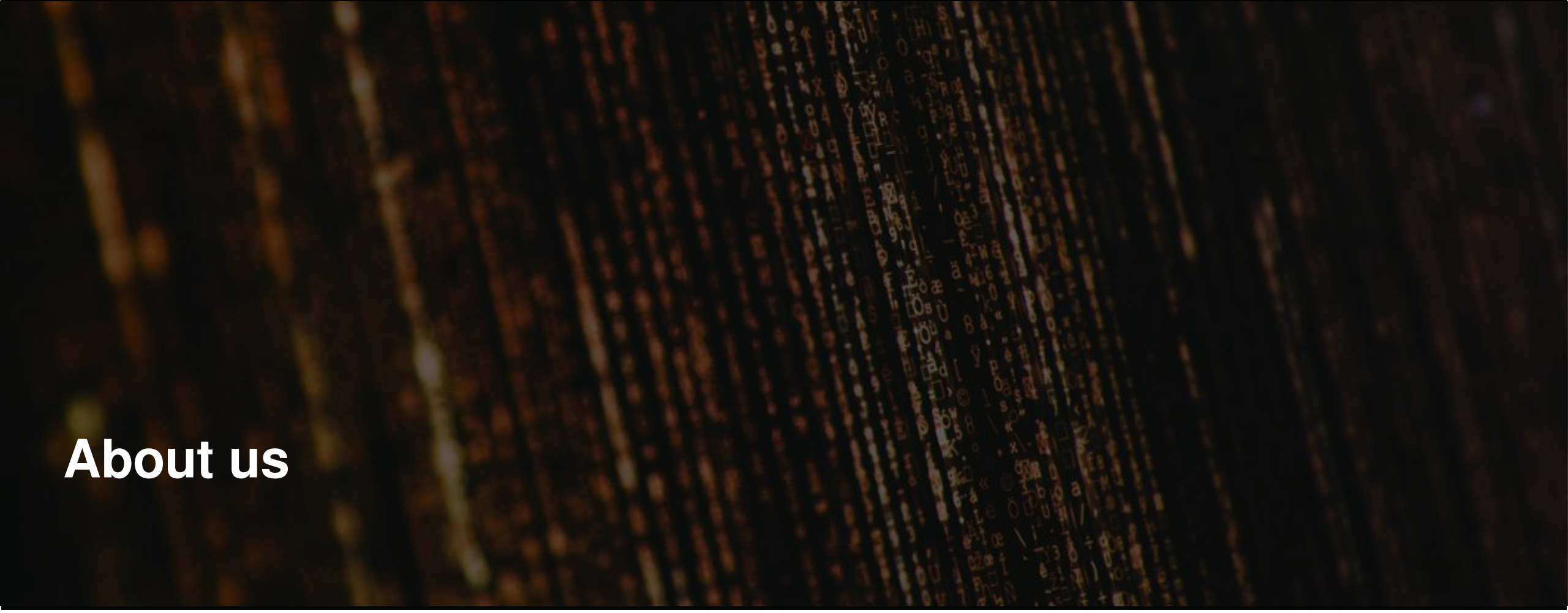
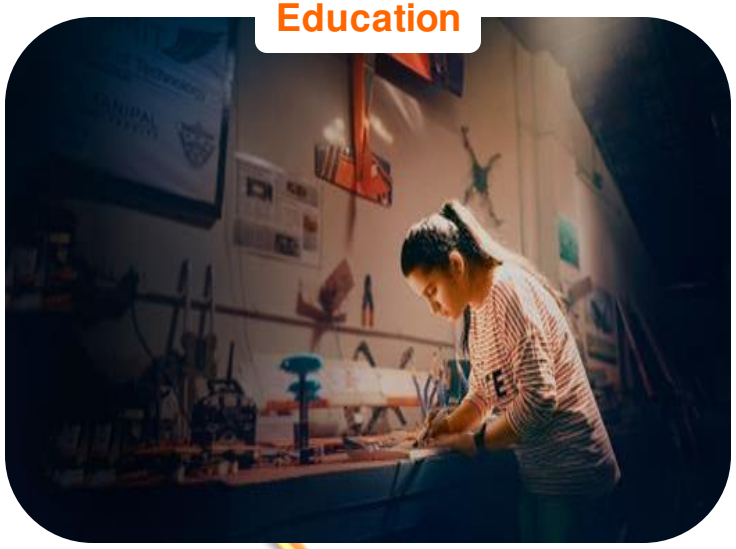
# SRE Learning Path



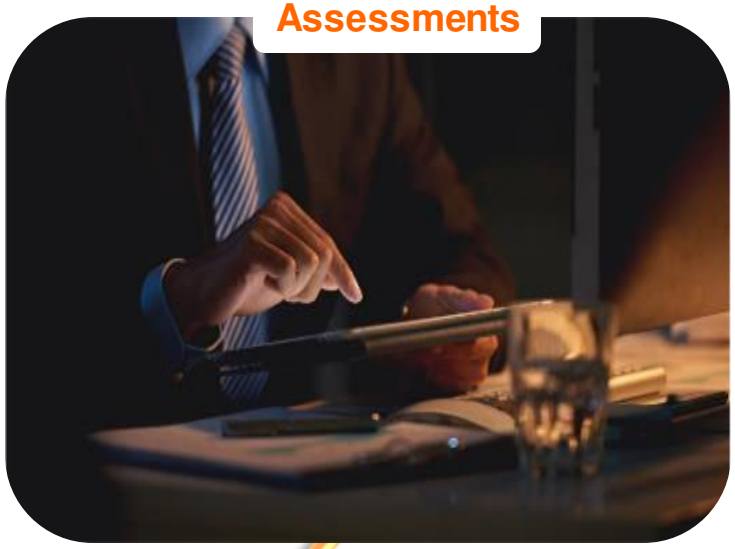
# About us

# The Manipal Group

Education



Assessments



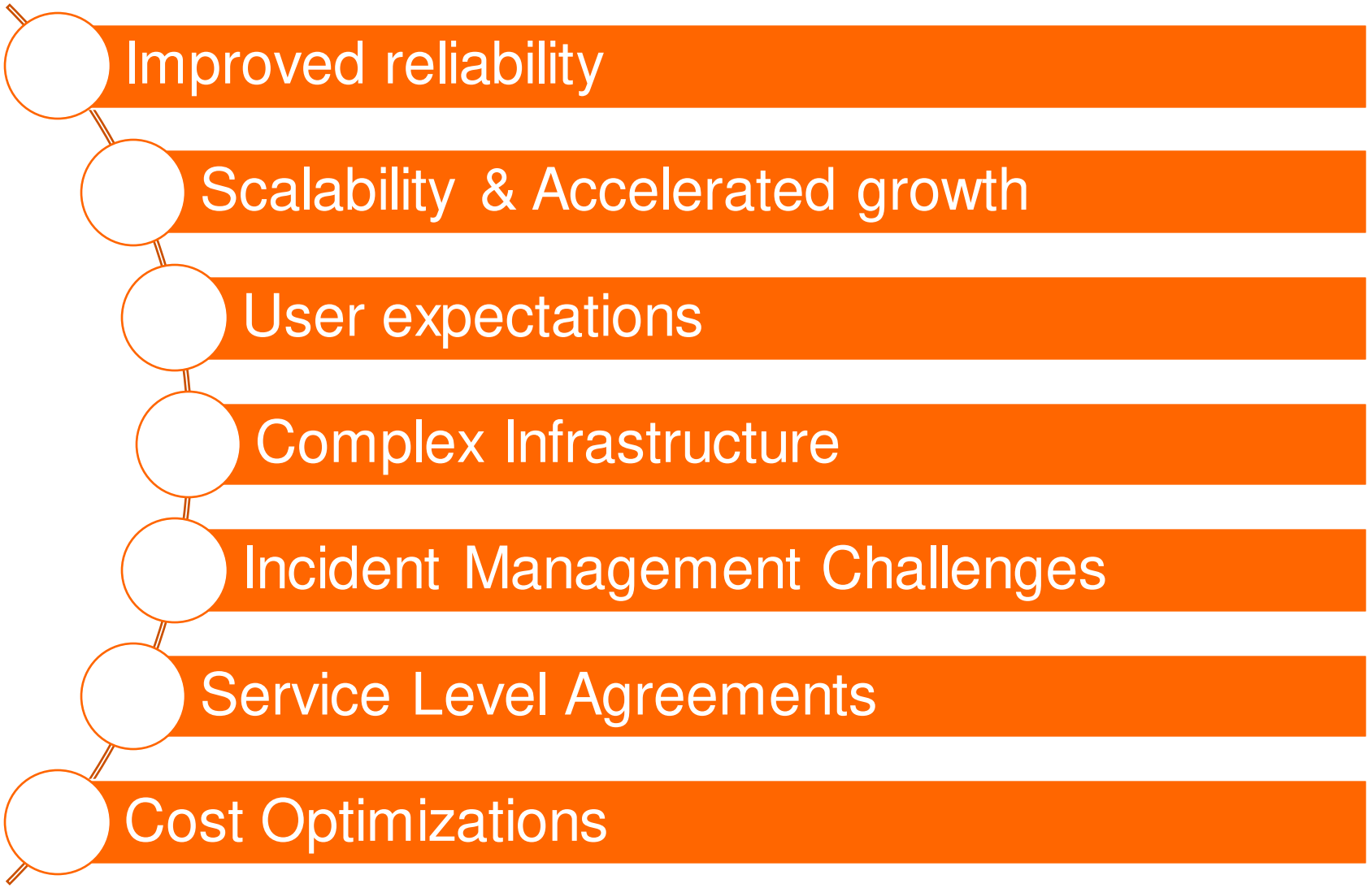
Health Care

Charting New Frontiers In The Knowledge & Health Industry

Health Insurance

# Site Reliability Engineering

# Why Organizations implement SRE



# Levels of SRE Competency

## SRE 101

Foundational level of SRE knowledge, primarily aimed at introducing individuals to the core concepts and principles of Site Reliability Engineering.

## SRE 201

Post acquiring foundational knowledge at SRE 101, SRE 201 delves deeper into technical and operational aspects of SRE.

## SRE 301

The advanced level of SRE expertise, intended for individuals who have extensive experience in SRE and want to tackle complex challenges.

# 101 – Introduction to SRE

## Target Audience

Intended for individuals new to SRE, including developers, operations engineers, and others interested in understanding the fundamental principles.

## Learning Outcomes

- ✓ Explain the core principles of SRE
- ✓ Understand importance of service-level objectives (SLOs)
- ✓ Fundamentals of incident management
- ✓ Appreciate blameless post-mortems
- ✓ Importance of & setting up monitoring and alerting

- ✓ Explain basic automation & reducing manual tasks
- ✓ Collaborative culture & Shared responsibility
- ✓ Incident Management process
- ✓ Apply SRE principles in real world scenarios
- ✓ Continuous Improvement & Basic Troubleshooting
- ✓ Importance of Security & Compliance

## Program Coverage

# 201 – Intermediate SRE

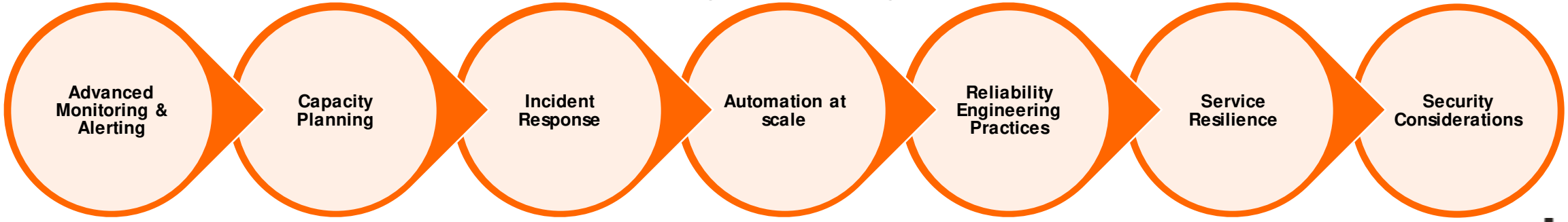
## Target Audience

**Intended for individuals who have completed SRE 101 or have basic SRE knowledge. It's suitable for SRE practitioners, system administrators, and engineers looking to deepen their expertise.**

## Learning Outcomes

- ✓ **Implement advanced monitoring solutions to proactively detect issues and bottlenecks.**
- ✓ **Perform capacity planning**
- ✓ **Develop and manage advanced incident response processes**
- ✓ **Automation of larger & complex infrastructure**
- ✓ **Drive innovation in SRE practices and technologies**
- ✓ **Develop strategies for advanced risk management**
- ✓ **Best practices for fault tolerance & disaster recovery**
- ✓ **Refine and manage error budgets and SLOs**
- ✓ **Conduct thorough Post-Incident Analysis and Learning**
- ✓ **Implement advanced strategies for optimizing costs**
- ✓ **Service Scaling and Global Resilience**

## Program Coverage



# 301 – Advanced SRE

## Target Audience

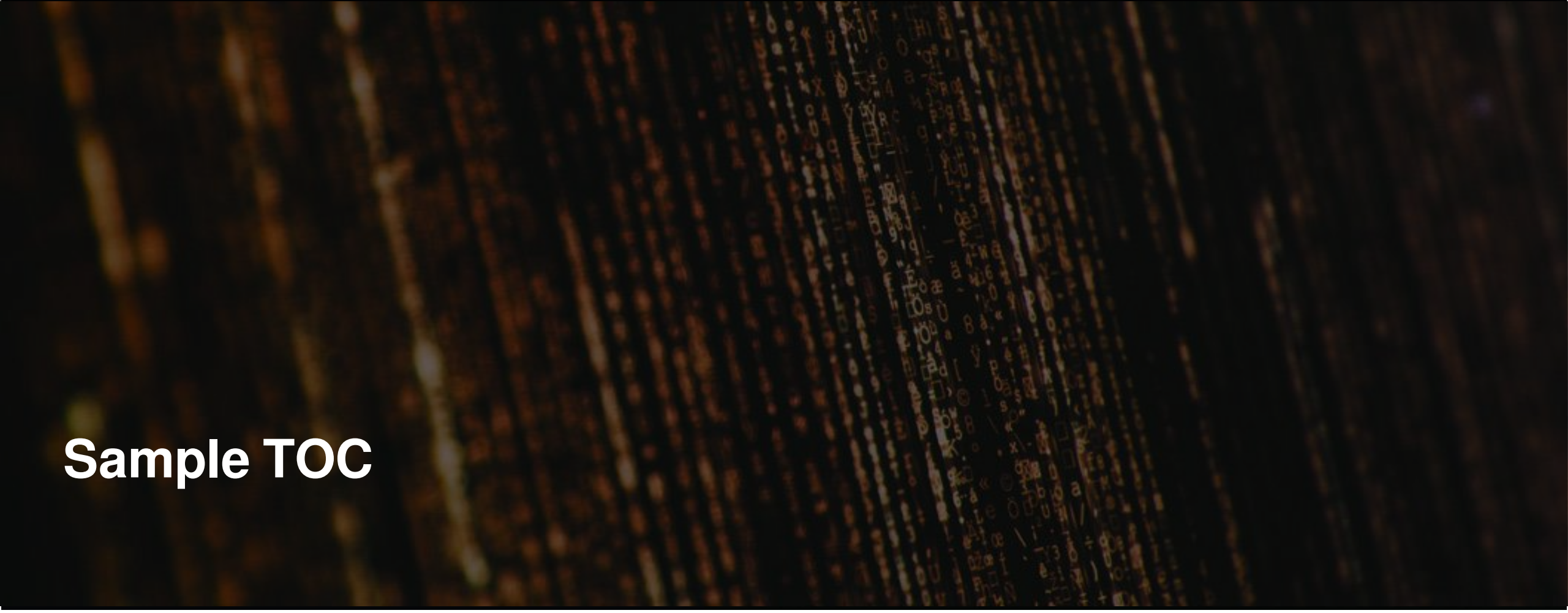
**Intended for highly experienced SRE practitioners, senior SREs, SRE managers, and individuals in leadership roles responsible for driving SRE initiatives in organization.**

## Learning Outcomes

- ✓ Manage Advanced Distributed Systems
- ✓ Manage global traffic distribution and failover mechanisms
- ✓ Advanced cost optimization for large-scale systems.
- ✓ Optimize cloud resources and infrastructure expenses while maintaining performance and reliability.
- ✓ Lead and coordinate complex incident management.

- ✓ Meet regulatory requirements & industry standards
- ✓ Advanced automation tools and frameworks
- ✓ Conduct advanced performance tuning and optimization
- ✓ Design & conduct advanced chaos engineering PODs
- ✓ Plan and execute advanced resilience testing
- ✓ Implement organizational learning & knowledge-sharing

## Program Coverage



# Sample TOC

# Detailed Design – SRE (1/4)

| Sl No | Module | Sub-Module | Theory (Concepts)/ Hands-on | Assignment/Use Case / Project Description | Tools | Learning outcome | Day # | Duration in Hours |
|---|---|---|---|---|---|---|---|---|
| 1 | Introduction to Site Reliability Engineering (SRE) | Evolution and principles of SRE | Theory (Concepts) | Use case | NA | Participants understand the core principles and practices of Site Reliability Engineering and recognize its role in improving system reliability and performance. | Day 1 | 03:00 |
| | | Role of SRE in modern digital operations | | | | | | |
| | | Aligning SRE with DevOps and ITIL | | | | | | |
| 2 | System Architecture and Design for Reliability | Designing for reliability and availability | | | | Participants understand principles of designing systems for high availability and resilience. They recognize architectural patterns that contribute to system reliability and fault tolerance. | | 04:00 |
| | | Patterns for redundancy, failover, and scalability | | | | | | |
| | | High availability architecture and trade-offs | | | | | | |
| 3 | **Day 1 Retrospective** | | | | | | | 01:00 |

# Detailed Design – SRE (2/4)

| Sl No | Module | Sub-Module | Theory (Concepts)/ Hands-on | Assignment/Use Case / Project Description | Tools | Learning outcome | Day # | Duration in Hours |
|---|---|---|---|---|---|---|---|---|
| 4 | Incident Management and Response | Incident lifecycle and severity levels<br>Best practices for incident response<br>Coordinating incident response across teams | Theory (Concepts) & Hands-on | Use case | JIRA | Participants learn how to effectively manage and respond to incidents and minimize downtime. They understand the importance of clear communication and collaboration during incidents. | Day 2 | 03:30 |
| 5 | Service Level Objectives (SLOs) and Service Level Indicators (SLIs) | Defining SLOs and SLIs to measure system reliability<br>Using SLIs to monitor and improve service quality<br>Translating business goals into measurable objectives | | | | Participants develop appreciation of role of SLOs and SLIs in measuring and maintaining service quality. They learn how meaningful metrics and goals impact system performance. | | 03:30 |
| 6 | **Day 2 Retrospective** | | | | | | | 1 |

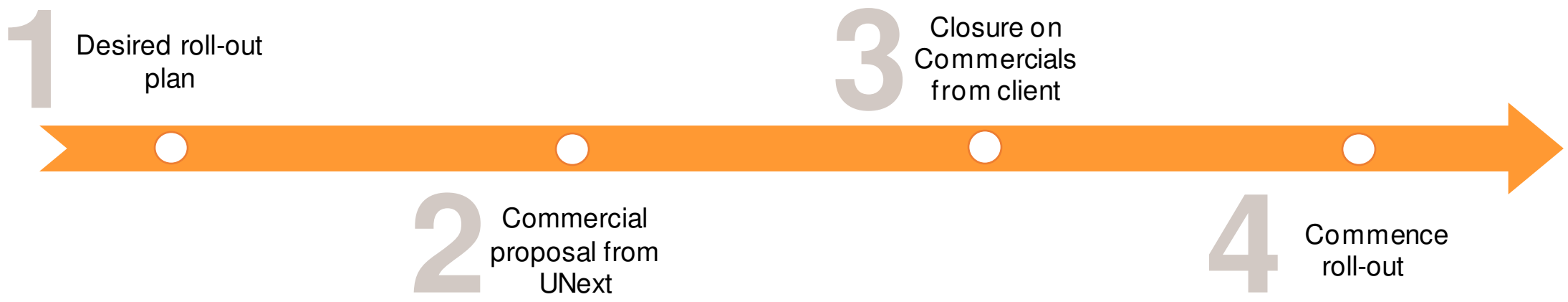
# Detailed Design – SRE (3/4)

| Sl No | Module | Sub-Module | Theory (Concepts)/ Hands-on | Assignment/Use Case / Project Description | Tools | Learning outcome | Day # | Duration in Hours |
|---|---|---|---|---|---|---|---|---|
| 7 | Automation and Scripting | Automating routine operational tasks<br>Scripting for system management and configuration<br>Infrastructure as Code (IaC) concepts | Theory (Concepts) & Hands-on | Assignment / Use case | Docker<br>Kubernetes<br>Prometheus<br>Grafana<br>Cloud Lab | Participants automate routine tasks to improve operational efficiency. They understand scripting and IaC concepts for infrastructure management. | Day 3 | 02:30 |
| 8 | Cloud Computing and Containerization | Leveraging cloud services for reliability<br>Introduction to containerization and orchestration<br>Cloud-native architecture principles | | | | Participants learn the benefits of cloud computing and containerization for achieving system reliability. They get to appreciate the principles of cloud-native application design and deployment. | | 02:30 |
| 9 | Monitoring and Observability | Monitoring vs. Observability<br>Instrumentation and data collection<br>Analyzing metrics, logs, and traces for insights | | | | Participants get to appreciate monitoring & observability and their importance in detecting and diagnosing issues. They learn about using monitoring data to gain insights into system behavior. | | 02:00 |
| 10 | **Day 3 Retrospective** | | | | | | | 01:00 |

# Detailed Design – SRE (4/4)

| Sl No | Module | Sub-Module | Theory (Concepts)/ Hands-on | Assignment/Use Case / Project Description | Tools | Learning outcome | Day # | Duration in Hours |
|---|---|---|---|---|---|---|---|---|
| 11 | Incident Post-Mortems and Learning | Conducting post-mortems for continuous improvement<br>Identifying root causes and preventive actions<br>Cultivating a blameless culture | Theory (Concepts) & Hands-on | Assignment / Use case | GitLab Jenkins Cloud Lab | Participants learn how to conduct effective incident post-mortems to drive learning and improvement. They get to understand the significance of creating a blameless culture for fostering growth. | Day 4 | 02:00 |
| 12 | Disaster Recovery and Business Continuity | Planning for disaster recovery and data loss scenarios<br>Implementing backup and recovery strategies<br>Ensuring business continuity during disruptions | | | | Participants start recognizing the importance of disaster recovery planning and maintaining business continuity. They learn about strategies for ensuring data protection and recovery in unexpected events. | | 02.30 |
| 13 | Security and Compliance in SRE | Incorporating security into SRE practices<br>Compliance considerations and regulations<br>Securing applications, data, and infrastructure | | | | Participants get to learn how to integrate security and compliance into SRE processes. They understand the role of SRE in maintaining secure and compliant systems. | | 02:30 |
| 14 | **Day 4 Retrospective** | | | | | | | 01:00 |
| **Total Days & Duration** | | | | | | | **4 Days & 32 Hours** | |

# Next Steps…




Thank You