# DevOps Career Advisory

accenture

# JOURNEY OF DEVOPS

**WHAT IS DEVOPS?**

**LET'S TEST DEVOPS**

**MULTIPLE TEAMS ON DEVOPS**

**ENTERPRISE WIDE-DEVOPS**

**HIGH SECURITY NEEDS!**

**FOCUS ON OPS**

**DEVXOPS AT SCALE**

**WHAT'S NEXT?**

**Combine Dev & Ops**
2009, the first conference named DevOpsdays

**Lean Startup**
Continuous Deployment & Delivery and build, measure learn, book published in 2012

**Architecture**
Microservices & Cloud, 2012 Netflix moved the "source of truth" finally in the cloud

**Infrastructure as code & containers**
Docker engine started in 2013, Chef was already used in 2009. Teams where enabled to describe and automate provisioning of cloud infrastructure resources.

**Enterprise DevOps**
BizDevSecOps
In 2021, 50% of organizations are implementing DevOps according to Forrester Research.

**DevSecOps**
DevSecOps gaining momentum as companies are now focusing on integrating security in the pipelines. That's because scaling up DevOps in enterprises sets risk reduction in focus.

**Ops with SRE**
Site Reliability Engineering (SRE) incorporates aspects of software engineering and applies them to infrastructure and operations problems. The book from Google was published 2016, now enterprises are staring to optimize DevOps with SRE.

**DevXOps**
DevOps is rapidly branching into feature streams focused on Cloud, Security, Data Science, ML & AI & new Lean ways of workings...

**GitOps, AIOps and MLOps for DevXOps**
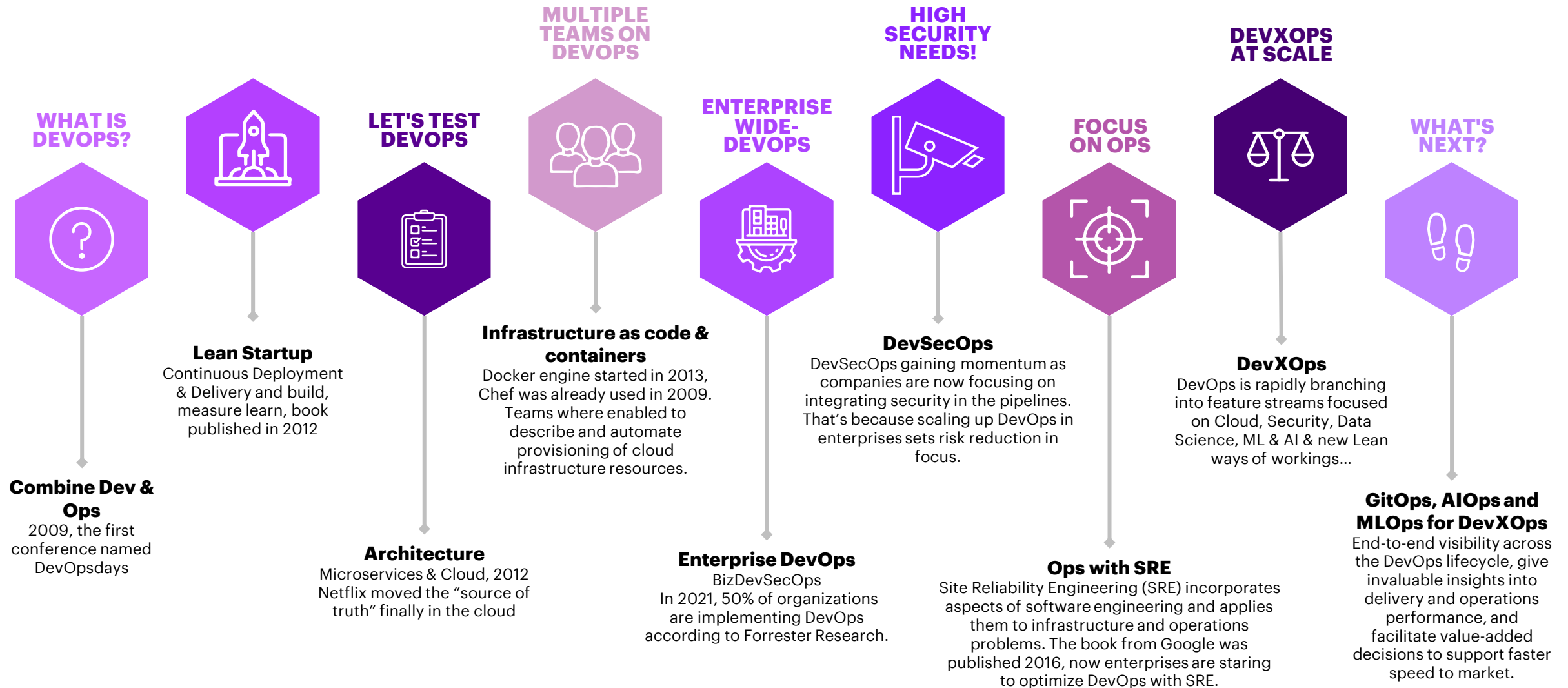End-to-end visibility across the DevOps lifecycle, give invaluable insights into delivery and operations performance, and facilitate value-added decisions to support faster speed to market.
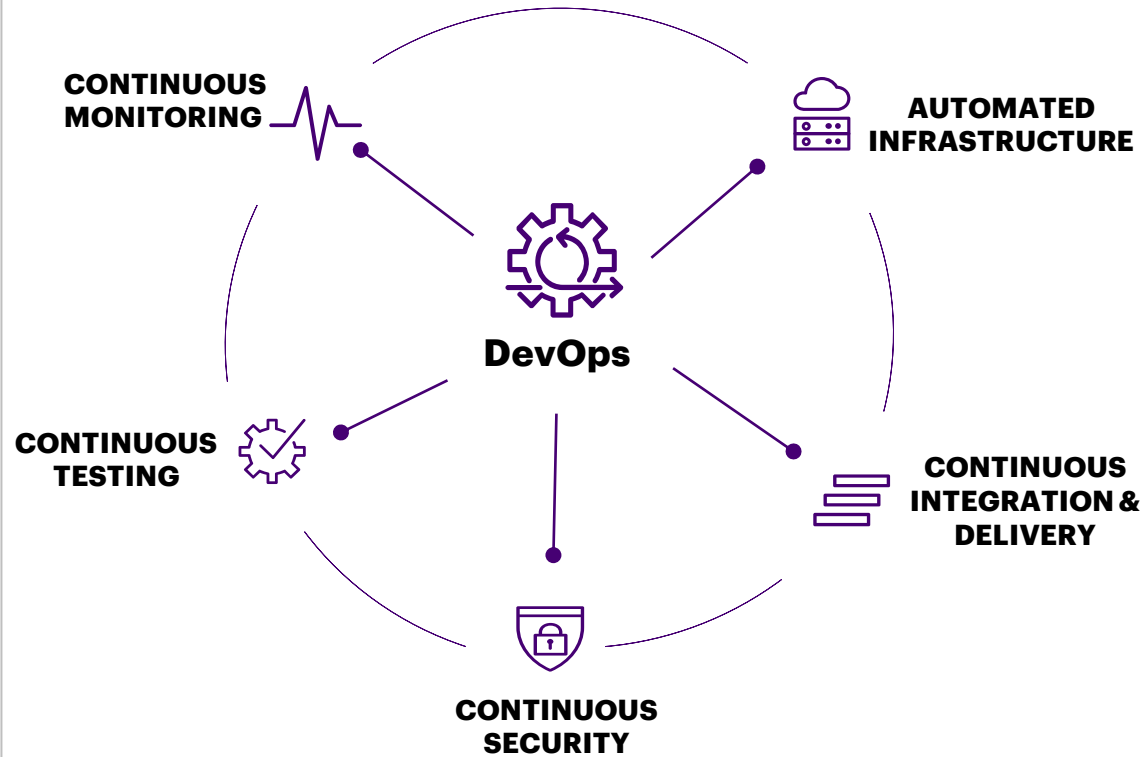
# HOW DEFINITION OF DEVOPS IS CHANGING ?

DevOps is rapidly branching into feature streams focused on **Cloud, Security, Data Science, Machine Learning, Artificial Intelligence & new Lean ways of workings...**

## DEVOPS AS WE KNOW TODAY



- CONTINUOUS MONITORING
- AUTOMATED INFRASTRUCTURE
- DevOps
- CONTINUOUS TESTING
- CONTINUOUS INTEGRATION & DELIVERY
- CONTINUOUS SECURITY

## DEVOPS IN FUTURE

**Disruption by Ways of Working**

- Site Reliability Engineering
- Scaled Agile
- Lean Governance

**Disruption by Platform**

VSDS

GitLab · GitHub · kubernetes · serverless · OPENSHIFT · VMware Tanzu

**Disruption in Tooling**

HashiCorp Terraform · ANSIBLE · Prometheus · ATLASSIAN · CloudBees

**Disruption by Cloud Platforms**

Azure DevOps · amazon web services · Google Cloud · IBM DevOps

*Not exhaustive

# HOW HAVE WE RESPONDED TO THE EMERGING TRENDS IN DEVOPS?

DevOps use cases are rapidly branching into feature streams focused on Security, Data, AI, Networking, and more...
DevOps must be multi-dimensional to cater to the needs of Next Generation Technologies...

## Dev**Sec**Ops

...embeds security gates and vulnerability checks across the application lifecycle to ensure uninterrupted operations

## Dev**Data**Ops

...embeds DevOps and DataOps best practices into ETL lifecycle for speed & accuracy of analytics and model management

## Dev**AI**Ops

...embeds intelligence across IT functions to build and release best-in-class products at pace, with reliability, repeatability & observability

# DevXOps
## ACROSS THE ENTERPRISE

## Dev**Biz**Ops

...embeds intelligence & analytics across requirement management, prioritization, & planning cycle to reduce lead times while delivering business north star aligned IT KPIs

## Dev**Net**Ops

...embeds DevOps best practices into software defined networking, programmatic configurations & operational efficiency

## Dev**Test**Ops

...fosters a culture of innovation & continuous improvement, reducing defects across the lifecycle through shiftleft & shiftright practices

4

# WHAT IMPACT DOES NEW DEVXOPS HAVE ON SKILL PROFILES OF DEVOPS PROFESSIOANLS?

DevOps for Future requires **E-shaped skills**. Our career model recognizes the need for **proactive approach to build next generation DevOps skills** to stay ahead of the talent curve**.**
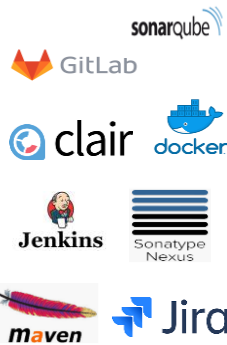


## One Dimensional Technology Mind-set

**FUNCTIONAL SKILL**

PROBLEM SOLVING | COMMUNICATION | DESIGN THINKING | COLLOBORATION | CUSTOMER CENTRICITY | INTERPERSONAL SKILLS

**TECHNOLOGY SPECIALIST**

TOOLING OR SCRIPTING for CI/CD
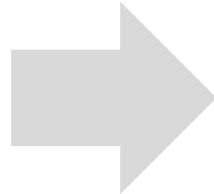
## Multi-skill TEchnology Mind-set and DevOps Architects

**BROAD FUNCTIONAL SKILLS**

| CUSTOMER CENTRICITY | DESIGN THINKING | SYSTEM THINKING | VALUE STREAM MAPPING |
| INTERPERSONAL SKILLS | STAKEHOLDER MANAGEMENT | EMOTIONAL INTELLIGENCE | COLLABORATION & COORDINATION |

**CLOUD NATIVE**
- Multi-cloud
- Cloud Native DevOps Services
- Container Services
- Security

**SOFTWARE ENGINEERING**
- TOOLING
- DATAOPS
- API & MICRO SERVICES
- AGILE, ITSM & SRE

**AUTOMATION**
- CI/CD AUTOMATION
- TEST AUTOMATION
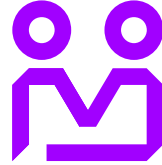- MONITORING & ANALYTICS
- CLOUD AUTOMATION

# What Learning Platforms and opportunities are available to become Full Stack DevOps Engineers and DevOps Architects?
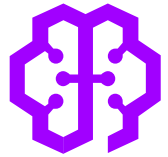
myCompetency (Organization + Capability)

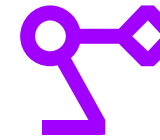myCompetency for Executives (Organization + Capability)

myLearning (Organization + Capability)

DevOps Academy Trainings (Capability)

Advanced Academy Trainings (Capability)

Automation Architect (AA&ME)

Partner Certification Programs (Organization)

Master Technology Architect Program (Organization)

Technology Quotient (Organization)

# How does myCompetency framework support proficiency certification in DevOps?

**Assessment Path to DevOps proficiency**

**Login to https://mycompetency.accenture.com/#/home**

**Define - Primary Skill / Secondary Skill**

**Objective Assessment**

- Cleared →
- **Not Cleared**

**Less Than P1**

**Reappear for the Objective assessment after 3 months to enhance the Proficiency**

**P1**
**P2**
**DevOps Practitioner**

**P3**
**DevOps Engineer**

**P3+ Expert Eligible**

**Expert Assessment**
- Cleared → **P4** **DevOps Architect**
- Cleared → **P4 + Master Eligible**
- **Not Cleared** → **Reappear for Expert assessment after 6 months**

**Master Interview**
- Cleared → **P5** **DevOps Senior Architect**
- **Not Cleared** → **Reappear for Master Interview after 6 months**

**Certification Path to DevOps proficiency**

**Steps**

*See appendix for list of external and internal certifications mapped to proficiency*

Add Primary/Secondary Skill – DevOps

Get Certified

Upload the certification in **myCredentails**

Tool Validates the certification

☆☆☆☆☆
**P4 Master**
Proficiency updated on **myCompetency**

# Certifications linked to myCompetency

## P3

### Must have any ONE certification

Amazon Web Services (AWS) Certified Developer - Associate

Amazon Web Services (AWS) Certified Solutions Architect - Associate

Amazon Web Services (AWS) Certified SysOps Administrator - Associate

Google Cloud Certified - Associate Cloud Engineer

Technology Architect(TA)

Data Architect(DA)

## P4

### Scenario 1

#### Must have any ONE certification

Amazon Web Services (AWS) Certified Advanced Networking - Specialty

Amazon Web Services (AWS) Certified Security - Specialty

Amazon Web Services (AWS) Certified Database - Specialty

Amazon Web Services (AWS) Certified Machine Learning - Specialty

Google Cloud Certified - Professional Data Engineer

Google Cloud Certified - Professional Cloud Network Engineer

Google Cloud Certified - Professional Cloud Architect

Google Cloud Certified - Professional Cloud Security Engineer

### Scenario 2

#### Must have any TWO certification

Amazon Web Services (AWS) Certified Developer - Associate

Amazon Web Services (AWS) Certified Solutions Architect - Associate

Amazon Web Services (AWS) Certified SysOps Administrator - Associate

Google Cloud Certified - Associate Cloud Engineer

Technology Architect(TA)

Data Architect(DA)

**AND**

#### Must have any ONE certification

Certified Jenkins Engineer

Certified CloudBees Jenkins Engineer

Red Hat Certified Specialist in Ansible Automation

Docker Certified Associate (DCA)

Certified Kubernetes Administrator (CKA)

Certified Kubernetes Application Developer (CKAD)

Certified Kubernetes Security Specialist (CKS)

Red Hat Certified Specialist in OpenShift Administration

Certified OpenStack Administrator (COA)

Red Hat Certified System Administrator in Red Hat OpenStack

HashiCorp Certified: Terraform Associate

HashiCorp Certified: Vault Associate

HashiCorp Certified: Consul Associate

HashiCorp Certified: Vault Operations Professional

GitLab Certified Associate

GitLab Certified Specialist: CI/CD

GitLab Certified Specialist: Project Management

GitLab Certified Specialist: Security

# Certifications linked to myCompetency

## P4 Master

### Scenario 1

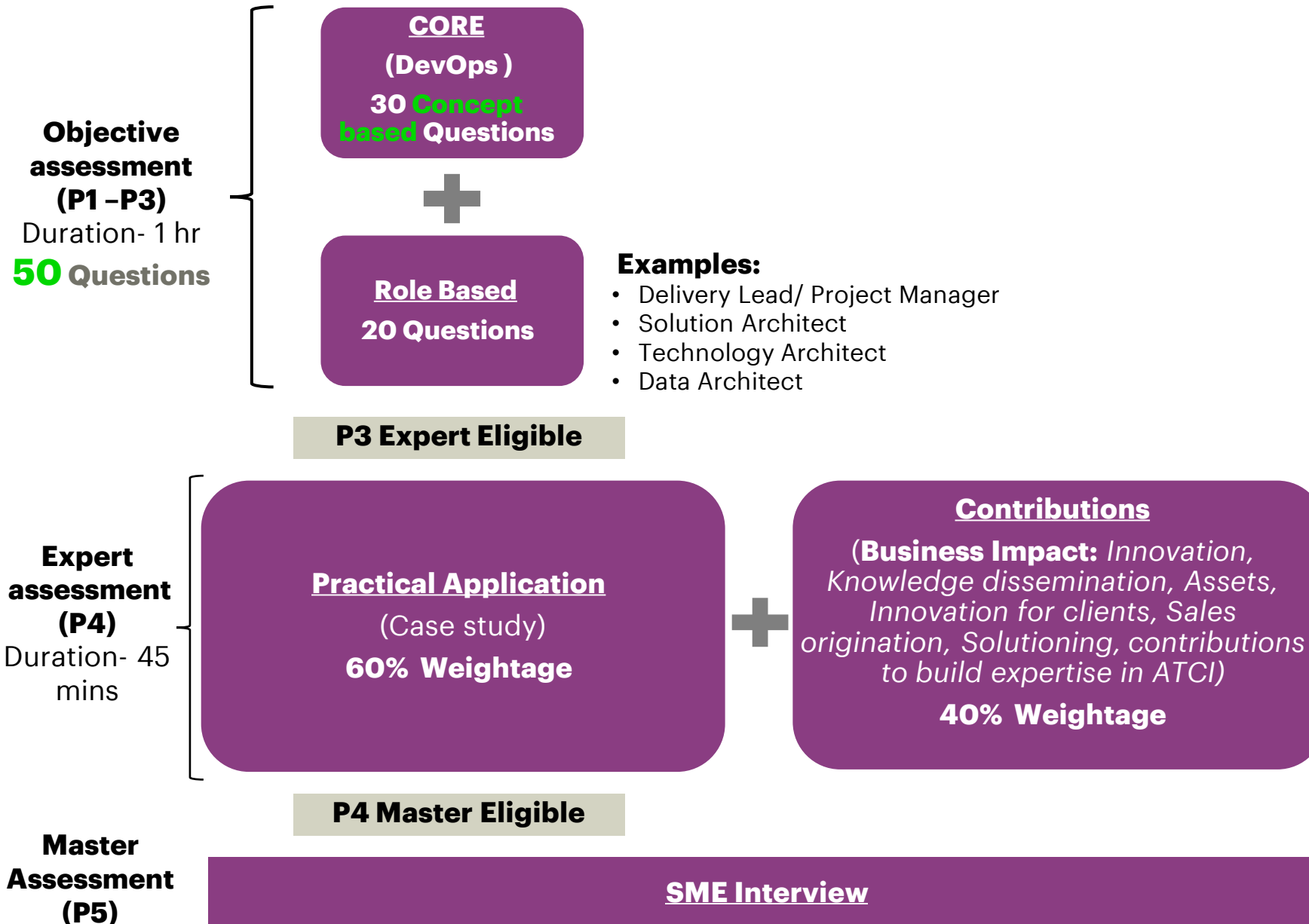| Must have any ONE certification |
| --- |
| Senior Technology Architect(STA) |
| Senior Data Architect(SDA) |
| Master Technology Architect(MTA) |
| Master Data Architect(MDA) |
| Senior Technology Architect(STA) |
| Senior Data Architect(SDA) |
| Master Technology Architect(MTA) |
| Master Data Architect(MDA) |

**OR**

### Scenario 2

| Must have any TWO certifications |
| --- |
| Amazon Web Services (AWS) Certified DevOps Engineer - Professional |
| Amazon Web Services (AWS) Certified Solutions Architect - Professional |
| Amazon Web Services (AWS) Certified Big Data - Specialty |
| Amazon Web Services (AWS) Certified Data Analytics - Specialty |
| Amazon Web Services (AWS) Certified Advanced Networking - Specialty |
| Amazon Web Services (AWS) Certified Security - Specialty |
| Amazon Web Services (AWS) Certified Database - Specialty |
| Amazon Web Services (AWS) Certified Machine Learning - Specialty |
| Google Cloud Certified - Professional Data Engineer |
| Google Cloud Certified - Professional Cloud Network Engineer |
| Google Cloud Certified - Professional Cloud Architect |
| Google Cloud Certified - Professional Cloud Security Engineer |
| Google Cloud Certified - Professional Cloud DevOps Engineer |
| Google Cloud Certified - Professional Collaboration Engineer |

# What additional support does myCompetency framework provide to executives for proficiency certification in DevOps?
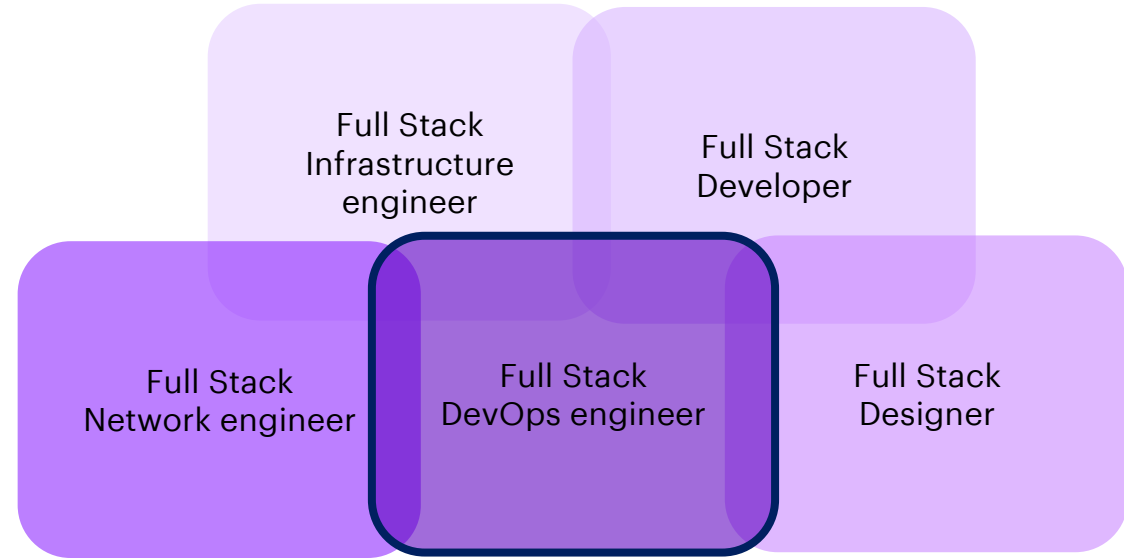
**Objective assessment (P1 –P3)**
Duration- 1 hr
**50** Questions

**CORE**
**(DevOps )**
**30 Concept based Questions**

**+**

**Role Based**
**20 Questions**

**Examples:**
- Delivery Lead/ Project Manager
- Solution Architect
- Technology Architect
- Data Architect

**P3 Expert Eligible**

**Expert assessment (P4)**
Duration- 45 mins

**Practical Application**
(Case study)
**60% Weightage**

**+**

**Contributions**
(**Business Impact:** *Innovation, Knowledge dissemination, Assets, Innovation for clients, Sales origination, Solutioning, contributions to build expertise in ATCI*)
**40% Weightage**

**P4 Master Eligible**

**Master Assessment (P5)**

**SME Interview**

# WHICH ROLES ARE SUPPORTED FOR DEVOPS EXECUTIVE ASSESSMENT?

| Role Name | Topic Names/Coverage |
|---|---|
| User Experience Engineer | Color Theory; Layout; Design tools; Trends; Typography; Design style guide; Iconography; Imagery; Accessibility; Fundamental of Design; Responsive design; design principles |
| Test Architect | Testing Techniques |
| SI Solution Architect | Deal Qualification; Buyer values; Solution Scope; Solution Blueprint; Assumptions, Dependencies & Risks associated with Solution; Solution Estimation; Solution Delivery Model &amp; Release Plan; Solution Staffing Model; Solution Costing & Pricing; Negotiation & Contracting; New IT Approach |
| SI Project Manager | Test Classes ; Initiation ; Tools &amp; Techniques ; Financials ; Risks ; Communication ; EVM ; Infosec ; Metrics ; People ; Phases ; Productivity ; Reviews ; Schedule ; scope |
| SI Delivery Lead | EVM ; Productivity ; People ; Metrics ; Schedule ; Infosec ; Phases ; scope ; Reviews ; Communication ; Financials ; Initiation ; Risks ; Tools , Techniques |
| Security Delivery | Application Security ; Network Security ; Data Security ; Information Security ; Business Continuity ; ADM for Security&#x0D; |
| Scrum Master | Extreme Programming Practices ; Agile ALM Tool &amp; Collaboration Tools ; Business Agility ; Lean Product Development Thinking ; Behavior Driven Development (BDD) automation ; Lean and Kanban application ; |
| Product Owner | ADM for DA ; Agile project management ; Business Agility ; Business Value Realization and Measurement ; Governance and Metrics ; Portfolio Management ; Working with Stakeholders, Customers, End Users ; Scrum and Kanban framework ; Scaled Agile and Devops ; prioritization estimation and refinement& |
| Business & Integration Architect | |
| Application Developer | EVM ; Productivity ; People ; Metrics ; Schedule ; Infosec ; Phases ; scope ; Reviews ; Communication ; Financials ; Initiation ; Risks ; Tools &amp; Techniques ; Test Classes&#x0D; |
| AO Solution Architect | Understanding Client`s Business Problem ; Conducting Application Portfolio Analysis ; Executing Financial / Budget Analysis ; AO-AM Estimator ; mySP for AO ; Identifying value proposition ; Defining delivery locations ; Defining PMO, DNPs and Costing Assumptions ; Identifying Assumptions and Risks ; SC guidance and QA ratings ; OpErA for Productivity ; New IT topics ; Living Systems approach ; Lean AO ; PCAT ; CDAT ; Service Transition ; CPR ; Rate Card ; myWizard for AO |
| AO Project Manager | Software development life cycle ; IT Service Management practices as defined by ITIL - Service Design, Transition and Operation ; Risk Definition and Management ; Software Quality assurance and Service Quality ; Contract management ; Information security ; IT Transformation and Application modernization. |
| AO Delivery Lead | |
| Technology Architecture Science | • Application Security Architect<br>• Dev & Ops Architect<br>• Application Integration Architect<br>• Digital Technical Architect |

# What is the career path for **engineering roles** to get proficiency certification in DevOps?

**Software Engineering discipline has 30% to 45% overlap with relevant DevOps skills**. Individuals playing engineering roles can becomes proficient in DevOps with trainings and certifications.
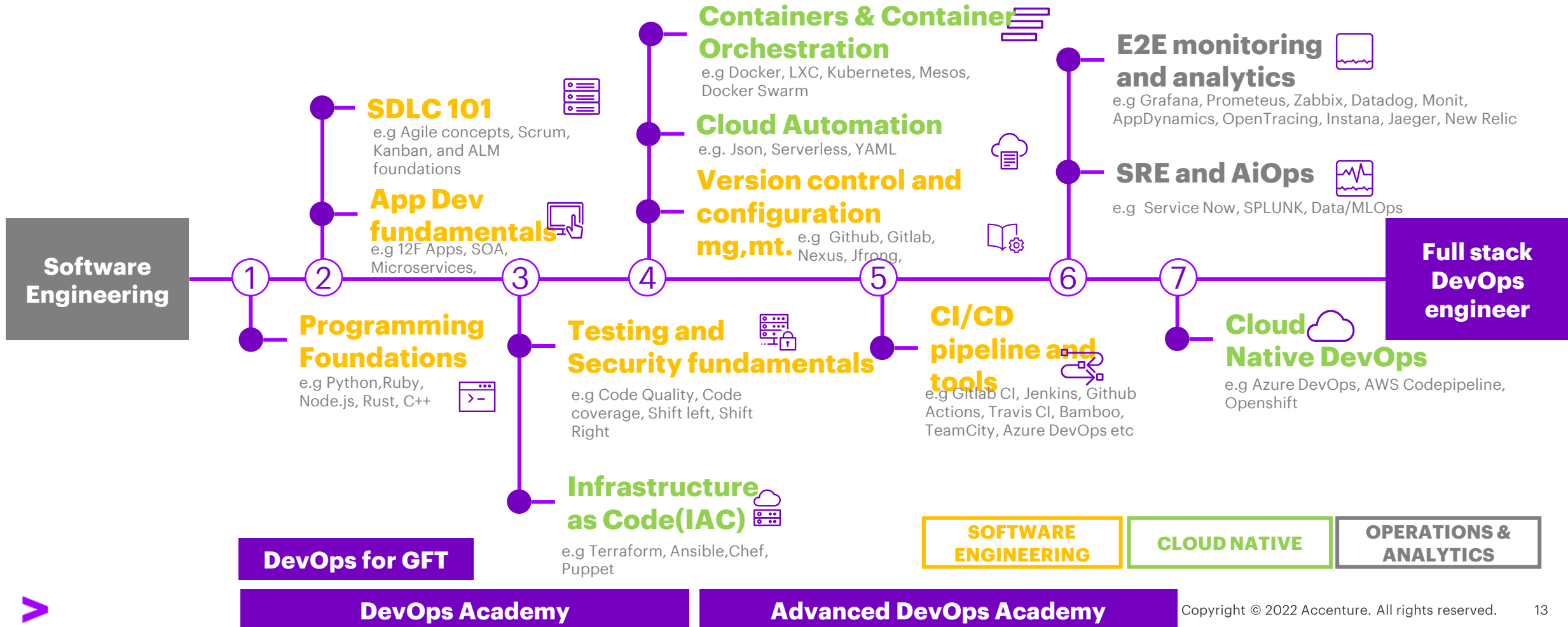
Full Stack Infrastructure engineer

Full Stack Developer

Full Stack Network engineer

Full Stack DevOps engineer

Full Stack Designer

## Full stack

**+**

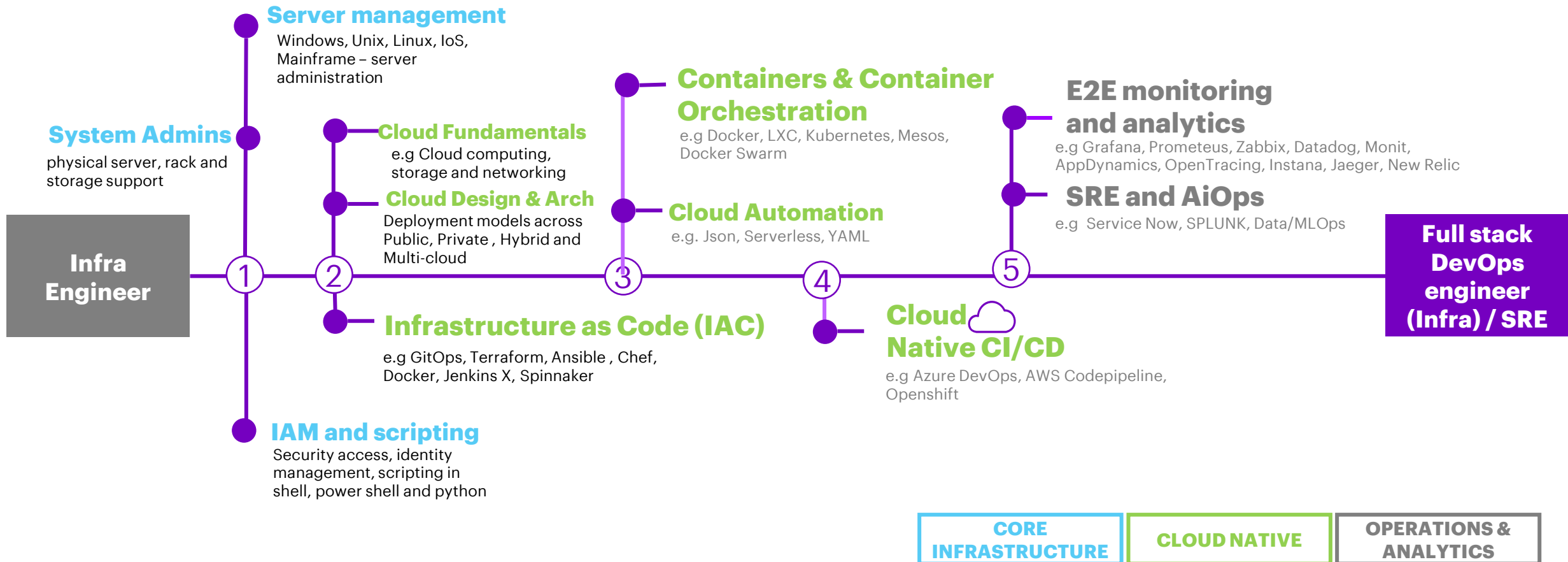| Full stack **DevOps engineer** | ┈┈┈► | Version control + Testing+ Security, CI/CD pipeline, Cloud Automation, Containers, Cloud Native, monitoring and SRE, programming skills |
|---|---|---|
| Full stack **Developer** | ┈┈┈► | Front End Dev +  Backend Dev(Phyton, Ruby, PHP, .Net), Databases (SQL,MongoDb,PostGres), Cloud storage, testing and security version control + Mobile Apps |
| Full stack **Designer** | ┈┈┈► | UX Design(research, wireframing), UI Design(visual design, mockups, UI elements), Rapid Prototyping(A/B testing), Front-End Dev(HTML, AngularJs, React, Bootsrap, PHP,Apache)  + Mobile Apps |
| Full stack **Network** engineer | ┈┈┈► | Routing, Switching, Virtualization, Data Center, Cloud, Automation skills |
| Full stack **infrastructure** engineer | ┈┈┈► | Public/Private/Hybrid Cloud +  On-premise, Server management, end-user computing, monitoring, cloud automation, CI/CD, Containers |

Capabilities

# Roadmap from Software Engineer to Full-stack DevOps Engineer

Software engineers may be trained or skilled in one or more color-coded capabilities. To develop **into a full-stack engineer for DevOps**, they need to **become proficient across** the seven wayposts and **twelve capabilities**.

**Containers & Container Orchestration**
e.g Docker, LXC, Kubernetes, Mesos, Docker Swarm

**E2E monitoring and analytics**
e.g Grafana, Prometeus, Zabbix, Datadog, Monit, AppDynamics, OpenTracing, Instana, Jaeger, New Relic

**SDLC 101**
e.g Agile concepts, Scrum, Kanban, and ALM foundations

**Cloud Automation**
e.g. Json, Serverless, YAML

**App Dev fundamentals**
e.g 12F Apps, SOA, Microservices,

**Version control and configuration mg,mt.**
e.g Github, Gitlab, Nexus, Jfrong,

**SRE and AiOps**
e.g Service Now, SPLUNK, Data/MLOps

**Software Engineering**

① ② ③ ④ ⑤ ⑥ ⑦

**Full stack DevOps engineer**

**Programming Foundations**
e.g Python,Ruby, Node.js, Rust, C++

**Testing and Security fundamentals**
e.g Code Quality, Code coverage, Shift left, Shift Right

**CI/CD pipeline and tools**
e.g Gitlab CI, Jenkins, Github Actions, Travis CI, Bamboo, TeamCity, Azure DevOps etc

**Cloud Native DevOps**
e.g Azure DevOps, AWS Codepipeline, Openshift

**Infrastructure as Code(IAC)**
e.g Terraform, Ansible,Chef, Puppet

**DevOps for GFT**

**SOFTWARE ENGINEERING** | **CLOUD NATIVE** | **OPERATIONS & ANALYTICS**

**DevOps Academy** | **Advanced DevOps Academy**

# Roadmap from Infra Engineer to Full Stack DevOps Engineer (Infra/ SRE)

Software engineer aligned to cloud skills (e.g., Cloud Infra) are proficient in core cloud computing skills. To evolve to a Cloud engineer with a DevOps skillset, they need to add additional Cloud-native, operations, and analytics skills.

**Server management**
Windows, Unix, Linux, IoS, Mainframe – server administration

**System Admins**
physical server, rack and storage support

**Cloud Fundamentals**
e.g Cloud computing, storage and networking

**Cloud Design & Arch**
Deployment models across Public, Private , Hybrid and Multi-cloud

**Containers & Container Orchestration**
e.g Docker, LXC, Kubernetes, Mesos, Docker Swarm

**Cloud Automation**
e.g. Json, Serverless, YAML

**E2E monitoring and analytics**
e.g Grafana, Prometeus, Zabbix, Datadog, Monit, AppDynamics, OpenTracing, Instana, Jaeger, New Relic

**SRE and AiOps**
e.g  Service Now, SPLUNK, Data/MLOps

**Infra Engineer**

(1) (2) (3) (4) (5)

**Full stack DevOps engineer (Infra) / SRE**

**Infrastructure as Code (IAC)**
e.g GitOps, Terraform, Ansible , Chef, Docker, Jenkins X, Spinnaker

**Cloud Native CI/CD**
e.g Azure DevOps, AWS Codepipeline, Openshift

**IAM and scripting**
Security access, identity management, scripting in shell, power shell and python

**CORE INFRASTRUCTURE** | **CLOUD NATIVE** | **OPERATIONS & ANALYTICS**

**DevOps Academy** | **Advanced DevOps Academy**

# What trainings are available to prepare for proficiency certifications? (Capability Driven)

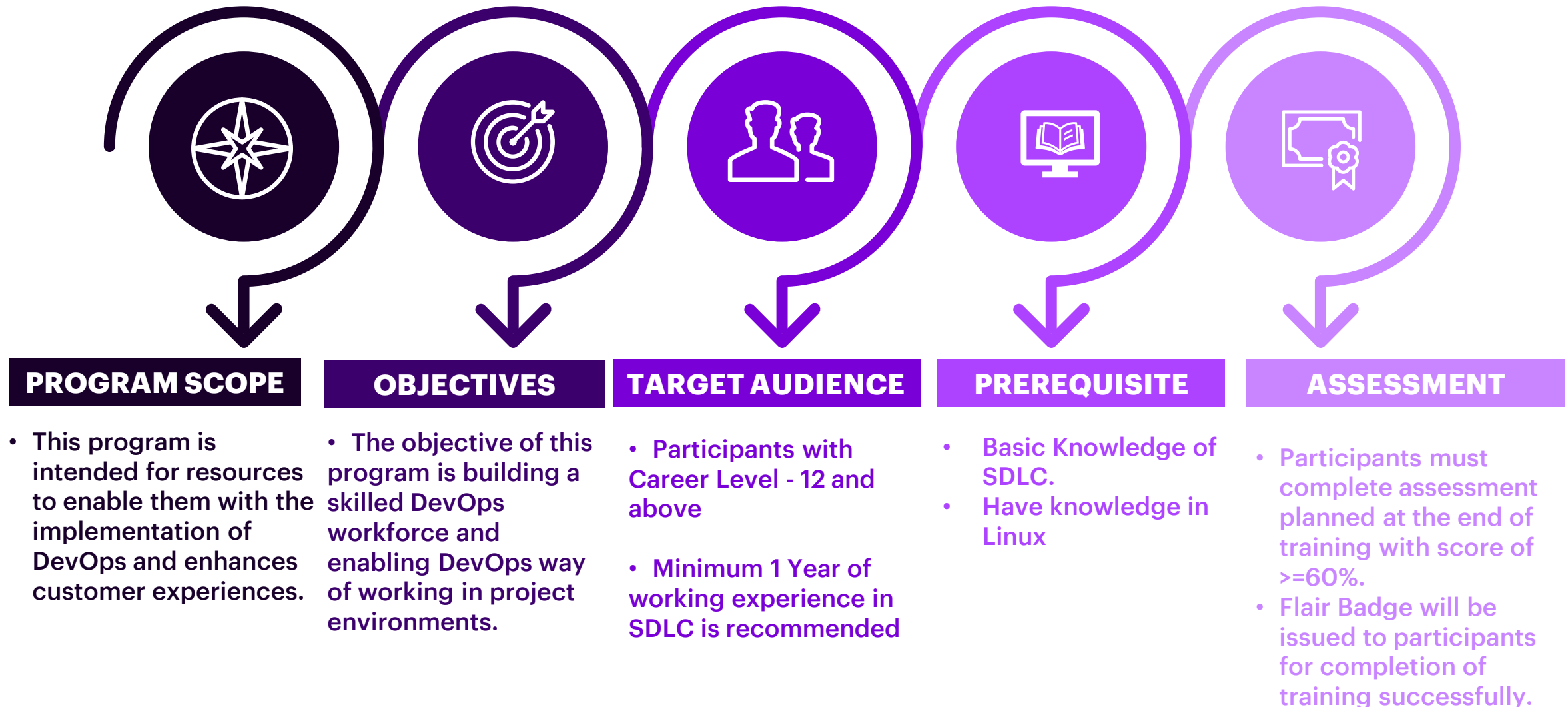| For Engineers (Level 12 and above) | For Executives and Architects(Level 9 and above) | For Executives and Delivery leads (Level 7 and above)* |
|---|---|---|
| **DevOps Academy (Foundation)** | **Advanced DevOps Academy** | **DevOps for Executives** |
| **DevOps Academy** learning program is designed to introduce the concepts and principles of DevOps and Continuous Delivery.<br><br>It's a 4-Half a-days(4Hrs per day) intended for resources to enable them with the implementation of DevOps and enhances customer experiences. | **Advanced DevOps** Academy learning program designed to educate you in the latest evolving technologies within DevOps<br><br>It's a 4-Half a-days(4Hrs per day) intended for DevOps Resources to enable them with the niche technology trends in DevOps and engage with clients effectively. | **DevOps for Executives** learning program designed to enable executives to engage with clients effectively on Accenture DevOps services<br><br>It's a 2-Half a-days(4.5Hrs per day) intended for participants to learn how DevOps can deliver value for our clients, what are the Accenture DevOps Offerings and capabilities are and principles of an enterprise DevOps transformation including insights on maturity assessment. |

*\* LKM Formal launch pending*
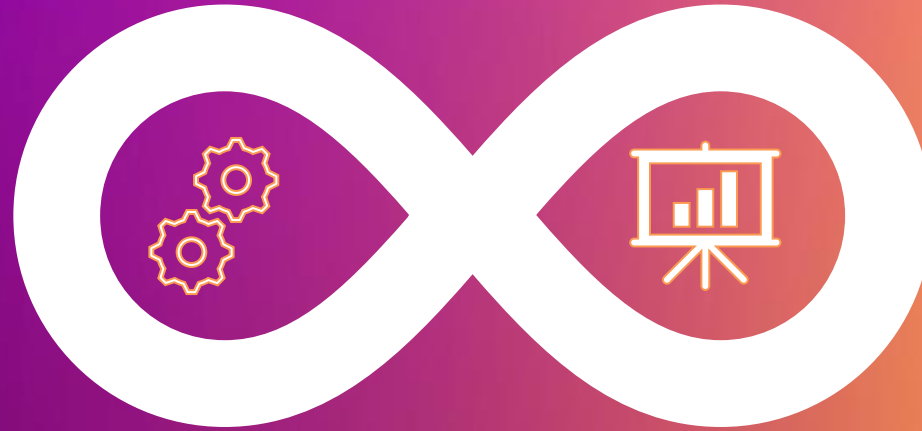
**"DevOps Academy, 4-Half a-days(4 Hrs per day)"** learning program designed to introduce the concepts and principles of DevOps and Continuous Delivery. The program includes relevant hands-on exercises on the <u>myWizard DevOps Platform</u> with the objective to train participants with the DevOps concepts to make them experience end to end DevOps adoption.

## PROGRAM SCOPE

- This program is intended for resources to enable them with the implementation of DevOps and enhances customer experiences.

## OBJECTIVES

- The objective of this program is building a skilled DevOps workforce and enabling DevOps way of working in project environments.

## TARGET AUDIENCE

- Participants with Career Level - 12 and above

- Minimum 1 Year of working experience in SDLC is recommended

## PREREQUISITE

- Basic Knowledge of SDLC.
- Have knowledge in Linux

## ASSESSMENT

- Participants must complete assessment planned at the end of training with score of >=60%.
- Flair Badge will be issued to participants for completion of training successfully.

# CURRICULUM OVERVIEW

## DAY 1

- Introduction to DevOps and Cloud Computing
- myWizard DevOps
- Case Study Introduction
- Software Configuration Management using Git and GitLab

## DAY 2

- Continuous Delivery and Pipeline flow
  - Pipeline as a code using Jenkins
- Code Quality
  - SonarQube
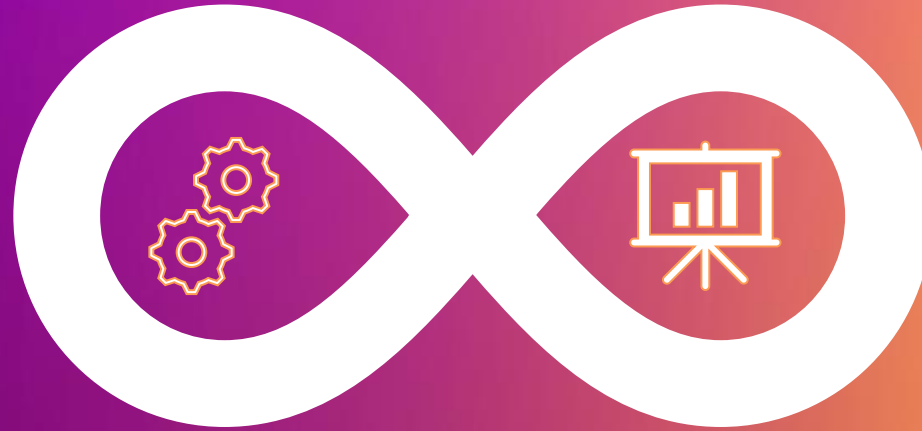  - DevSecOps Overview

## DAY 3

- Code Quality (Contd..)
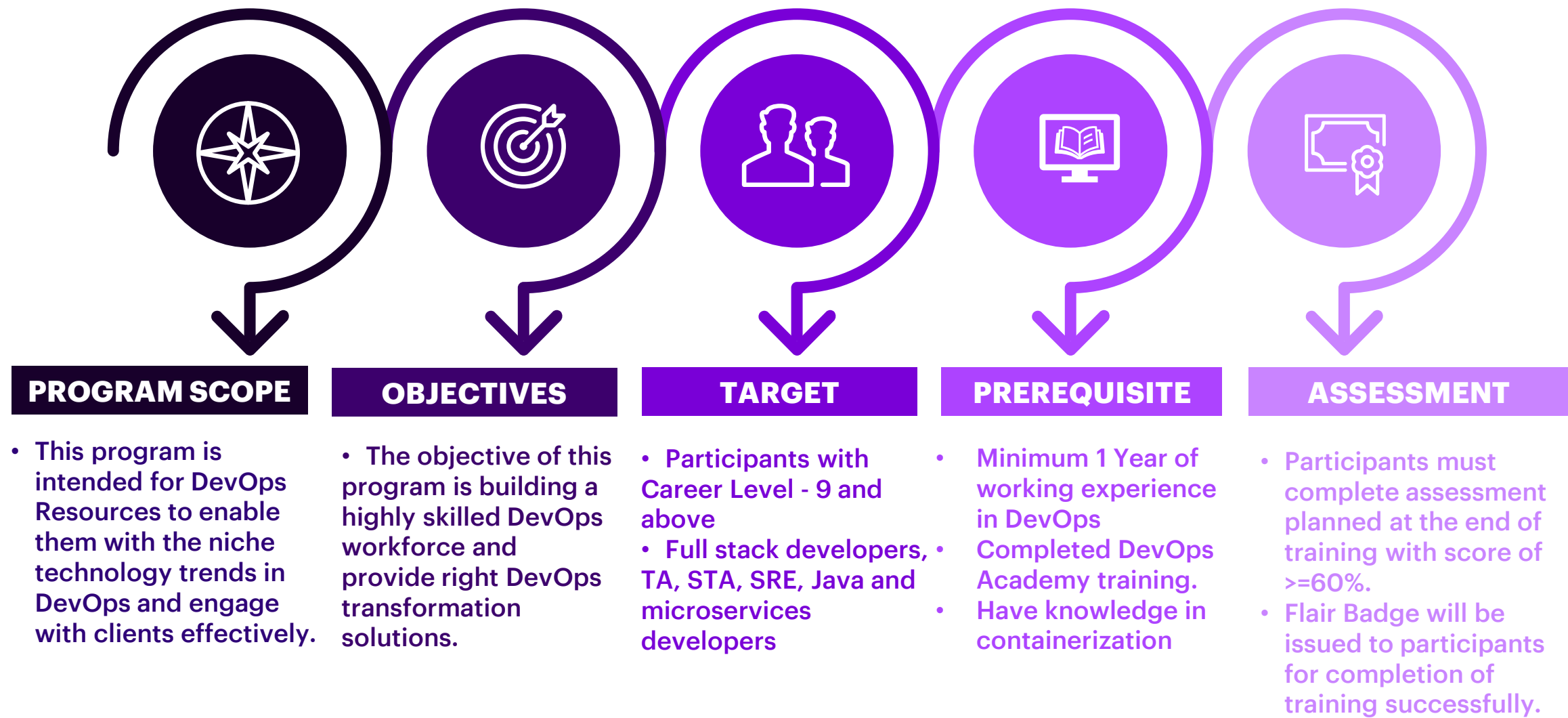- Introduction to Infrastructure as Code – Configuration Management using Ansible.

## DAY 4

- Containerization
  - Overview of Docker and Kubernetes
- Operations
  - SRE Introduction
- Monitoring
  - Prometheus and Grafana

"**Advanced DevOps Academy**", 4-half-a days(4.5 Hrs per day) learning program designed to educate you in the latest evolving technologies within DevOps. The program includes relevant hands-on exercises on the myWizard DevOps Platform.

## PROGRAM SCOPE

- This program is intended for DevOps Resources to enable them with the niche technology trends in DevOps and engage with clients effectively.

## OBJECTIVES

- The objective of this program is building a highly skilled DevOps workforce and provide right DevOps transformation solutions.

## TARGET

- Participants with Career Level - 9 and above
- Full stack developers, TA, STA, SRE, Java and microservices developers

## PREREQUISITE

- Minimum 1 Year of working experience in DevOps
- Completed DevOps Academy training.
- Have knowledge in containerization

## ASSESSMENT

- Participants must complete assessment planned at the end of training with score of >=60%.
- Flair Badge will be issued to participants for completion of training successfully.

# CURRICULUM OVERVIEW

**DAY 1**

- **Journey of DevOps**
- **Introduction to DevXOps**
- **myWizard DevOps Marketplace & Platform**
- **Deep Dive of myWizard DevOps Platform**

**DAY 2**

- **Containerization**
- **Kubernetes**
- **Introduction to cartridges -Pipeline as a code**
- **DevSecOps & Shift Left Testing**

**DAY 3**

- **Infra as Code**
- **IaC using Terraform**
- **Multi-cloud management**
- **GitOps**
- **Application Onboarding**

**DAY 4**

- **Microservice Deployment Strategy**
- **Chaos engineering**
- **DevOps analytics**
- **Site Reliability Engineering**
- **Success Stories**

# APPENDIX

# THANK YOU