Role of QA Automation in DevOps

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Slides courtesy of **Sahil Raziuddin**
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Role of QA Automation in DevOps

Contents

- DevOps intro
- QA in DevOps
- Importance of QA Automation
- QA Automation Approach

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DevOps intro

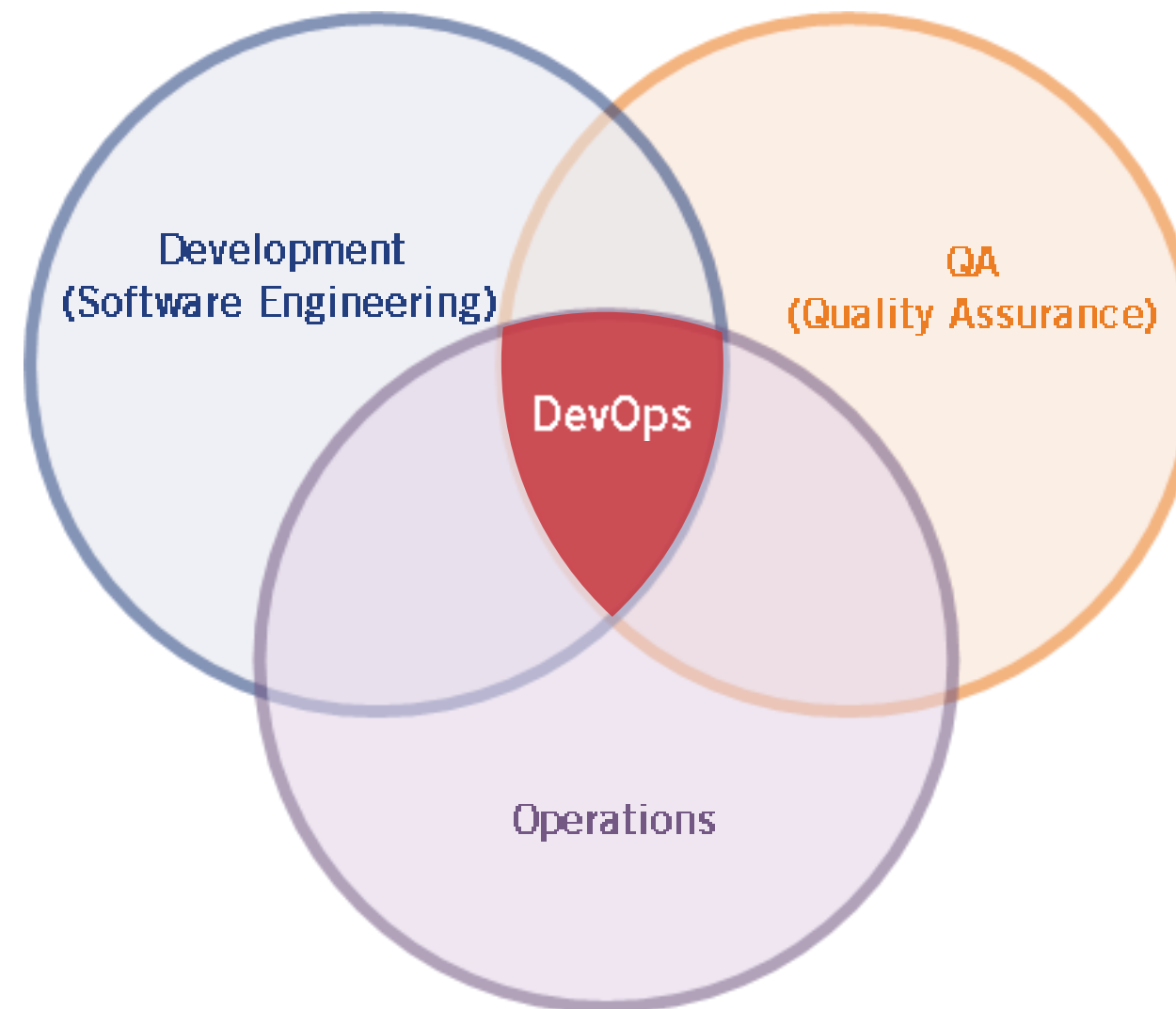eurofins

DevOps intro

DevOps (a combination of Development, Quality Assurance and Operation)

- is a software engineering culture and practice that aims at unifying software development (Dev) , Quality Assurance (QA) and software operation (Ops)
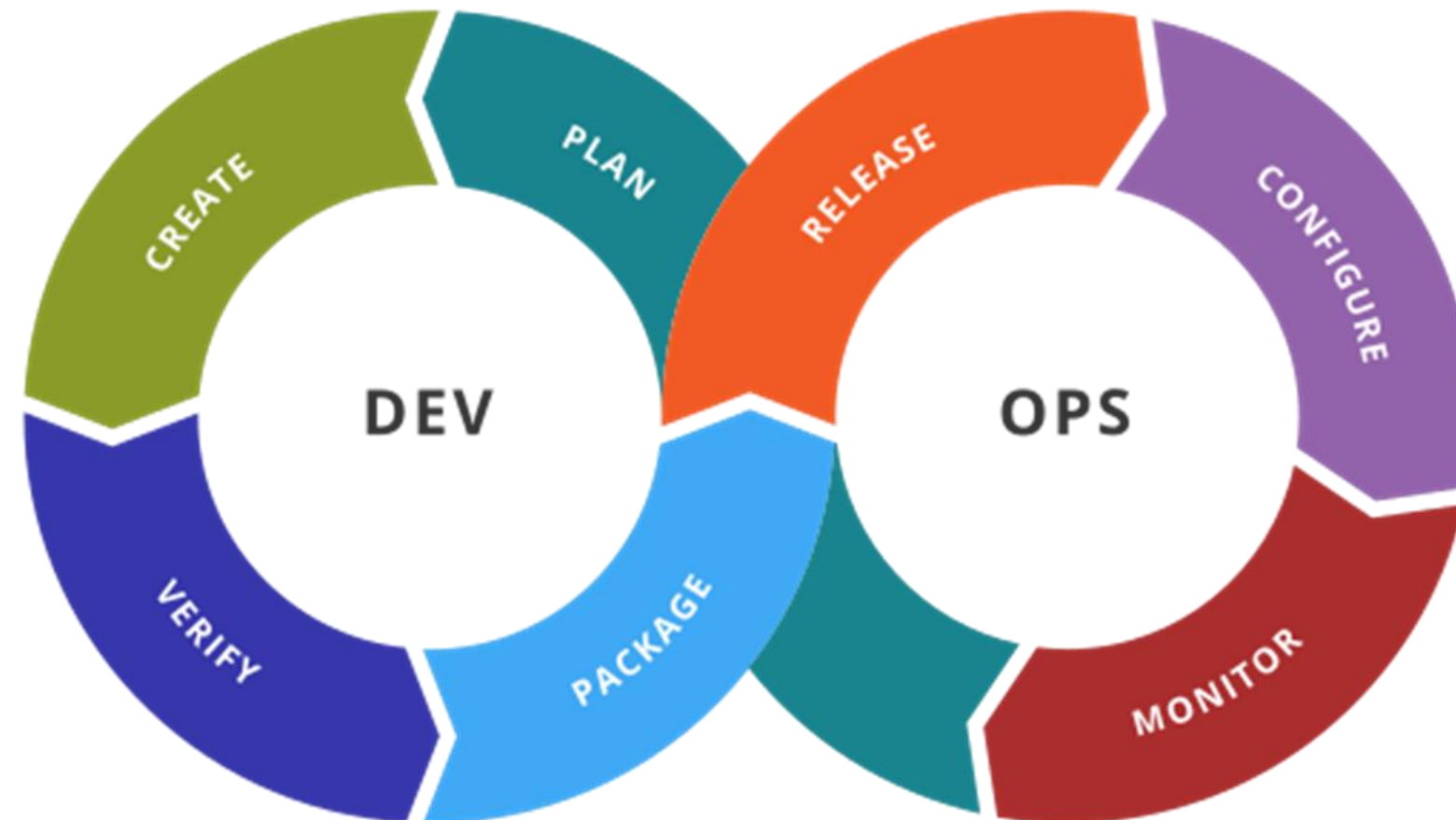

- is mainly a culture of communication and cross-functional collaboration

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DevOps intro

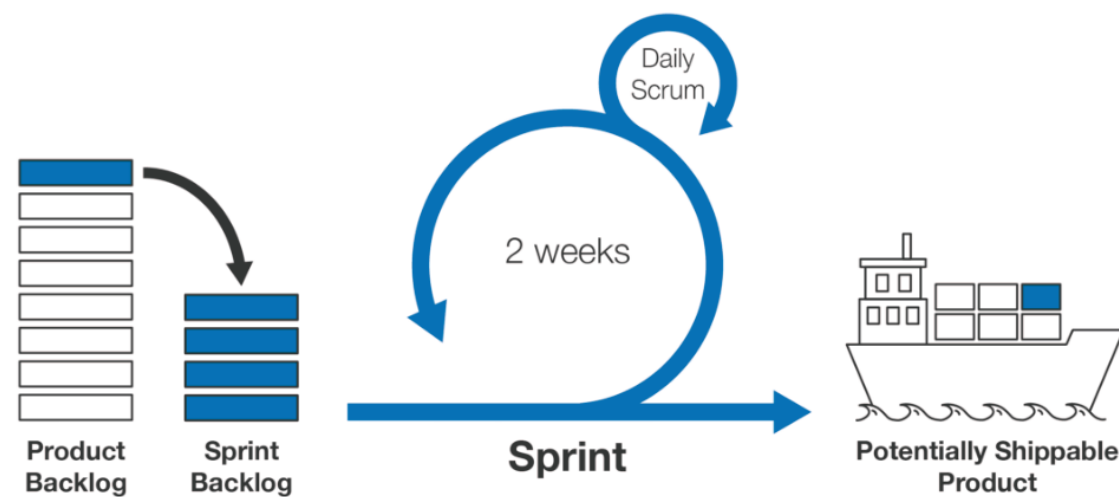## DevOps (a combination of Development, Quality Assurance and Operation)

▪ is a cross-functional mode of working and is a continuous process of software development, quality assurance, release and monitoring in production by individuals, who collaborate as one team!
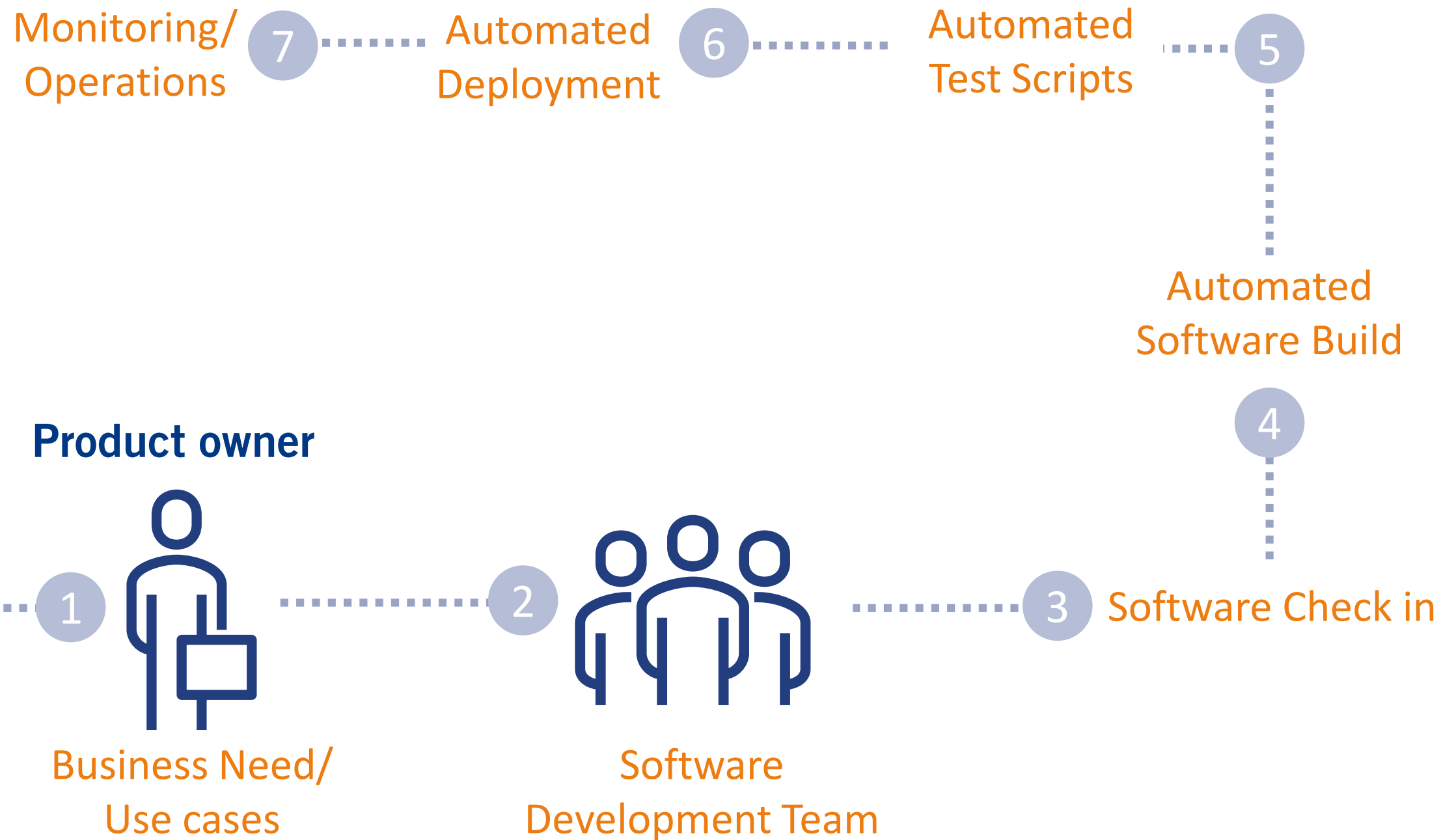
DevOps Intro

How it began...

DevOps+ Continuous Delivery Cycle
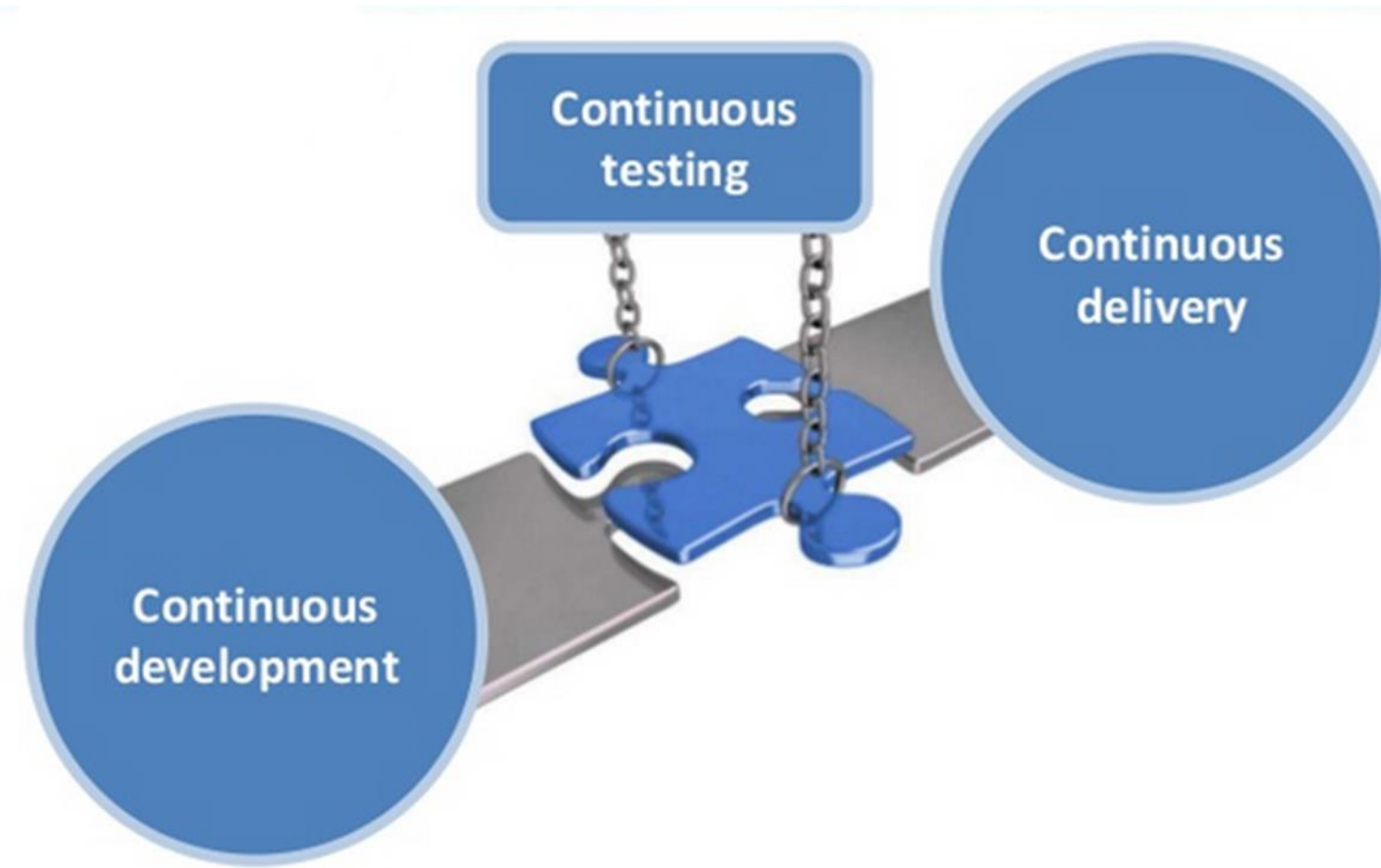
Quality Assurance in DevOps

Monitoring/ Operations **7** ········· Automated Deployment **6** ········· Automated Test Scripts **5**

Automated Software Build

4

Product owner

1 ········· **2** Software Development Team ········· **3** Software Check in

Business Need/ Use cases

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What is Quality Assurance in DevOps?

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Quality Assurance in DevOps

- In DevOps world, Quality Assurance is no longer the gatekeeper between development and operations – the bottleneck. QA is an enabler in form of Continuous testing
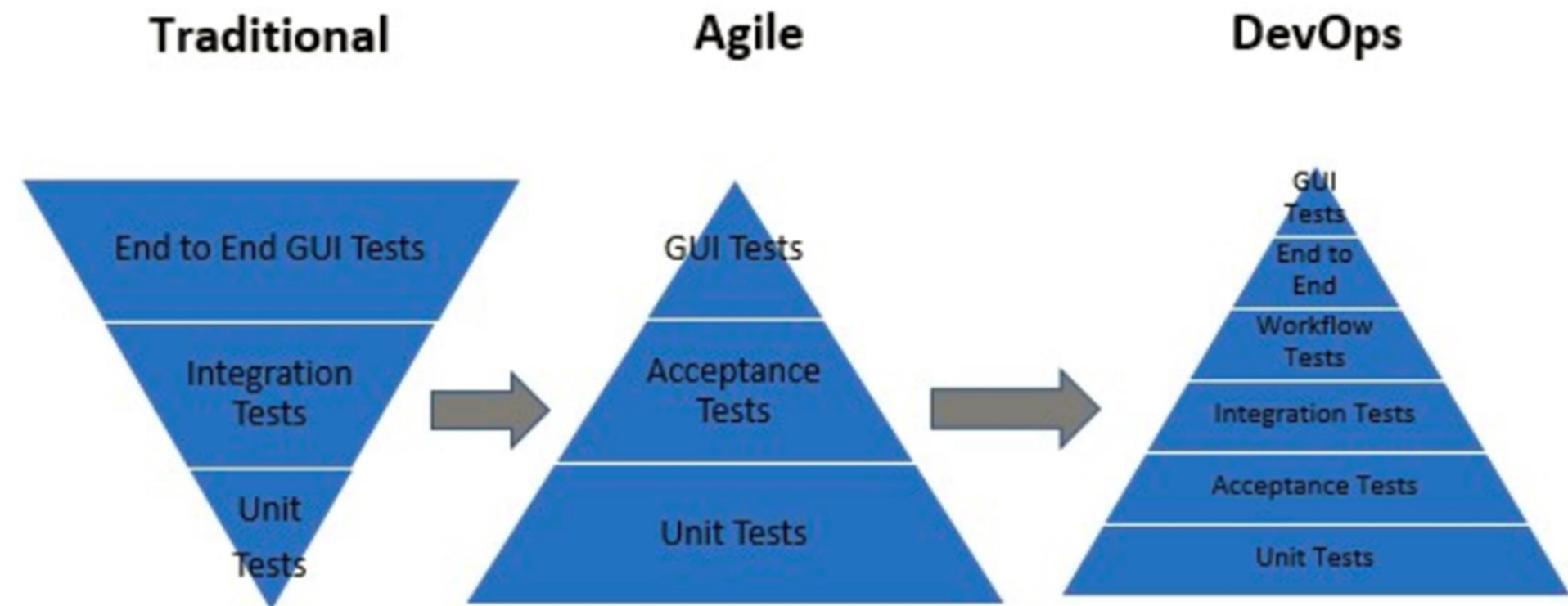

- With increase in velocity of delivery being driving factor for DevOps, QA has become more important than ever, increase in velocity is half as good without proper quality!
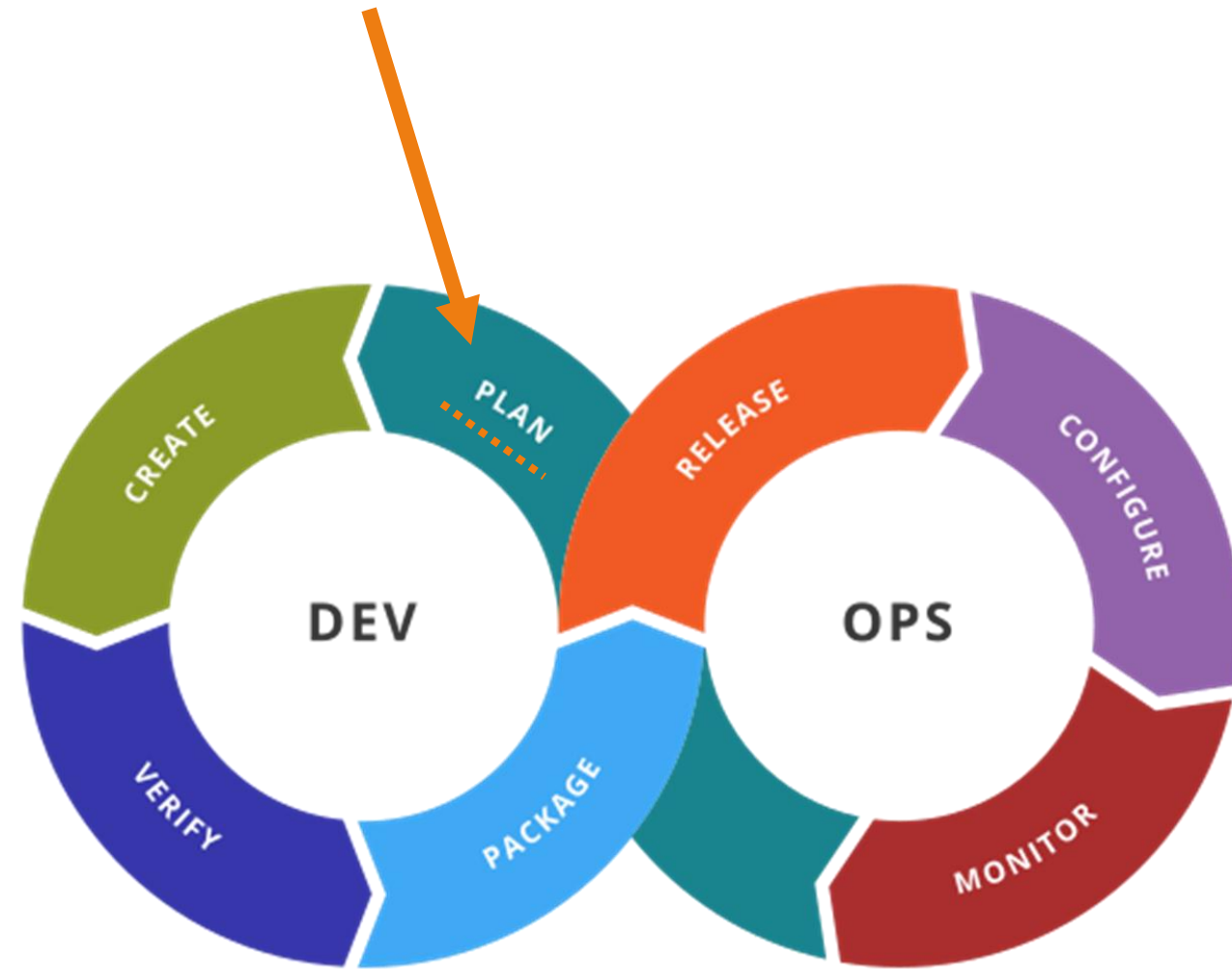
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Quality Assurance in DevOps

- It is all about flipping the Test Pyramid and taking it further than Agile, end goal is automation of entire testing stack in DevOps

Traditional	Agile	DevOps
End to End GUI Tests	GUI Tests	GUI Tests
Integration Tests	Acceptance Tests	End to End Workflow Tests
Unit Tests	Unit Tests	Integration Tests
		Acceptance Tests
		Unit Tests

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Quality Assurance in DevOps

PLAN

In DevOps, QA is integrated into the development and operations process and takes the collaborative approach to ensure quality throughout the delivery pipeline.
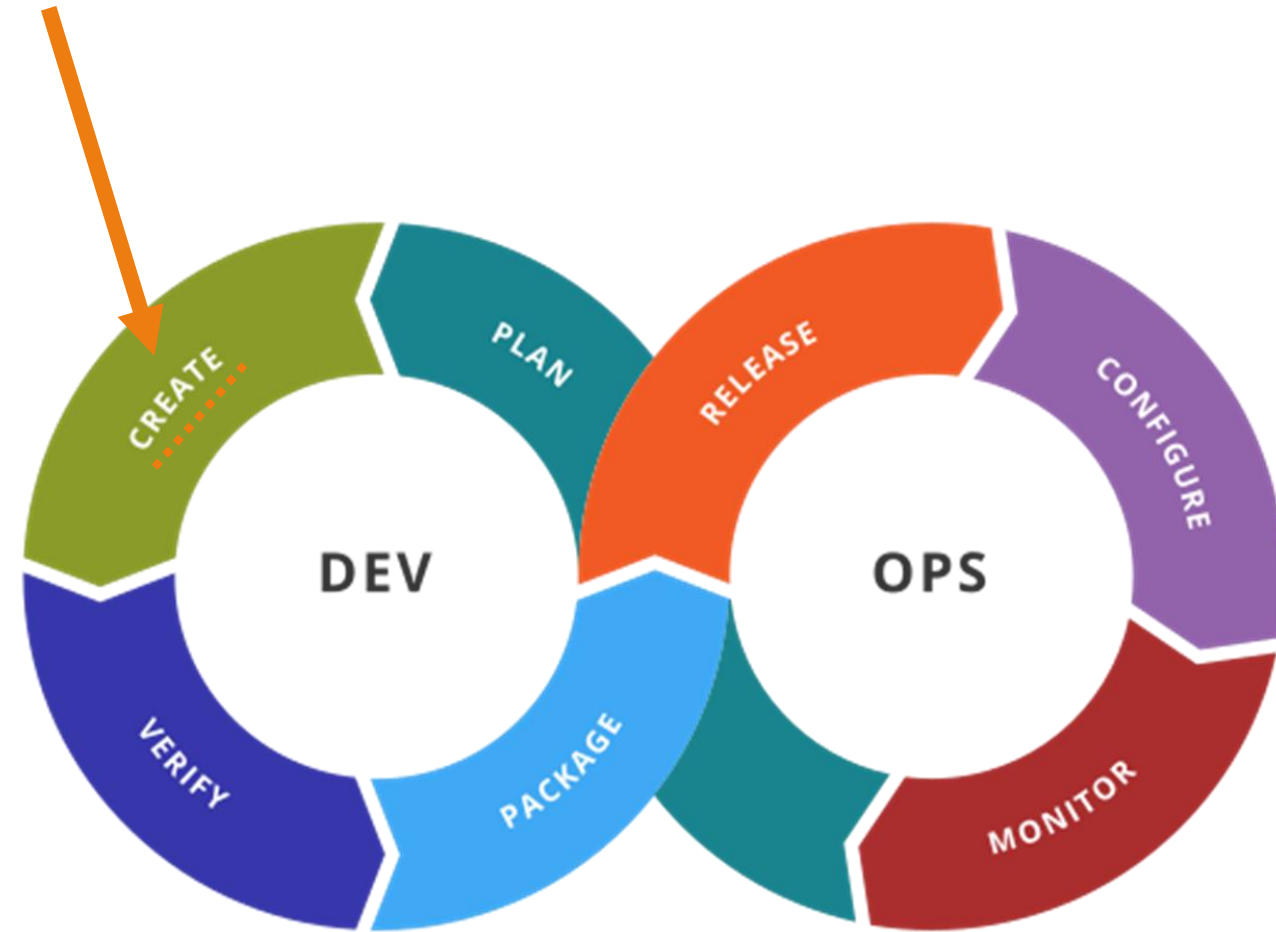In the traditional approaches, quality would mostly be measured towards the end, but with DevOps it comes in at every level.

Requirements testing, in form of adding acceptance criteria to user stories.

Acceptance criteria should cover:
- Functional
- Non-Functional & Performance

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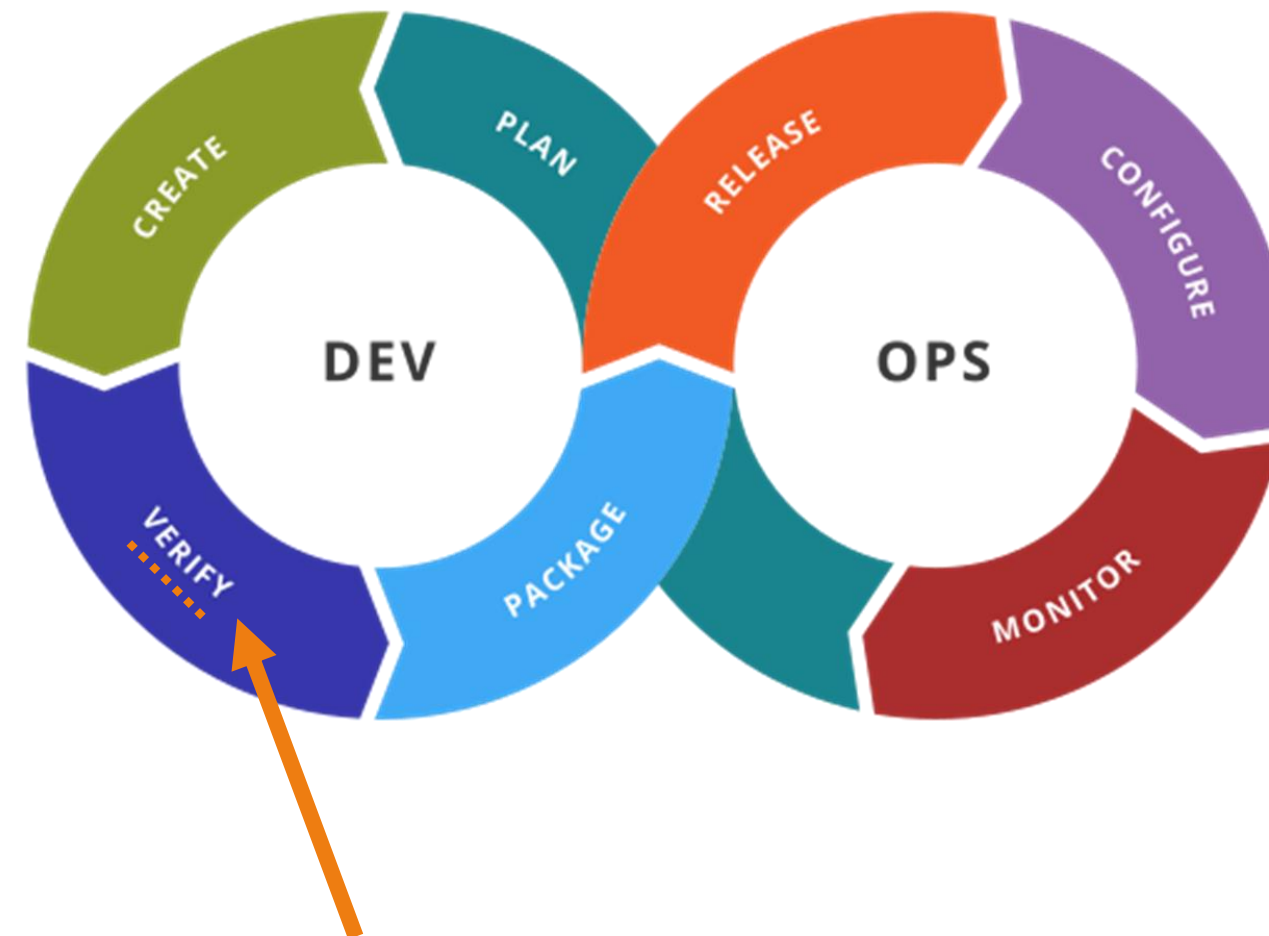# Quality Assurance in DevOps

CREATE

Ownership of quality is shared in the team, just doing the unit testing on code commit is not enough anymore.

QA in DevOps Create stage
- Unit test
- Code Coverage
- System & Functional test
- Based on acceptance criteria
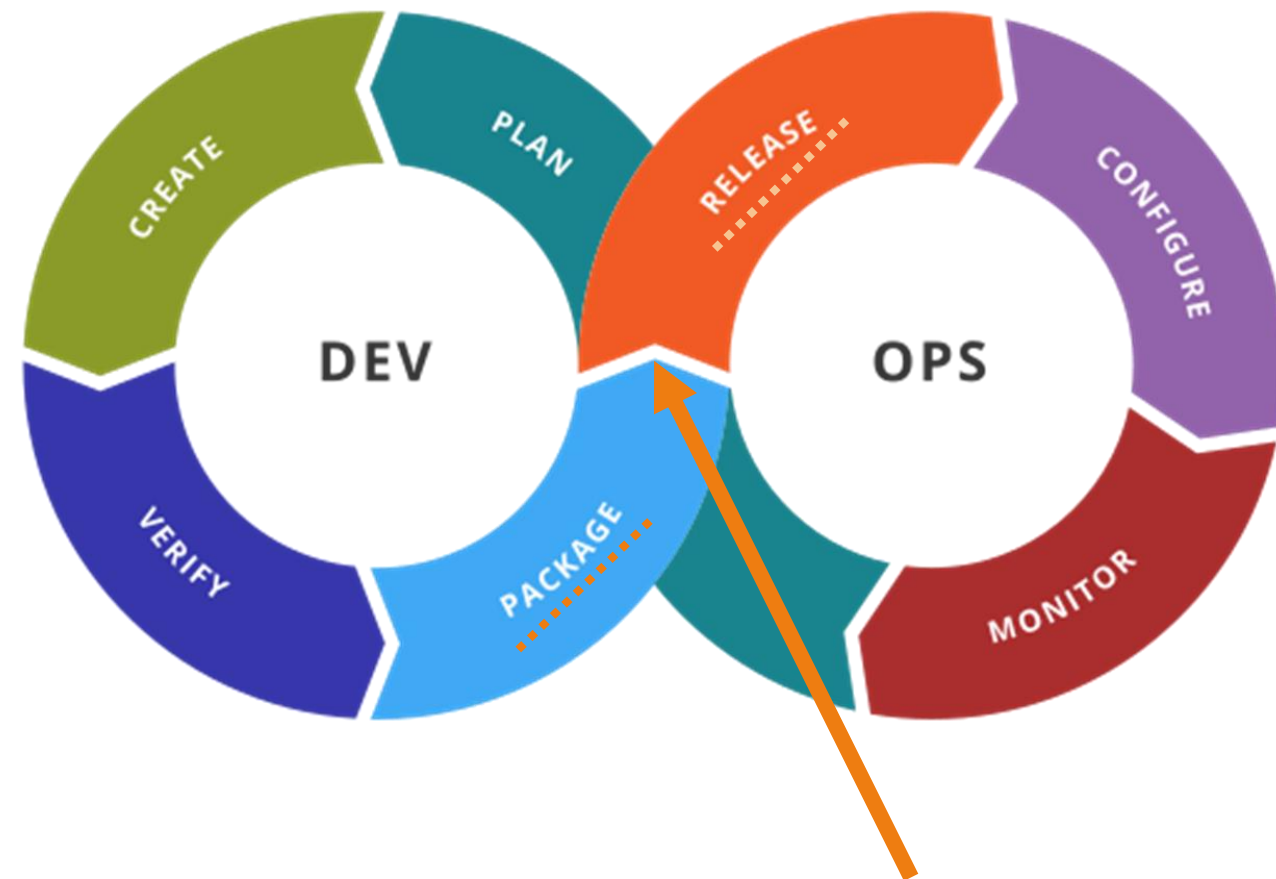- Definition of done

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Quality Assurance in DevOps

VERIFY

Verification stage in DevOps is mainly focusing on readiness of the features including functional acceptance.

QA in DevOps Verify stage
- Acceptance Testing
- Regression Testing
- Performance Testing
- Security Testing

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Quality Assurance in DevOps

PACKAGE & RELEASE

Stability of build and its impact on the existing system End2End is key focus area in Package and Release stage of DevOps

QA in Package & Release DevOps stage
- Integration Testing
- End2End Testing
- Regression Testing
- Compatibility Testing
- Performance Testing
- Security Testing

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Quality Assurance in DevOps
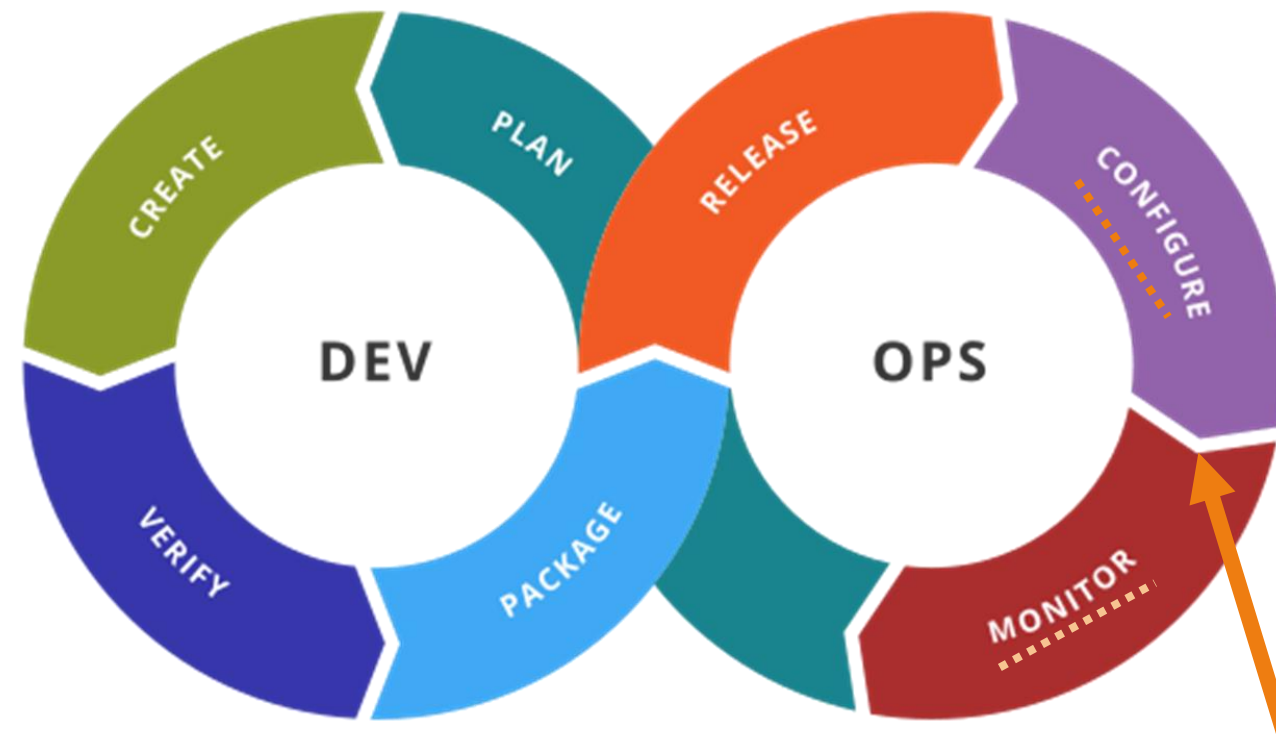
CONFIGURE & MONITOR

Monitoring on production systems to ensure the results of recent changes to the system and proactively find any issues before customers/users can be impacted.

QA in Configure & Monitor DevOps stage
- Production Verification
- Performance & Security Monitoring
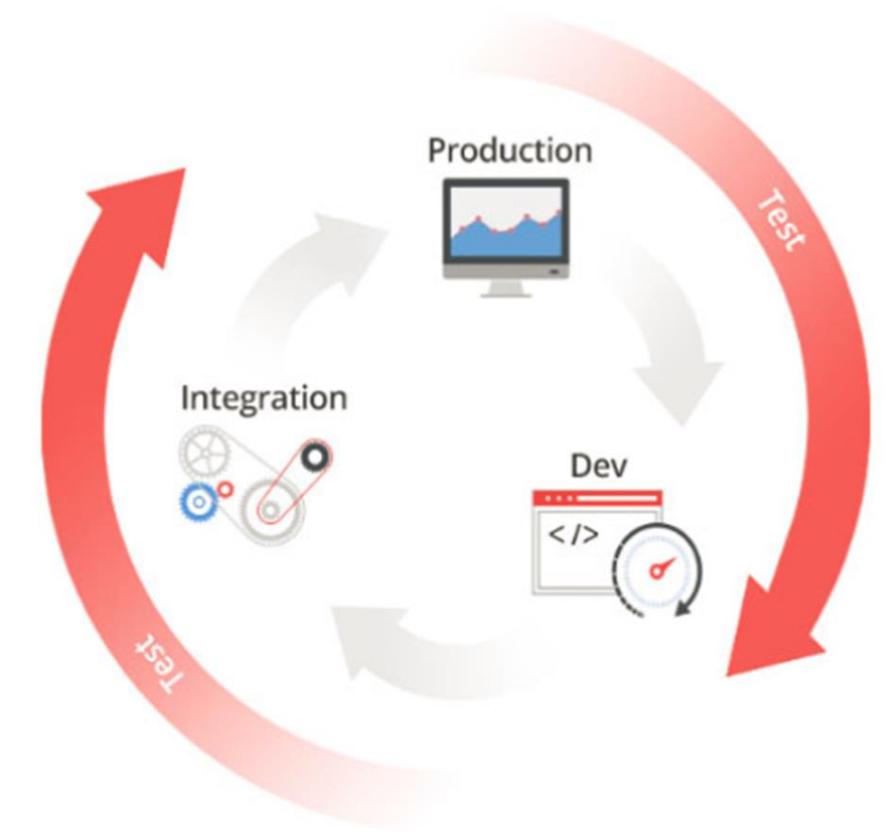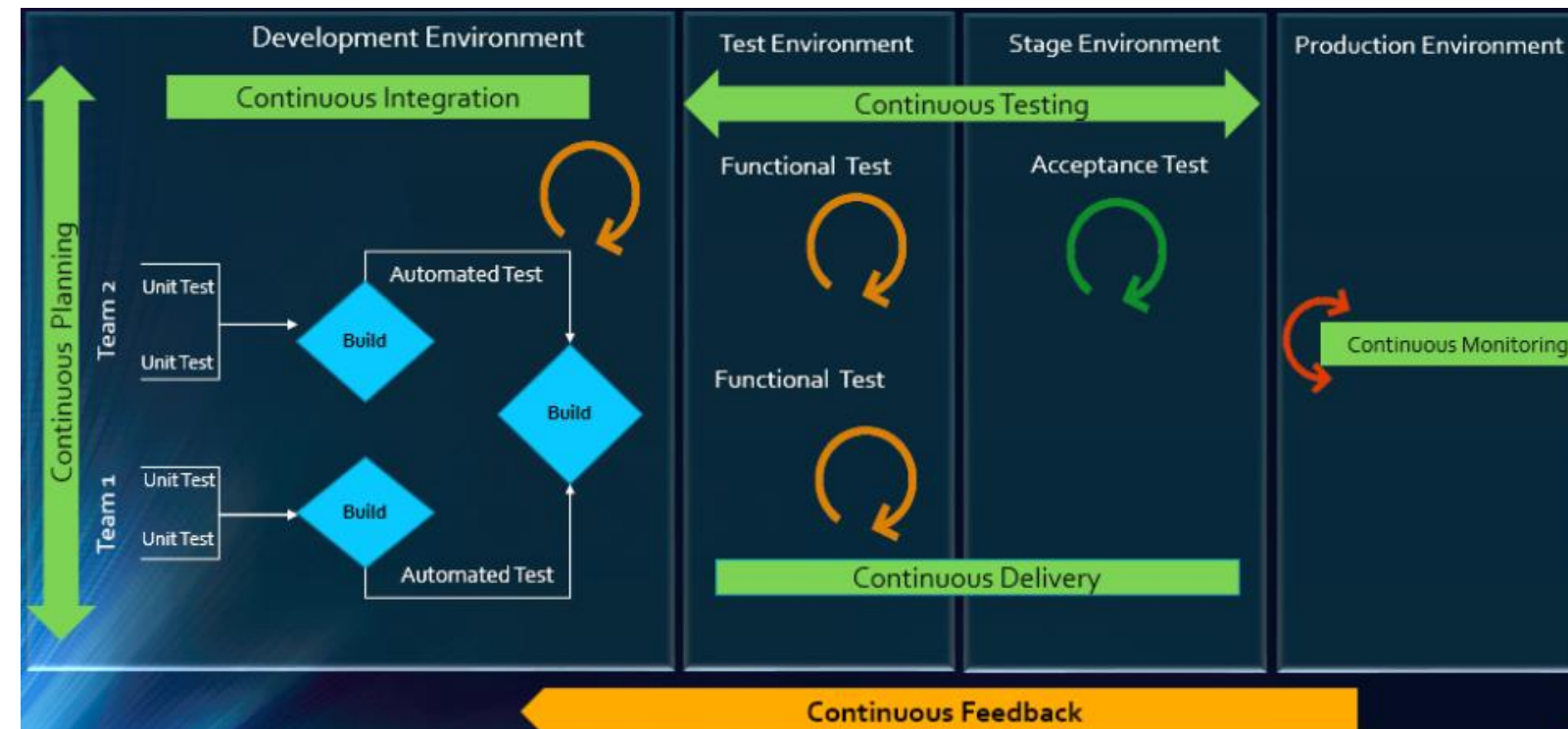- A/B Testing
- QA in systemwide logs to find irregularities

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Importance of

QA Automation in DevOps

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Why QA Automation?

In DevOps typical software is built in short sprint cycles, and it would be impossible to run all QA related activities manually and meet the sprint goals iteratively.

QA automation is a must for a successful DevOps, as it reduces the number of repetitive tasks and shortens feedback time. In other words QA Automation enables Continuous feedback loop.

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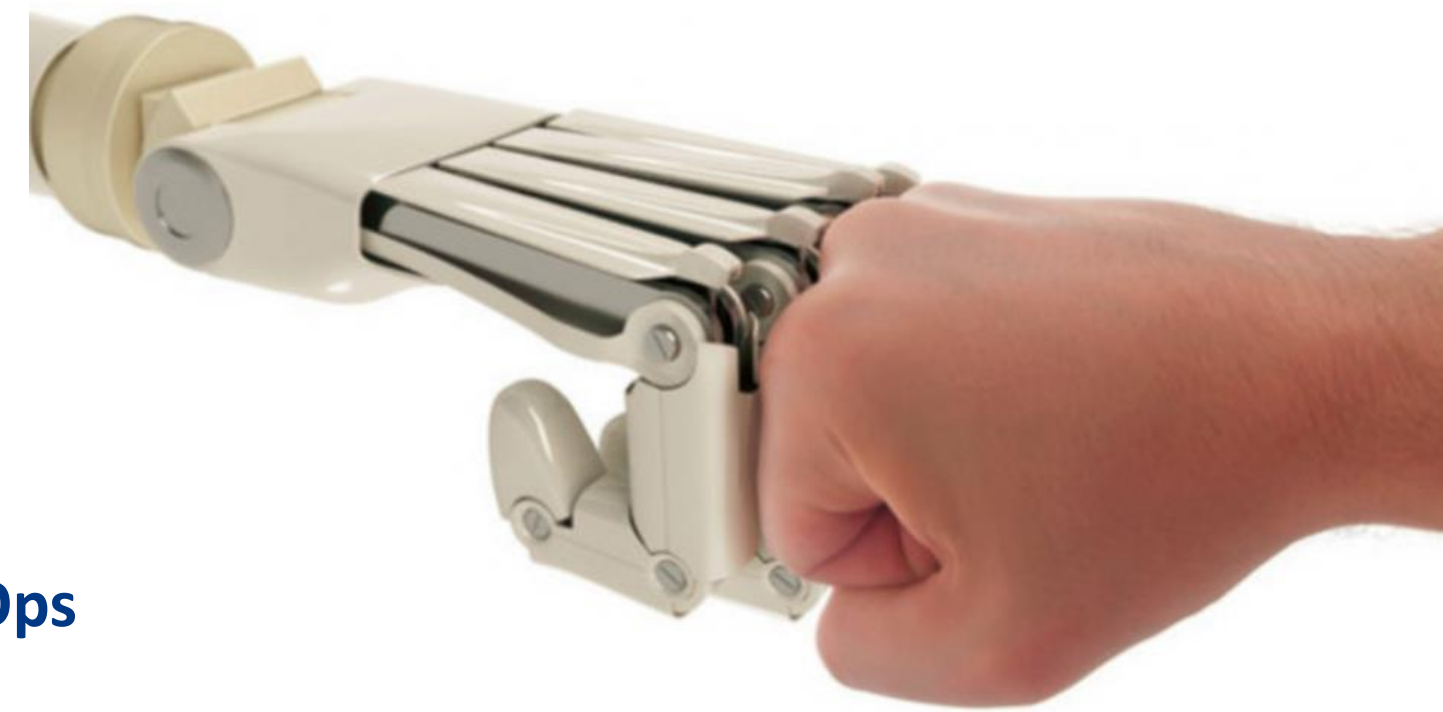
Why QA Automation?

Benefits of QA Automation in DevOps

- Improvement in Quality of feedback

- Faster execution time

- Possible to perform same test repeatedly

- Can execute testing in parallel on multiple environments

- Teams get more time to create rather than execute testing.

- Provides fast and continuous feedback
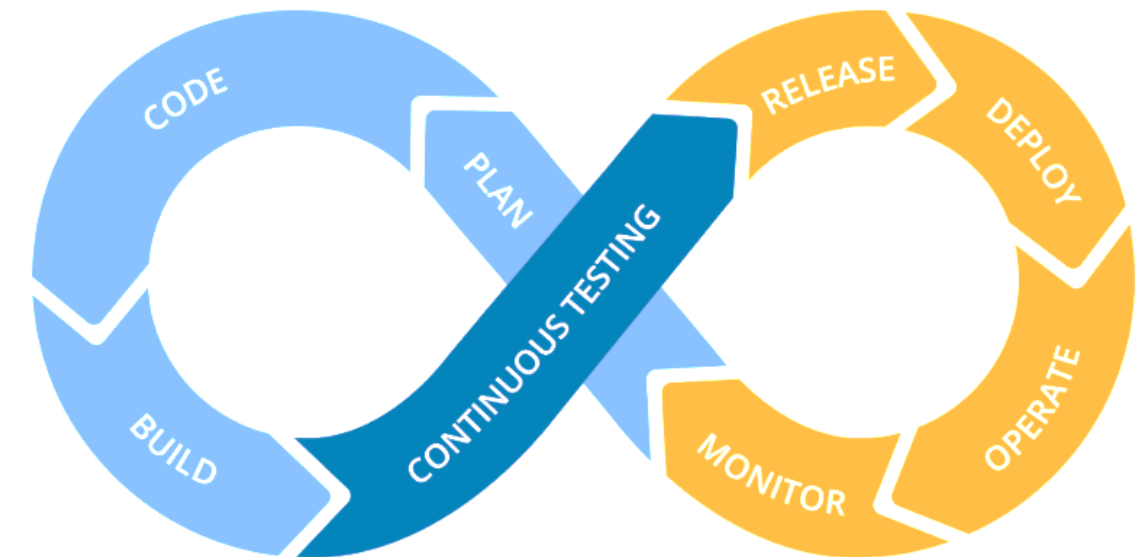
- Ensures safety of the system

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Some insights on QA Automation approach in DevOps

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DevOps QA Automation approach

Best Practice of QA Automation in DevOps

- QA Automation is an integral part of development sprints

- Include automation of test cases in the definition of done for user stories

- Regular maintenance of Regression and Sanity test suite should be part of development sprints

- Focus should also be on End to End scenarios focusing on user interactions on System and System integration level.

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DevOps QA Automation approach

Best Practice of QA Automation in DevOps

- Keyword and behavior driven Automation Framework

- Define a library of keywords and common actions/functions/behavior

- Keywords library should be updated in every sprint

- These keywords can be used to define test cases with less technical resources in the team

- Test cases can be written in GWT (Given, When, Then) format and easily understood even by business users.

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DevOps QA Automation approach

Best Practice of QA Automation in DevOps

- QA automation in slices, automate only what is needed

- Automate the cases which brings most benefits to the whole DevOps process

- Make small test cases instead of making complicated test cases with dozens of steps

- Measure the coverage of requirements from the automated test cases

- Enforce version control in the QA Automation framework

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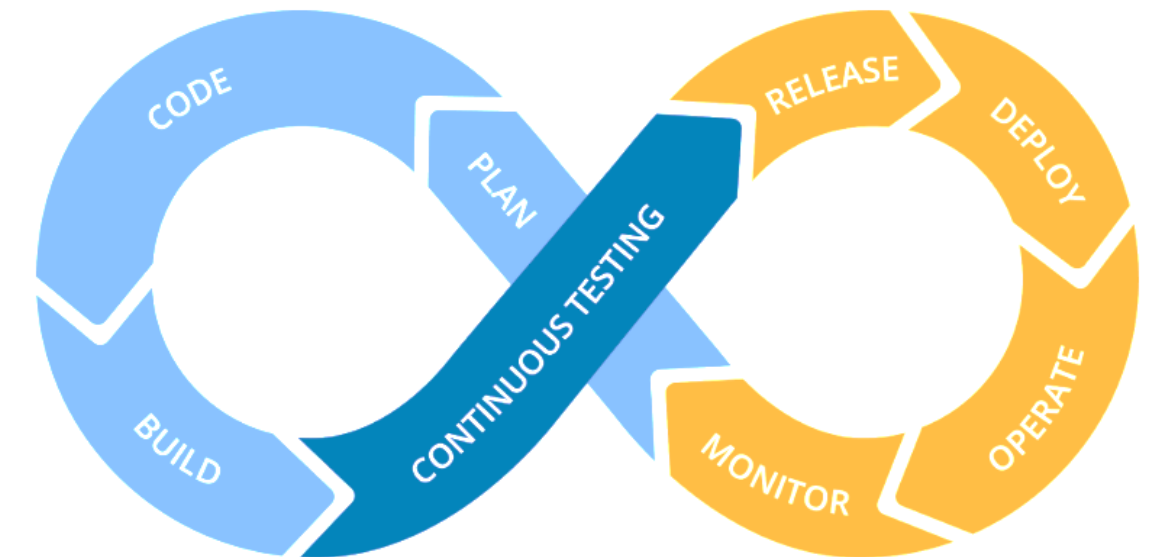
DevOps QA Automation approach

Best Practice of QA Automation in DevOps

- Choosing the right tool for QA Automation

- QA Tool should integrate seamlessly in the DevOps tool chain of the organization

- Central reporting capabilities to monitor the progress and status in real-time dashboards

- Tool should have Open architecture to allow freedom of scripting language used by team

- Tool should have out of the box features to support DevOps setups and teams.

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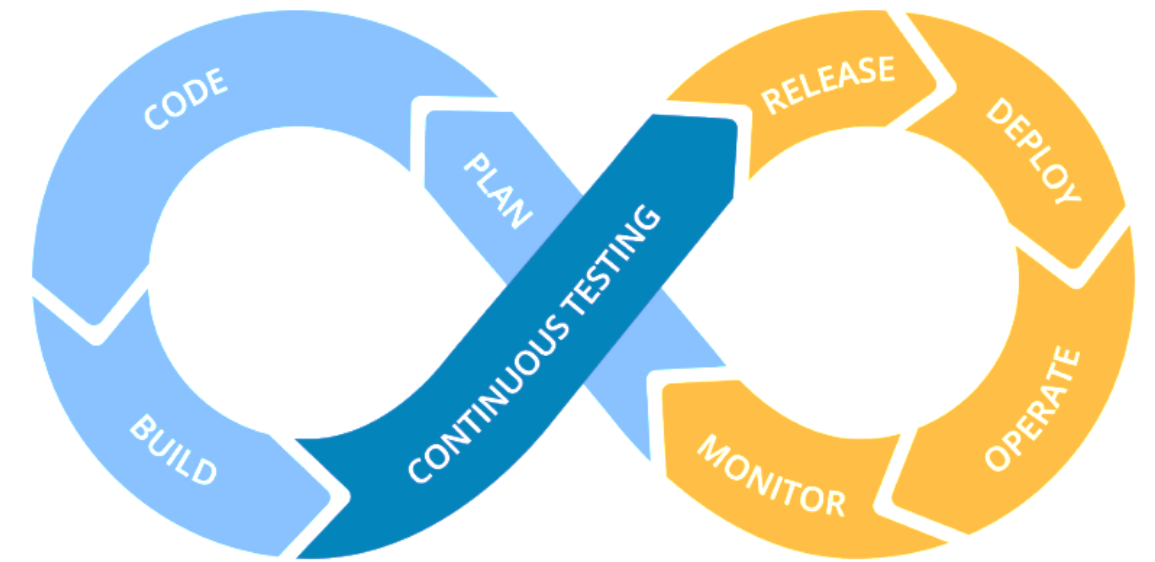
DevOps QA Automation approach

Test Competence Centre in DevOps

- Focus on all QA activities in DevOps

- Collaboration in the team and cross team

- Role of QA resources in DevOps

- Coverage of Testing & QA Automation status

- Documentation and deliverables from teams

- Right tool selection in the team

- QA environment setup and test data management

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Thank you for your attention!

Questions?

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