INGENIERÍA EN SOFTWARE

FACULTAD DE INGENIERÍA EN SISTEMAS

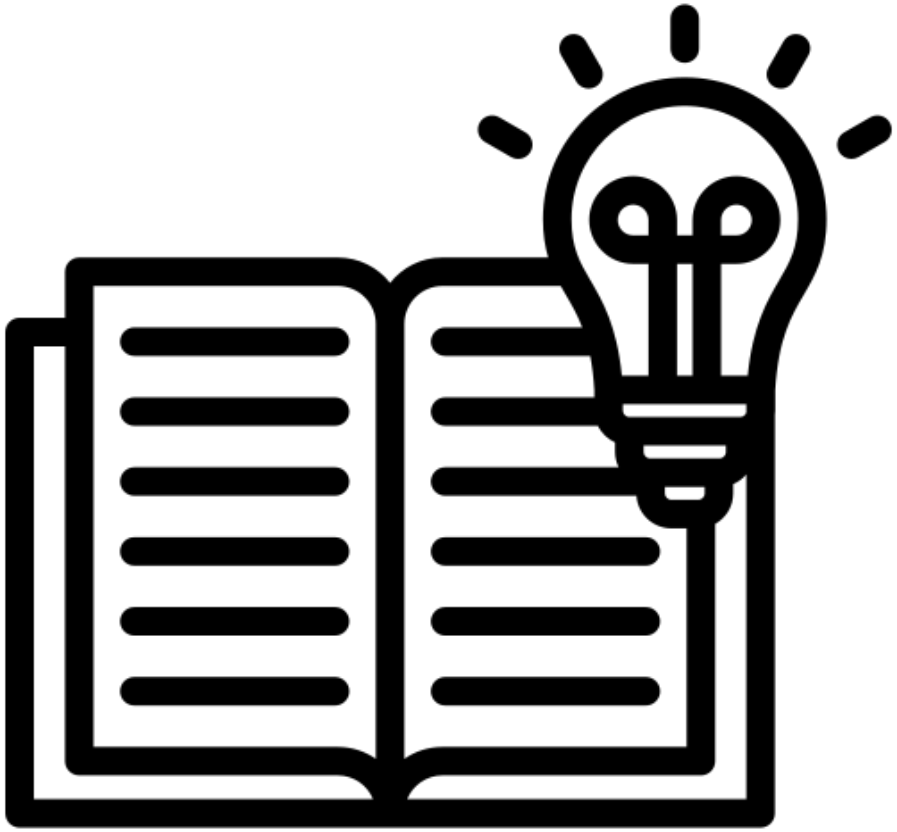
AGENDA DEVOPS

- Elicitación y Análisis
- Especificación
- Validación
- Bibliografía

OBJETIVO DE LA CLASE

- Explicar qué es DevOps y por qué es importante en el desarrollo de software.
- Destacar la evolución de la cultura y prácticas de desarrollo hacia DevOps.

INTRODUCCIÓN TEÓRICA



THE KEY PLAYERS

- ***Developers*** enjoy writing code and developing software for customers to use

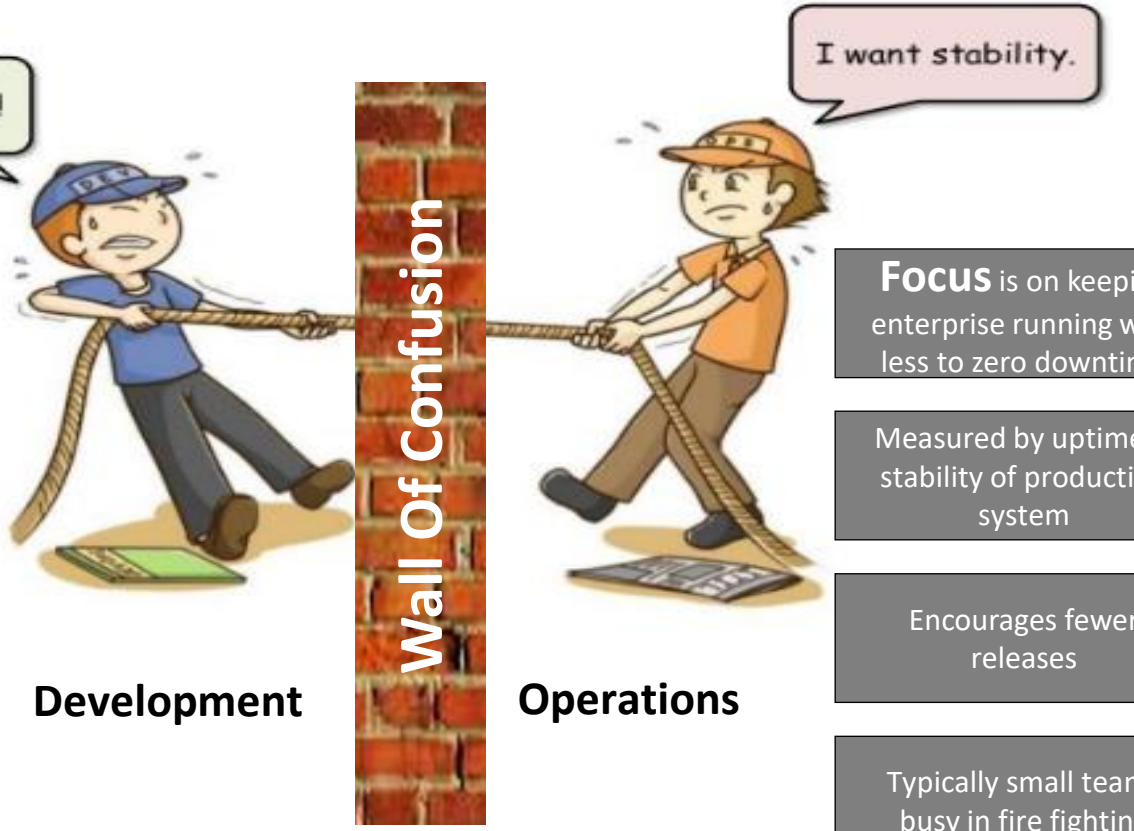
- ***Operations*** enjoy deploying software solutions and running stable platforms

- ***Business*** depends on both to generate revenue and want both to be optimal

THE KEY PLAYERS

- Developers are often far removed from the production environment - do not know how a release may impact the production set up or how the software they are writing performs when it goes “live”
- Operations are not always aware of the release plan and upcoming changes - deployments often cause system downtime, both planned and unplanned
- Deadlines are missed - Stakeholders’ trust is lost

DIFFERENT GOALS



Focus is on delivering value on time and within budget

Measured by improved business capability & agility

Wants higher frequency of releases

Rapid pace of innovation in tools & technologies

Development

Operations

Focus is on keeping enterprise running with less to zero downtime

Measured by uptime & stability of production system

Encourages fewer releases

Typically small teams busy in fire fighting

BREAK THE WALL

GO THE DEVOPS WAY

- **DevOps** is a way of working way of working whereby business, developers and IT system operators work
  - closely,
  - collaboratively and
  - in harmony
- towards a ***common goal*** with little or no
- organizational barriers or boundaries
- between them

DEVOPS ENABLES BUSINESS TO

- Optimize, streamline and improve the way of working so that it can release quality software frequently
- Embrace change and manage risk
- Be ***Nimble(Agile) but Stable***

DEVOPS IS ABOUT

PEOPLE

Behavior

PROCESS

Interactions

TECHNOLOGY

Automation

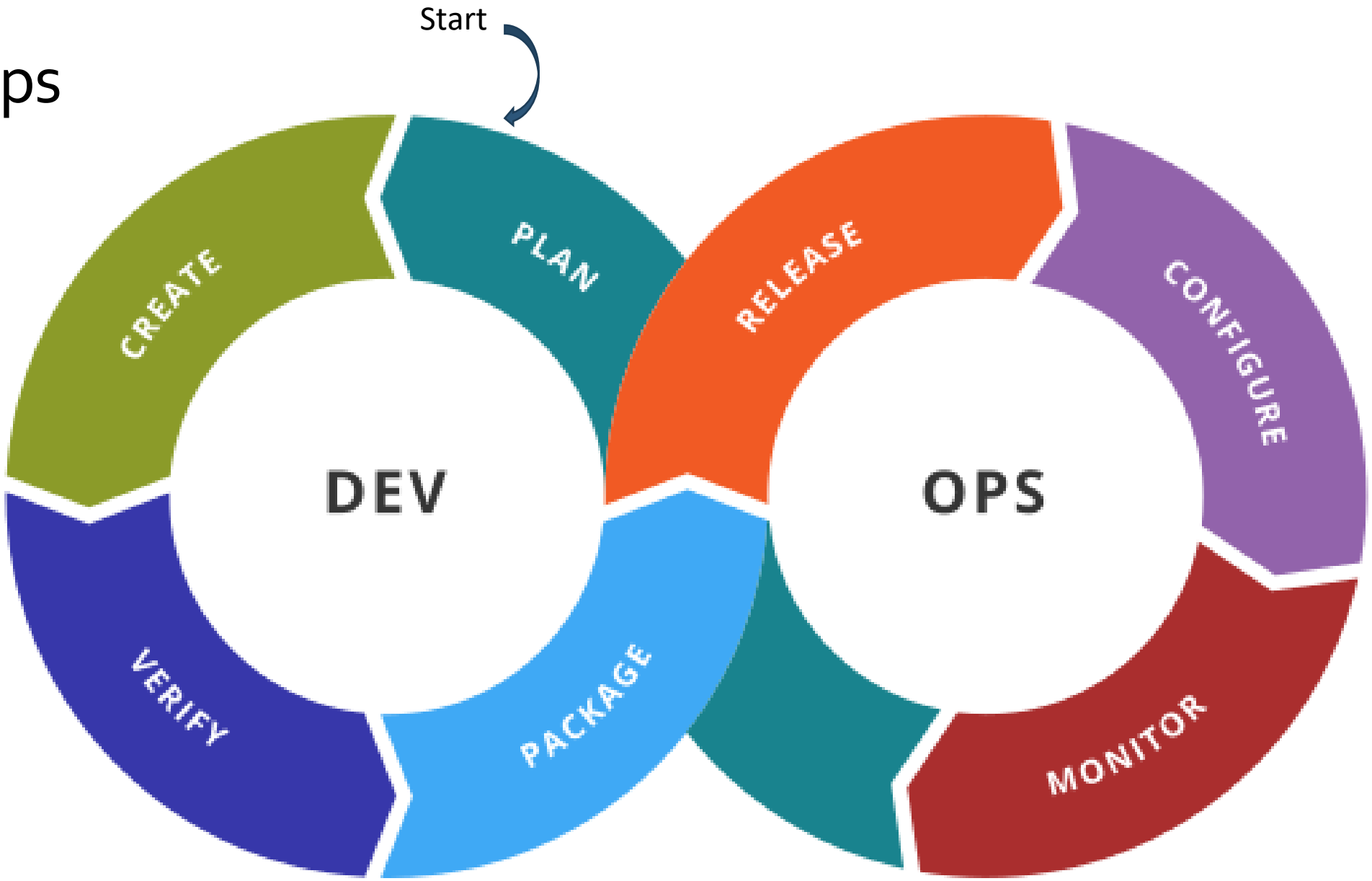
¿Qué es DevOps?

- DevOps (acrónimo inglés de development -desarrollo- y operations -operaciones-) es una práctica de ingeniería de software que tiene como objetivo unificar el desarrollo de software (Dev) y la operación del software (Ops).

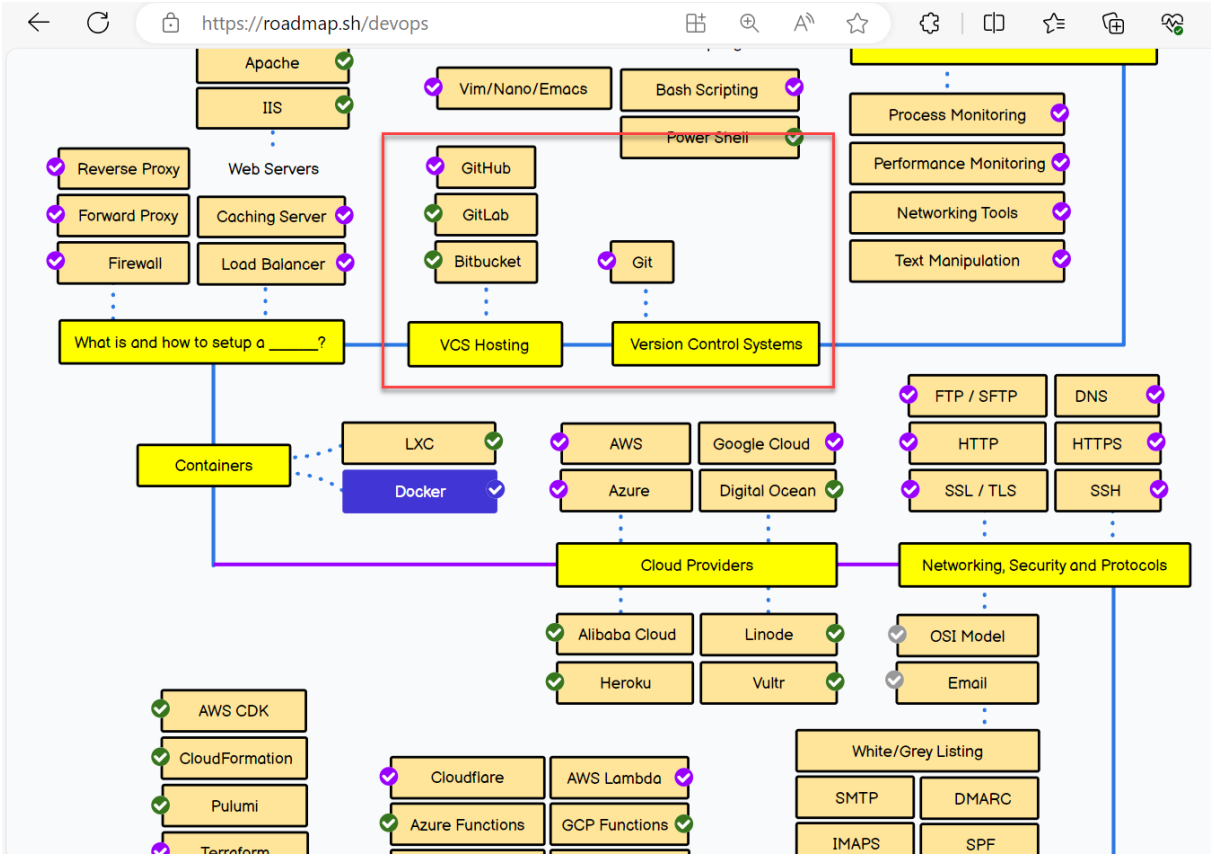
- La principal característica del movimiento DevOps es defender enérgicamente la automatización y el monitoreo en todos los pasos de la construcción del software, desde la integración, las pruebas, la liberación hasta la implementación y la administración de la infraestructura.

- DevOps apunta a ciclos de desarrollo más cortos, mayor frecuencia de implementación, lanzamientos más confiables, en estrecha alineación con los objetivos comerciales.

DevOps


Start
CREATE
PLAN
RELEASE
CONFIGURE
DEV
OPS
VERIFY
PACKAGE
MONITOR

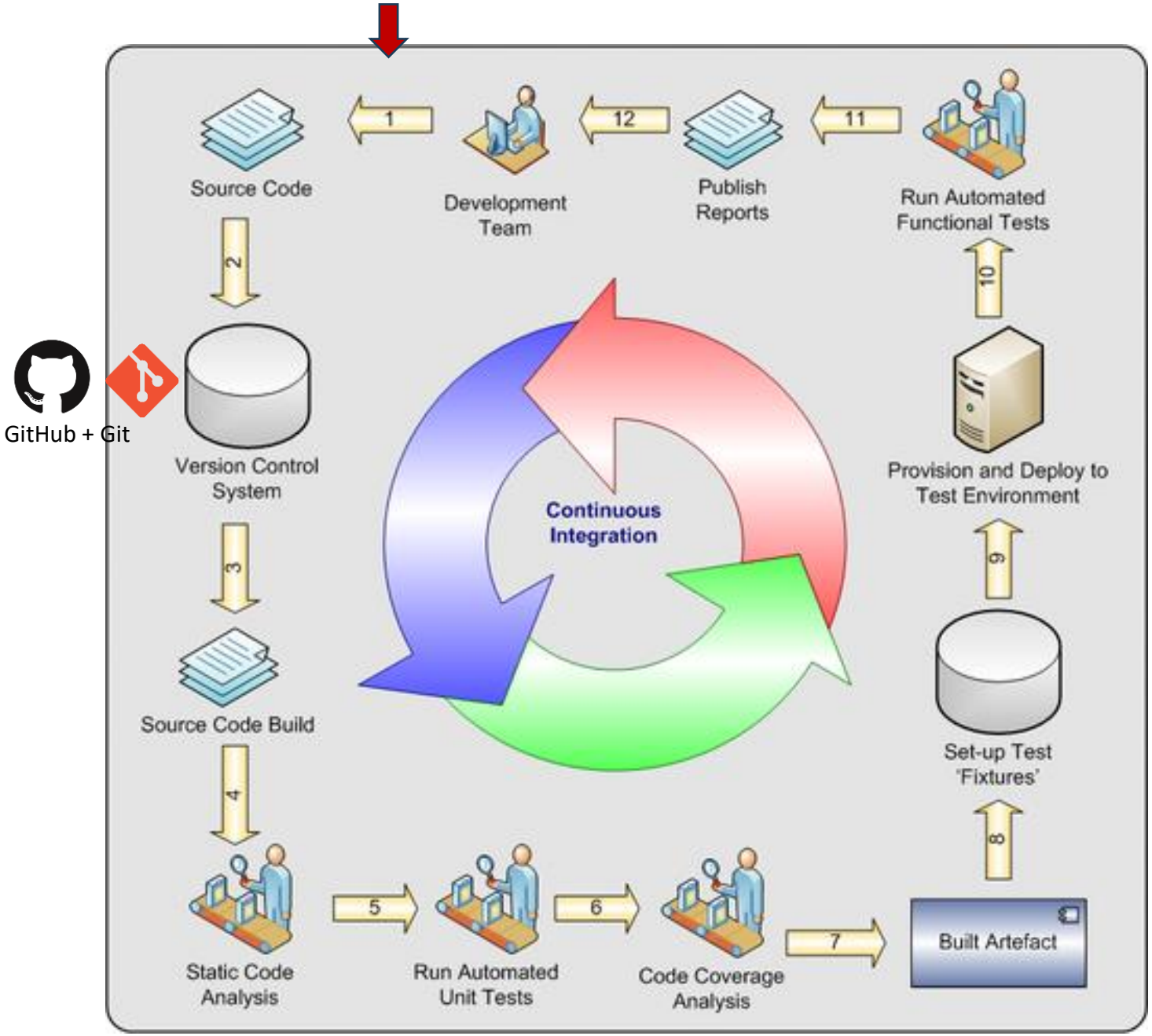
DevOps Roadmap



[DevOps Roadmap: Learn to become a DevOps Engineer or SRE]

C.I.

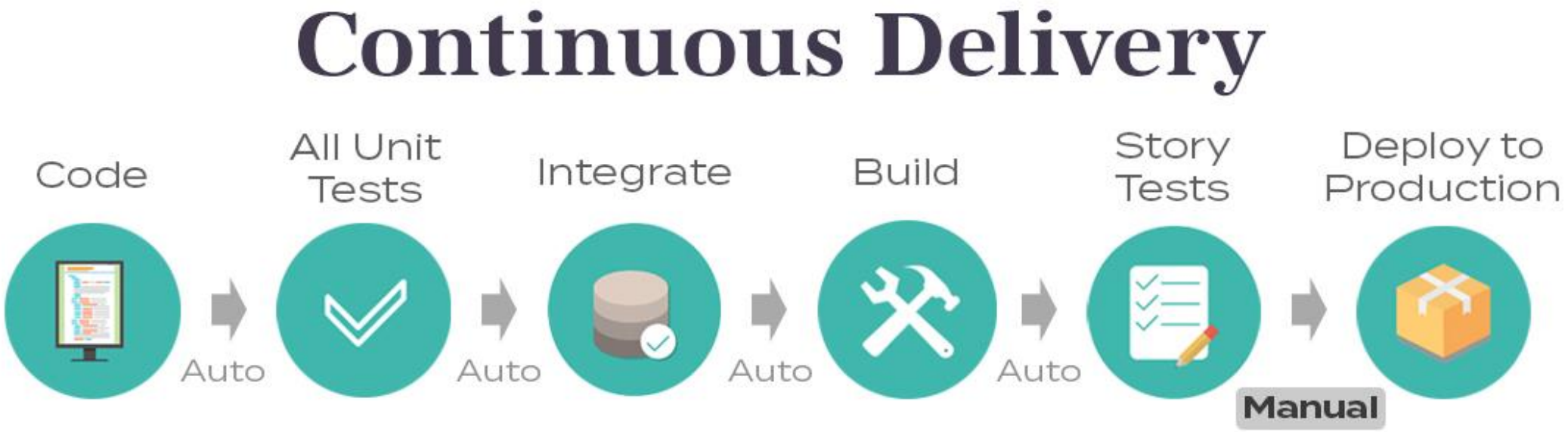
- La integración continua es una práctica de desarrollo de software mediante la cual los desarrolladores combinan los cambios en el código fuente en un repositorio central de forma periódica, tras lo cual se ejecutan versiones y pruebas automáticas.
- Con la integración continua, los desarrolladores envían los cambios de forma periódica a un repositorio compartido con un sistema de control de versiones como Git.



https://aws.amazon.com/es/devops/continuous-integration/

C.D.

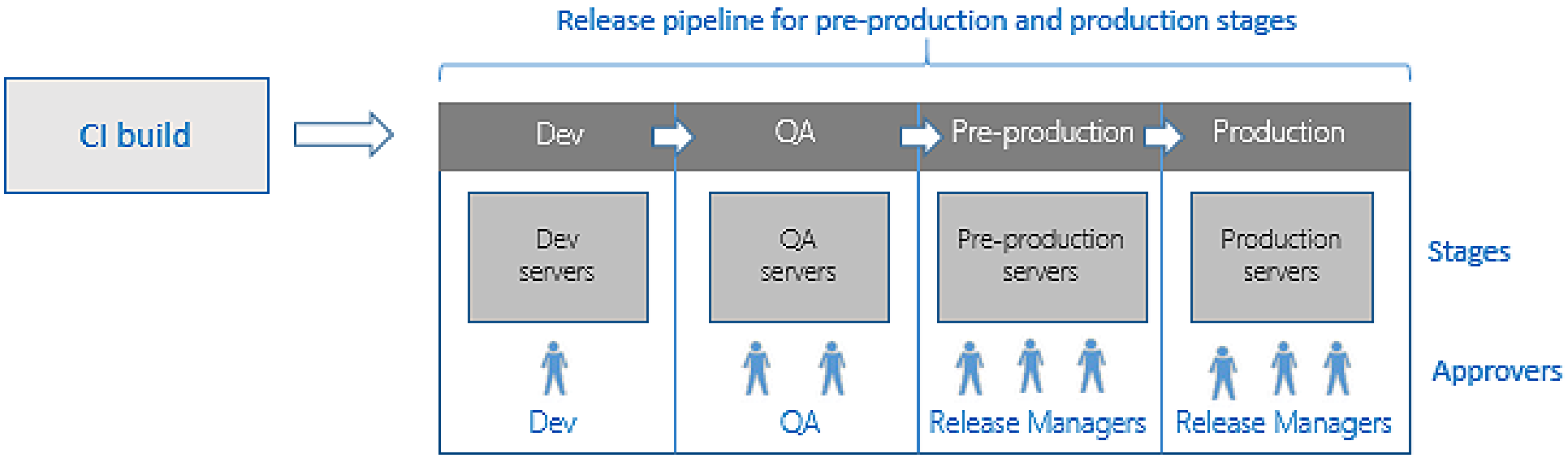
- Entrega continua (continuous delivery en inglés o CD) es un enfoque de la ingeniería del software en que los equipos de desarrollo producen software en ciclos cortos, asegurando que el software puede ser liberado en cualquier momento, de forma confiable en cualquier momento.
- Apunta a la construcción, prueba, y liberación del software de forma más rápida y más frecuente. Este enfoque ayuda en la reducción del costo, tiempo, y riesgo de la liberación de versiones a través de la liberación de versiones más incrementales a aplicaciones en producción.



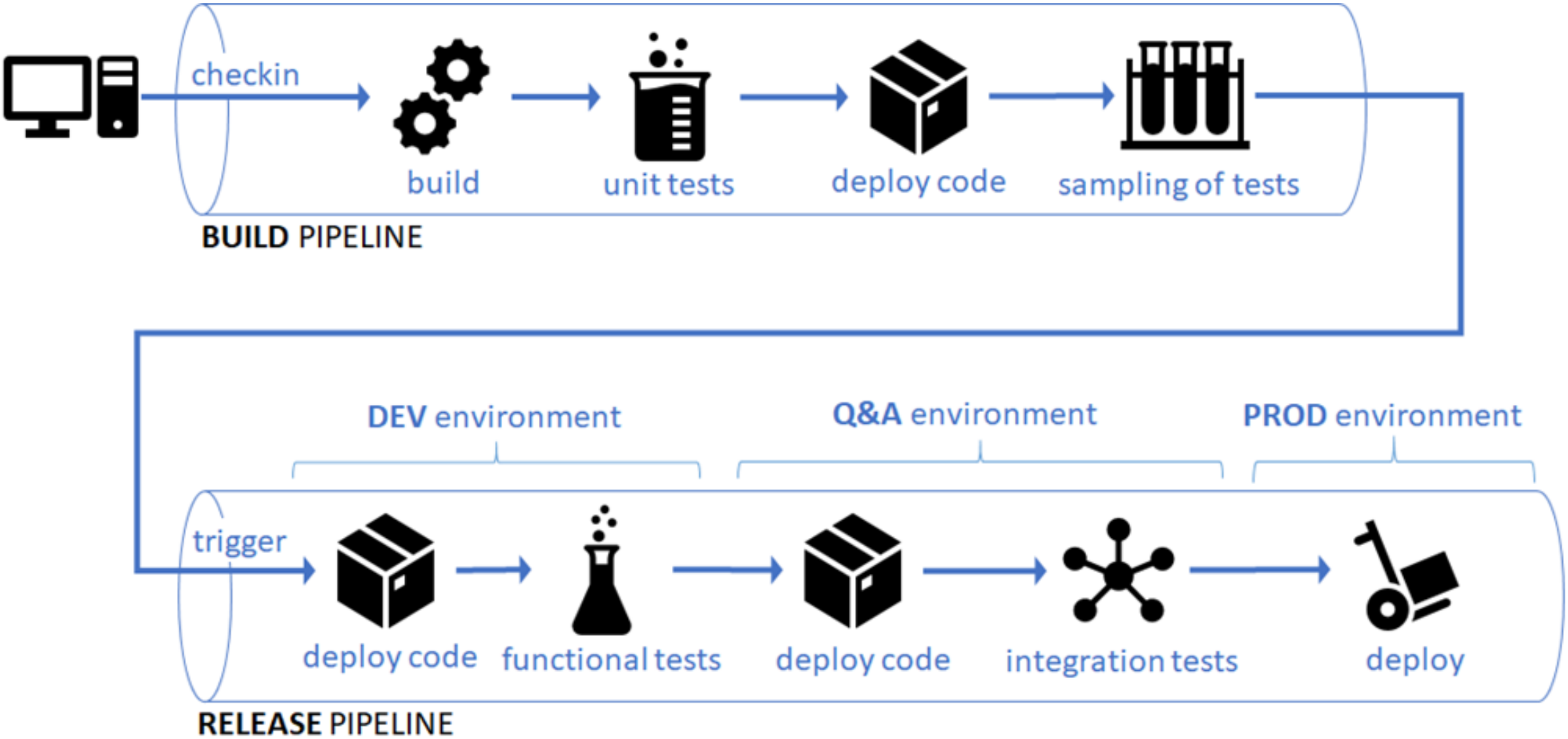
https://es.wikipedia.org/wiki/Entrega_continua

Las canalizaciones (pipelines)

- Las canalizaciones (pipelines) de **Release** ayudan al equipo de desarrollo de software a entregar continuamente (CD) software a sus clientes a un ritmo más rápido y con menor riesgo.
- Puede automatizar por completo las pruebas y la entrega de su software en varias etapas hasta la producción.

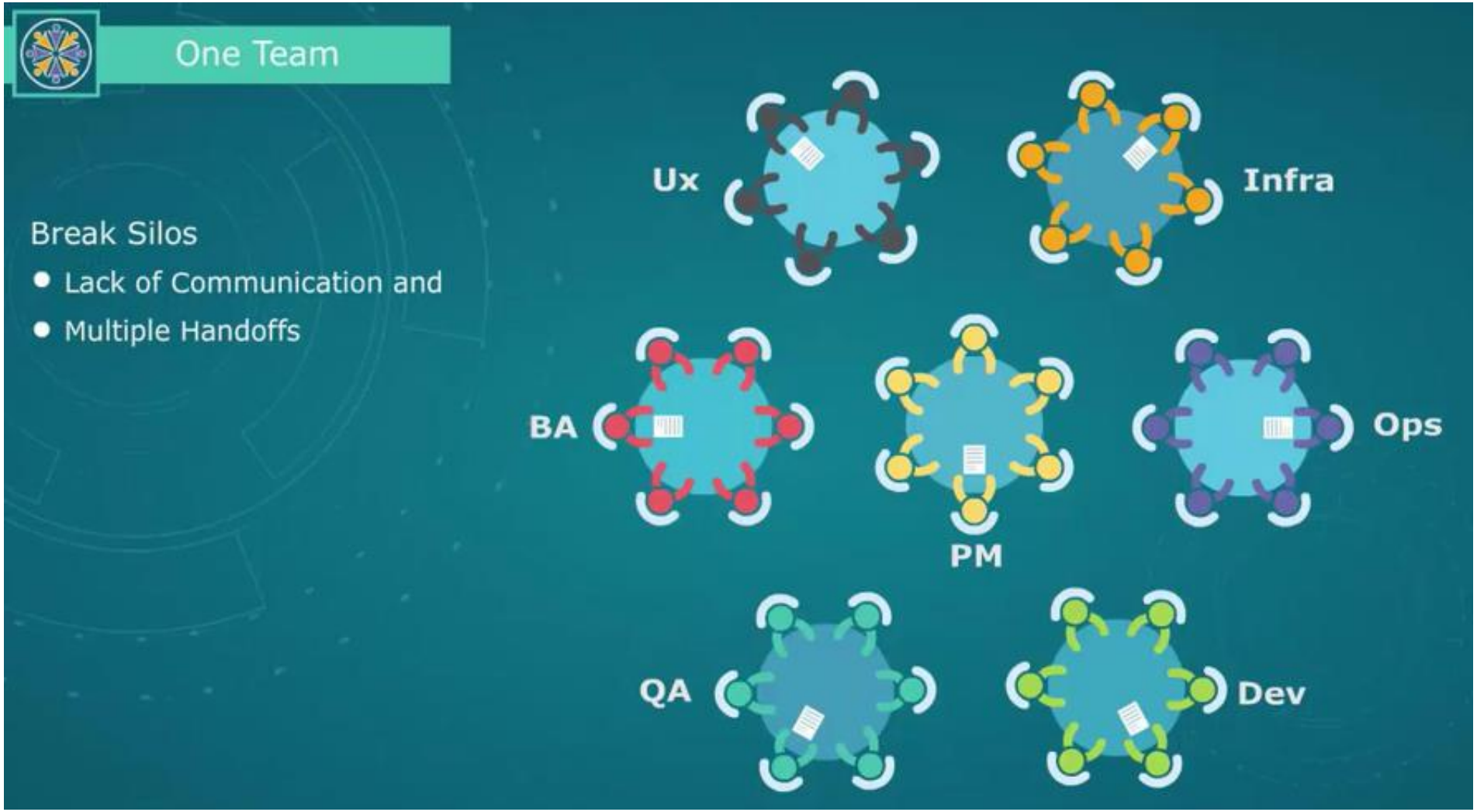


https://docs.microsoft.com/en-us/azure/devops/pipelines/release/?view=azure-devops


checkin
build
unit tests
deploy code
sampling of tests
BUILD PIPELINE
DEV environment
Q&A environment
PROD environment
trigger
deploy code
functional tests
deploy code
integration tests
deploy
RELEASE PIPELINE

ONE TEAM - BREAK THE SILOS

ONE TEAM - BREAK THE SILOS



ONE TEAM - BREAK THE SILOS

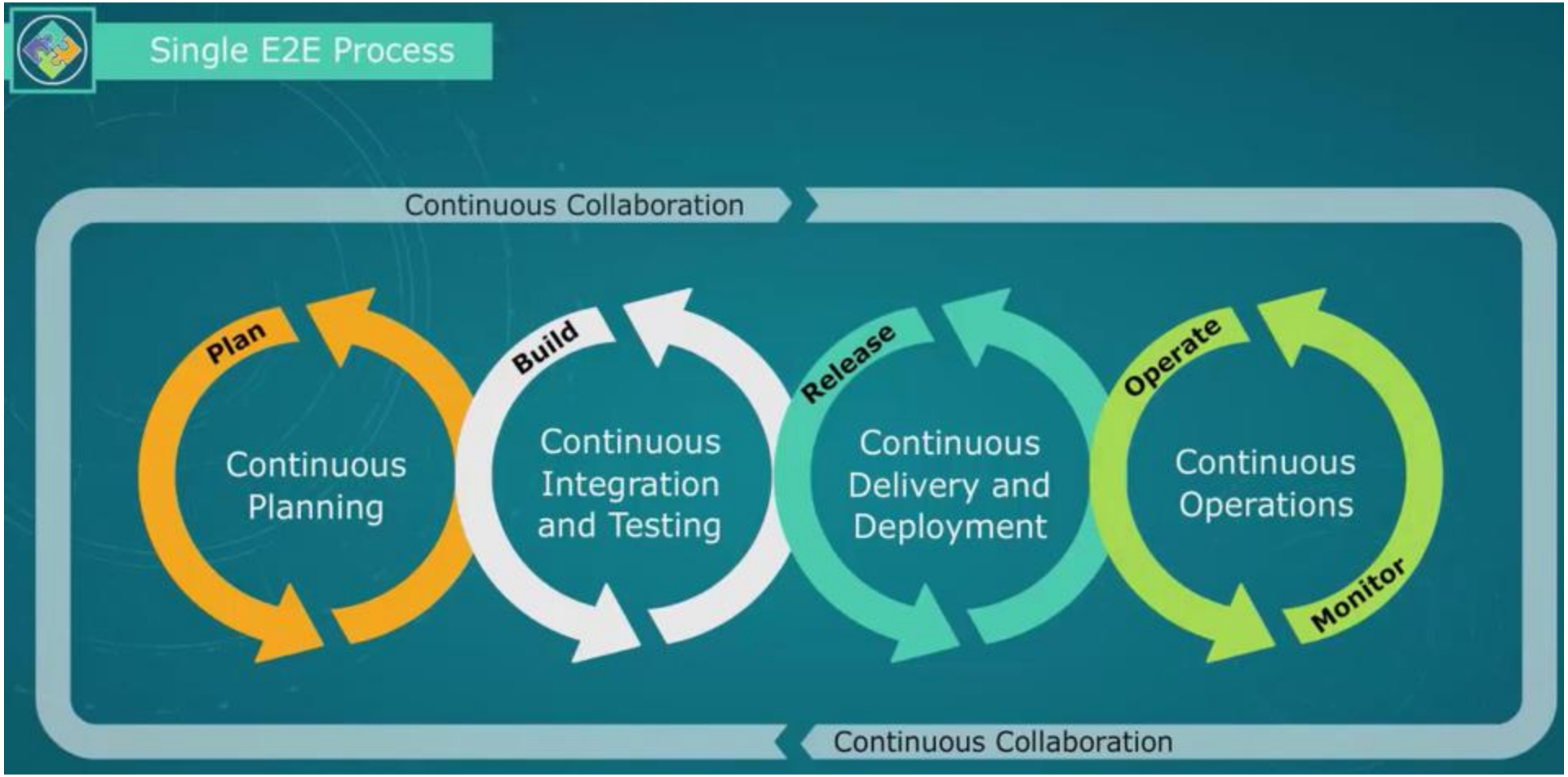
Break Silos

- Lack of Communication and
- Multiple Handoffs

Form Cross functional Team

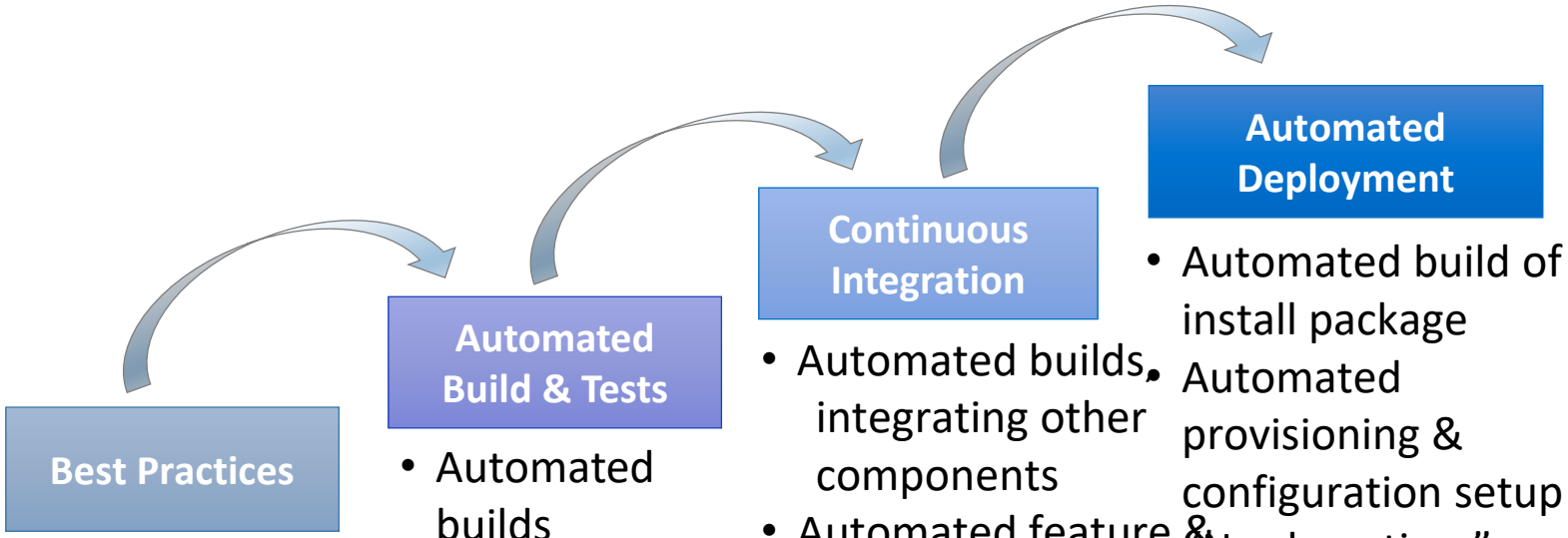
- High Collaboration and
- Common Goal

SINGLE E2E PROCESS



TRANSPARENCY

ENGINEERING PRACTICES



AUTOMATED BUILD & TEST

Build and Unit Testing

gradle
NUnit
Apache Ant
Maven
JUnit
MSBuild
FitNesse
SoapUI

Static Code Quality

sonarqube
FORTIFY
coverity
ReSharper
StyleCop
Microsoft Visual Studio Team Foundation Server

Source Code Management

GitHub
Stash
Bitbucket
SUBVERSION
Rational. ClearCase

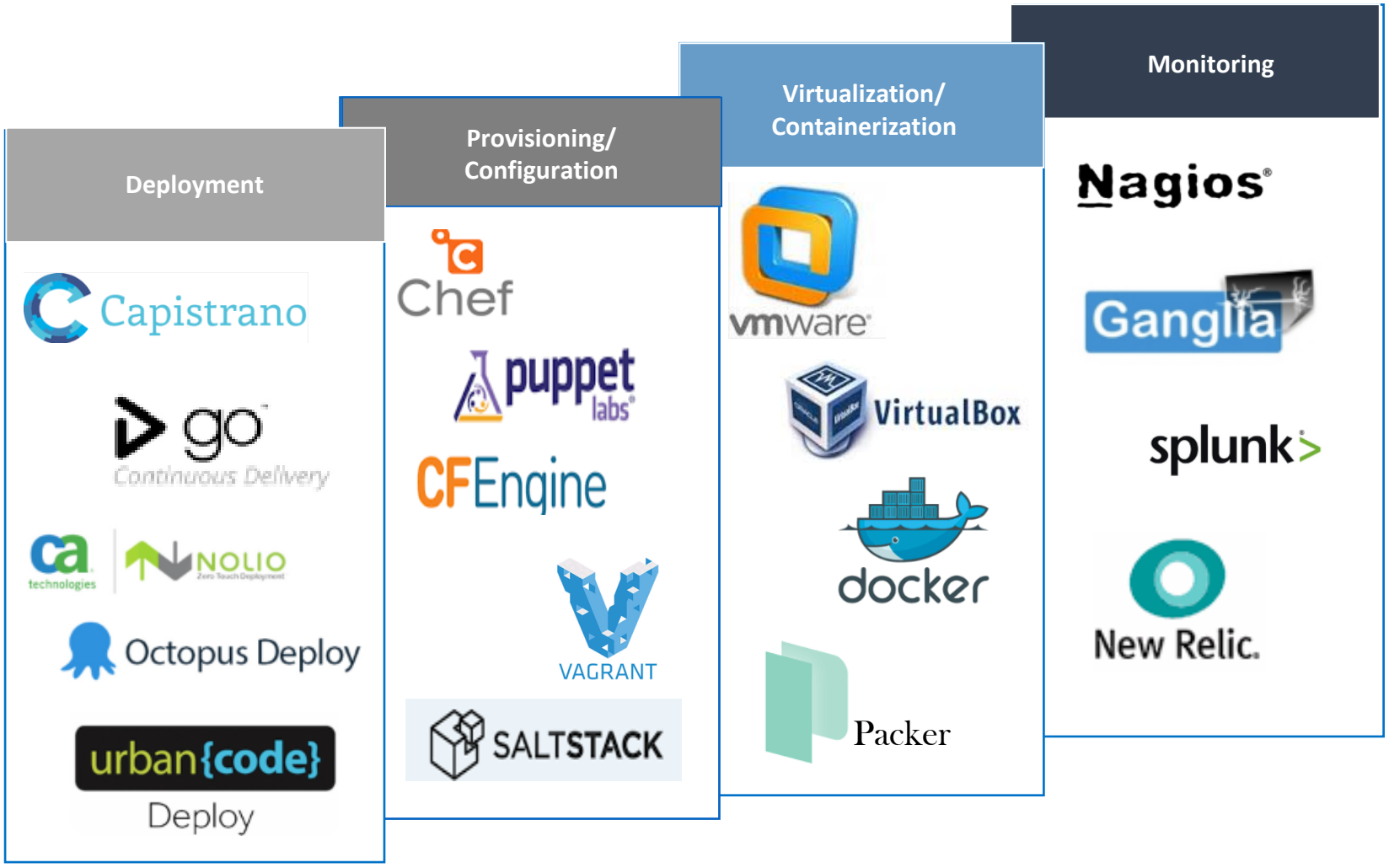
Functional Testing

Selenium
Cucumber
jbehave
Jasmine
Behavior-Driven JavaScript

Continuous Integration

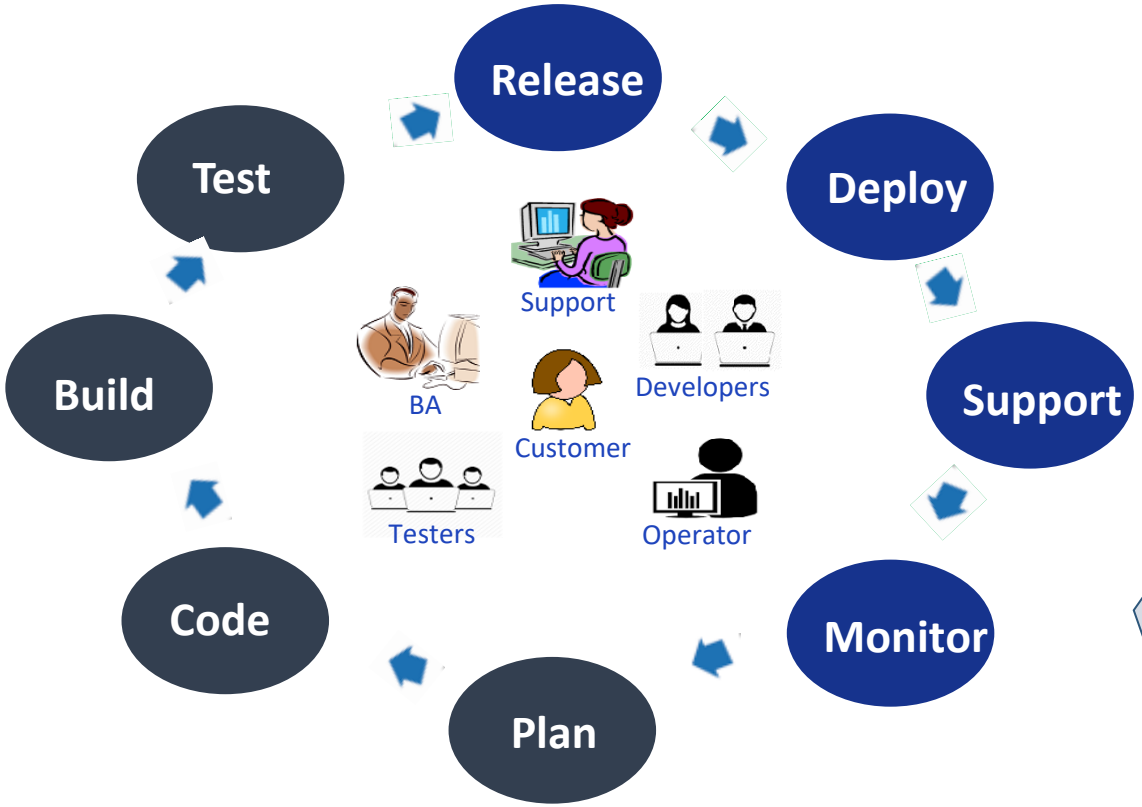
Jenkins
cruisecontrol
Bamboo
Hudson

AUTOMATED RELEASE MANAGEMENT



DEVOPS ECOSYSTEM

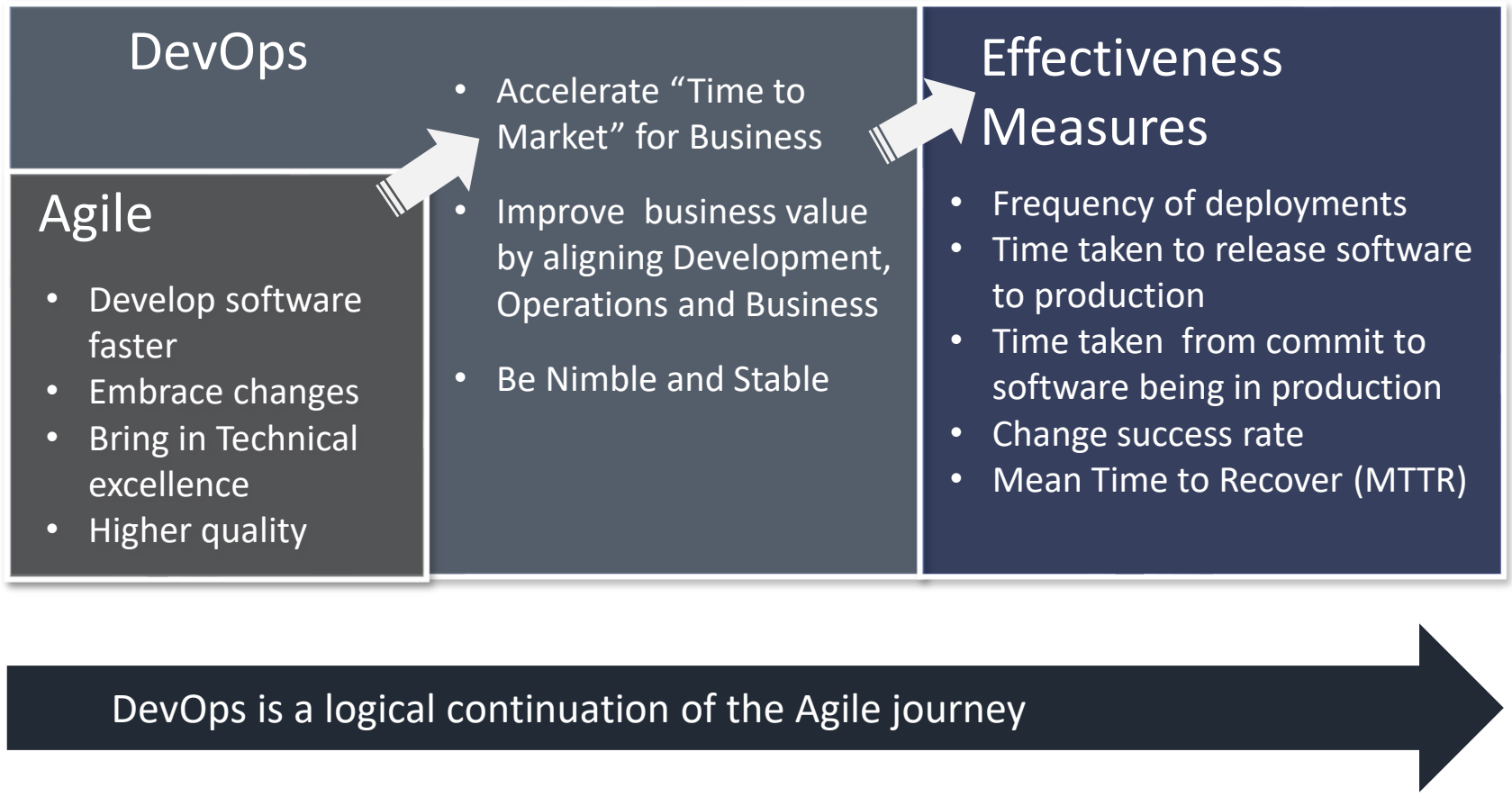
- Release Planning
- Backlog Refinement
- Static Code Analysis
- Automated Build
- Continuous Integration
- Automated Testing



- Package Creation
- Automated Provisioning & Configuration setup
- “No-downtime” Deployment
- Application Support
- Automated Monitoring

ALL ROADS LEAD TO CULTURE

INCREASED BUSINESS ALIGNMENT



THE MYTHS

- DevOps replaces Agile
- DevOps replaces ITIL
- DevOps means NoOps
- DevOps is just automation
- DevOps is only for the “Amazons” and “Googles”

STATE OF DEVOPS REPORT

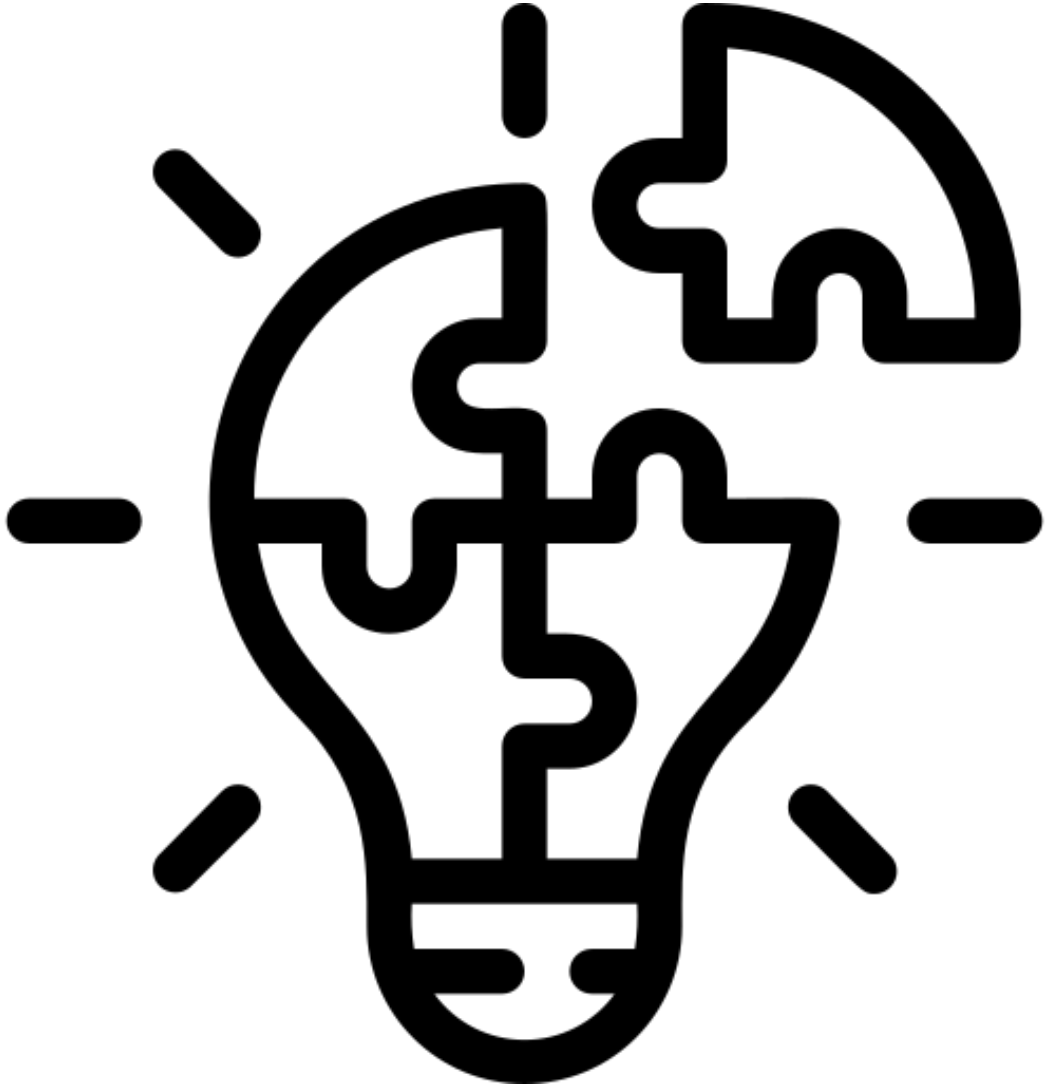
- ***High performing IT organizations report experiencing***
  - ✓ ***200X more frequent deployments***
  - ✓ ***2,555X faster lead times***
  - ✓ ***3X lower change failure rate***
  - ✓ ***24X faster recovery from failures***

www.devopssurvey@puppetlabs.com

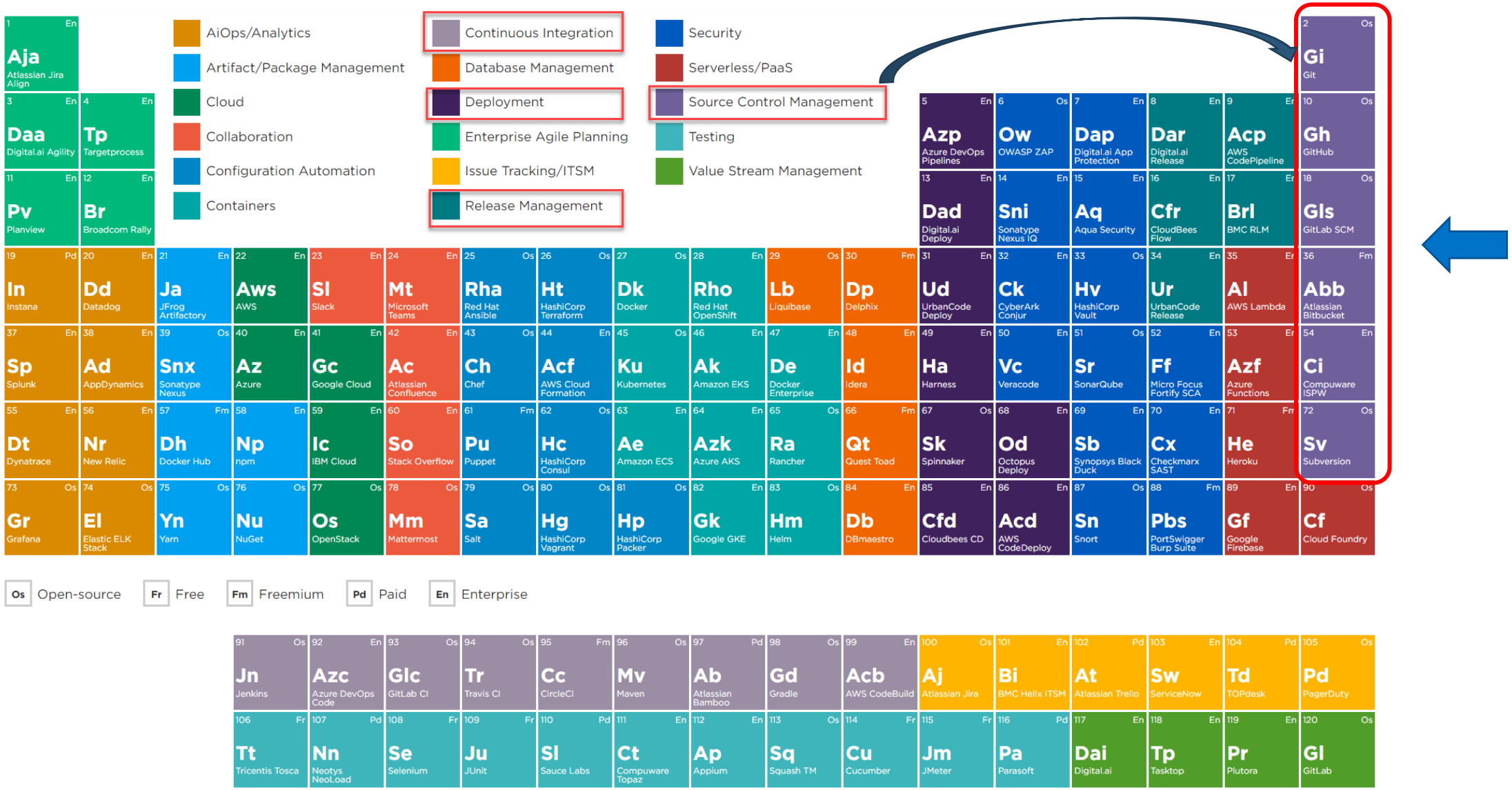
EMBRACING DEVOPS

- **C**ulture
  - ● Embrace change ● Break Silos ● Form One Team
- **A**utomation
  - ● Continuous Delivery ● Infrastructure as Code
- **L**ean
  - ● Reduce Waste ● Have Small Batches ● Improve Cycle time
- **M**easurement
  - ● Measure everything all the time ● Show improvements
- **S**haring
  - ● Collaboration ● Transparency

PROCEDIMIENTO



Periodic Table of DevOps Tools



https://digital.ai/periodic-table-of-devops-tools

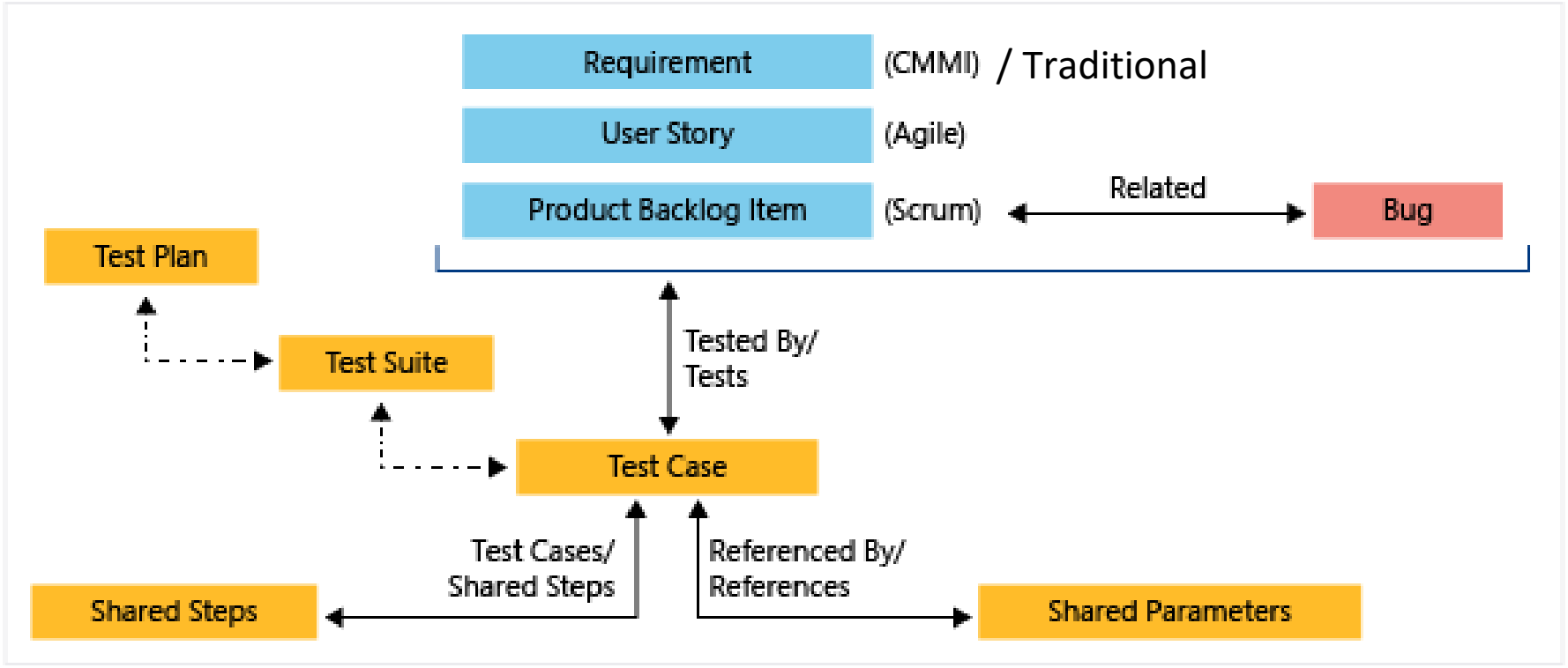
PREGUNTAS

ANÁLISIS DE RESULTADOS

ELABORACIÓN DE UN PROYECTO CON AZURE DEVOPS

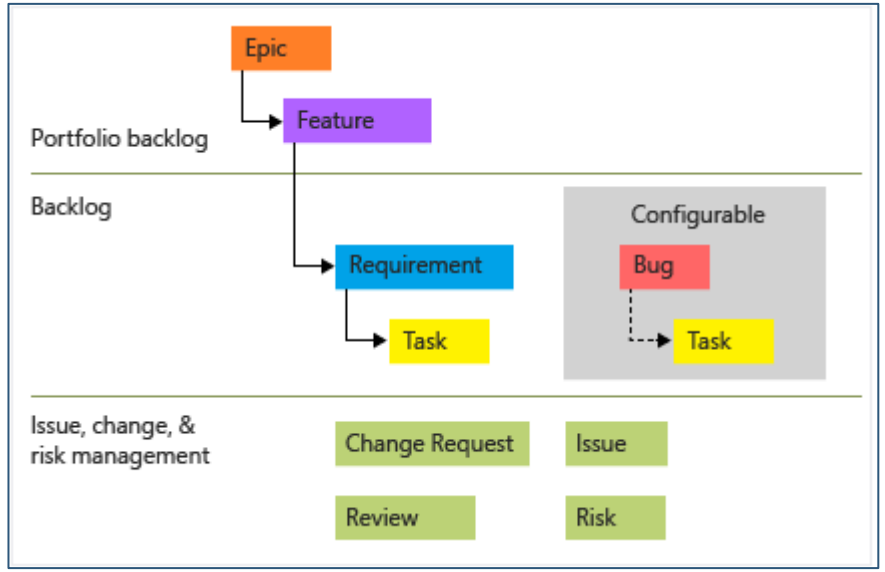
- Basándose en alguna plantilla (template), elabore un listado de requerimientos funcionales, para la construcción de un software que usted escoja, al menos describir 6 requerimientos.

REQUERIMIENTOS EN AZURE DEVOPS

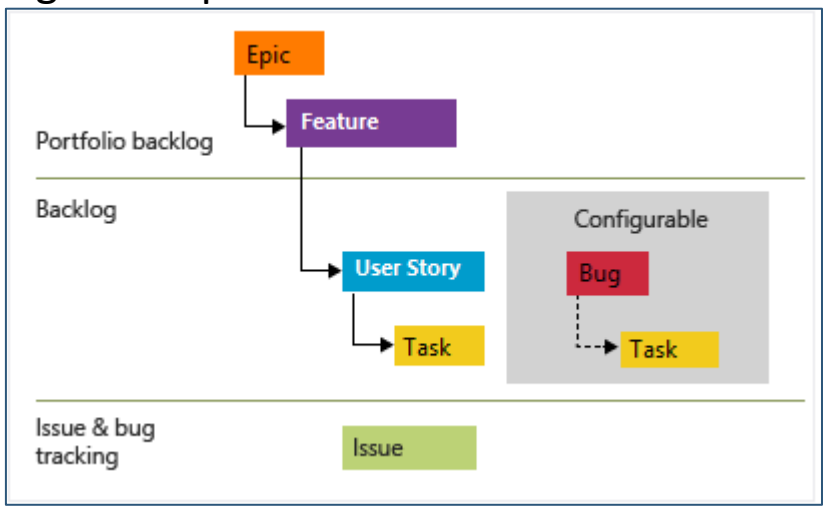


REQUERIMIENTOS EN AZURE DEVOPS

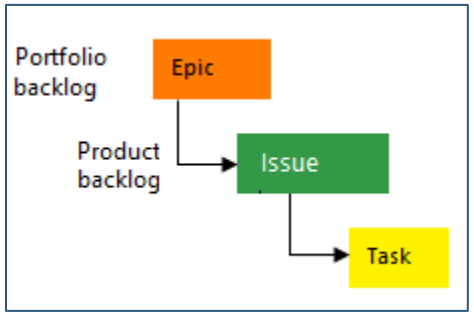
CMMI Template



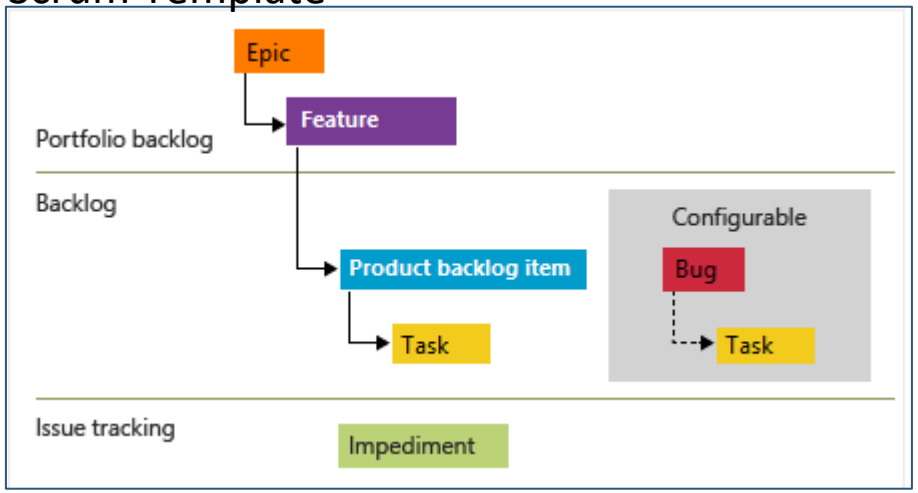
Agile Template



Basic

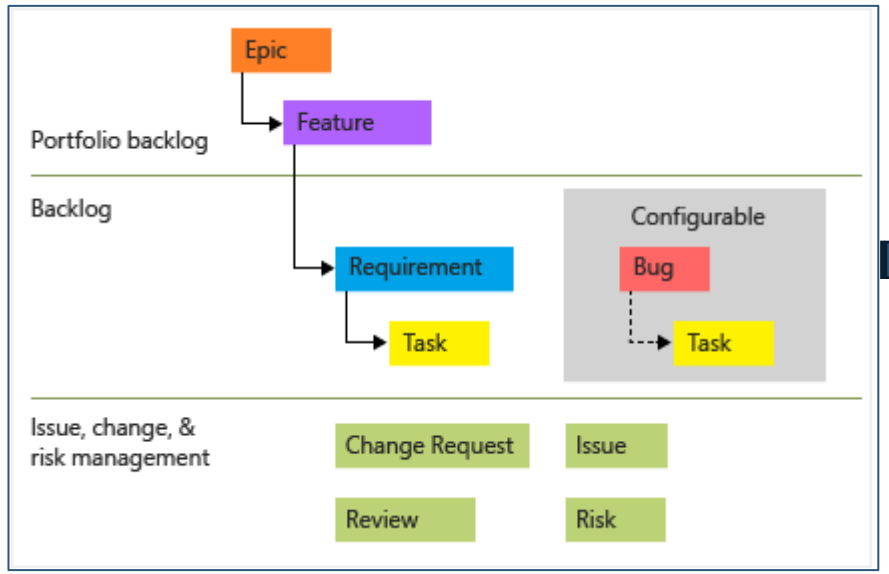


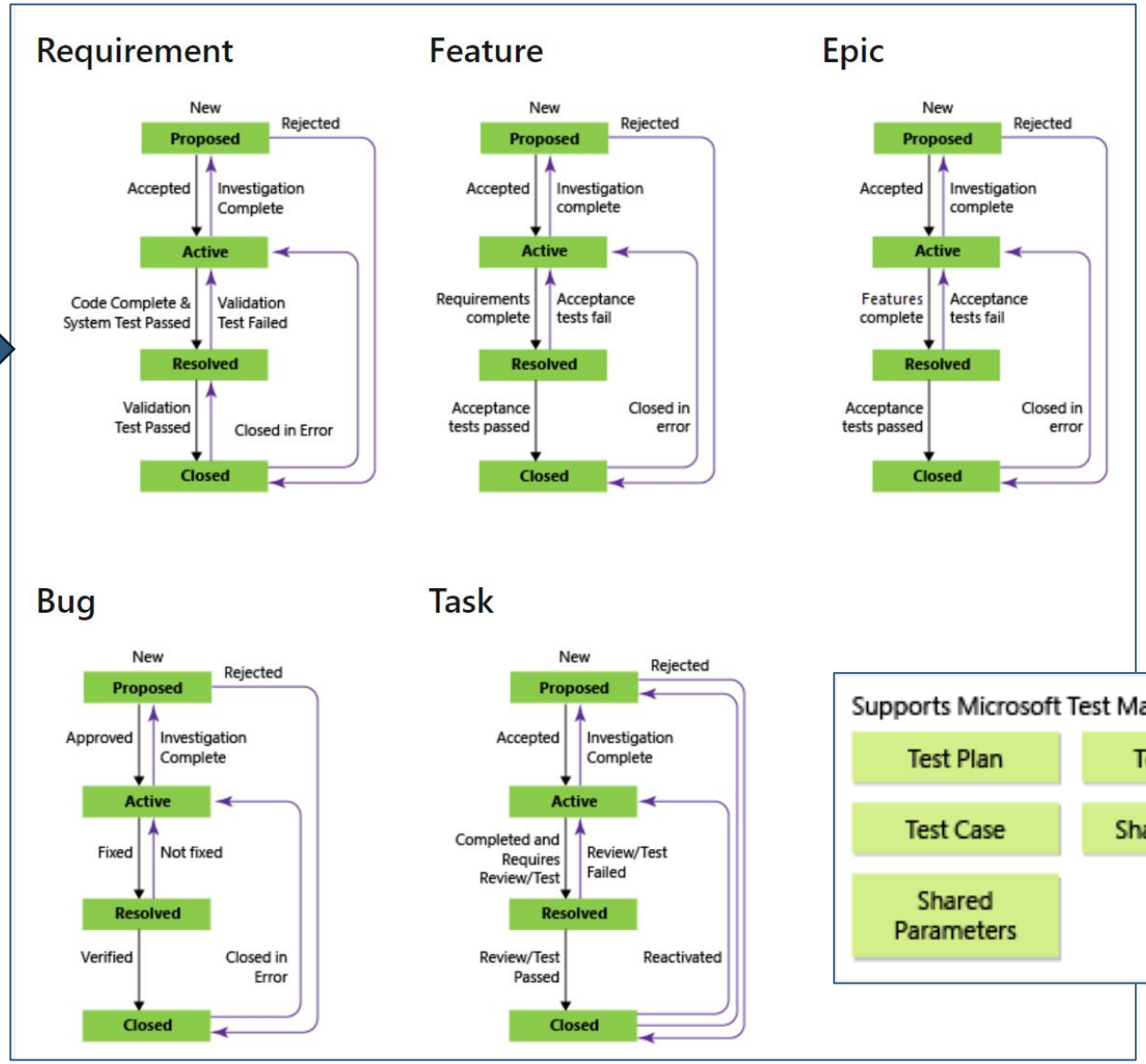
Scrum Template



REQUERIMIENTOS EN AZURE DEVOPS

CMMI Template (AKA Traditional)

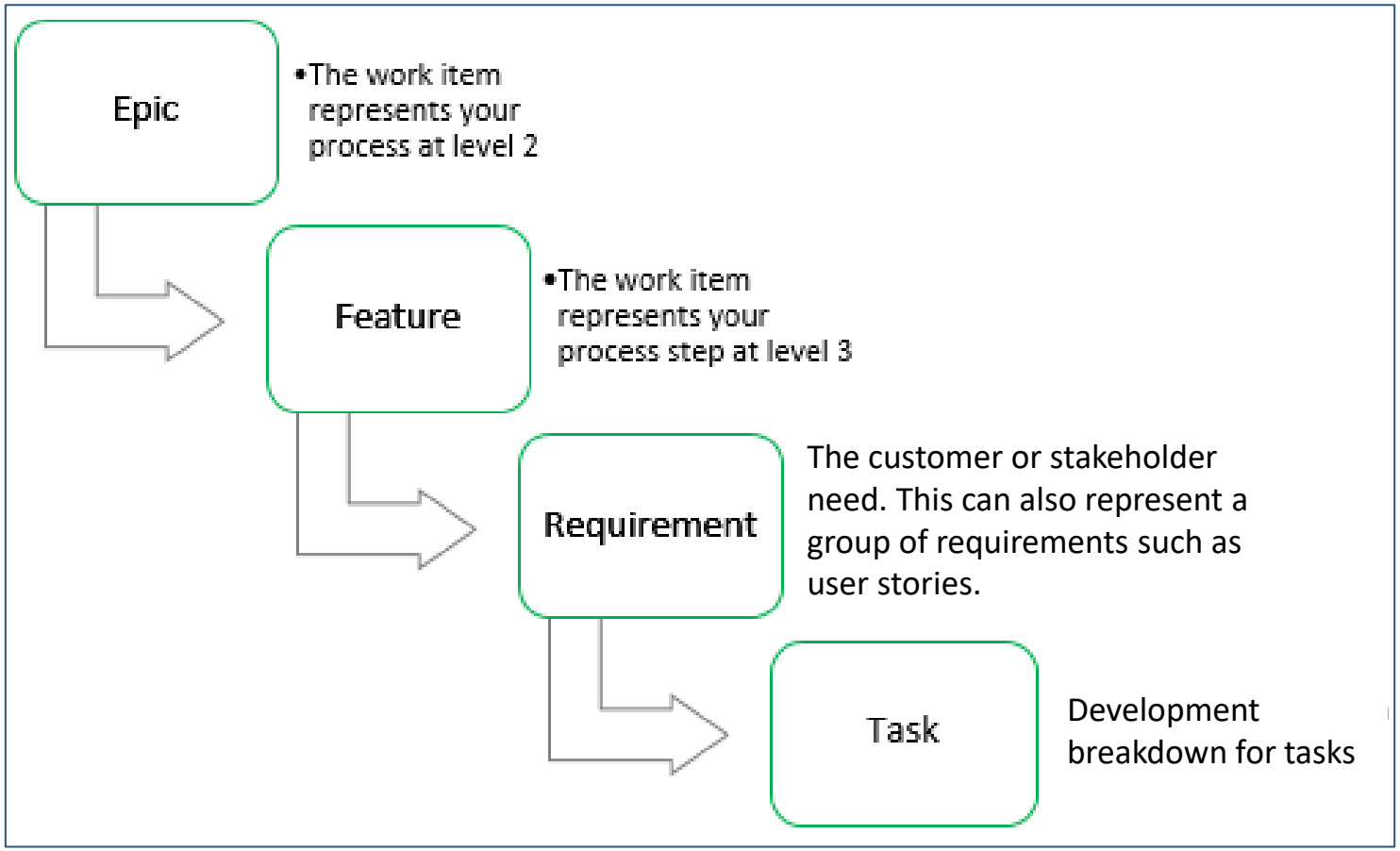




AKA=also known as

REQUERIMIENTOS EN AZURE DEVOPS

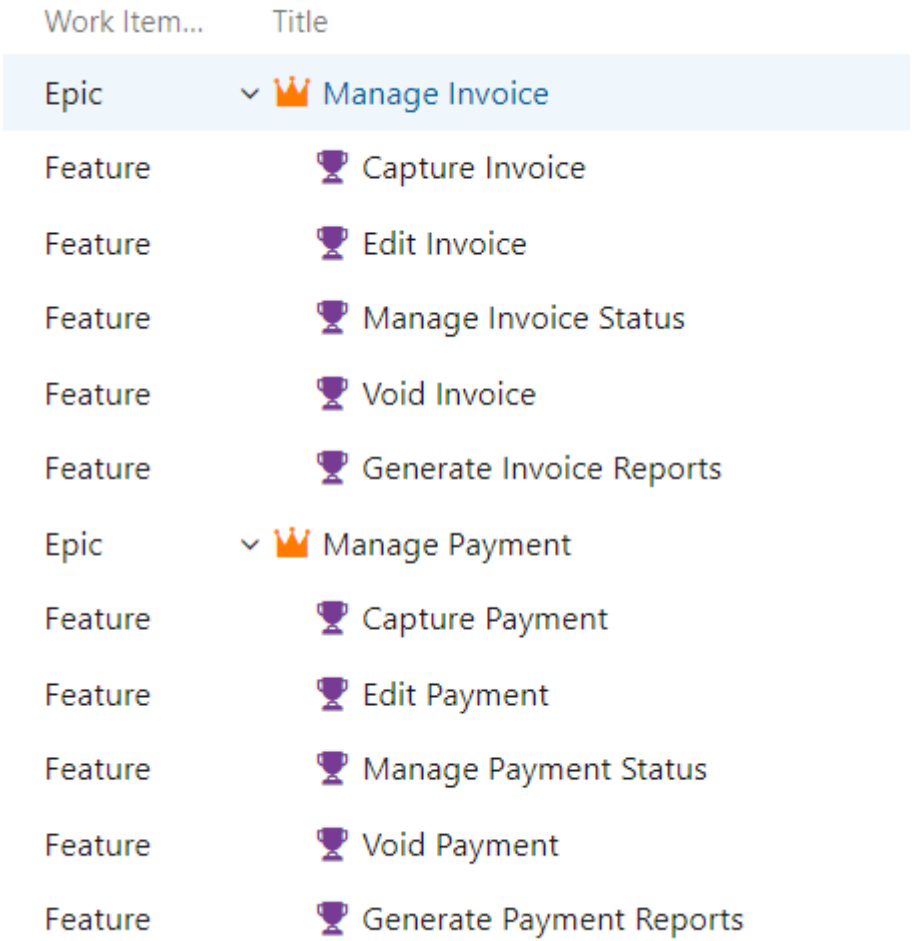
Process Level	Definition
Business Process (L2)	The business process is the level that aggregates business-oriented functions or steps to a unit that is meaningful and comprehensive in the sense that the steps or functions incorporated are essential to fulfill a business mission related task. I. e. A **business process begins with a specific customer's need and ends with the fulfillment of that need.**
Process Step (L3)	A process step performed by a user or a piece of software together with other process steps forming a business process. From a user interaction point of view a process step is a single work task in a causal work flow without role change. A process step is typically identified by the fact that the task owner has got all necessary responsibilities to execute the task.



Requirements Life Cycle Management with Azure DevOps (modernanalyst.com)

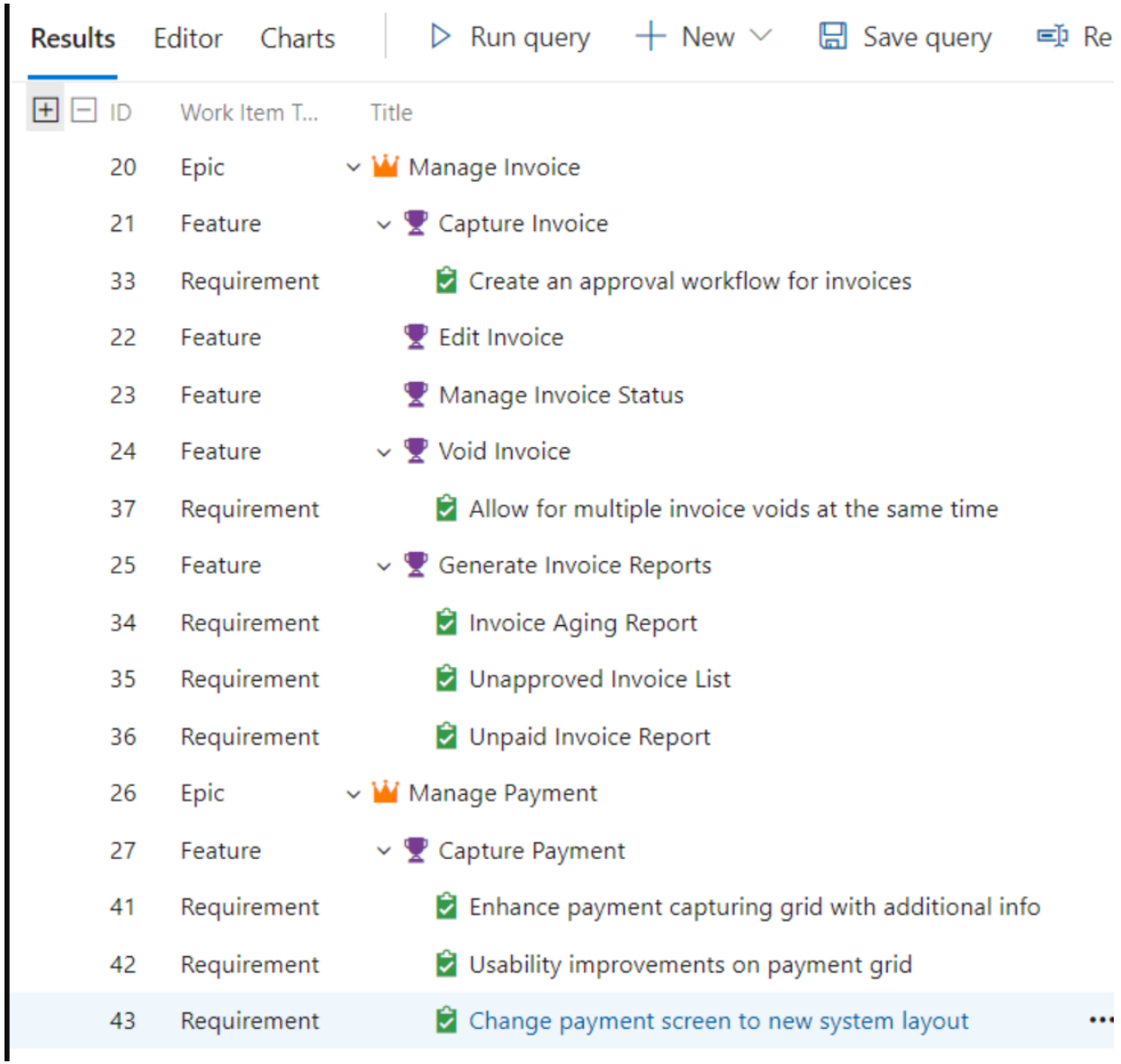
REQUERIMIENTOS EN AZURE DEVOPS

- Epic and Feature example:
  - Create an ERP with multiple modules

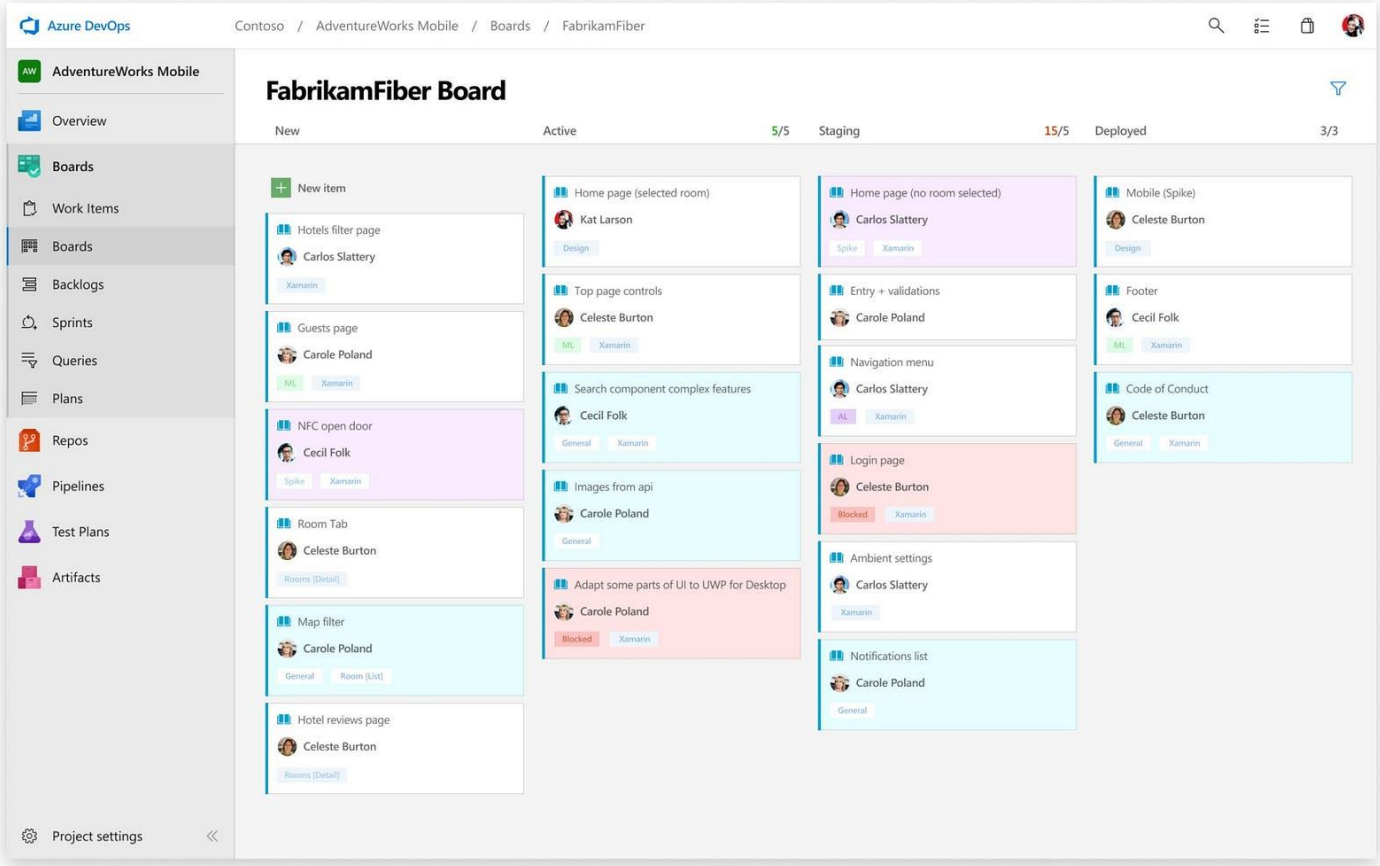


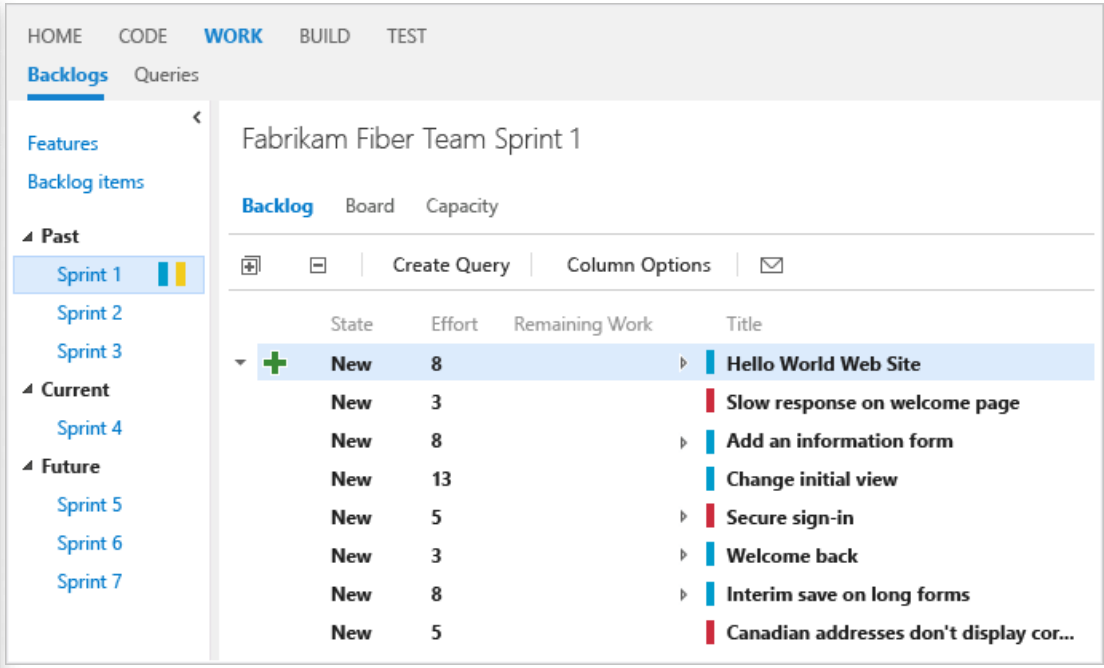
REQUERIMIENTOS EN AZURE DEVOPS

- Epic
  - Feature
    - Requirement:



REQUERIMIENTOS EN AZURE DEVOPS





BIBLIOGRAFÍA DE REFUERZO

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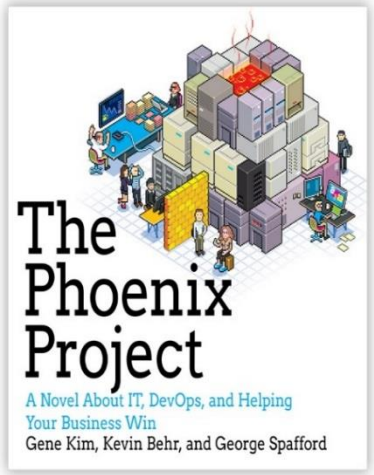
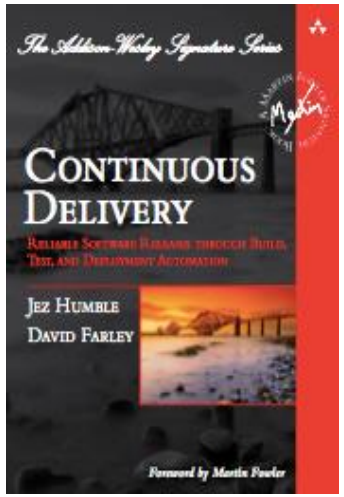
DevOps – A Quickstart Guide
Second Edition
Paul Swartout
PACKT


The
Phoenix
Project
A Novel About IT, DevOps, and Helping
Your Business Win
Gene Kim, Kevin Behr, and George Spafford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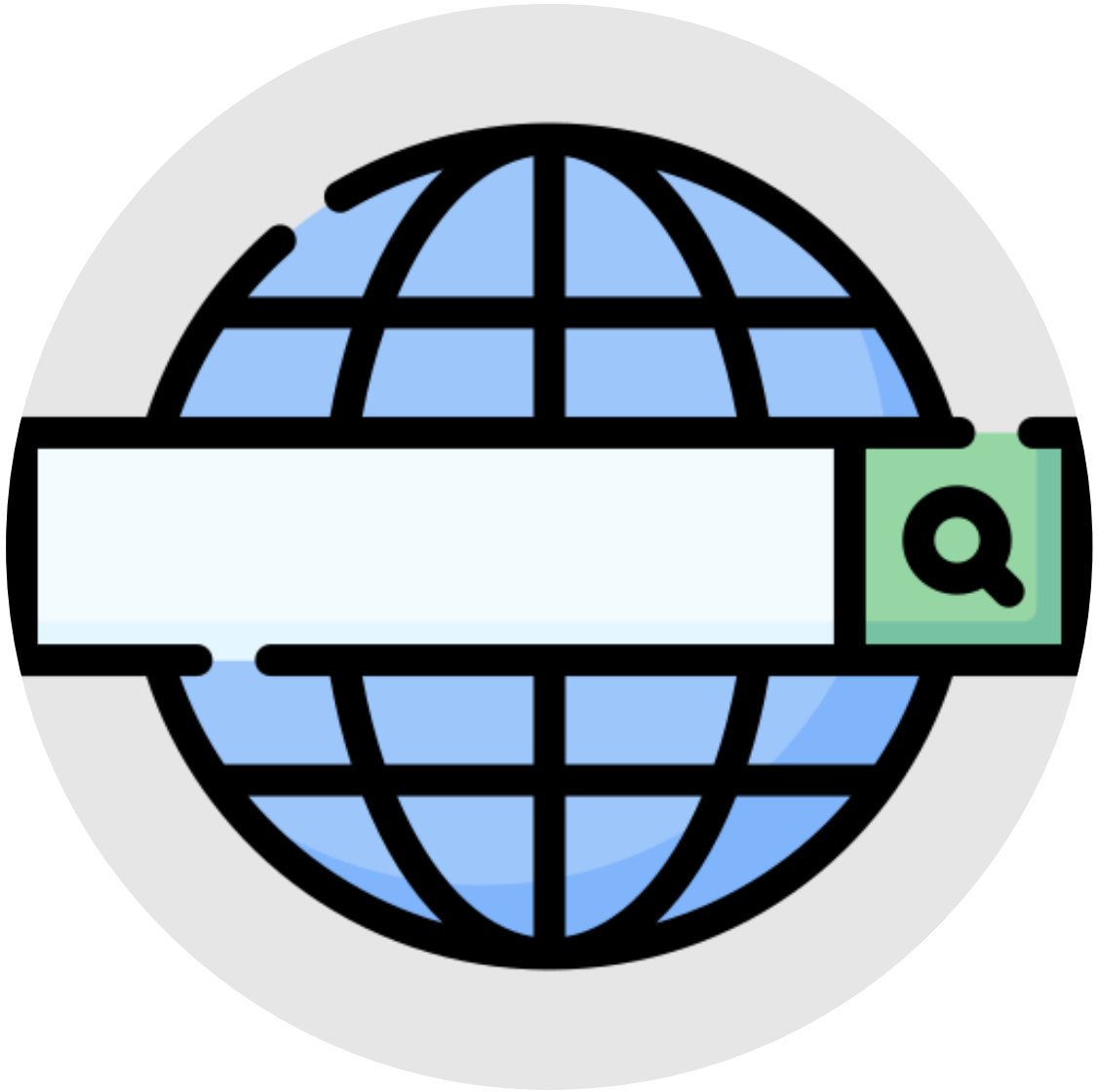
JEZ HUMBLE
DAVID FARLEY
Foreword by Martin Fowler


2016
State of
DevOps Report
puppet
DORA
ThoughtWorks
splunk>
Atlassian
Automic
REVOLUTION



THANK YOU