POWERING POTENTIAL

DEVOPS AS A CULTURE

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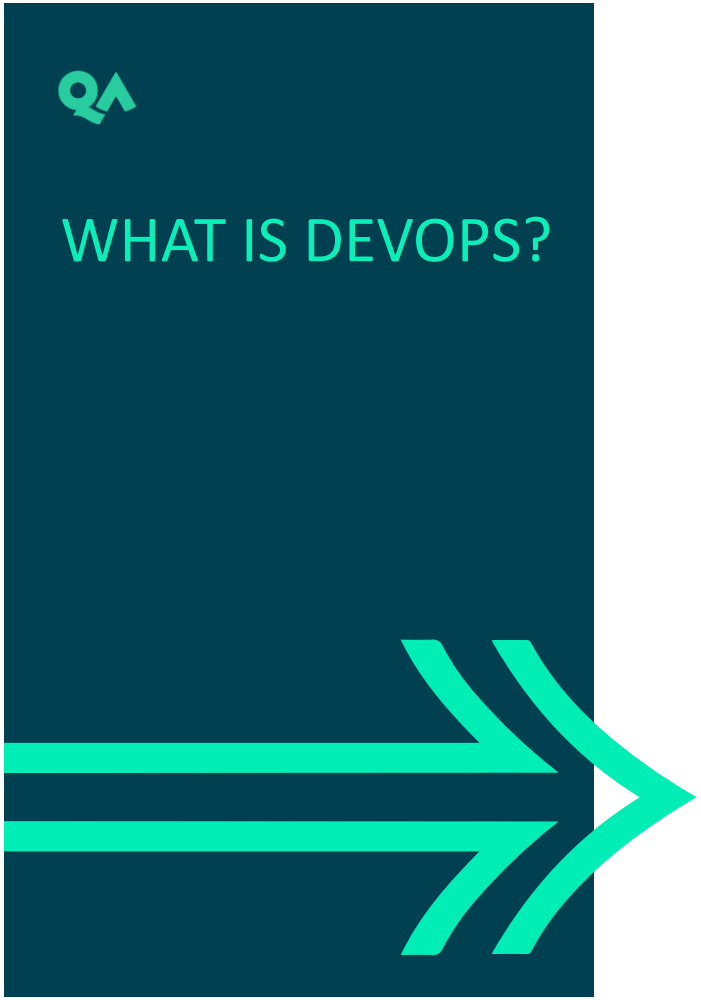

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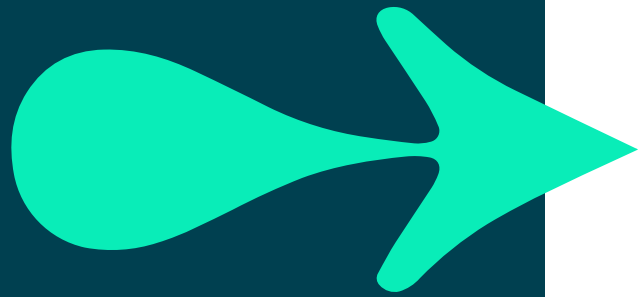
- ***Cultural*** approach to software development project structure with a particular philosophy designed to achieve the following:
  - Increased collaboration
  - Reduction in silos
  - Shared responsibility
  - Autonomous teams
  - Increase in quality
  - Valuing feedback
  - Increase in automation

HOW THINGS USED TO BE DONE

- Software companies were structured into separate, stratified teams:
  - Development
  - Quality assurance (testing)
  - Security
  - Operations.

- Teams tend to have varying and conflicting goals
- Often poor communication
- Isolated teams are referred to as *silos*
- This structure regularly results in:
  - Slower releases
  - Wasted time and money
  - Blame cultures

HOW DEVOPS CHANGES THINGS UP



- Based on agile project management
  - Designed to encourage flexible teamwork with the ability to fail (and recover) fast and celebrate achievements to promote a productive work culture
- Agile focuses on bridging the gap between developers and customers

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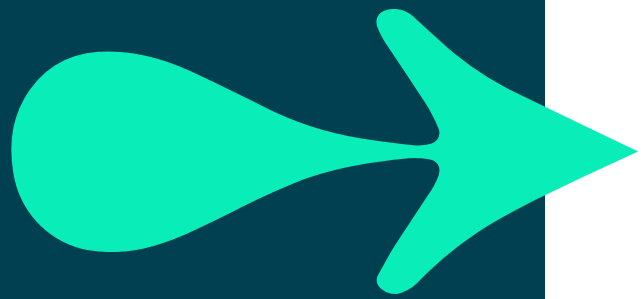
HOW DEVOPS CHANGES THINGS UP



- DevOps focuses on bridging the gap between developers and operations teams
  - Historical friction between the developers and operations teams
    - Developers would generate code that broke the applications
    - Operations would throw code back to developers without sufficient details
  - Causes slower release times, inability to focus on their primary responsibilities, and general frustration within the organisation

AUTOMATION

- Rule of thumb: if a machine *could* do it, a machine *should* be doing it
- **Manual work:**
  - Human error
  - Slower development
  - Slower deployment
- **Automated work:**
  - Consistent
  - Faster
  - Predictable
  - Scalable

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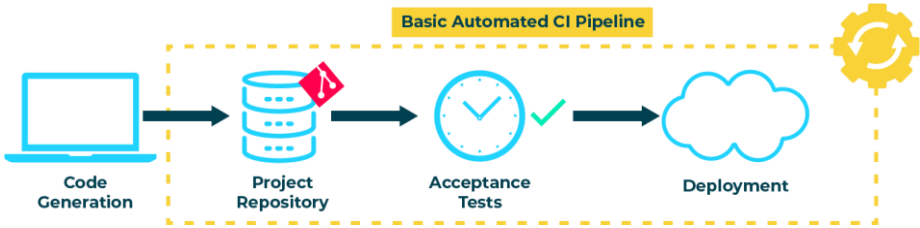
AUTOMATION



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- When code is committed to a repository, it is automatically built and subjected to acceptance tests
- Test failures result in the code being prevented from integrating with the repository. Developers are immediately notified of a test failure so they can fix issues as quickly as possible

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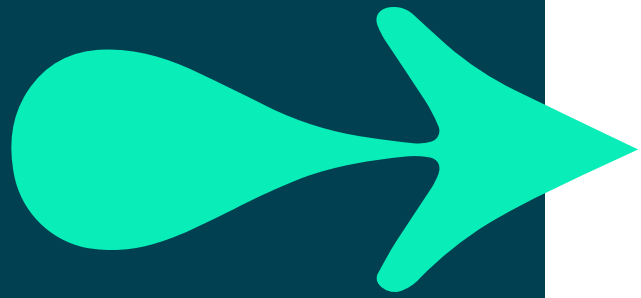
CONTINUOUS DEPLOYMENT/ DELIVERY

- As new code passes acceptance tests, it is automatically integrated into a deployment environment
- Being able to choose a version to deploy with one push a button requires a fair amount of automation

INFRASTRUCTURE AS CODE



- IaC is used to specify the configuration of a computer environment with easy-to-write/read config files
- Having environment infrastructure declared in code allows for infrastructure to be created or modified using version control
- Allows for simple replication of environments so they stay consistent across the pipeline

MEASUREMENT

- Accurate and precise measurements allow us to pinpoint constraints in the pipeline and fix or improve them faster
- Also important from a cultural standpoint as they can inform teams whether they're working more productively and what can be done to improve
- We use metrics to measure our pipelines

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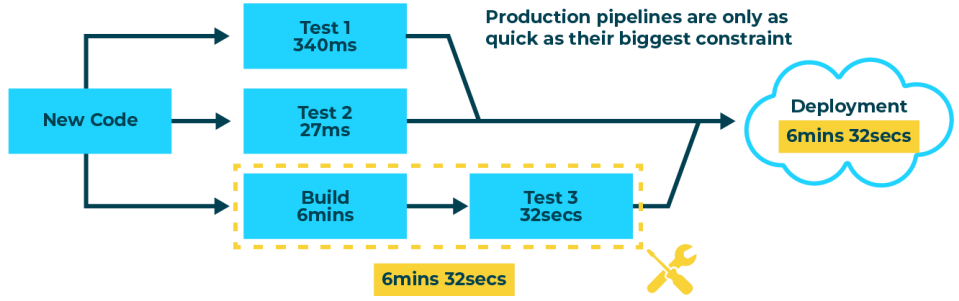
MEASUREMENT



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MEASUREMENT

- **Frequency of deployment**
  - DevOps pipelines encourage frequent, smaller updates to software, so charting the frequency of deployments is a good indicator of the effectiveness of a pipeline
  - Deployment frequency should tend upwards until it reaches a natural plateau, though fluctuation is normal
- **System availability**
  - Systems should be available at all times to customers
  - Knowing the availability of our systems allows us to pinpoint which parts of our infrastructure need attention

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MEASUREMENT

- **Service performance**
  - Allows us to see whether our services are running within desired thresholds
  - e.g. response times per request, CPU load, how long it takes for a website to load
- **Mean time to recovery (MTTR)**
  - Average time it takes to solve problems that impact the end-user
  - e.g. outages, security issues, severe bugs
  - More worthwhile metric than charting the frequency of failures as DevOps is less interested in minimising problems than the speed at which they are solved

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MEASUREMENT

- **Mean time to discovery (MTTD)**
  - This refers to how quickly problems are discovered
  - The faster problems are identified, the faster they can be fixed
  - Measured from the point of integration into production to the point the problem is identified
  - Faster MTTDs are more desirable.
  - Should also indicate whether discovery is made by the customer or the automated systems, with the latter being more desirable

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