

iSEE – Integrated  
Software Engineering  
Enablement Strategy:

GLOBAL PRODUCT DATA  
INTEROPERABILITY  
**S U M M I T**  
2017



ELYSIUM

Parker Aerospace

NORTHROP GRUMMAN

BOEING

ELYSIUM

Parker Aerospace

NORTHROP GRUMMAN

BOEING



# iSEE Tenets

Global Product Data Interoperability Summit | 2017

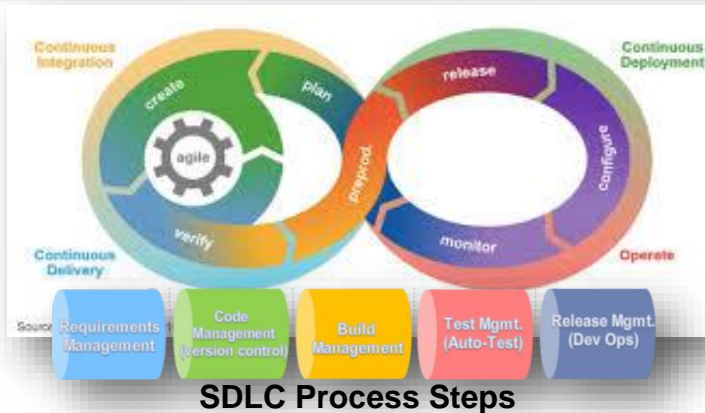
- **Create an environment that developers want to use**
  - Low barrier to entry & control over dev. environment
  - Enable DevOps and automated software development processes
- **Create an environment that generates value for program development**
  - Works within the disciplined agility (agile development) paradigm
  - Connects program labs and developers to SDLC tools and cloud capabilities
  - Enables savings across license, tools, infrastructure mgmt., and DevOps process enablement
- **Create an environment that supports multiple communities**
  - Disparate Software development teams across the company
  - External Partners & Global developers
  - Multiple application hosting environments – program labs, classified, enterprise, external clouds
- **Provide Governance and Scalability**
  - Utilize Northrop Grumman's investment in infrastructure, DR, security, and scalability
  - Provide ownership of products and capability roadmaps integrated with business line strategies
  - Provide policy and process choices

# iSEE –

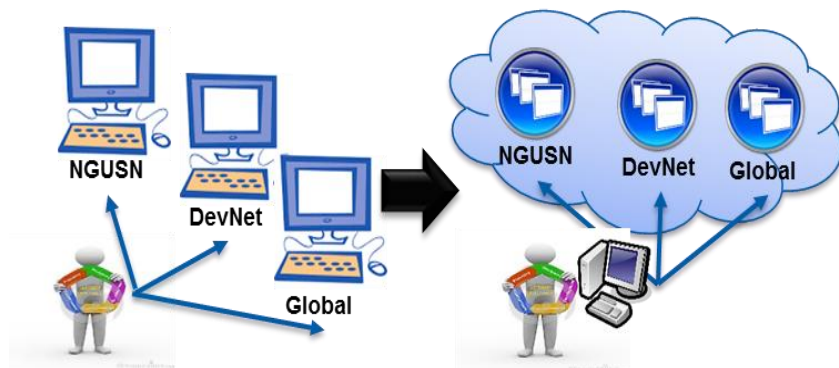
## IT programs focused on enabling DevOps and SLDC process automation

Global Product Data Interoperability Summit | 2017

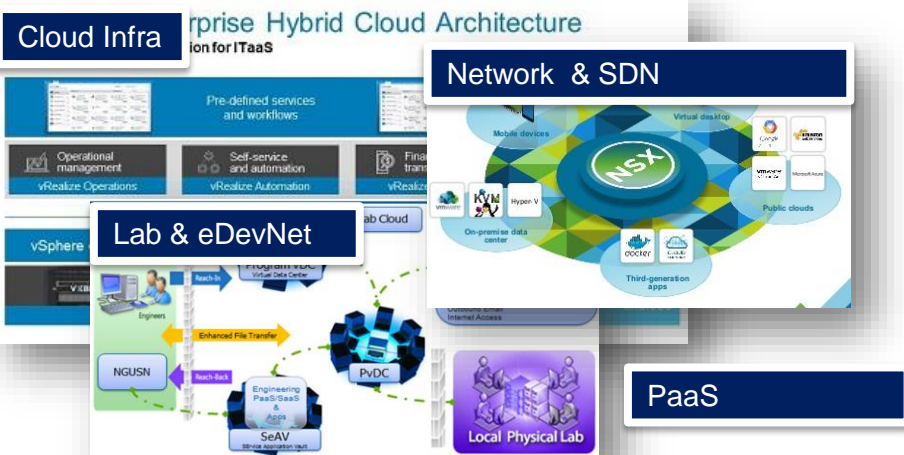
### Shared Enterprise SDLC Tools & Patterns



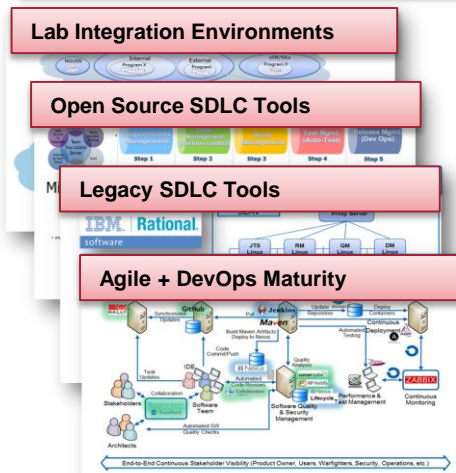
### Digital Workspace – Testing and Access



### Cloud – Infra Hosting, Ops, Automation, & Lab Services



### DevOps Process and Tool Governance



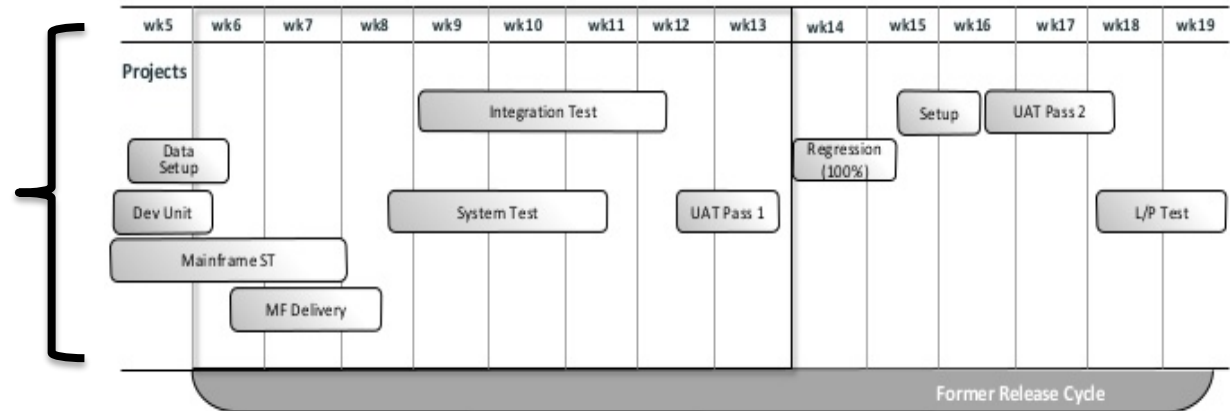
Business Lines  
coordinating  
across DevOps  
activities

# iSEE Value Prop (Example)

## Reducing Software Release Lifecycles (CI/CD Automation)

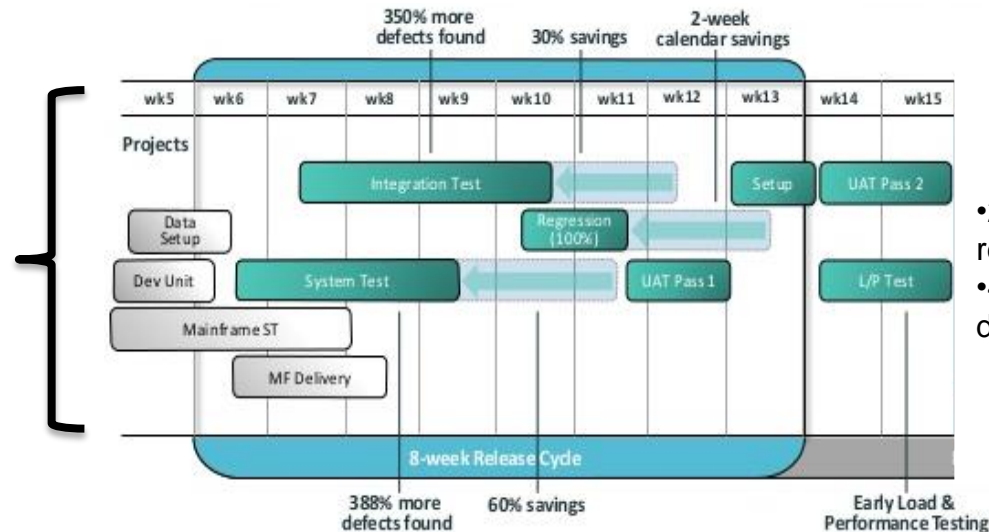
Global Product Data Interoperability Summit | 2017

### Traditional Software Development Release Schedule



### Same Lifecycle as above with Continuously Integrated:

- Software Unit test and Build
- Integration and regression testing
- Infrastructure as Code
- Security Code scanning and signing
- Load & Performance Testing
- Release to Production



- 20% reduction in release cycle
- 40% increase in defect discovery

iSEE focuses on capturing software design lifecycle processes and deploying services aimed at enabling faster release cycles



# Sector Development Use Cases

## Project & Sector Distribution

Global Product Data Interoperability Summit | 2017

Project Size	%	Characteristics	DevOps Opportunity
Small Scale	10%	<ul style="list-style-type: none"> <li>• <b>Small software applications</b> <ul style="list-style-type: none"> <li>• (e.g. static web pages)</li> </ul> </li> <li>• <b>Infrastructure is relatively static</b> <ul style="list-style-type: none"> <li>• (e.g. single servers for deployment, direct access to production systems)</li> </ul> </li> <li>• <b>Testing is small and direct</b> <ul style="list-style-type: none"> <li>• (e.g. Manual testing of front end functionality)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• CI Tools</li> <li>• Security Automation</li> <li>• Ops Automation</li> </ul>
Medium Scale	60%	<ul style="list-style-type: none"> <li>• <b>N Tier architectures</b> <ul style="list-style-type: none"> <li>• (e.g. Application Server, Integration of COTS)</li> </ul> </li> <li>• <b>Infrastructure is somewhat dynamic</b> <ul style="list-style-type: none"> <li>• (e.g. Reconfiguration of App Servers, Installation of tools)</li> </ul> </li> <li>• <b>Testing is automated due to complexity of the activity</b></li> </ul>	<ul style="list-style-type: none"> <li>• CI Tools</li> <li>• Security Automation</li> <li>• Infrastructure As Code - IAC</li> </ul>
Large Scale (growing%)	30%	<ul style="list-style-type: none"> <li>• <b>Large scale distributed applications</b> <ul style="list-style-type: none"> <li>• (e.g. SOA, Micro Services, Distributed data solutions)</li> </ul> </li> <li>• <b>Infrastructure is completely dynamic</b> <ul style="list-style-type: none"> <li>• (e.g. Cloud Infrastructures, automatic provisioning of x numbers of servers)</li> </ul> </li> <li>• <b>Testing is automated due to complexity of the activity</b> <ul style="list-style-type: none"> <li>• (e.g. Infrastructure As Code - IAC )</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• CI Tools</li> <li>• Security &amp; Ops Automation</li> <li>• Infrastructure As Code - IAC</li> <li>• Environment As Code</li> </ul>

All Development Projects benefit from shared tools, CI and Automation, but the more complex a project, the greater benefit from Infrastructure As Code

# Current Shared Tool & DevOps Strategies

## Initiatives across enterprise

Global Product Data Interoperability Summit | 2017

### People and Processes for DevOps:

- Business lines and IT app services building DevOps processes & Governance

### DevOps Tool enablement:

- Business lines specifying tool stacks aligned with enterprise Software Center of Excellence
- Strategies being coordinated across enterprise

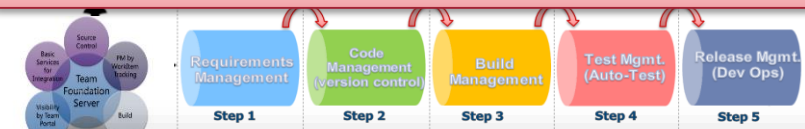
### IT being asked to:

- Automate and simplify Security & Operations Processes
- Deploy “Infrastructure as code” capability for infrastructure automation
- Standup Engineering Tools

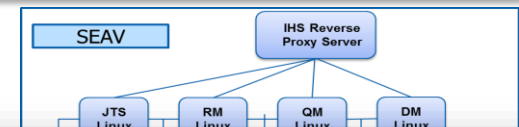
### Lab Integration Environments



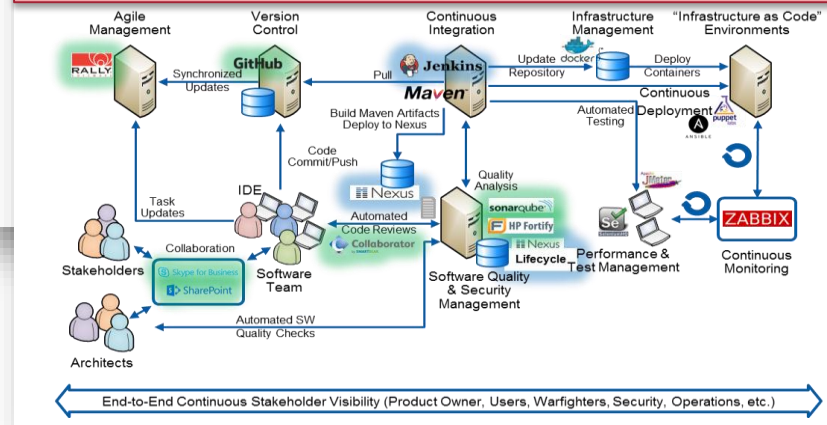
### Open Source SDLC Tools



### Legacy SDLC Tools



### Agile + DevOps Maturity

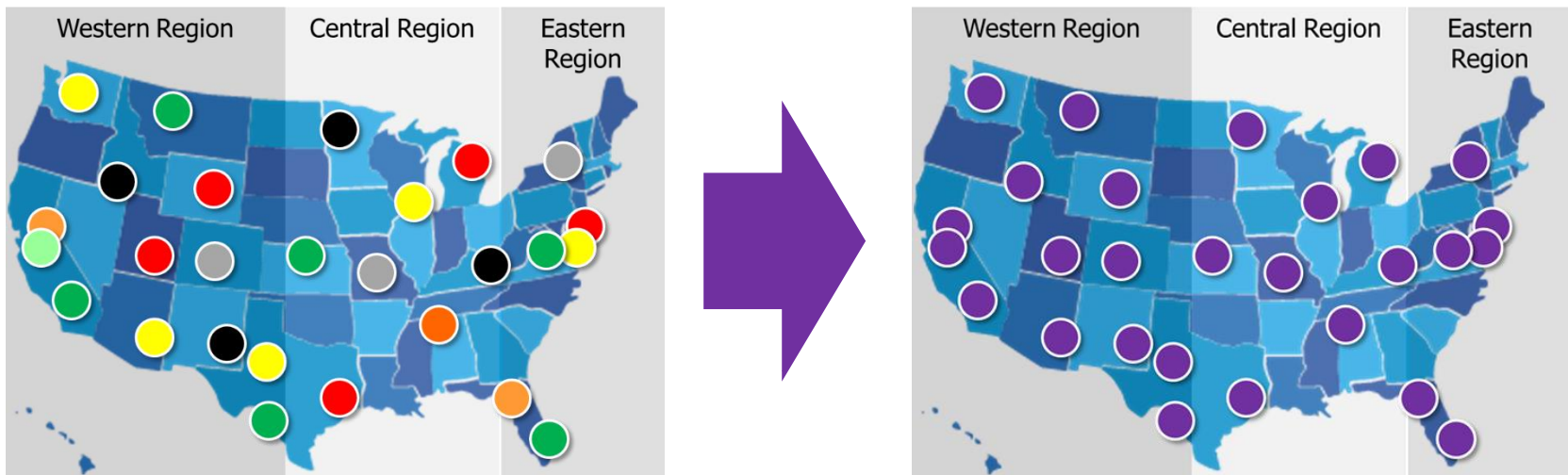


Business lines are managing people and process maturity, IT is managing technical roll out to enable DevOps and Testing automation

# Background

Global Product Data Interoperability Summit | 2017

- Northrop Grumman Program Lab Network applications and services working to share automated testing capability.
- Engineering asking IT to provide “Seamless” user experience and access to services from program lab networks



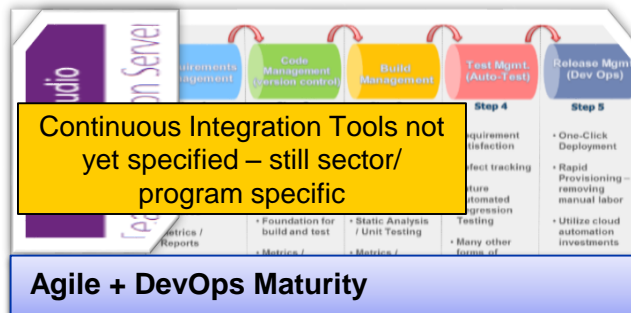
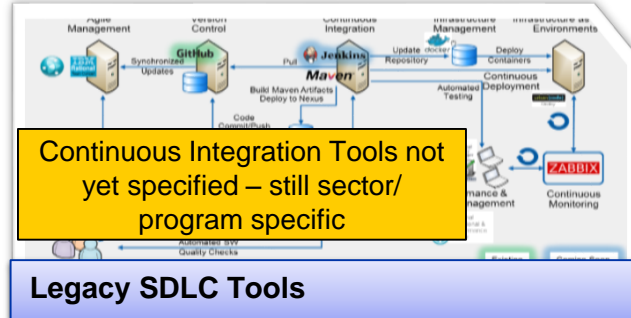
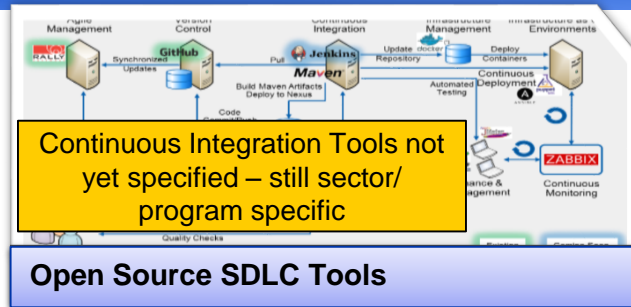
PLN's asking for help to standardize security compliance AND access to shared engineering tools and services

# Infrastructure as Code: Today

*Manual processes are the enemy of rapid/agile software development*

Global Product Data Interoperability Summit | 2017

~90% of program developers and program labs use these patterns



ES&CSO & ~10% of program developers live in this pattern

## Manual Processes today:

- Server forms
- NDR – Network Design
- Approvals
- Change management
- InfoSec ISG Approvals
- Program Lab Registration
- Infrastructure Management

## Infrastructure, Operations, InfoSec, and ITAM



Enterprise focused Services & Hosting

Insufficient shared tools, continuous integration capability, automated Security/DevSecOps, or enabling infrastructure.

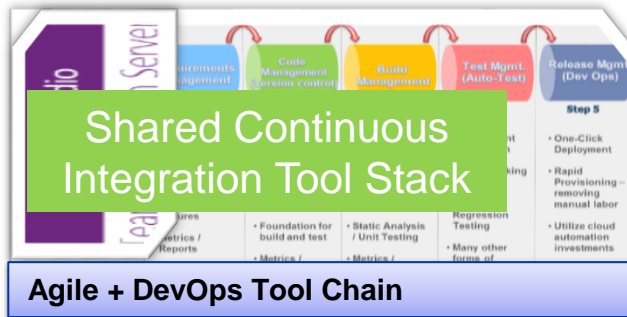
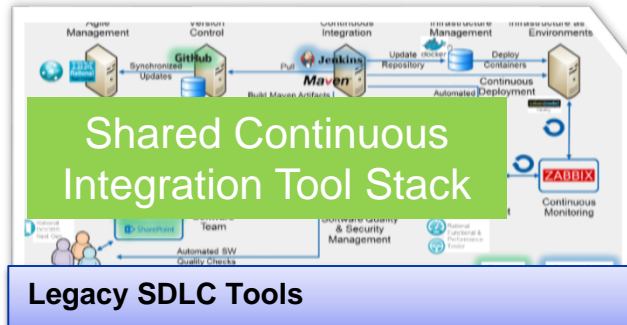
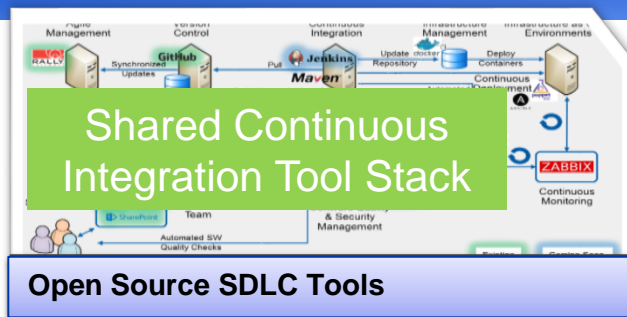


# Infrastructure as Code: Future

NG Developers have training, tools and Ops automation to support DevOps/CI Processes

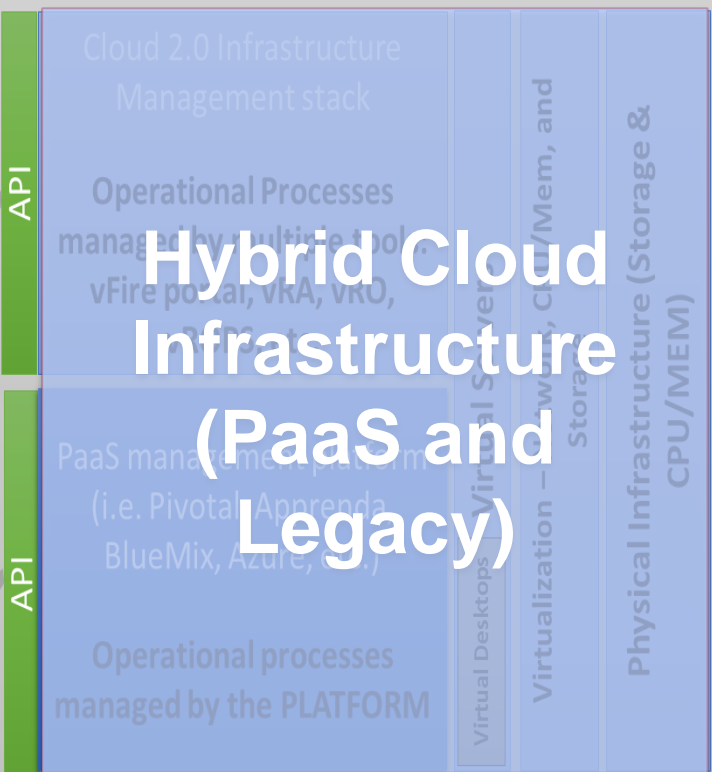
Global Product Data Interoperability Summit | 2017

~90% of program developers and program labs use these patterns



Automate & Deploy

Infrastructure, Operations, InfoSec, and ITAM



Program Lab + NGUSN, Pro-Active Compliance processes

iSEE program to provide automated infrastructure, tools, and security services necessary for DevOps & Continuous Integration Processes

# Key Outcomes

Global Product Data Interoperability Summit | 2017

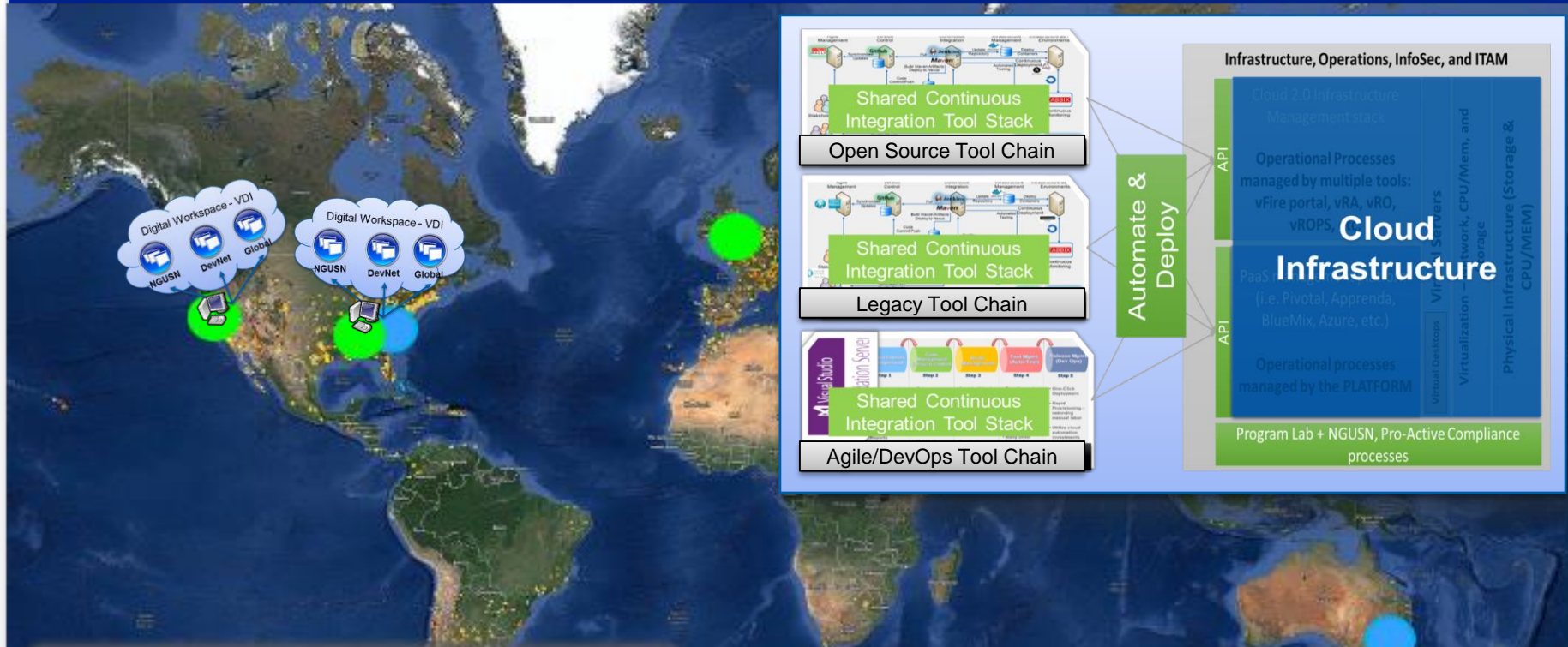
Entity	Capability	Outcomes
<b>Business</b>	Program Lab Networking and enterprise tool delivery for Lab environments	<ul style="list-style-type: none"> <li>Secure, inbound and outbound access from sector program lab networks to shared Development tools (Assume DFAR compliance)</li> <li>Deployment of key enterprise SDLC tools</li> </ul>
	Application Testing Automation & CI testing automation	<ul style="list-style-type: none"> <li>Expanded availability of standard tool chain and integration in to DevSecOps &amp; hybrid Cloud management tools</li> </ul>
<b>IT</b>	<ul style="list-style-type: none"> <li>Production PaaS web hosting Environment</li> <li>streamlined CI/CD</li> <li>POC program - CI/CD improvements - FOD &amp; IAC</li> </ul>	<ul style="list-style-type: none"> <li>Faster Release CI/CD lifecycle for Enterprise Applications</li> <li>IT Web Apps will have a hosting platform that enables faster release lifecycles CI/CD</li> <li>Program Lab Server based applications have improved CI/CD automation capabilities</li> </ul>
<b>Enterprise</b>	Digital Workspace	<ul style="list-style-type: none"> <li>Improved Remote Access solution</li> <li>GPU Accelerated VDI for Engineering Applications</li> <li>Digital Workspace portal for access to virtual desktops and applications</li> </ul>

# JIC

# iSEE Vision

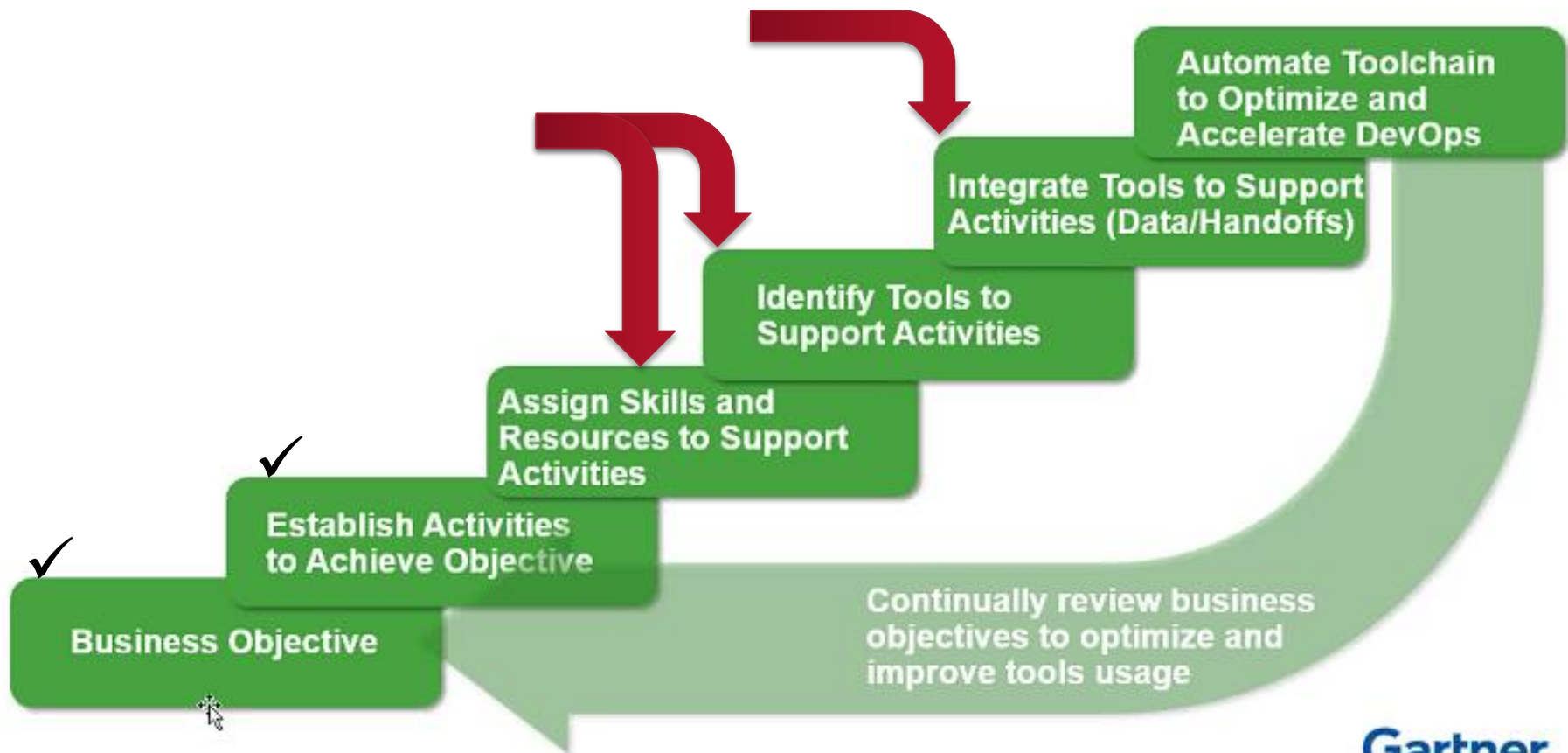
Global Product Data Interoperability Summit | 2017

Enable Business Lines and IT software development processes with secure SDLC automation tools, CI/CD automation, lab connectivity, and cloud service offerings



Leverage Hybrid Cloud and Agile+DevOps strategies to Streamline SDLC through standard tools, cloud infrastructure automation, VDI, and lab connectivity





© 2016 Gartner, Inc. and/or its affiliates. All rights reserved.

**Gartner**

High priority capabilities being worked to define governance and integration models