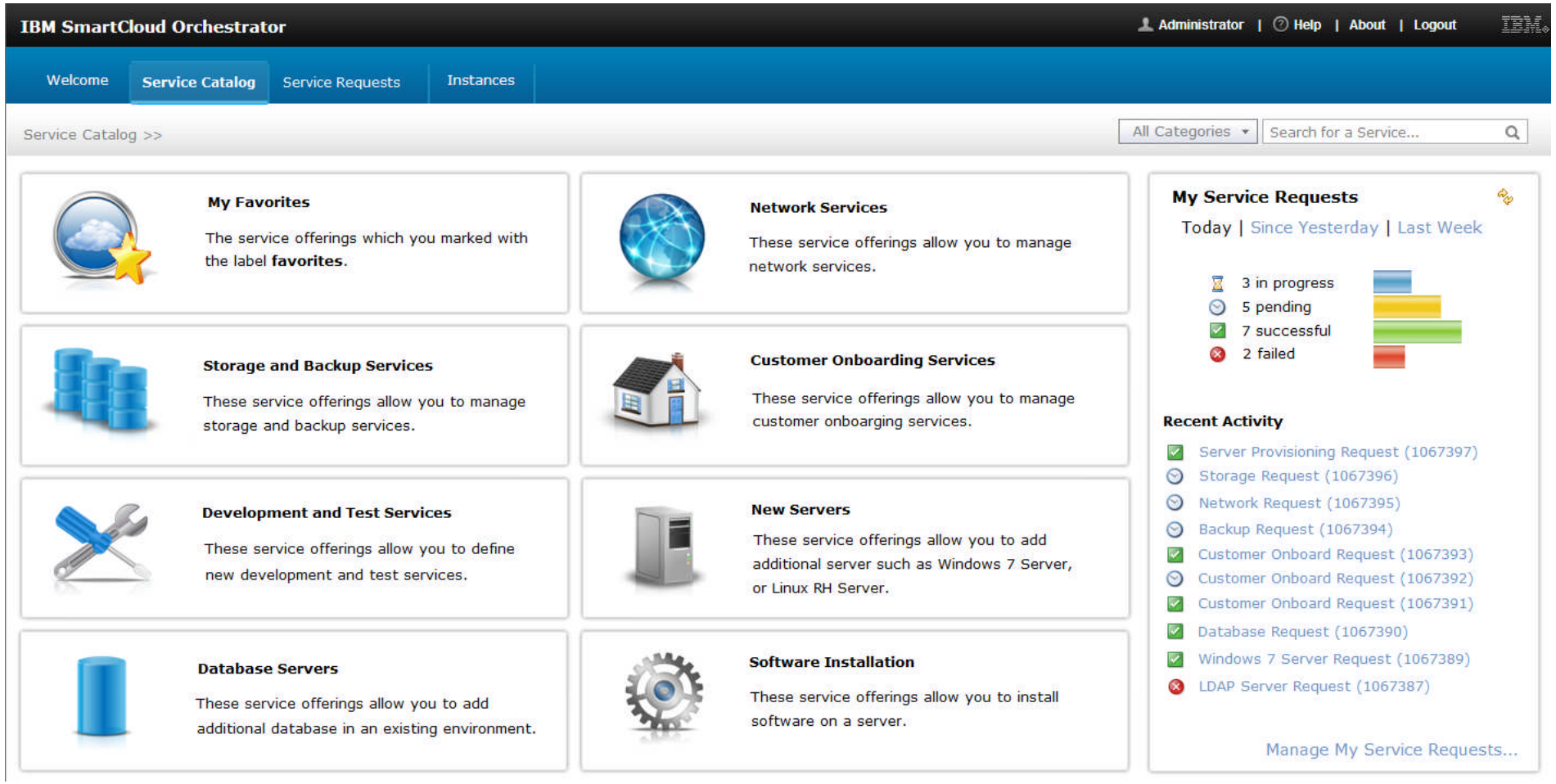


- Fully automates the deployment and lifecycle management of cloud services across resources, workloads and services
- Built on a foundation of open standards – TOSCA, OpenStack, OSLC
- Accelerated deployments with reusable workload patterns and Chef recipes
- Unified management of heterogeneous environments
  - Both all IBM servers and 3rd party resources
- Supports deployment of hybrid & public clouds
- Works with SmartCloud Continuous Delivery to provide extended DevOps platform

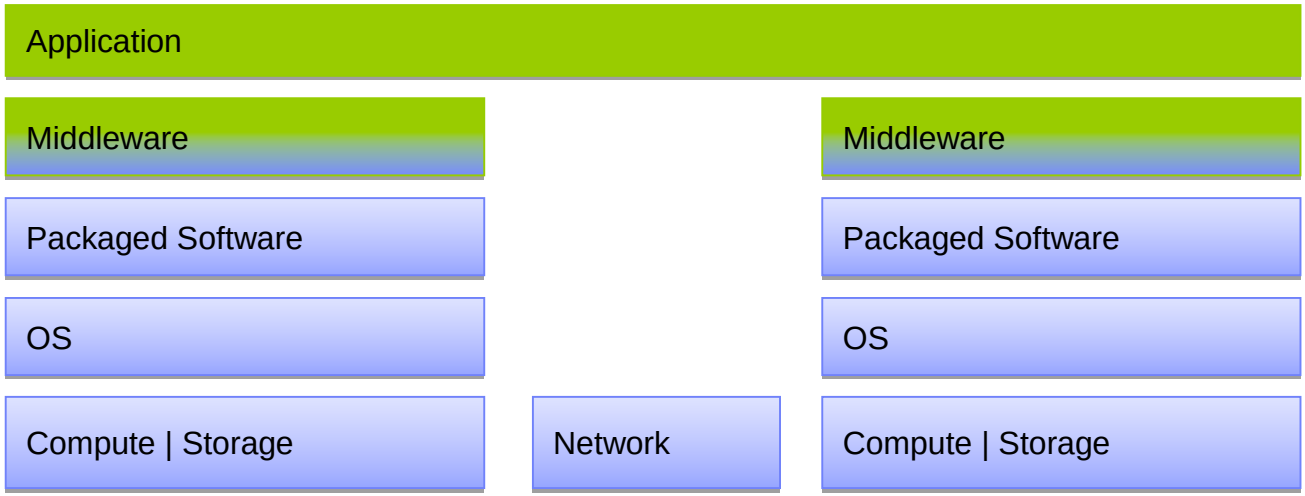
Reduce time-to-market to deliver new business services

Improve administrator productivity

SCO Service Catalog – an Overview

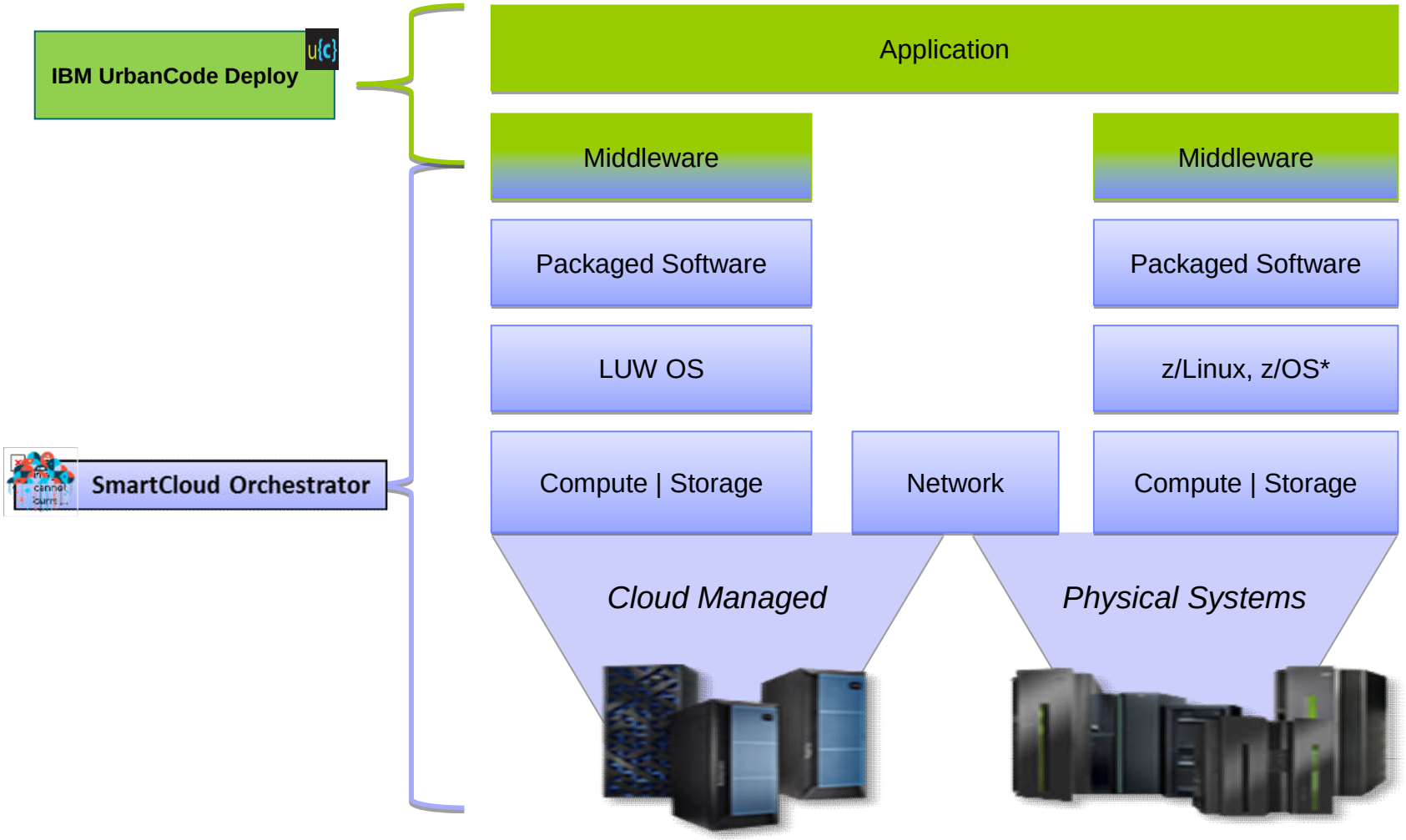


Deployment Requirements Vary

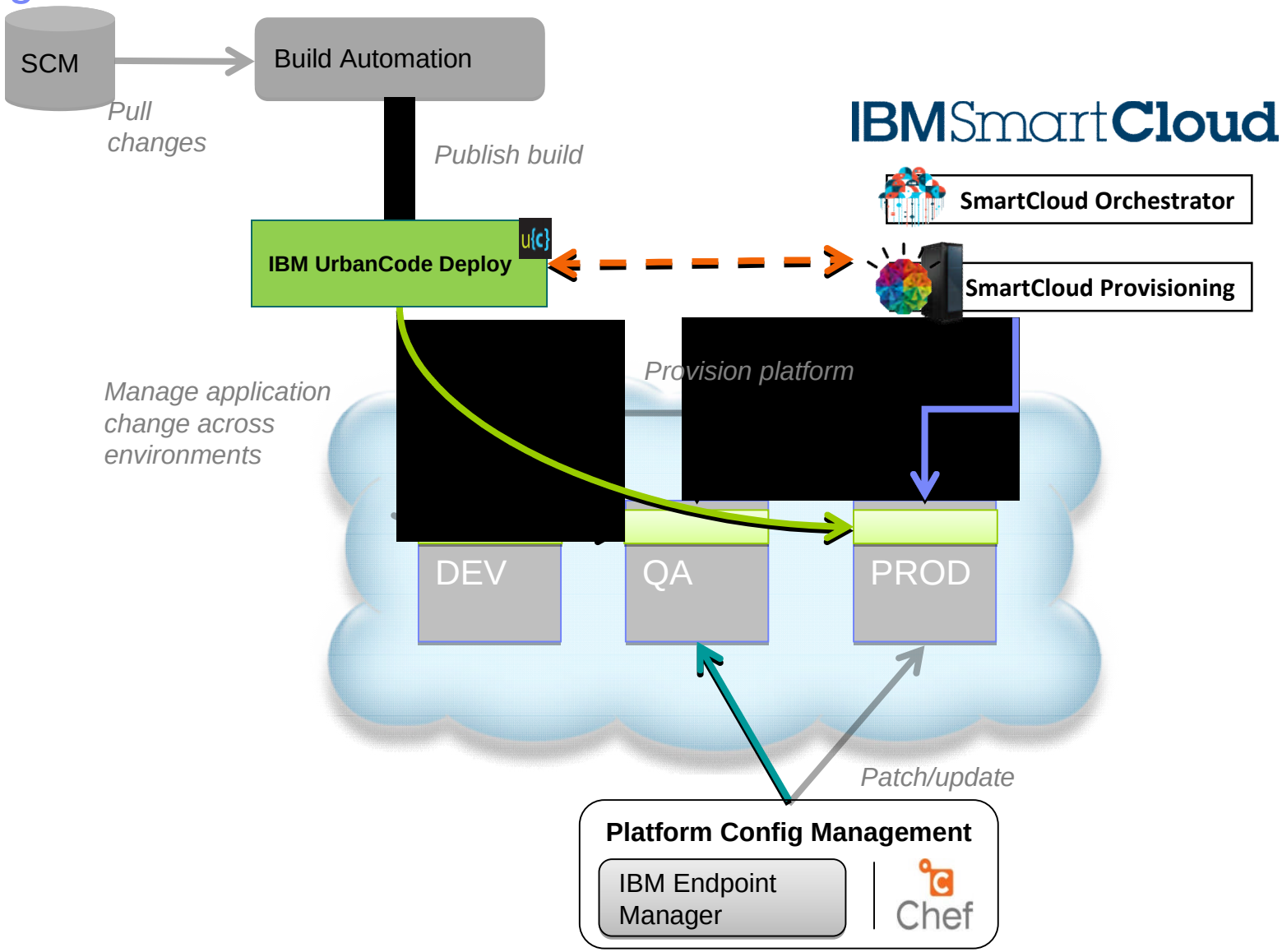


Quantity	Chg Frequency	Devt >> Prod	Lifetime needs
Fewer, standard, (1 to many)	Low rate of change	Topology complexity increases	Longer-lived, patching required
Many	High rate of change	Consistent processes with config changes	Shorter lived versions

Aligning Deployment Automation with Environment Provisioning

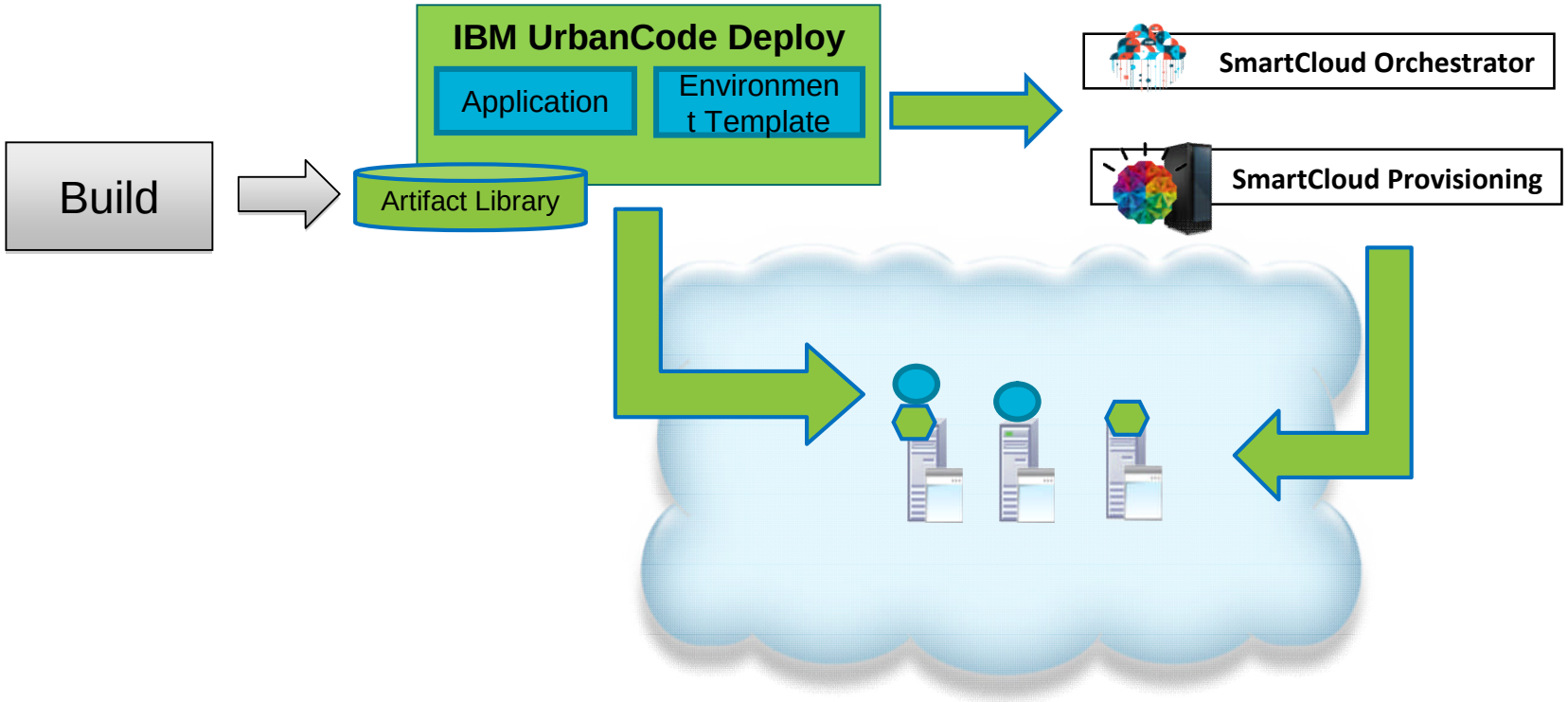


Integrated Tools



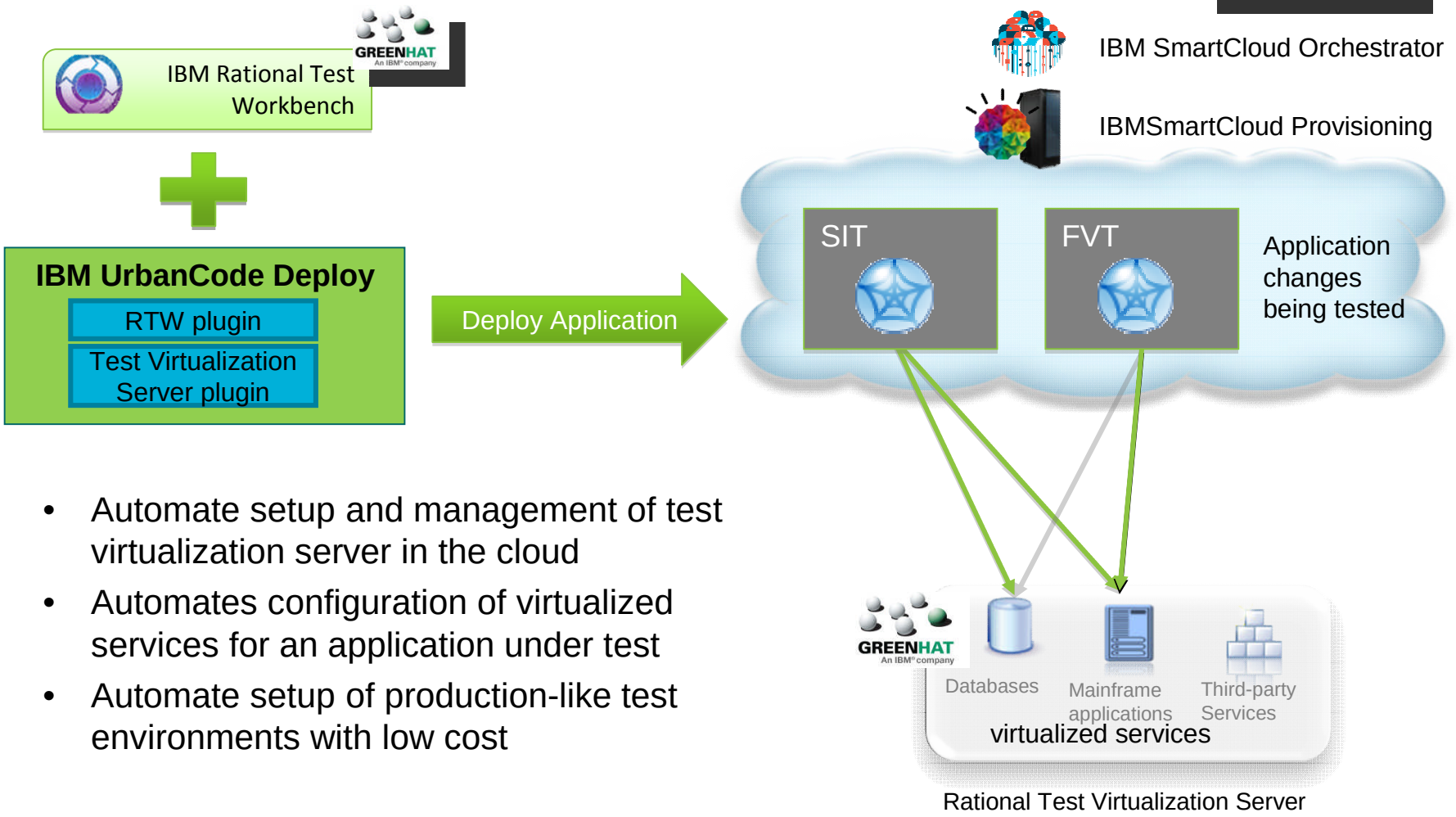
Continuous Delivery to Cloud

- Extend UrbanCode Deploy to capture **Environment Templates**
  - Describe desired environment infrastructure/platform
  - Define Application processes to run in scope of Environment Template
- Seamless process flow for incremental, full stack provisioning and application deployment automation
- Track and version artifacts to know what is deployed where



Continuous testing with virtualized services

Avoid testing bottlenecks due to dependencies on external services



- Automate setup and management of test virtualization server in the cloud
- Automates configuration of virtualized services for an application under test
- Automate setup of production-like test environments with low cost

Application Lifecycle Integration – Monitoring & Log Analytics

IBM UrbanCode Deploy

IBM Log Analytics plugin

Application Performance Management plugin

Deploy and config

SIT

App components and configurations

APM agent

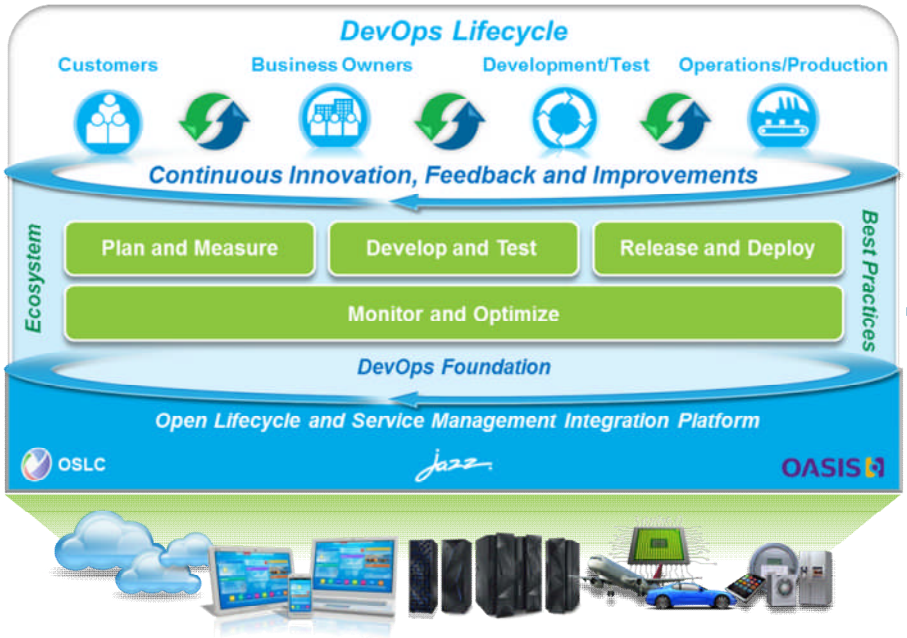
APM agent

Application Dashboard

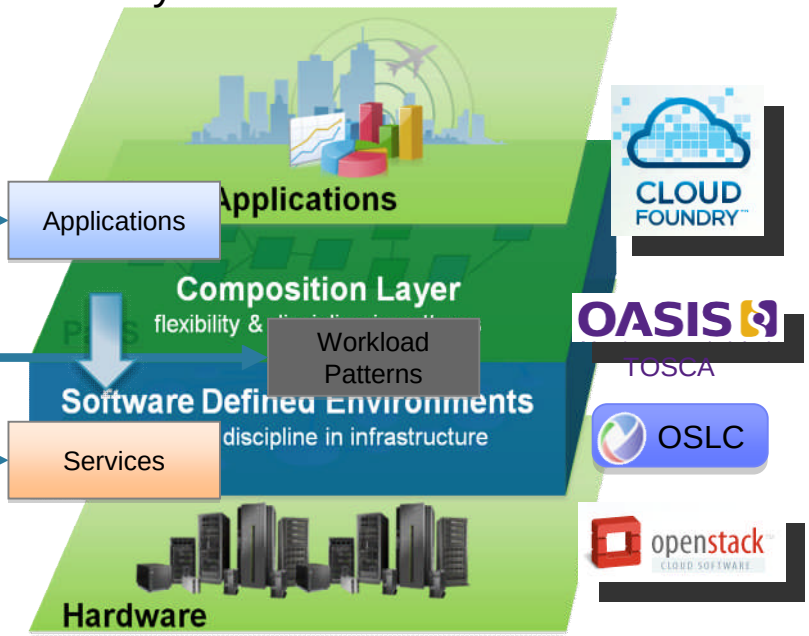
DevOps - Enables Rapid Delivery of Differentiated Services

- Capability for continuous software delivery that enables clients to seize market opportunities and reduce time to customer feedback
- Flexible integration with Cloud APIs for lifecycle management enabled by the Jazz Platform and OSLC
- Portfolio of integrated tools to enable a service provider to deliver new capabilities and manage changes across whatever server platform they choose – Z, Unix or x86

DevOps Portfolio



Layered Cloud Architecture



www.ibm.com/ibm/devops/us/en

For more information

Websites:

IBM DevOps solution overview: www.ibm.com/devops
IBM UrbanCode Deploy: http://www.urbancode.com/html/products/deploy/
IBM UrbanCode Release: http://www.urbancode.com/html/products/release/
IBM UrbanCode v6.0 Announcement http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/7/897/ENUS213-337/index.html&lang=en&request_locale=en&lc&lc

Enterprise Cloud Computing: **http://www-03.ibm.com/systems/z/solutions/cloud/index.html**
Provisioning and Orchestration: http://www-03.ibm.com/software/products/us/en/category/SWU20
Scheduling and Systems Automation: http://www-03.ibm.com/software/products/us/en/subcategory/SWU10

Other resources:

Short Video: IBM DevOps – Cntinuous delivery of software-driven innovation
http://www.youtube.com/watch?v=v5omfd2E5eQ&feature=youtu.be

Article: Making DevOps Real for System z:
http://public.dhe.ibm.com/common/ssi/ecm/en/ra112346usen/RA112346USEN.PDF?ce=ISM0056&ct=swg&cmp=ibmsocial&cm=h&cr=crossbrand&ccy=us

White Paper: Achieve end-to-end visibility for IBM System z and IBM zEnterprise cloud infrastructures
http://public.dhe.ibm.com/common/ssi/ecm/en/tiw14157usen/TIW14157USEN.PDF