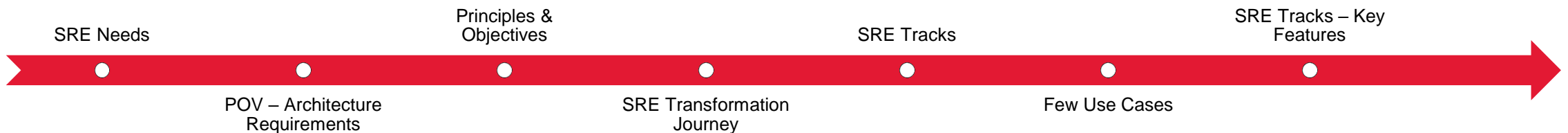
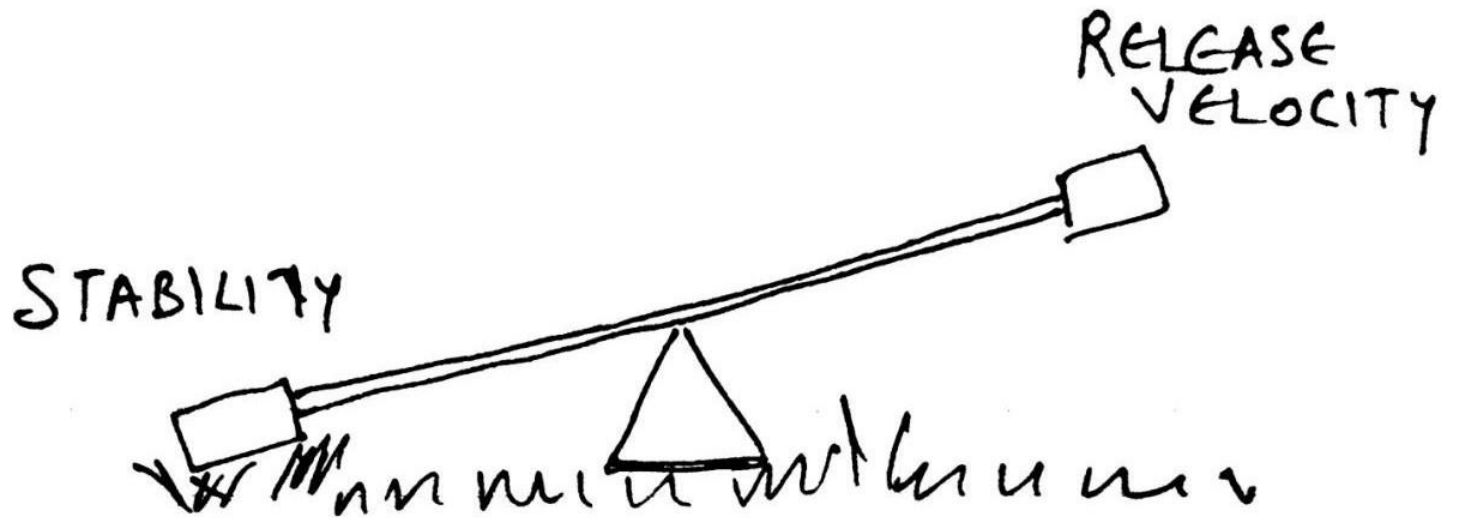


# SRE Transformation Journey - VCG

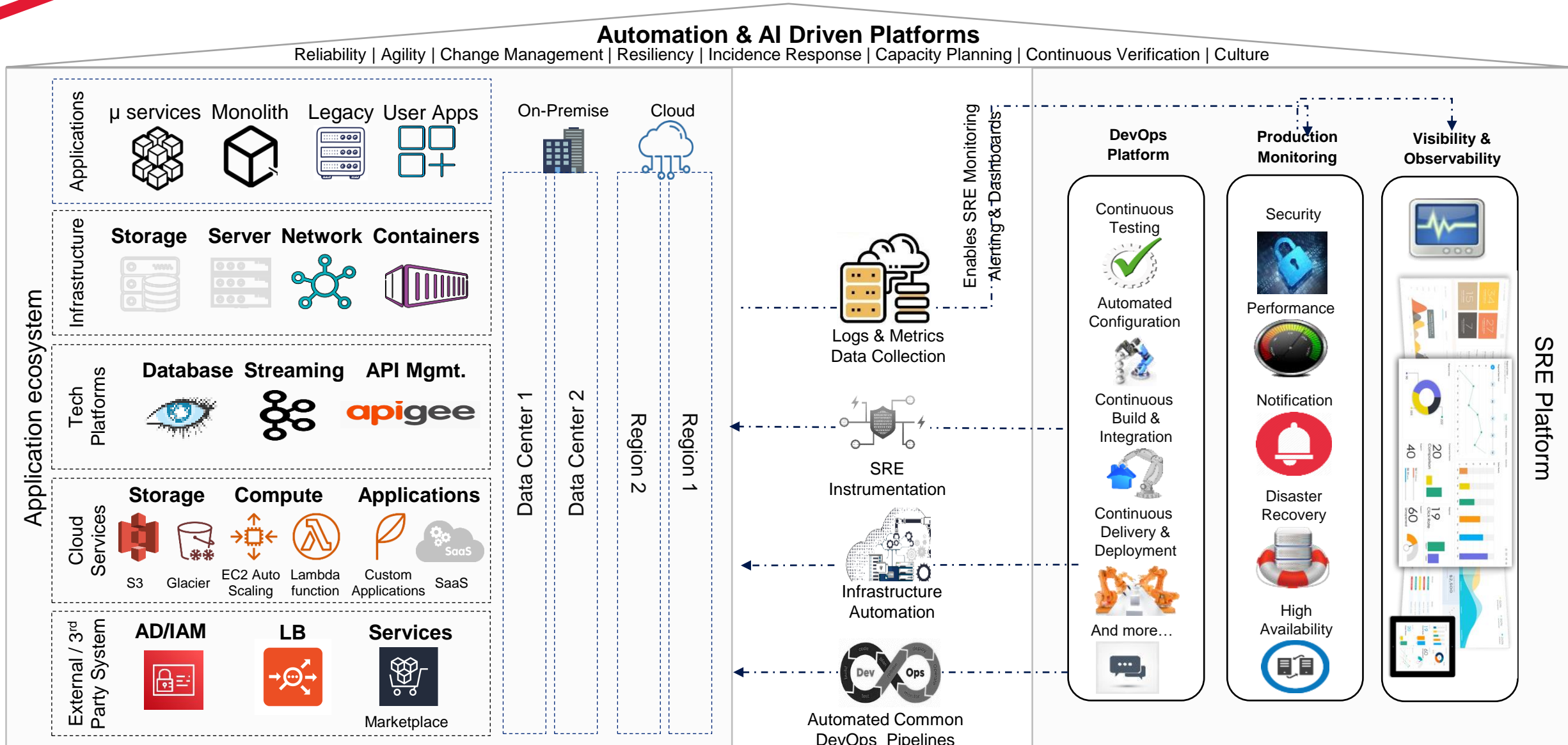
February 2023

# SRE Transformation for a leading US Telecom Provider



TechMahindra 2019-23

# SRE TechOps - Platform Needs



# SRE TechOps Platform – Component Architecture



✓ Reliability | Agility | Change Management | Resiliency | Incidence Response | Capacity Planning | Continuous Verification | Culture → Higher Service Reliability | Higher Productivity | Reducing the cost of failure

Observability Portal  
(Visibility & Actionable Insights via single Pane of Glass)



Offerings & Capabilities

DevOps Platform  
(Architected for SRE)

Observability Platform Core

Application Ecosystem  
(Hybrid Infrastructure)

Monitoring Tools

Centralized Data Stores

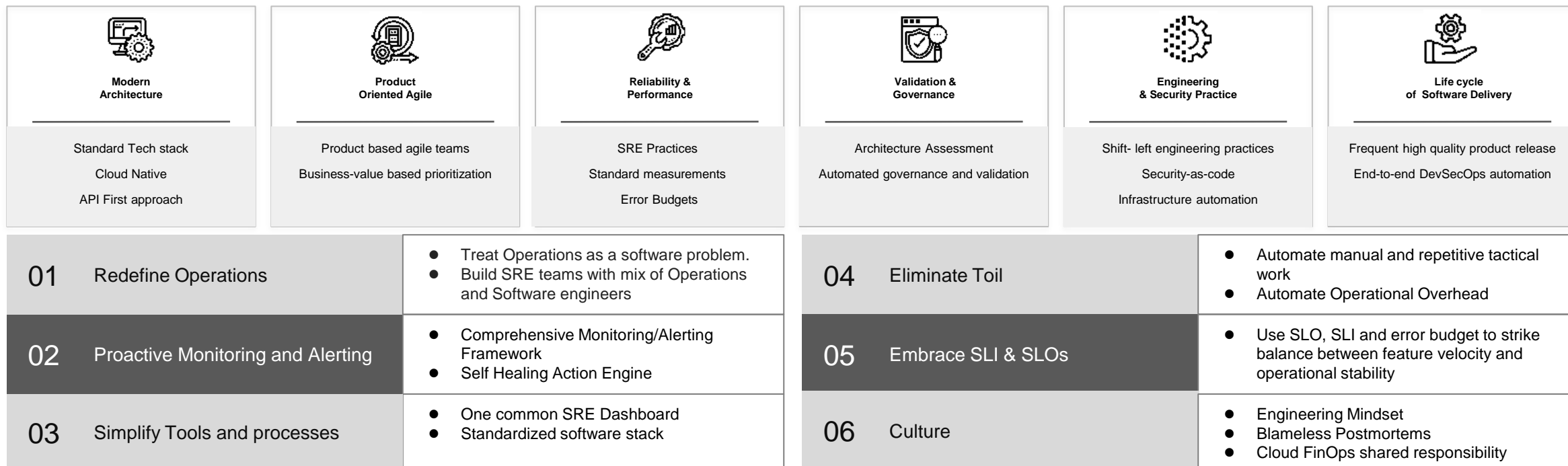
Observability Platform

# SRE TechOps Transformation – Principles and Objectives

## Cloud Engineering & SRE TechOps Platform

Tech Mahindra is Building High-Performance Software Engineering Organization to enable a standard operating environment to drive business value

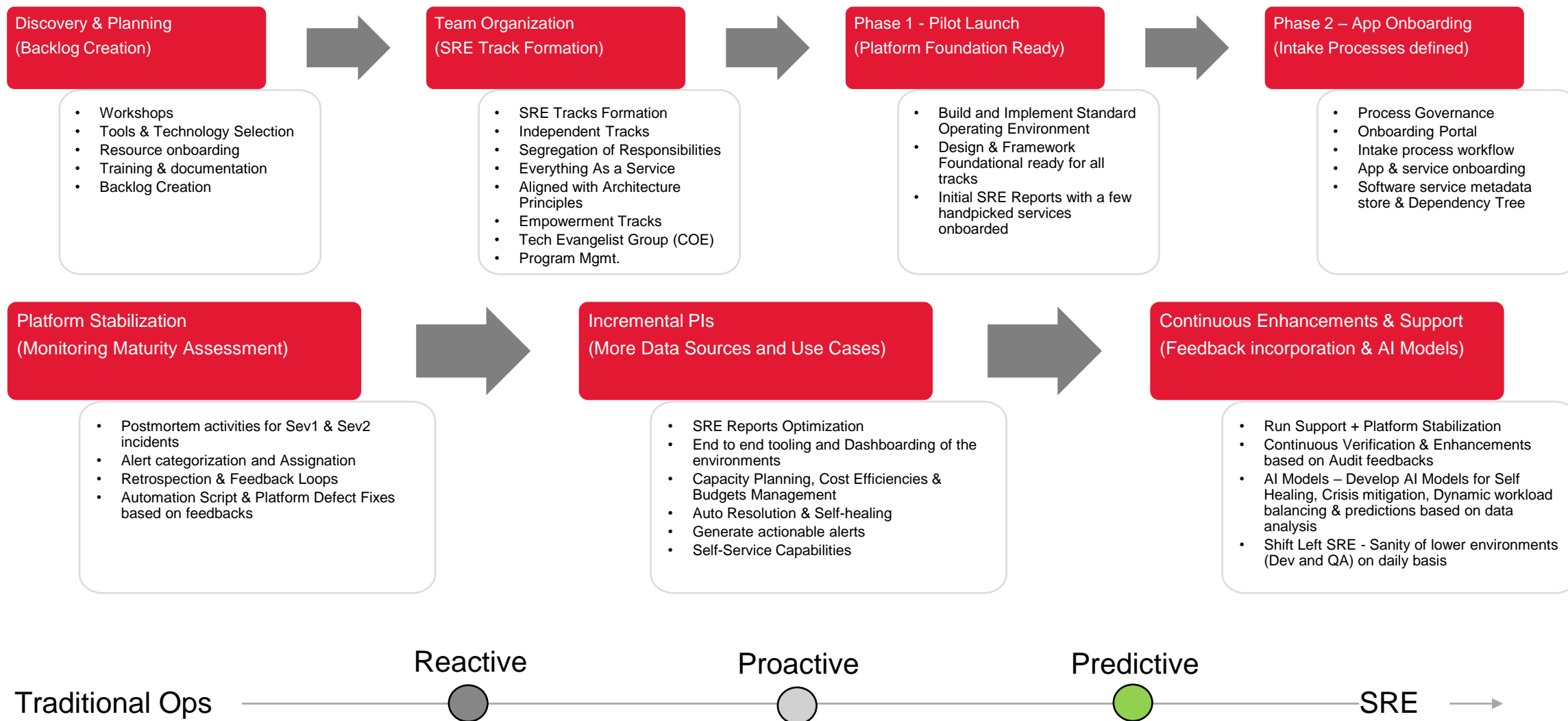
✓ Reliability | Agility | Change Management | Resiliency | Incidence Response | Capacity Planning | Continuous Verification | Culture



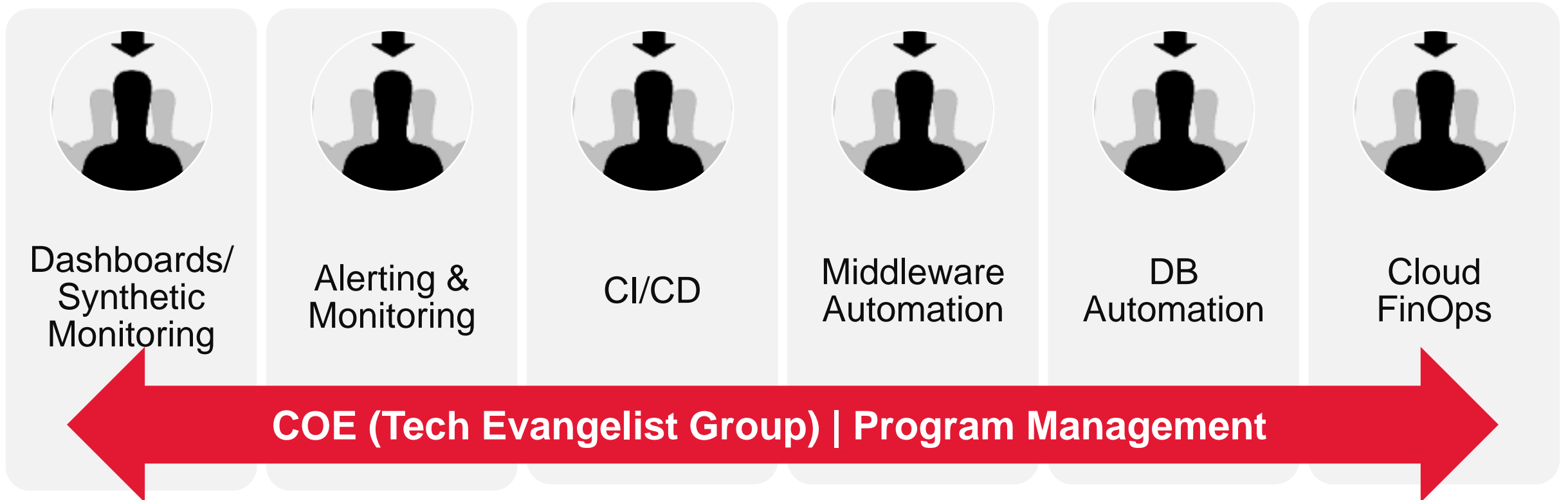
42 Applications | ~ 400 Services | Hybrid Infrastructure



# SRE TechOps Transformation – Journey



# SRE TechOps Transformation – Tracks





# SRE Observability - Dashboards/ Synthetic Monitoring

Overall Reliability - All Channels



## Digital Sales & Services Desktop

Reliability 78.81% Availability SLI 95.60% Latency SLI 81.56%

Desktop

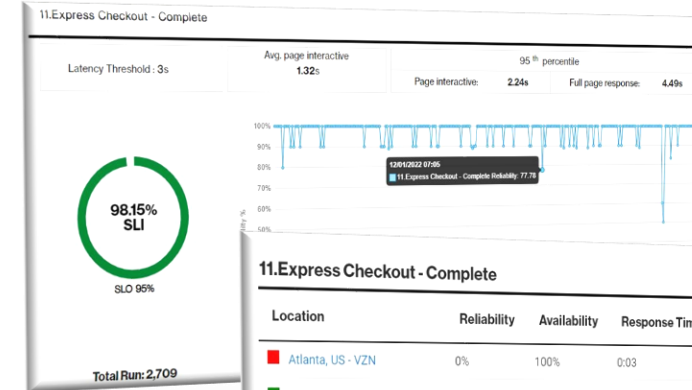
78.81% SLI

SLO 95%

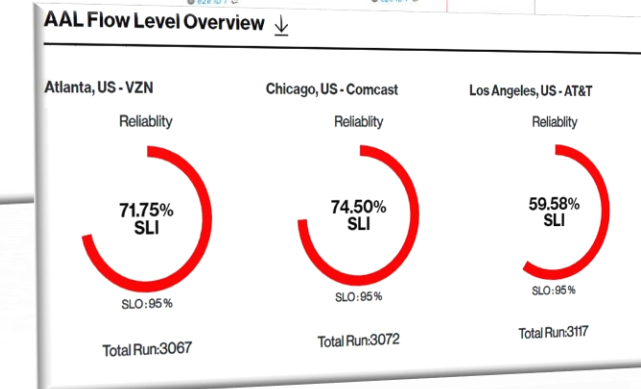
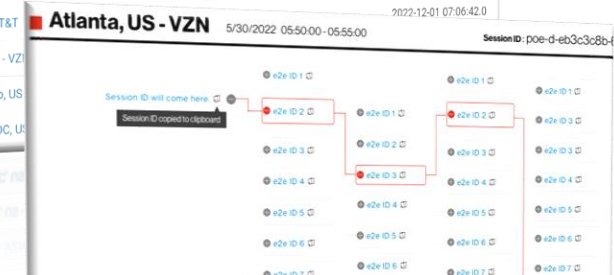
All Flows	Sales	Services
78.64%	76.66%	83.92%

Flow	Reliability	Availability SLI	Latency SLI
AAL	71.84%	83.38%	81.19%
CPC	78.76%	68	74.68%
Plan First	73.06%	67	
Prospect BYOD with TradeIn	83.11%	74	
Prospect Standalone TradeIn	78.94%	91	

Step	Reliability	Availability SLI	Latency SLI
01.Sign In	Reliability 93.48%		
02.Overview	Reliability 73.74%		
03.Smartphones Gridwall	Reliability 7.49%		
04.Phone Details	Reliability 0.0%		
05.MDN Selection	Reliability 87.54%		
06.Accessory Interstitial	Reliability 74.87%		
07.Express Checkout - Review	Reliability 93.66%		
08.New Number	Reliability 98.05%		
09.Device Protection	Reliability 87.89%		
10.Plan Selection	Reliability 98.38%		
11.Express Checkout - Complete	Reliability 98.52%		



Location	Reliability	Availability	Response Time (Sec.)	Time
Atlanta, US - VZN	0%	100%	0:03	2022-12-01 07:06:58.0
Boston, US - VZN	100%	100%	0:02	2022-12-01 07:06:43.0
Chicago, US - Comcast	100%	100%	0:01	2022-12-01 07:06:46.0
Dallas, US - Cogent	100%	100%	0:01	2022-12-01 07:06:46.0
Los Angeles, US - AT&T	0%	100%	0:03	2022-12-01 07:06:42.0
Miami, US - AT&T				2022-12-01 07:06:42.0
New York, US - VZ				
San Francisco, US				
Washington DC, US				

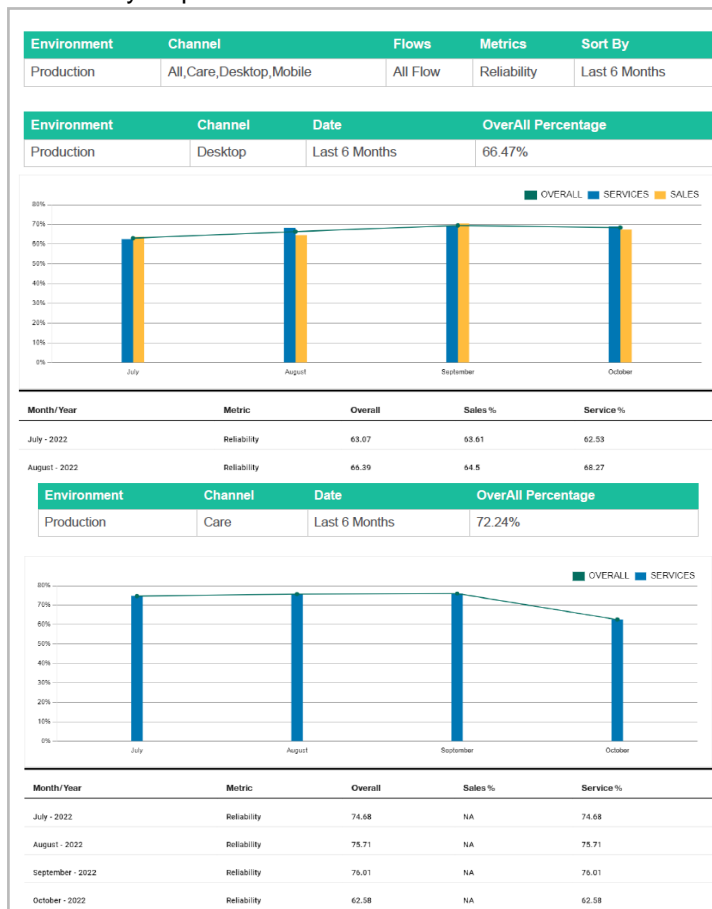


Add Alerts being generated

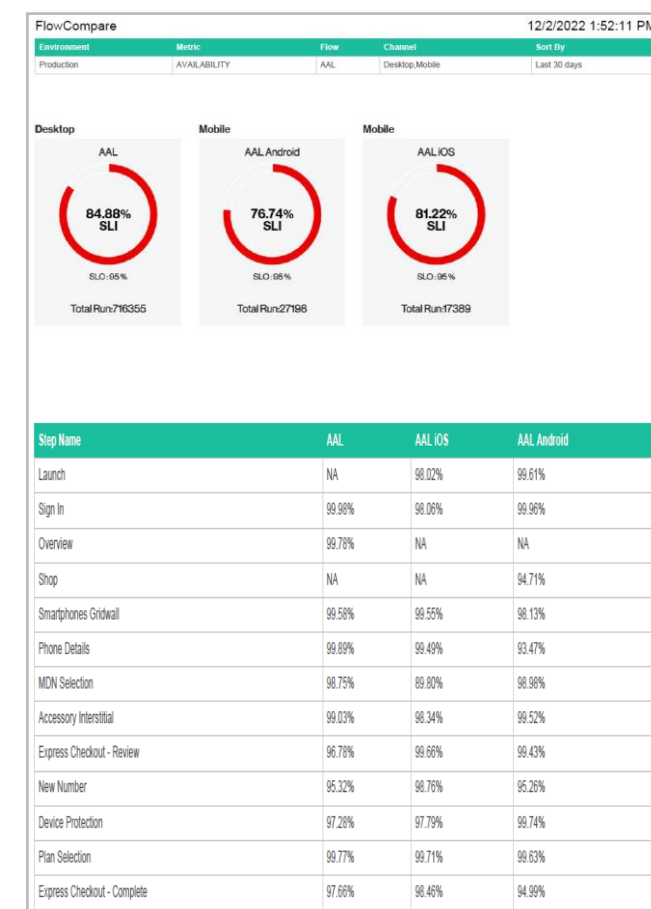


# SRE Observability – Reports / Synthetic Monitoring

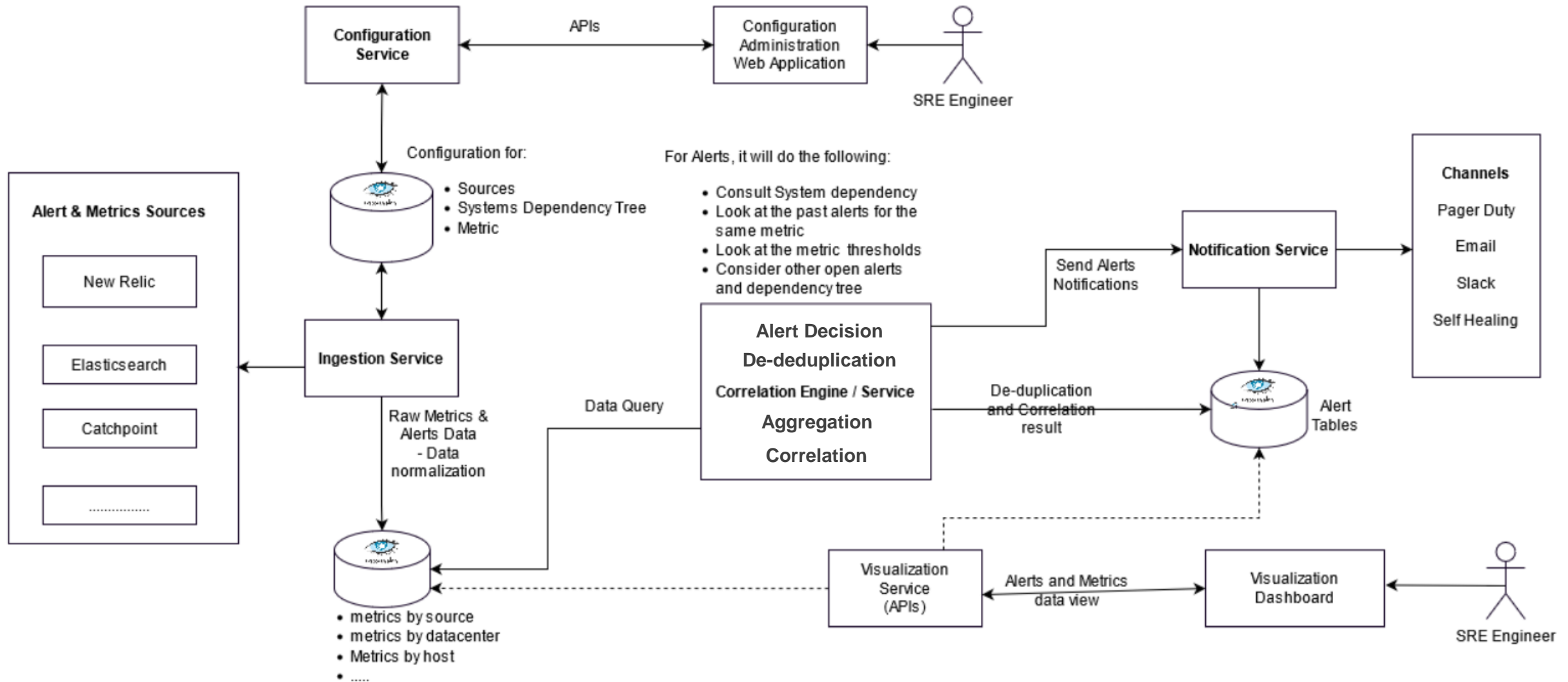
## Reliability Report



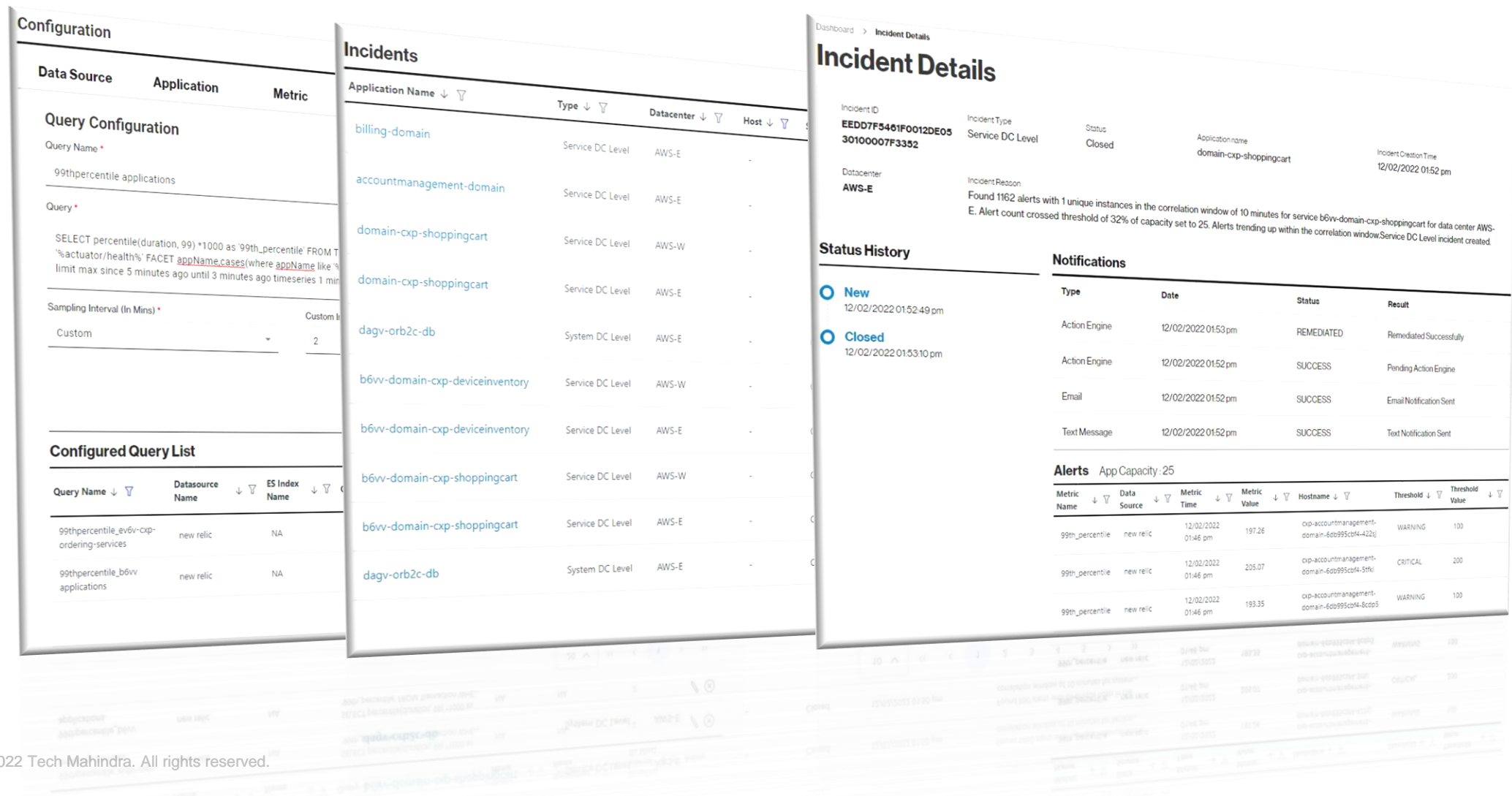
Compare Locations Report				12/1/2022, 1:43:15 PM
Environment	Channel	Flow	Sort By	
Production	Desktop	AAL	last24Hour	
Average Interactive Times(s)				
Step Name	Atlanta, US - VZN	Chicago, US - Comcast	Los Angeles, US - AT&T	
01.Sign In	1.60	1.56	1.95	
02.Overview	2.83	2.62	3.07	
03.Smartphones Gridwall	6.03	4.21	7.11	
04.Phone Details	8.45	5.06	10.61	
05.MDN Selection	1.22	1.07	2.08	
06.Accessory Interstitial	2.42	1.62	4.09	
07.Express Checkout - Review	1.56	1.80	2.42	
08.New Number	1.19	1.53	1.78	
09.Device Protection	1.18	1.18	1.83	
10.Plan Selection	1.20	0.96	1.80	
11.Express Checkout - Complete	1.31	1.06	2.06	
Average Fullpage Response Times(s)				
Step Name	Atlanta, US - VZN	Chicago, US - Comcast	Los Angeles, US - AT&T	
01.Sign In	3.07	3.20	5.96	
02.Overview	8.82	8.47	12.42	
95 Percentile Interactive Times(s)				
Step Name	Atlanta, US - VZN	Chicago, US - Comcast	Los Angeles, US - AT&T	
01.Sign In	3.07	3.35	3.70	
02.Overview	3.46	3.41	3.88	
95 Percentile Fullpage Response Times(s)				
Step Name	Atlanta, US - VZN	Chicago, US - Comcast	Los Angeles, US - AT&T	
01.Sign In	4.60	5.20	13.92	
02.Overview	9.97	9.52	19.90	
03.Smartphones Gridwall	10.45	9.27	25.18	
04.Phone Details	13.33	13.28	26.68	
05.MDN Selection	28.43	28.76	26.63	
06.Accessory Interstitial	13.71	13.50	16.42	
07.Express Checkout - Review	4.93	5.46	7.44	
08.New Number	9.40	10.11	11.11	
09.Device Protection	3.68	4.21	5.69	
10.Plan Selection	13.39	12.61	18.40	
11.Express Checkout - Complete	4.01	3.65	6.63	



# SRE Alerting & Monitoring – High Level Design



# SRE Alerting & Monitoring – High Level Correlation Design



# DB Automation

The image displays three overlapping screenshots of the DB Automation web application interface, showing different stages of the database onboarding and upgrade process.

**Top Screenshot (Application Onboarding):** The browser address bar shows `ar-gz-sit1e.ebiz.verizon.com/sredbautomation/app-onboard`. The page title is "Database Onboarding". The navigation bar includes "Dashboard", "Environment", and "Application Onboarding". The main content area contains several form fields for database configuration:

- \*DB Type: Select
- \*VSAD ID: Select
- \*Data Center: Select
- \*OS Type: Select
- \*DB Role: Select
- \*Grid Version: Select
- \*Location: Select
- \*OS Version: Select
- \*RDBMS: Select

**Middle Screenshot (Dashboard):** The browser address bar shows `ar-gz-sit1e.ebiz.verizon.com/sredbautomation/`. The page title is "Dashboard". The navigation bar includes "Dashboard", "Environment", and "Application Onboarding". The main content area contains a "Filter & Sort" section with the following fields:

- VSAD ID: Select
- Datacenter: Select
- Environment: Select
- Database: Select
- Host: Select

**Bottom Screenshot (Upgrade Details):** The browser address bar shows `ar-gz-sit1e.ebiz.verizon.com/sredbautomation/upgrade/Oracle/12.1/0`. The page title is "DB Automation". The navigation bar includes "Dashboard", "Environment", and "Application Onboarding". The main content area contains several form fields for upgrade configuration:

- p33829718\_121020\_Linux-x86-64.zip
- tpaldinuvd001.ebiz.verizon.com,tpaldinuvd002.ebiz
- \*Binaries Local Path: /oracle/DB/patches
- Change Number: Select
- Software file name: https://oneartifactoryprod.verizon.com/artifactory/IN
- Response file name: https://oneartifactoryprod.verizon.com/artifactory/IN
- \*OS Platform: Linux
- \*Grid Current Home: /oragrid/crs/12.1.0.2/grid
- \*RDBMS Current Home: /oracle/app/product/12.1.0.2/dbhome\_1
- \*GRID Current Version: 12.1
- \*RDBMS Current Version: 12.1
- \*Schedule Date & Time: 12/13/2022 01:11 PM
- \*Upgrade Options: Upgrade

The bottom screenshot also shows a "Scheduling Details" section with a table of upgrade records:

Upgrade Name	Version	Prod
EFFV RSS8PRD & 10.03	Prod	SACRAMENTO
EFFV RSS8PRD & 19.15	Prod	SACRAMENTO

At the bottom of the upgrade details section, there are three buttons: "Schedule Upgrade", "Upgrade Now", and "Cancel".

# SRE Tracks – Key Features & Values Delivery

## Dashboards / Synthetic Monitoring

UX Design  
(SLI/SLO Dashboards & Reports)

Data Collectors  
(Catchpoint, Headspin, Sikuli Scripts)

Desktop Channel  
(Sales, Service & Troubleshooting Flows)

Mobile Channel  
(iOS & Android Sales & Services Flows)

Assisted Care  
(Sikuli Scripts | WFH Setup using Citrix)

Retail Store  
(5 Stores, Scripts on iPad device)

Metrics & Reports  
(API Drilldown, Lighthouse Metrics & Reliability reports)

Visibility of CX reliability SLI/SLOs | Monitoring & troubleshooting outliers | Web page performance against defined web vitals

## Alerting & Monitoring

Data Ingestion  
(Data Source, Metrics Threshold & Query Interval Configurations)

Systems Inventory  
(Metadata & Discovery | Dependency Tree)

Alert Correlation  
(Erratic Patterns, RCA & Incident Creation)

Notifications  
(Notification Rules & Escalation procedures)

Action Engine  
(Action Playbook & Execution Scripts for Auto resolution)

Visual Dashboard  
(Incident Mgmt. Dashboards, Incident & Alert Details)

Human toil reduction by reducing alert noise | Correlate alert data from multiple data sources to identify root cause faster | Auto Resolution & Self-Healing | Reduce outages

## CI / CD

Unified Pipeline  
(Branching Strategy, Common pipelines for Hybrid Deployment)

DevOps  
(Framework for Automatic Build, Test & Deploy)

Tools & Standards  
(Developer self-serve tools to build & deploy Containerized apps)

Environment Mgmt.  
(Env on Demand, Env allocation & rotations)

Release Mgmt.  
(Release milestone, status & progress)

Dashboards  
(CI/CD pipeline portal and dashboards)

Self-Service  
(RBAC enabled access for experimenting using Canary Deployments)

Common standardized & configurable pipelines for hybrid deployment | self-service to application team

## Middleware Automation

AMI Publishing  
(App Developers to choose AMI)

Rehydration Design  
(Parametrized Generic Framework Design)

M/W Rehydration  
(For EKS, Kafka, IBM & Rabbit MQ & more)

M/W Portal  
(Configuration, scheduling & Status Mgmt.)

Cert Mgmt.  
(Cert Centralization, Lifecycle Mgmt. & Automated renewals)

Automated Scripts to deploy, horizontally scale and monitor m/w apps | Increased rehydration frequency for compliance & maintainability

## DB Automation

Oracle DB  
(Automated Patching & upgrades of Oracle RAC, Grids & DB)

Cassandra DB  
(Automated Patching & upgrades)

Couchbase DB  
(Automated Patching & upgrades)

Mongo DB  
(Automated Patching & upgrades)

Influx DB  
(Automated Patching & upgrades)

DB Portal  
(Configuration, scheduling & Status Mgmt.)

Automated DB patching & upgrades

## Cloud FinOps

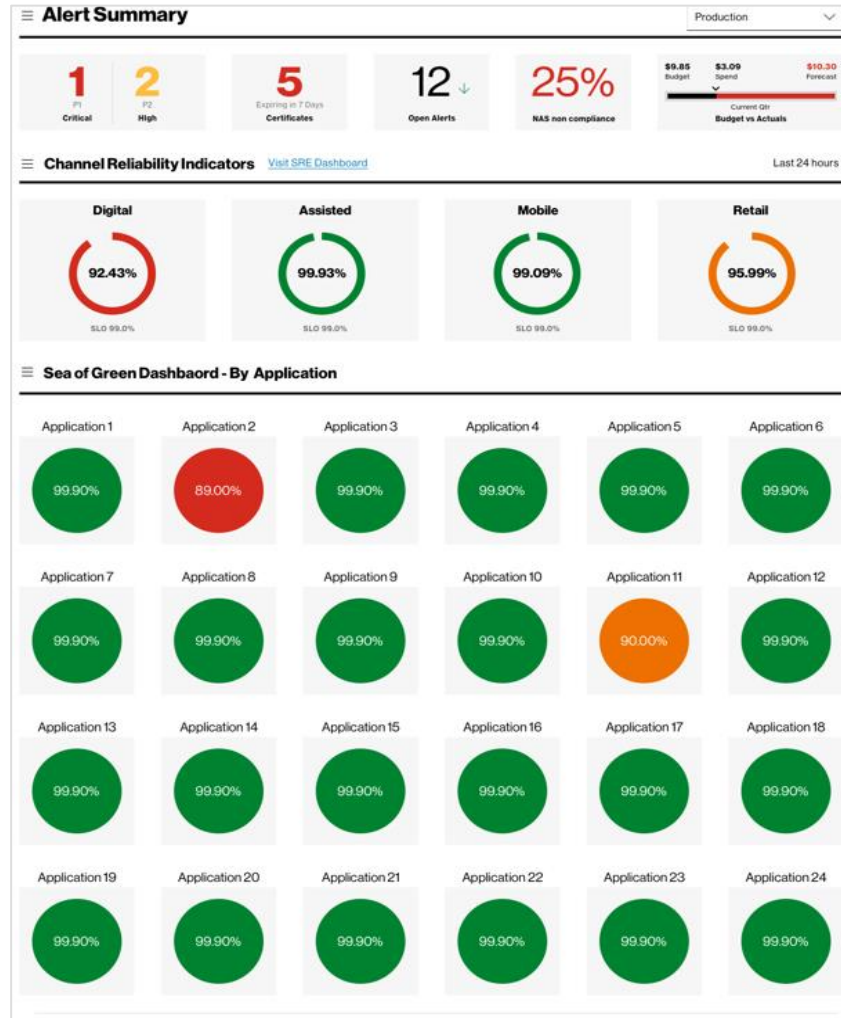
Cost Efficiency  
(Recommendations & Optimization of Public Cloud Assets)

Capacity Mgmt.  
(Right sizing, Resource utilization measure, Budget Alerts)

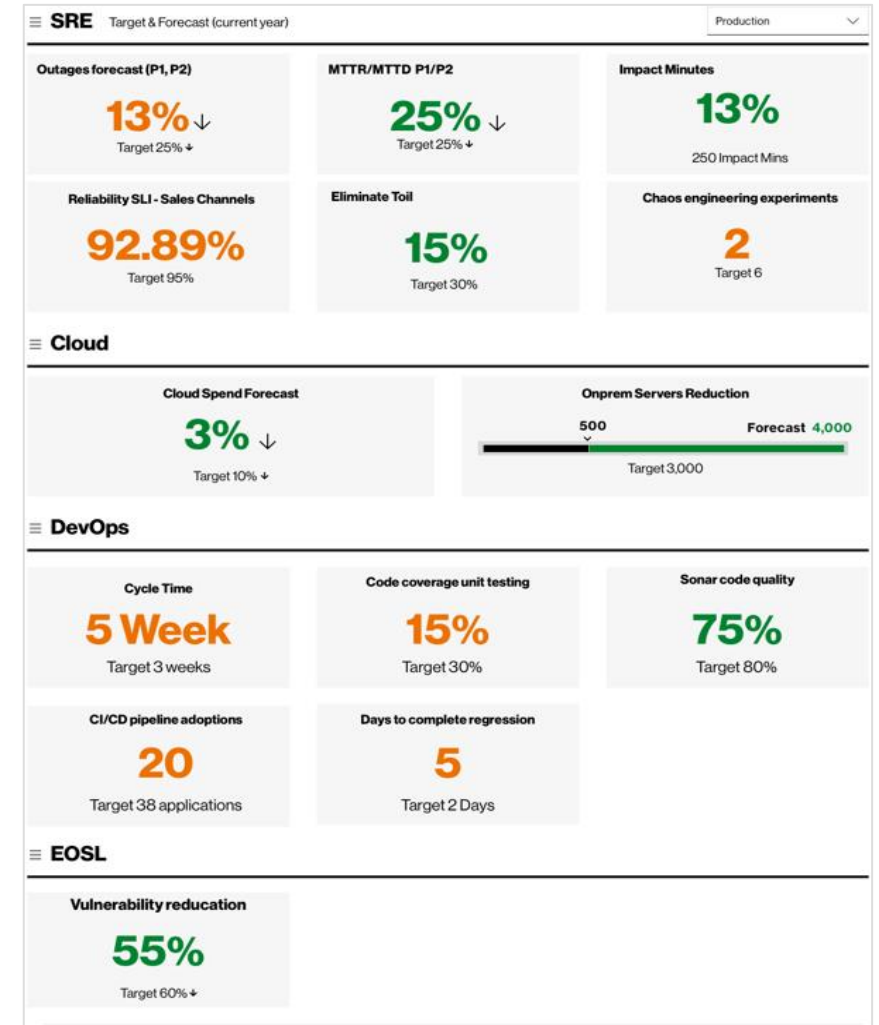
FinOps Dashboards  
(Cost, Budget, Compliance & Governance Reports)

# Site Reliability Engineering – Observability Dashboards

## Operations Dashboard



## Executive Dashboard







# Thank You

For Enquiries please contact:

Name

Client Partner

Mobile: XXX XXX XXX

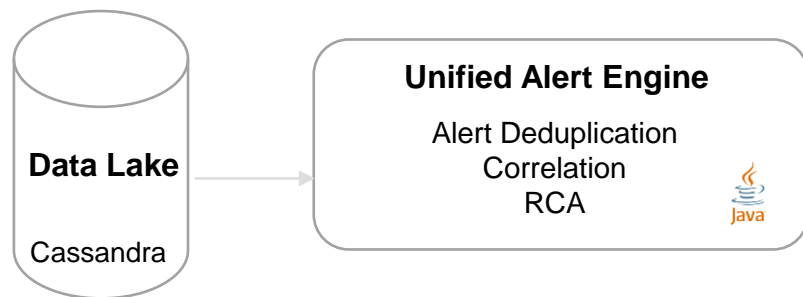
Email: XXX.XXXXXX@TechMahindra.com

[www.techmahindra.com](http://www.techmahindra.com)

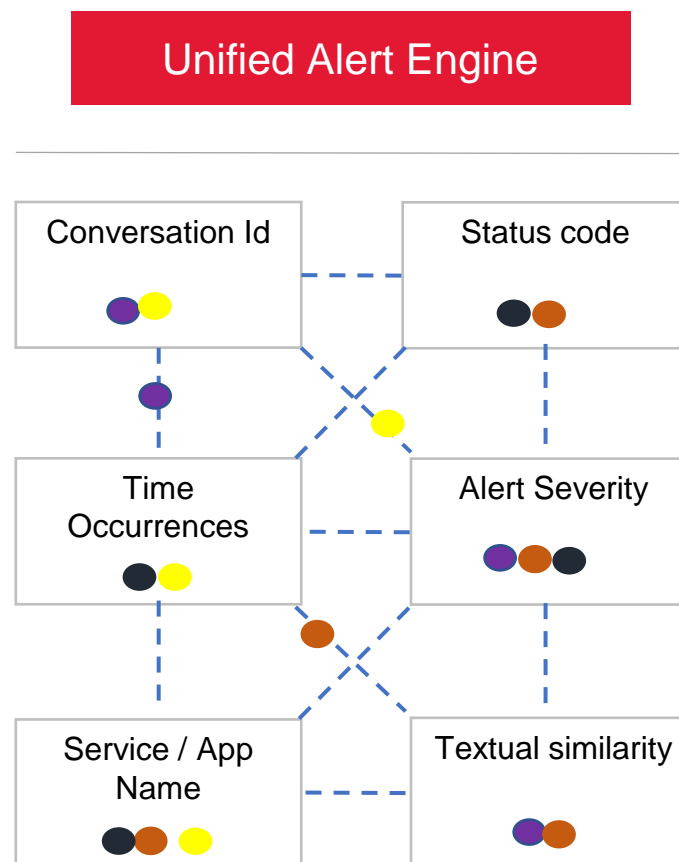
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# SRE Alerting & Monitoring – High Level Correlation Design



- Scheduler
- Query services running in scheduler every 5 mins for last 10 mins
- Alerts which got pickup by previous query that will skip and new alert data (which got delayed by source) will pickup
- Alert Aggregation / deduplication by comparing with open events and Similar event in last 6 mins
- Correlate alerts according to timestamps and variables identification
- CMDB lookup and Dependency tree lookup



Alert engine aggregate / co-relate events  
and route data through rule base  
algorithm



Generated events are  
manageable clusters of  
correlated alerts that investigate  
by end users

# SRE Alerting & Monitoring – High Level Correlation Design

The screenshot shows the Hawkeye Configuration page with the 'Data Source' tab selected. The page has a dark header with the Hawkeye logo, 'Dashboard' and 'Configuration' tabs, a search icon, and a 'Sign Out' button. Below the header, the 'Configuration' section is titled, and the 'Data Source' tab is active. A search bar prompts the user to 'Choose a data source type' and 'Search by name or type'. Under 'Available Datasources', there are two options: 'New Relic' with a 'Select' button and 'Elastic Search' with a 'LEARN MORE' link. The Windows taskbar is visible at the bottom.

This screenshot shows the 'Configured Query List' section of the Hawkeye Configuration page. It includes a 'Sampling Interval (In Mins)' dropdown menu set to 'Select'. Below this are 'Test', 'Add', and 'Reset' buttons. The 'Configured Query List' table contains one entry:

Query Name	Datasource Name	ES Index Name	Query	Metric Name	Application Name	Sampling Interval (In Mins)	Action
component_config_demo	new relic	NA	SELECT percentile(duration, 99) *1000 as '99th_percentile' FROM Transaction...	NA	NA	2	

At the bottom of the table, there is a pagination control showing '20' items per page and a page number '1'.





# Your SRE Transformation Partner - TechM

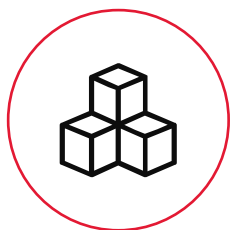
**Vision** – Driving next-gen Customer Experience by leveraging the power of SRE, to deliver business outcomes



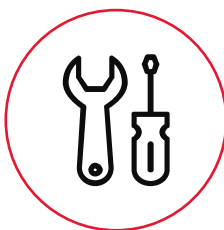
Hyper-Specialized Tier

Partner Of The Year 2019 and 2020  
Amongst 100+ Partners.

Developed Terraform Provider for  
Azure Stack.



**Industry Leading**



**Value-Adds**

**Accelerators/IPs as Code  
Base**

**AIOps Platform Setup &  
Hardening**



**Readiness**

**Ready Resource Pool –  
Day 1 Kick-off**

**Multi-Skilled Resource  
Mix – Architects, Data  
Scientist/Engg.,  
Automation Engg., etc.**



**24x7 Coverage**

**Geo Spread Teams**

**Multi Shore delivery  
model**