

SAMSUNG SDS

Realize your vision

Techtonic 2019

Partner



Foresee

Disrupt

2019.11.14 • SAMSUNG SDS Tower B1F
{ Magellan Hall / Pascal Hall }

Track 2 | Main

SRE (Site Reliability Engineering) 실전 적용

- e커머스, RCS Chatbot 서비스

김미숙 프로 (MC실행그룹) / 삼성SDS

김선학 프로 (Cloud Team) / 삼성전자

AGENDA

1. SRE 소개
2. SRE 적용 사례
 - 1) e커머스 서비스
 - 2) RCS Chatbot 서비스
3. Demo

1

SRE 소개

SRE 개요

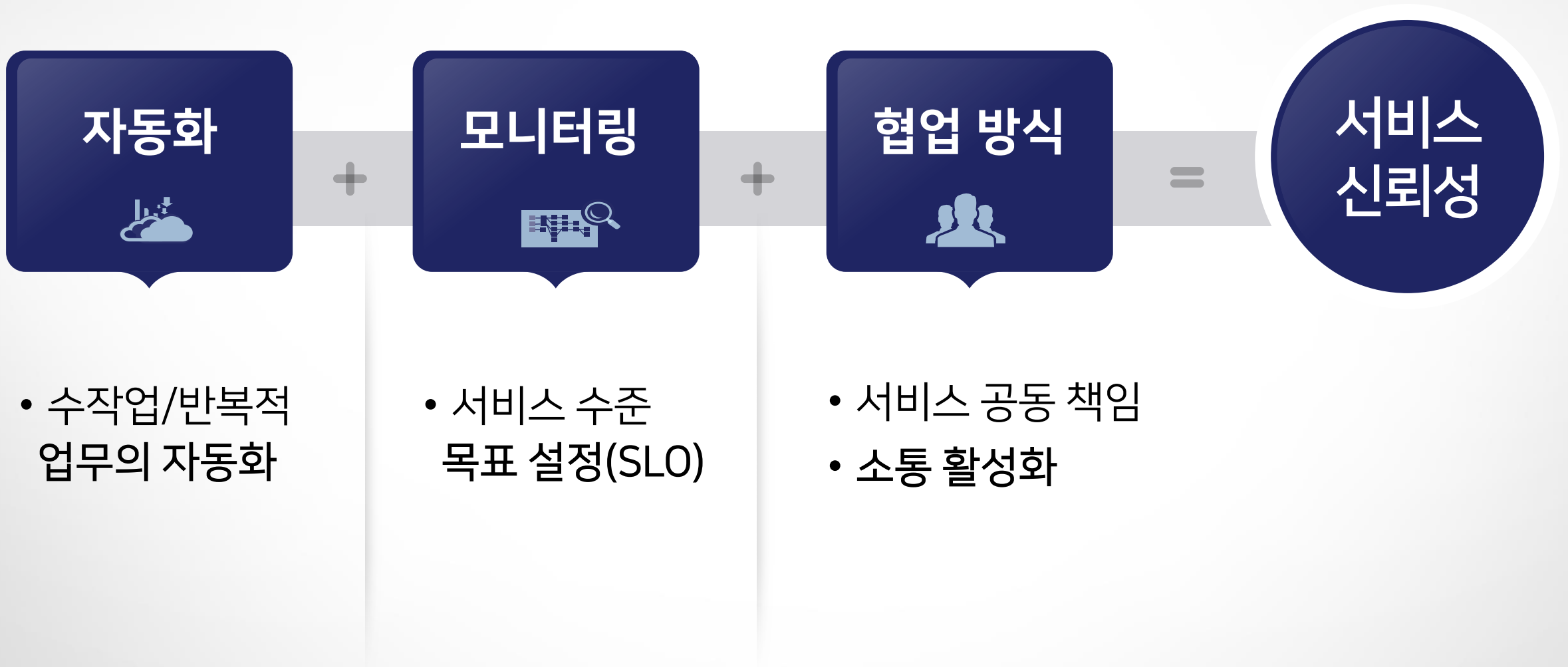
SRE란?

- Site Reliability Engineering
- 사이트(서비스)의 신뢰성을 높이는 공학

SRE 목표

- 소프트웨어로 서비스의 신뢰성과 확장성 구현

SRE 역할



2

SRE 적용사례

- e커머스 글로벌 확산

e커머스 서비스

빠르게 변화하는 리테일 시장 대응을 위해 신속한 서비스 확산과 안정적인 서비스 제공 필요



고객이 원하는 것은..

e커머스 서비스의 신속한 글로벌 확산 및 안정적인 서비스 운영 요구



기존 권역 및 국가 확산
11주 소요 ↑
(인도 권역, 1개 국가 기준)



서비스 분석 및 처리 어려움 ↑



신속한 대응 미흡

SRE를 통한 개선 방향 도출

신속하고 안정적인 e커머스 서비스의 글로벌 확산을 위해 SRE 체계 적용 제안

자동화



모니터링



협업 방식



인프라, S/W, App.
배포 자동화

오픈소스 기반의
모니터링 체계 구축

협업 툴을 활용한
소통 활성화

솔루션 1. 자동화

Solution 1. 자동화

반복적으로 수행했던 수작업들을 선별하여 인프라, S/W 및 App. 배포 자동화 구현

개선 대상

인프라 및
S/W 배포

인프라 관리 AWS 콘솔 수작업
S/W구성 자동화 스크립트 불일치

애플리케이션
배포

서비스를 환경별 수동 배포
국가별 서비스 설정정보 관리
어려움

자동화 방향 및 효과

인프라 및 S/W 구성 자동 배포

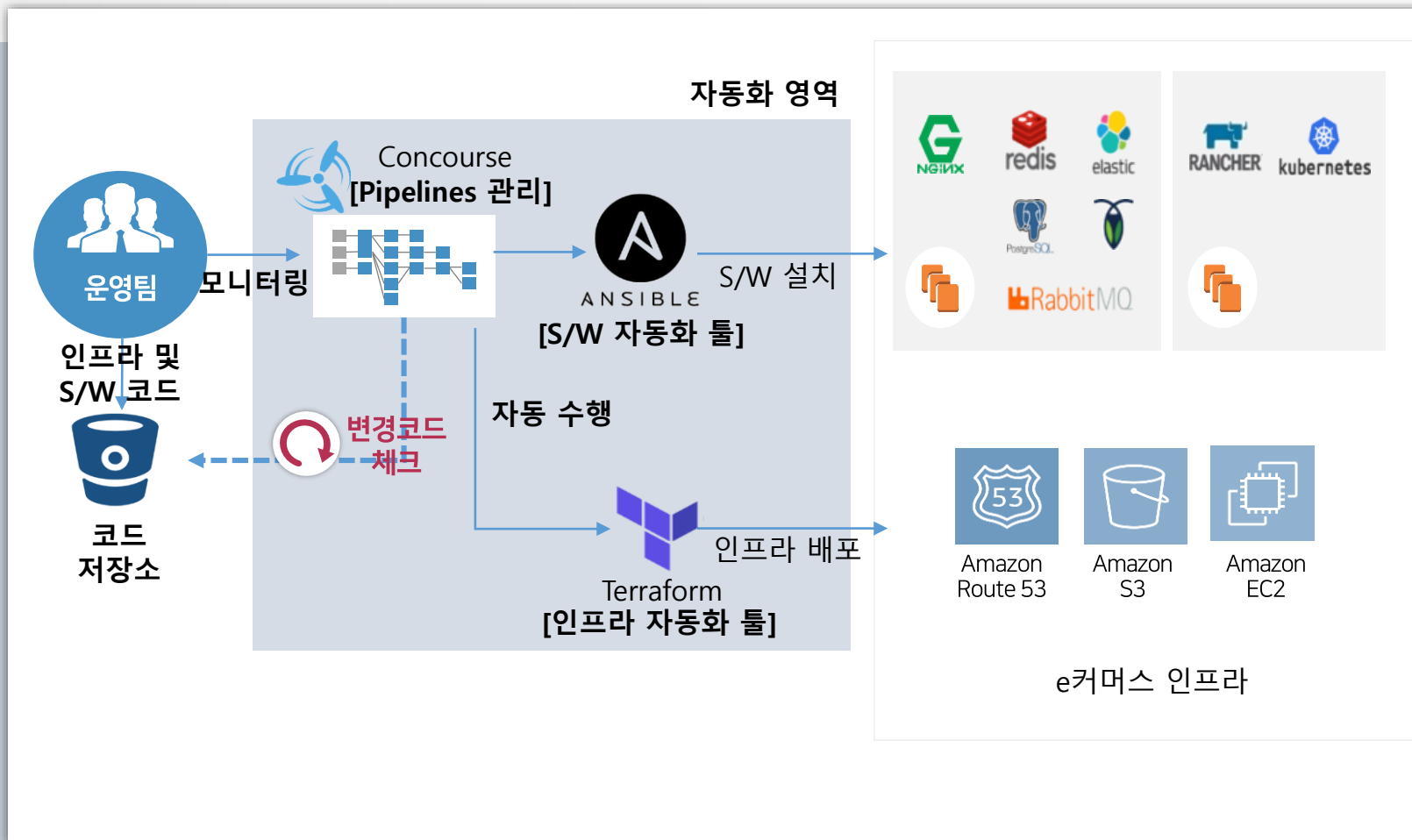
인프라 관리 : Terraform
S/W 설치 구성 : Ansible
파이프라인 구성 : Concourse

애플리케이션 배포 고도화

Appl. 빌드/설정/배포/테스트 자동화
Database 변경 자동화

Solution 1. 자동화 - ① 인프라 및 S/W 자동 배포

인프라 및 S/W 배포를 코드화 하고, 파이프라인 자동화로 신규 권역 구성 기간 단축



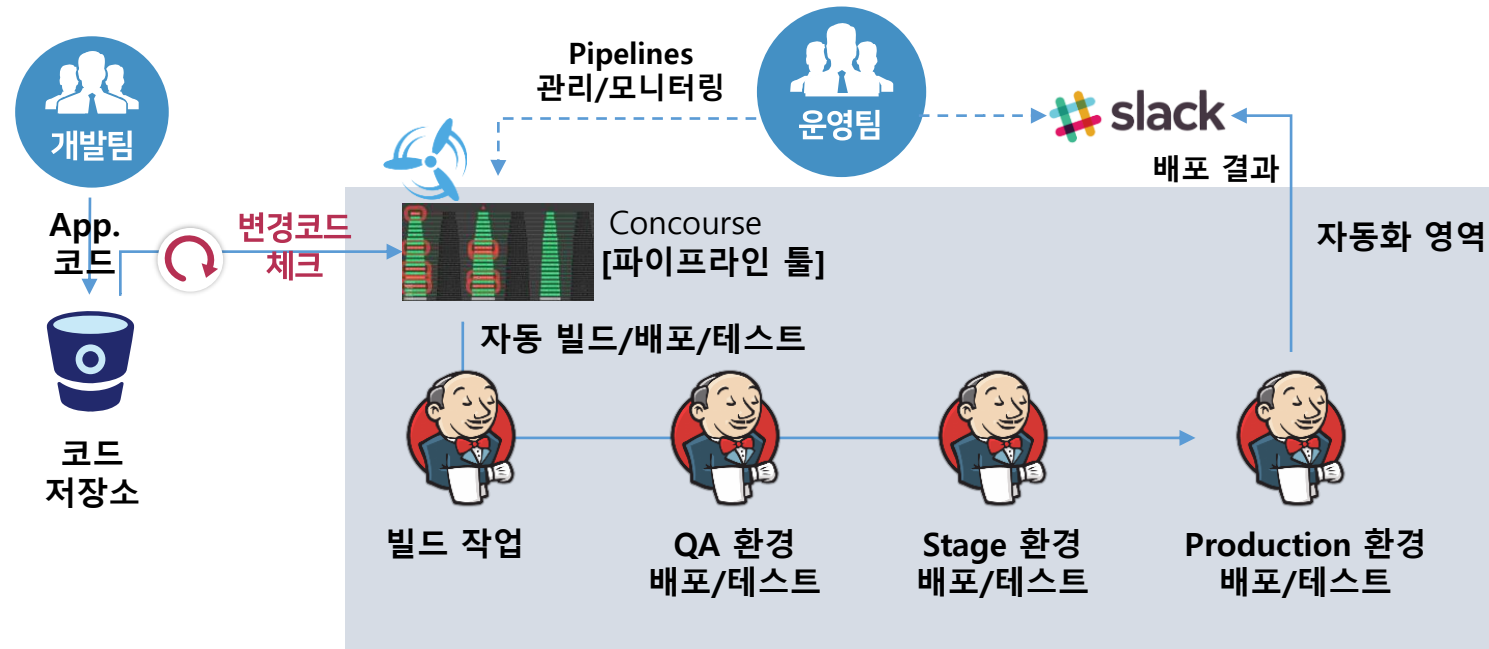
➤ 개선 활동

- 인프라 구성 및 S/W 설치 코드화
- 자동 배포를 위한 파이프라인 구성

신규 권역 구성기간
72% 단축 (7주 → 2주)

Solution 1. 자동화 - ② 애플리케이션 배포 고도화

애플리케이션 배포 과정의 환경 별 빌드/배포/테스트 자동화 적용으로 신규 국가 구성 기간 단축



➤ 개선 활동

- App. 빌드/배포/테스트 자동화
- App. 설정 구성 자동화
- DB 변경 자동화

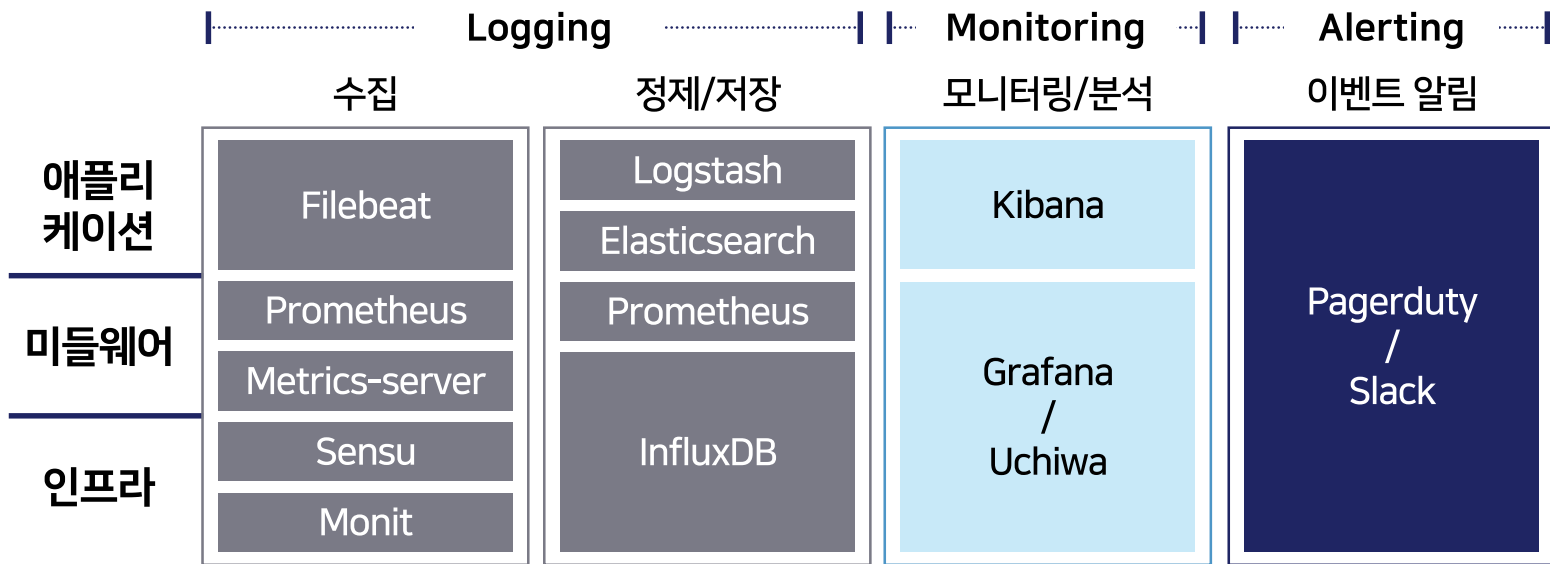
신규 국가 구성기간
75% 단축 (4주 → 1주)

솔루션2. 모니터링 체계 구축

Solution 2. 모니터링 체계 구축

전 영역 오픈소스 기반 모니터링 체계 구축 및 모니터링 구성 자동화 적용

✓ 오픈소스 기반 모니터링 체계



✓ 모니터링 구성 자동화

추가 리소스 식별 ▶ 모니터링 자동 구성 ▶ 서비스 지속성 관리

➤ 오픈소스 기반 모니터링 체계 적용

- 영역별 최적 모니터링 솔루션
- 동일 모니터링 환경 제공
- 모니터링 환경 구성 자동화

➤ 서비스 지속성 관리

- 서비스 수준 목표(SLI/SLO) 측정
- 서비스 목표 수준에 도달 못할 시 담당자 자동 배정 및 이벤트 알림

솔루션3. 협업 방식 개선

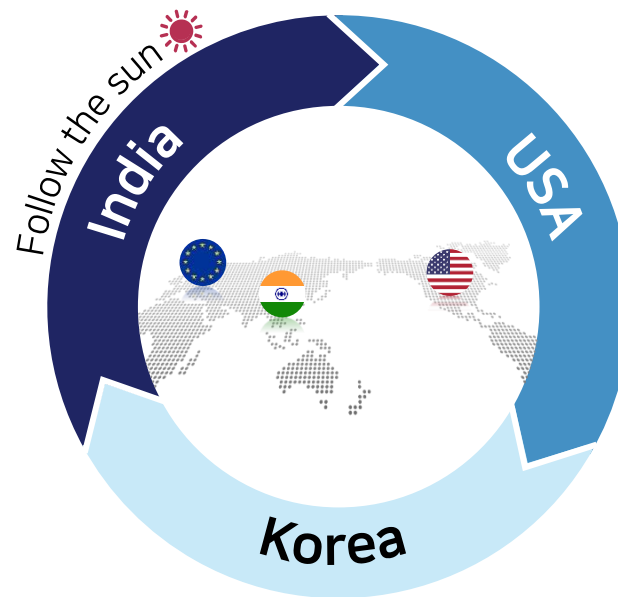
Solution 3. 협업 방식 개선

글로벌 협업도구를 활용한 신속한 대응 및 글로벌 통합 협업 체계 구현

협업 도구



24x7 글로벌 통합 운영



› 신속한 대응 체계

- 글로벌 협업도구 활용
 - Jira, Slack, Confluence
- 담당자별 R&R 기반 이벤트 처리
 - Slack, Pagerduty

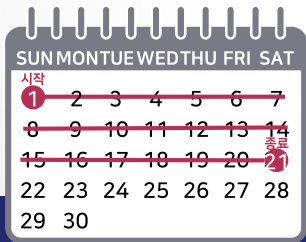
› 24x7 글로벌 통합 운영

- 'Follow the sun' 방식 글로벌 운영
 - 한국 → 인도 → 북미
- 단계별 기술지원
 - Tier 1 : SR처리
 - Tier 2 : 구축 및 기술지원
 - Tier 3 : 기술 총괄

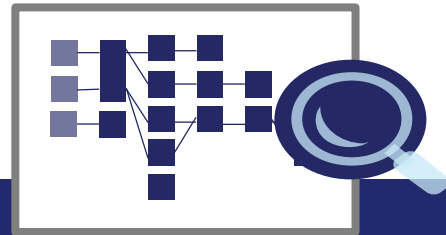
e커머스 SRE 적용 결과

확산 기간 단축

11주 → 3주



서비스 지속성
모니터링

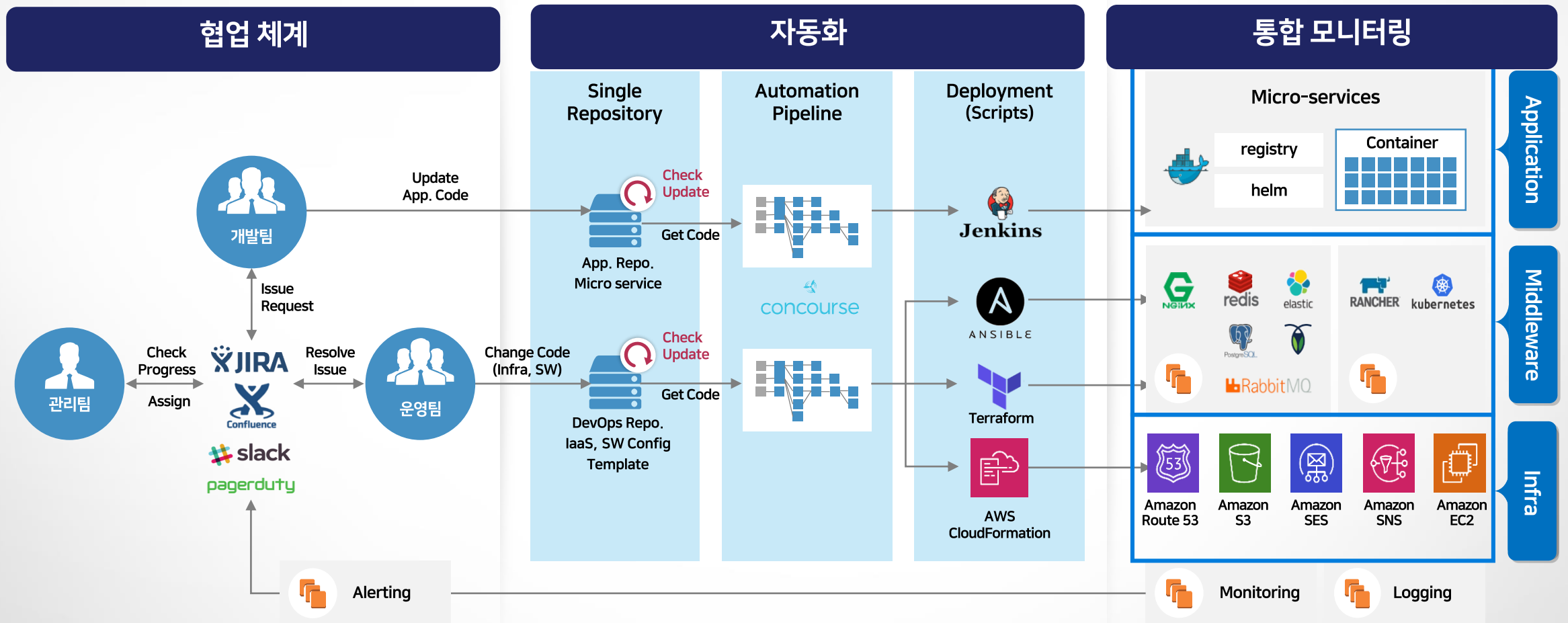


개발팀 요구사항
신속 대응



e커머스 SRE 적용 모델

유럽 권역에 SRE 적용모델이 BP화 되어, 인도/미국 권역에도 동일 모델로 확산 진행 중





역할보다는 역량

**새로운 시도를 지지하고,
실패를 허용하는 문화**



팀웍이 중요!!



2

SRE 적용사례

RCS Chatbot 개발자 워크스페이스

Who am I?

◆ Staff Engineer at Cloud TEAM, Samsung Electronics (Cloud Ops, S-SRE3 Part)



Seon Hak Kim

김선학 / seonhak.kim@samsung.com

❖ Heroes

최동원 / Dongwon Choi

유현성 / Ashton Hyunsung Yu

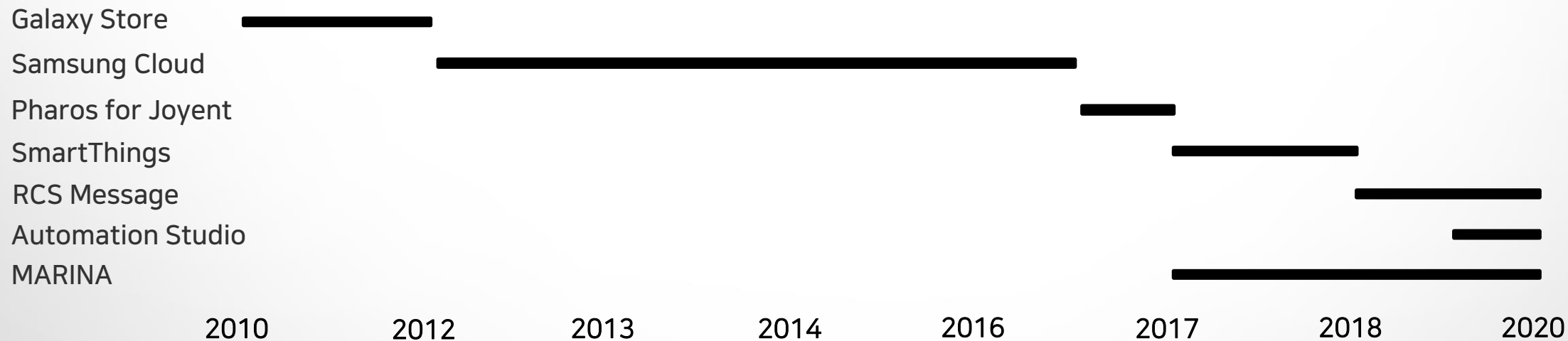
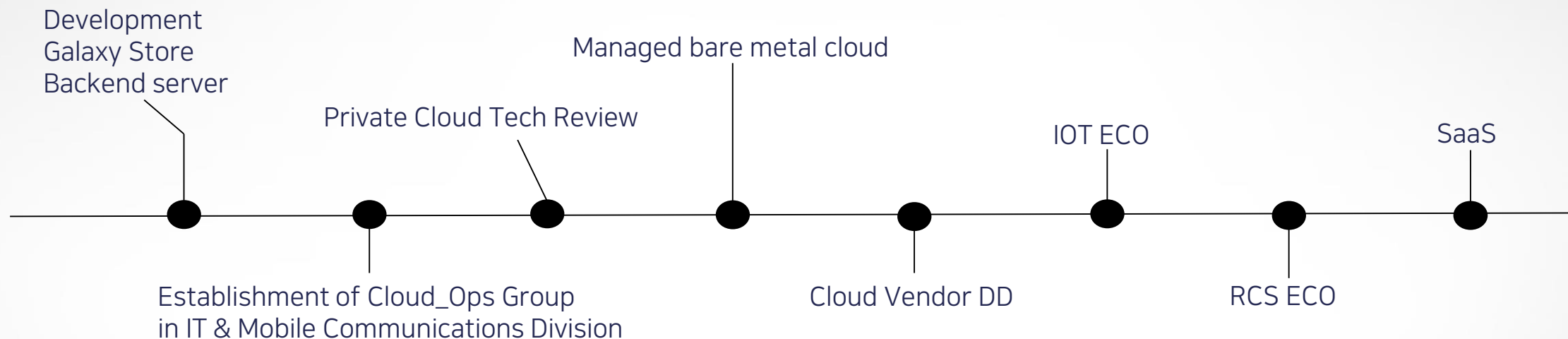
김교탁 / Kyotack Tylor Kim

김대선 / DaeSeon Kim

이진규 / JinKyu Lee

김현석 / Hyeonseok Kim

A brief history of my footprint



Samsung RCS Eco System

Introduction

The key elements

Developer Portal, Workspace

Discovery

High Level Architecture

High Level Service Diagram

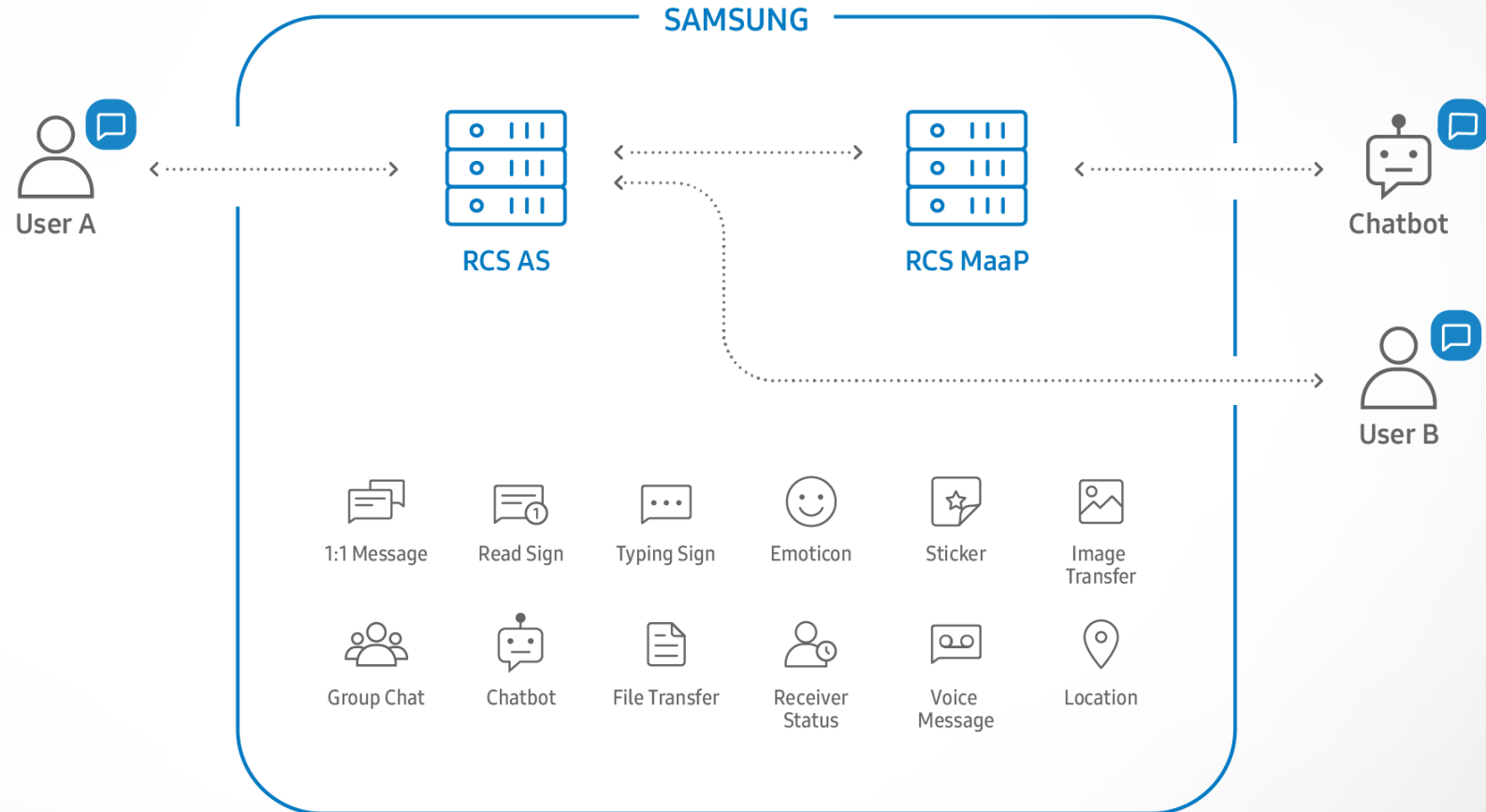
Samsung RCS Introduction

- Samsung is committed to Rich Communication Services (RCS) and is a market leader in its technical implementation of the entire RCS infrastructure. As such, we are poised to be the market leader in RCS providers worldwide.
- Samsung, with its market share of devices as well as relationships with Mobile Network Operators (MNOs) around the globe, is prepared to provide you access to your customers through RCS Chatbot, available as part of Samsung RCS Messaging as a Platform (MaaP).

Samsung RCS key elements

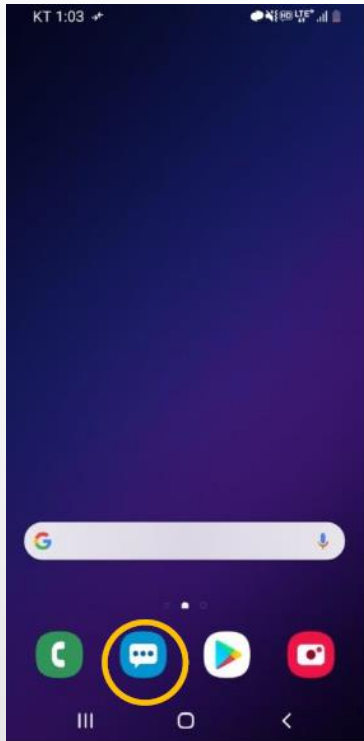
● Elements

- 1:1 Message
- Read Sign
- Typing Sign
- Emoticon
- Sticker
- Image Transfer
- Group Chat
- **Chatbot**
- File Transfer
- Receiver Status
- Voice Message
- Location

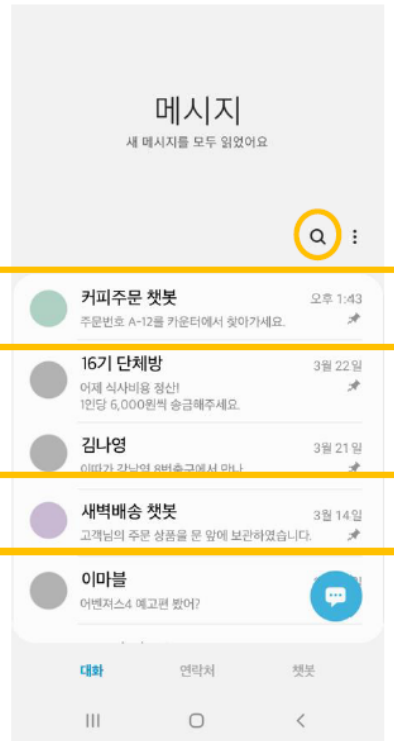


Samsung RCS Chatbot Discovery

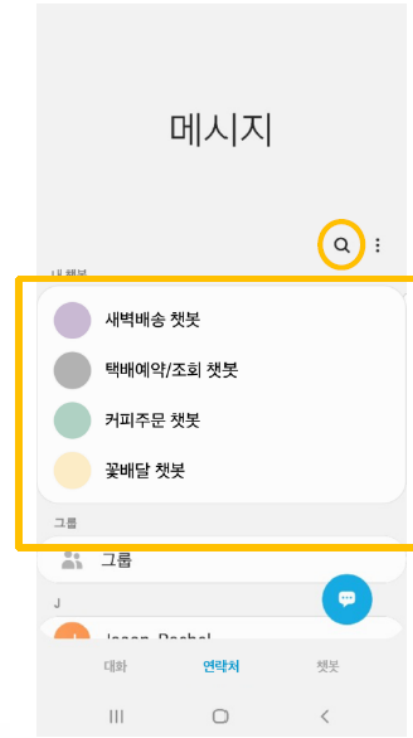
Focus Native Message App



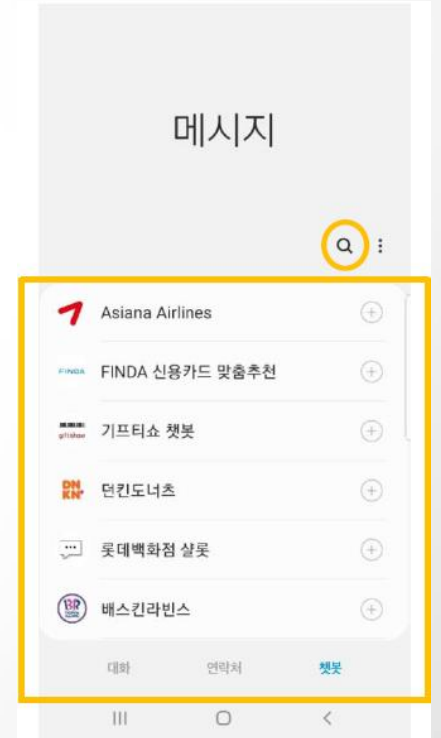
conversation



contacts



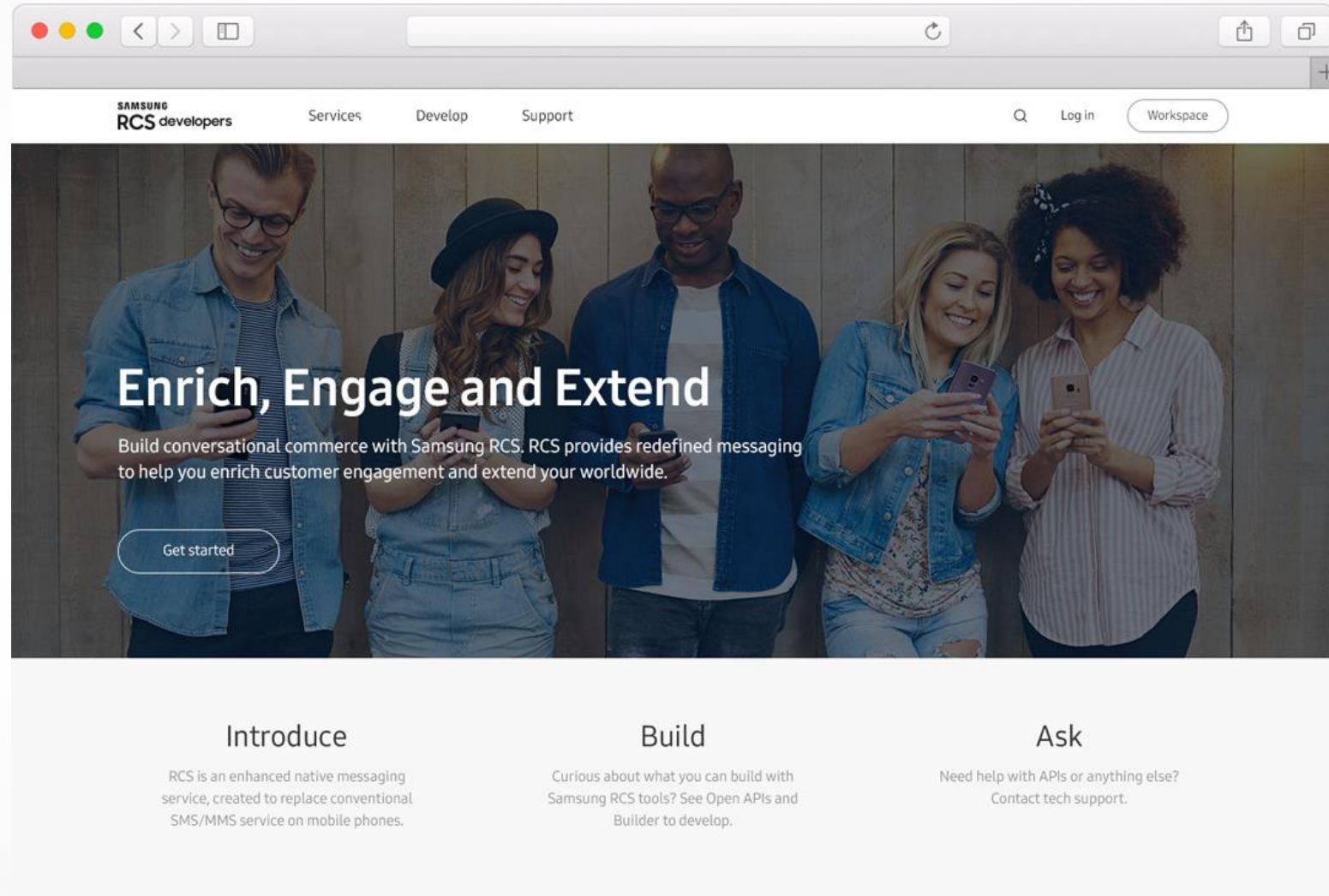
chatbot



Samsung RCS Chatbot Developer Tools

- Portal

- Tech Doc
- Support
- Events
- News



Samsung RCS Chatbot Developer Tools

- Workspace

- Emulator
- Builder
- Onboarding
- Setting
- Publish

SAMSUNG
RCS Workspace

Develop Support

Develop
RPATest_20191022

Chatbot configure

Actions

Entities

Intents

Settings

Actions

Custom actions ⓘ

Membership Card Menu Order

Default actions ⓘ

Welcome Fallback Farewell

Test chatbot Debug

Welcome to Kim's Café
Enjoy special coffee during your break!
123 Road, San Jose, CA, USA

Order
Show Menu

Show Menu

Caffè Americano
price is: \$4.0
Order Grande
Order Tall

Caffè L
price is: \$

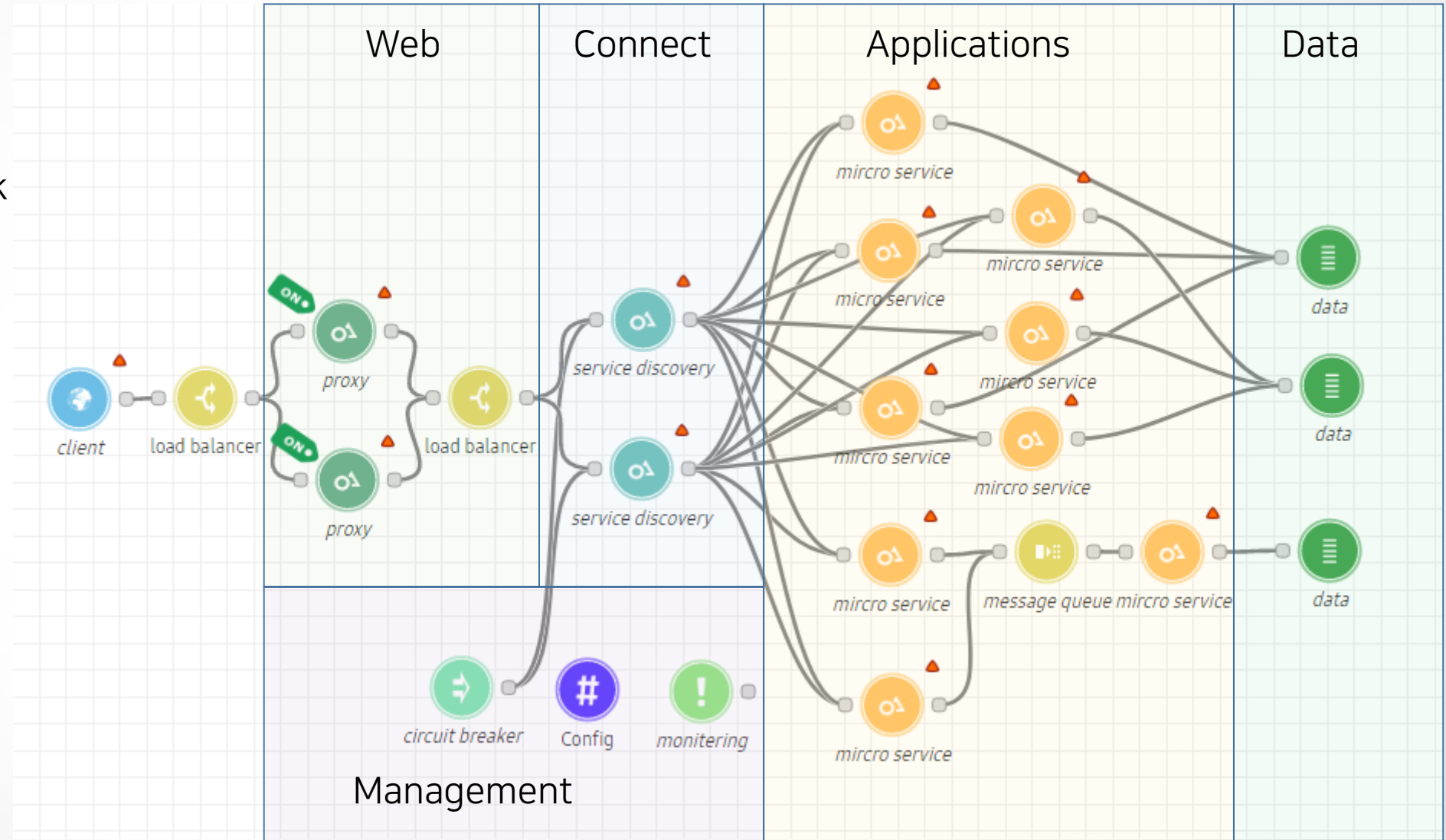
Change to Caffè Latte

Enter a message to chat

High Level Architecture 1.0

- Production

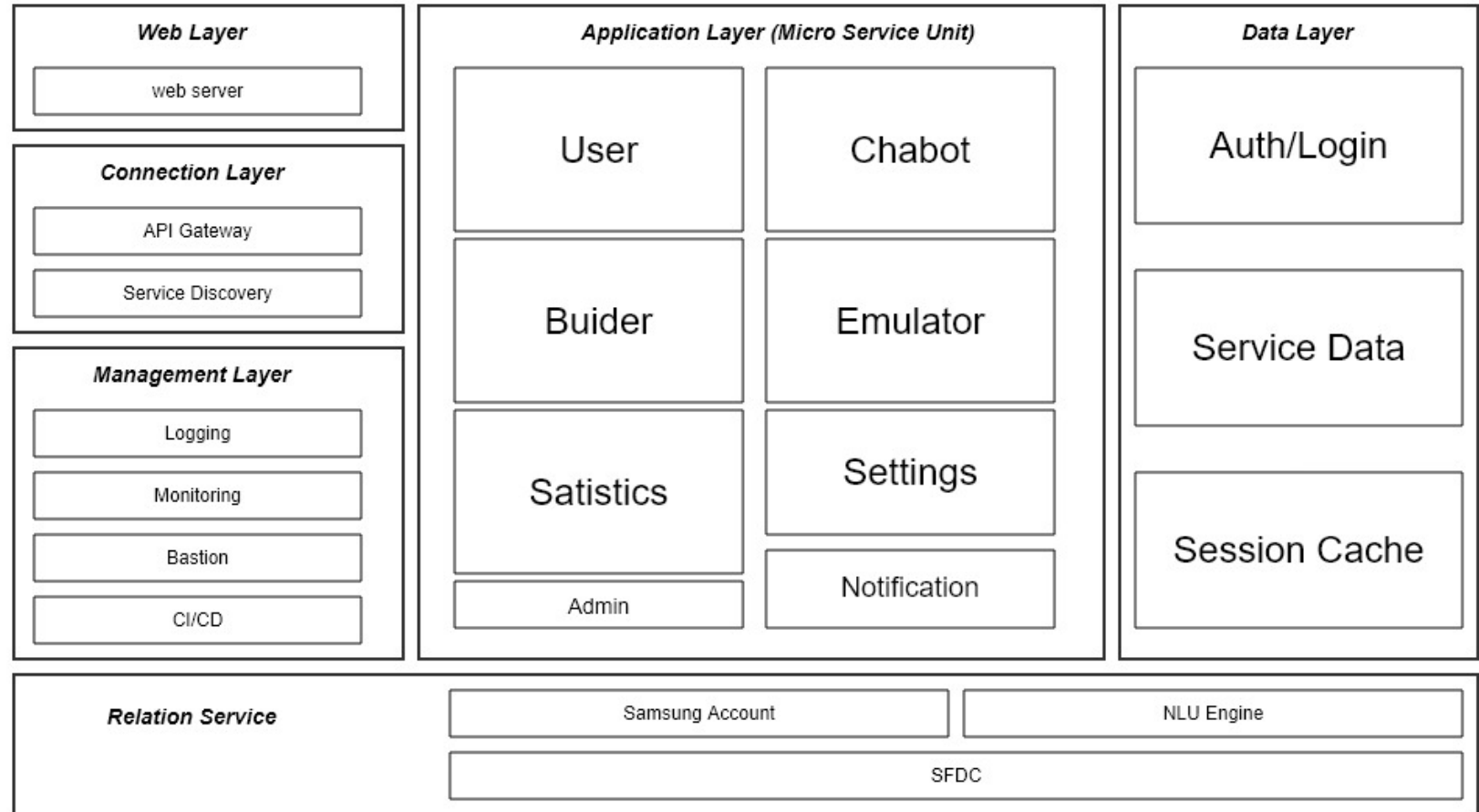
- Netflix OSS Stack
- Cloud Infra Host
- Infra CLI
- Ansible Scripts
- Cache / RDBMS



High Level Service Diagram

- Production

- 6 Logical Layers
- 8 Micro Service Units
- 5 External Back-ends



Requirements form a SRE

Key Qualifications

SLO/SLIs

Centralized Logging

VAELT Dashboard

Escalation policy for SLO

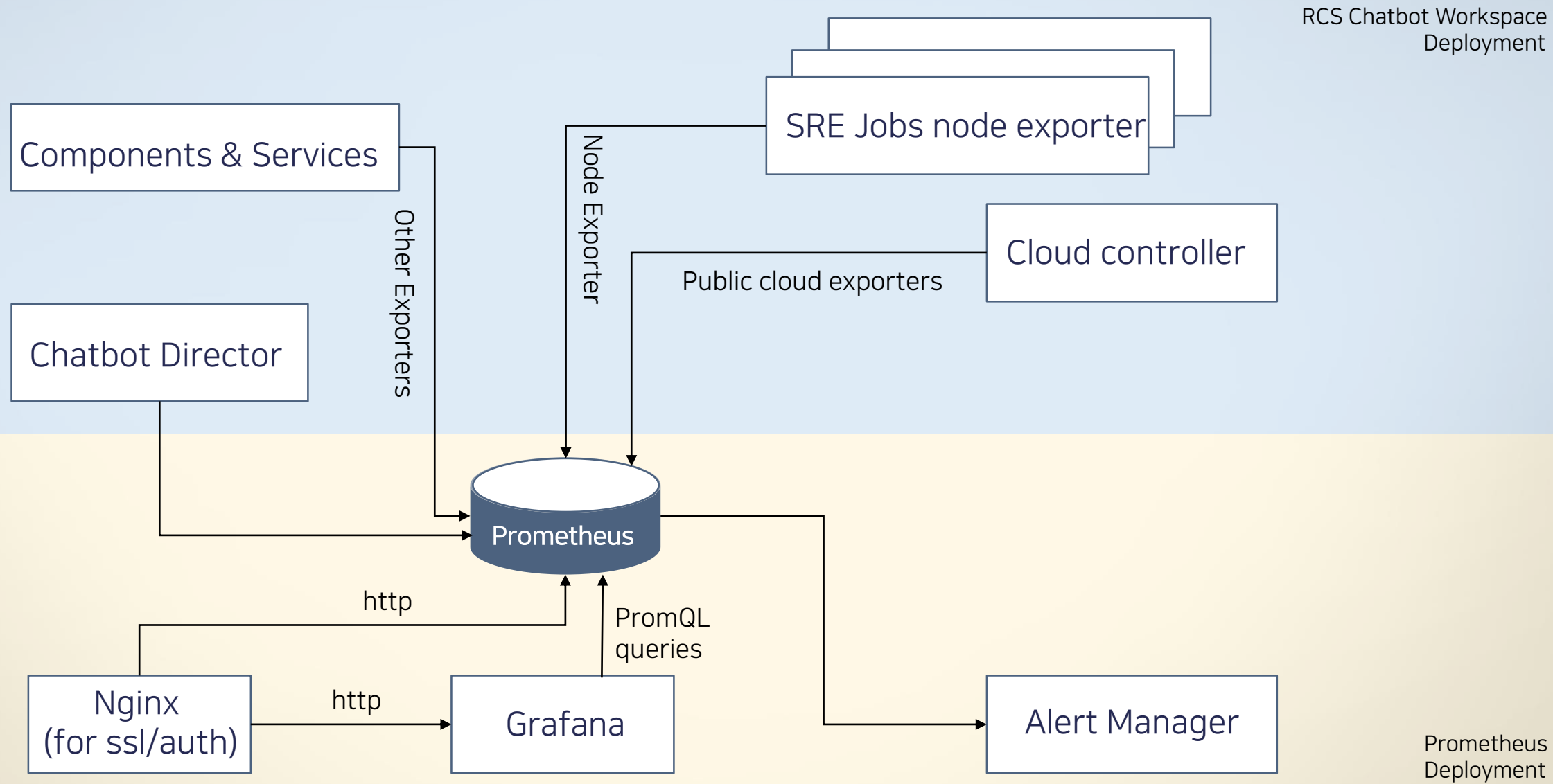
Key Qualifications

- You will champion our SLOs and continuously improve them
- You will participate in an on-call rotation to help maintain the availability of our service so that users always have access to their data
- You will act as a subject-matter expert for critical infrastructure and provide mentorship for the department in those areas
- You have deployed Kubernetes and cloud-native infrastructure and worked with product teams to launch and run microservices in production
- Fully experienced in all aspects of CI/CD
- Proficient with various programming languages such as Python/Java/Ruby/Perl/Go for building automation or integration with APIs
- You have 5 or more years of experience running a large-scale, online web services

SLO / SLI

- SLO : a service level objective
 1. a target value or range of values for a service level that is measured by an SLI
 2. A natural structure for SLOs is thus **SLI \leq target**, or **lower bound \leq SLI \leq upper bound**
- SLI : service level indicators
 1. a carefully defined quantitative measure of some aspect of the level of service that is provided
 2. directly measures a service level of interest, but sometimes only a proxy is available because the desired measure may be hard to obtain or interpret

Centralized Logging

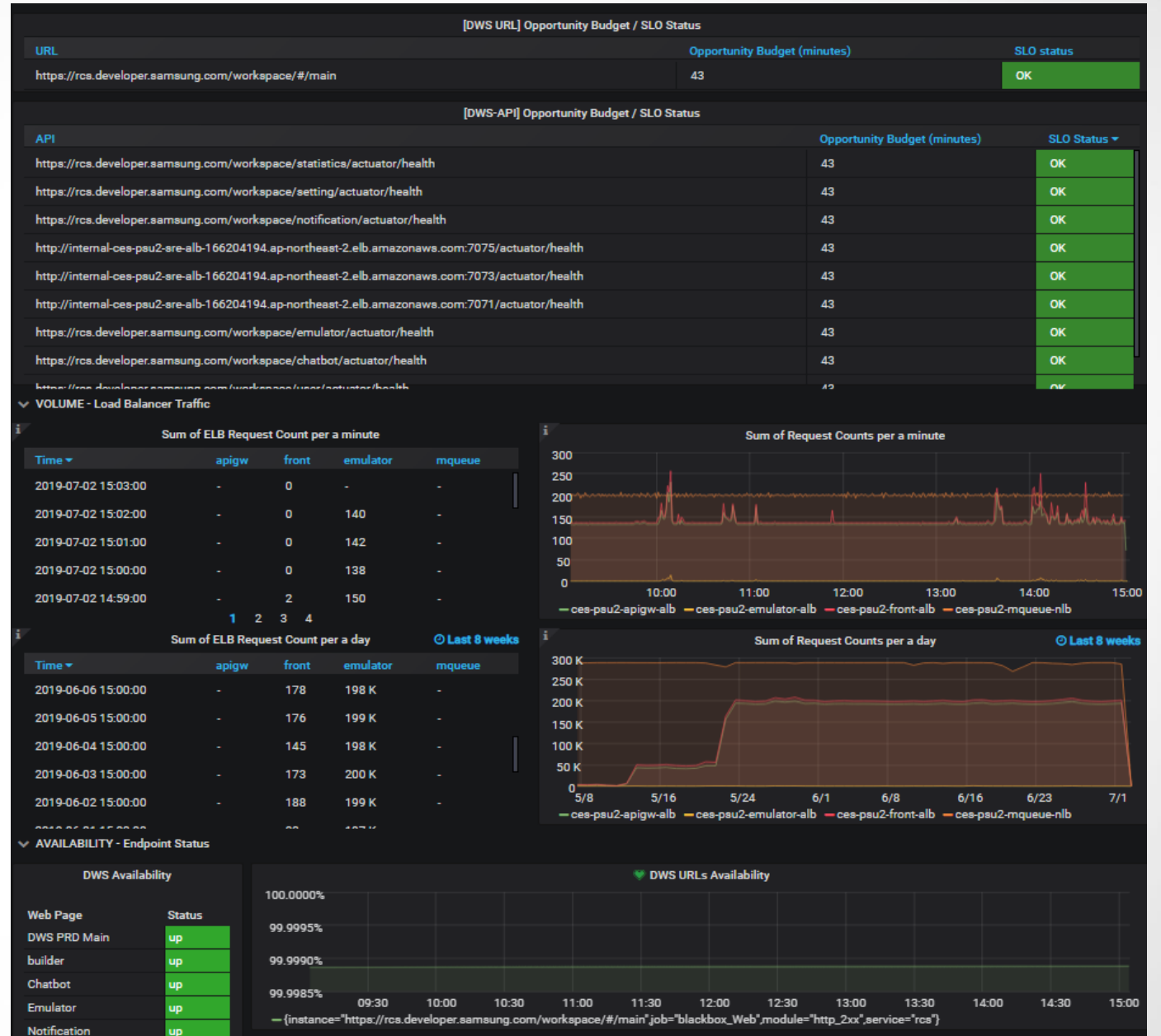


VALET Dashboard

- Volume
- Availability
- Latency
- Errors
- Tickets

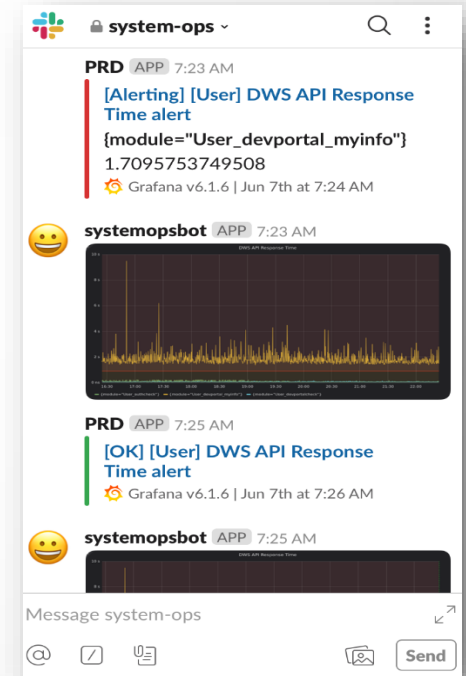
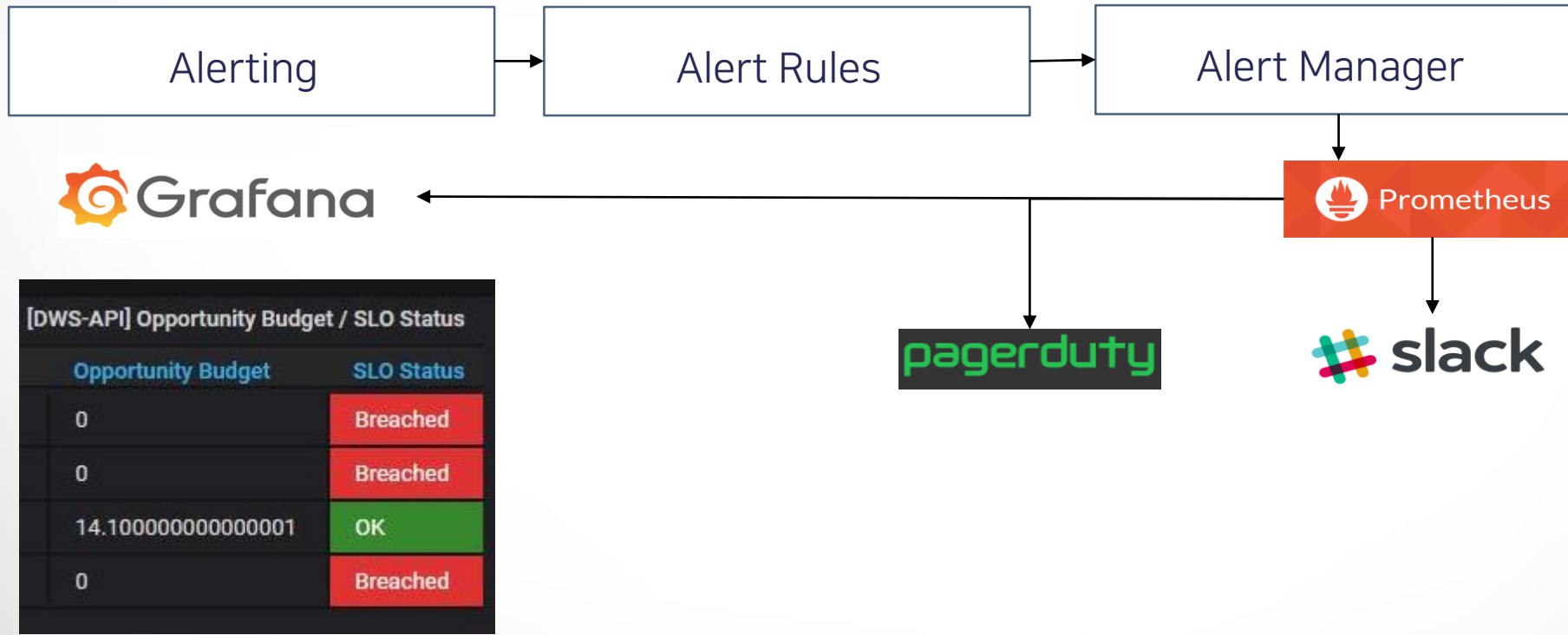
for SLIs/SLOs management

“Failure is normal and reliability is fundamental”



Escalation policy For SLO

- It's structured as a series of thresholds that, when crossed, trigger the redirection of more engineering effort towards addressing an SLO violation



Implements DevOps

Tools / Assets

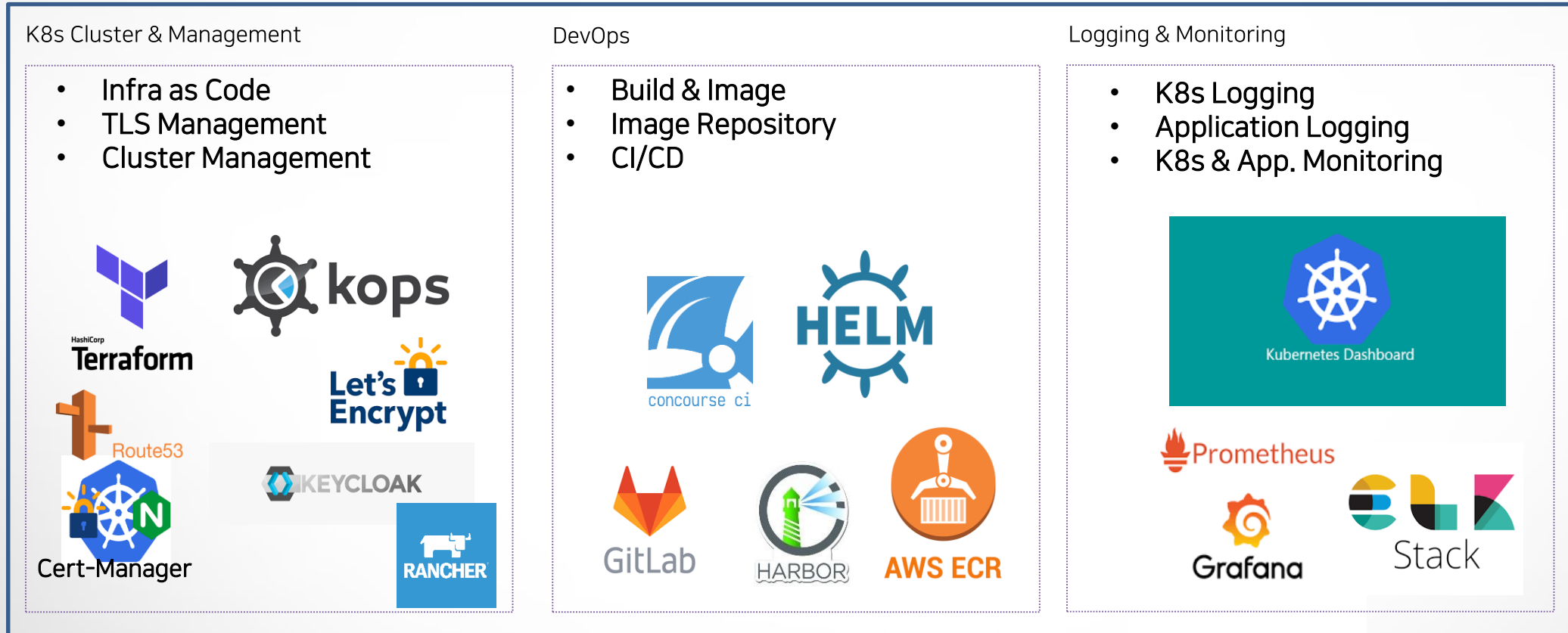
Extreme Automation

QA

Escalation policy for SLO

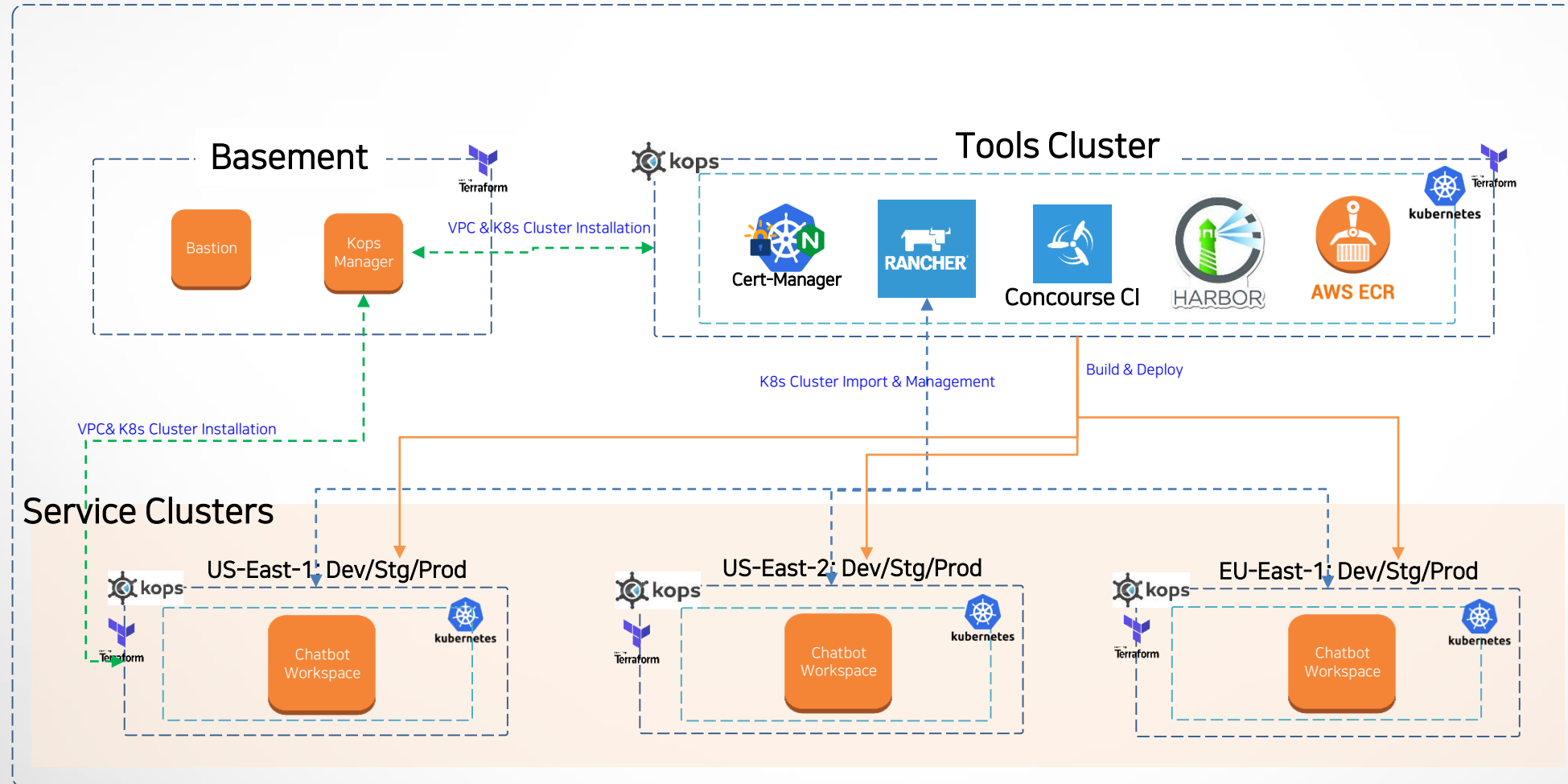
SRE Implements DevOps

- High Level Architecture 2.0 - Tools



SRE Implements DevOps

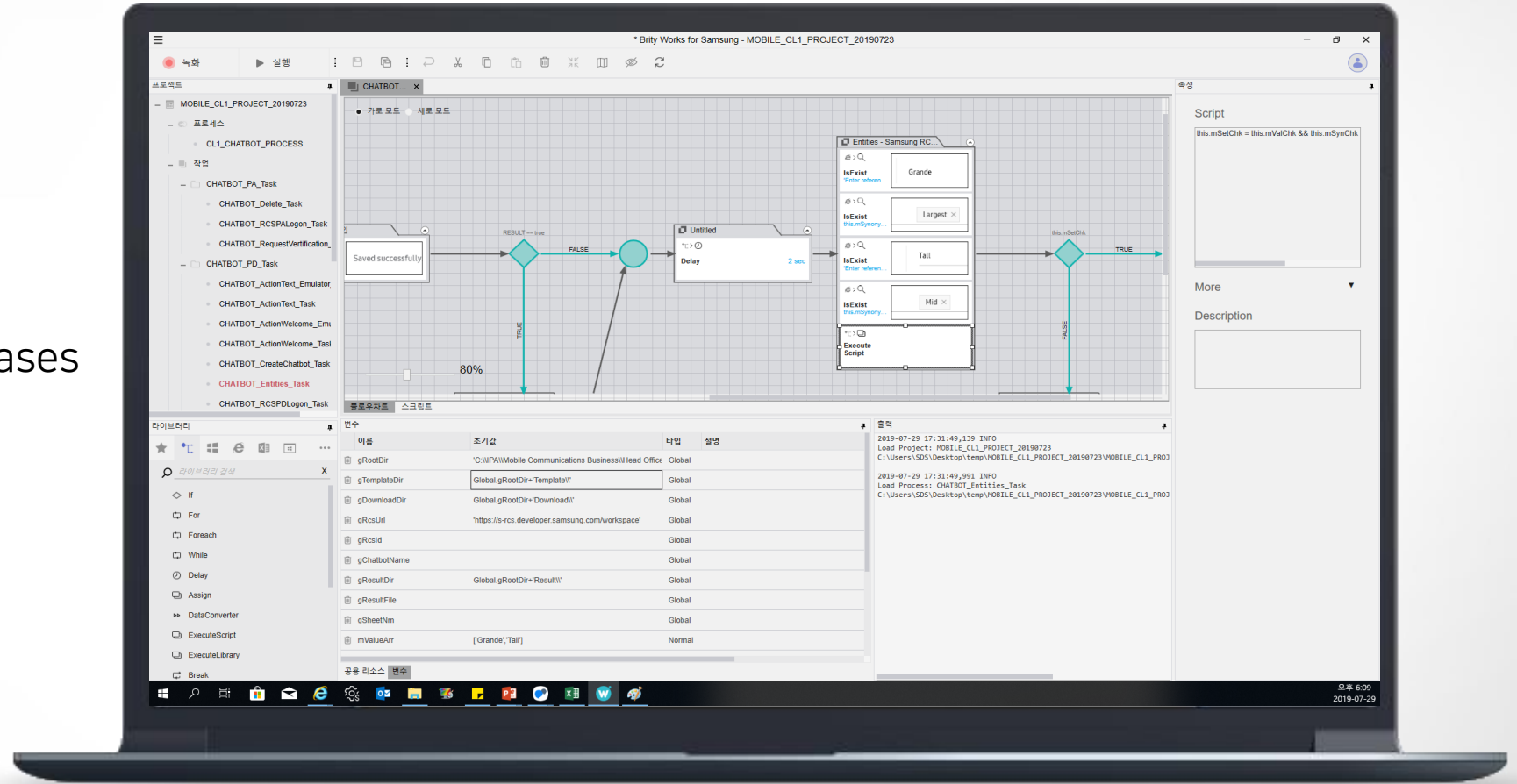
- High Level Architecture 2.0 - Assets



QA Ops

- SDS Brity Works (RPA)
- Run 21 Scenario
- Run twice a day
- Included in the pipeline
- Covers about 600 test cases

- LIME
- Setup 130 Restful APIs
- Included in the pipeline



Automation

- Clear & Extreme Pipeline

The image displays a Concourse CI pipeline dashboard and a detailed pipeline graph. The dashboard at the top shows five pipeline instances: **cws-concourse** (16d 20h), **cws-dev-seoul-auto** (3d 4h), **cws-dev-install** (paused), **cws-docker** (paused), and **cws-infra** (16d 3h). Below the dashboard is a large, complex pipeline graph with a central node **dev.cws-workspace**. The graph shows various build tasks (e.g., **build-common**, **build-user**, **build-zuul**, **build-builder**, **build-chatbot**, **build-setting**, **build-emulator**, **build-statistics**, **build-notification**) and deployment tasks (e.g., **dev.upload-chart**, **dev.install-seoul-cws-k8s**, **dev.upload-elk**, **dev.install-sydney-cws-k8s**, **dev.upload-prometheus**, **dev.install-seoul-cws-elk**, **dev.install-seoul-cws-prometheus**). The graph also includes dependency nodes like **git-common**, **git-front**, **git-config**, **git-eureka**, **git-builder**, **git-chatbot**, **git-setting**, **git-emulator**, **git-statistics**, and **git-notification**. A legend in the bottom left corner defines the status colors: succeeded (green), errored (orange), aborted (red), paused (blue), pinned (purple), failed (red), pending (grey), and started (yellow). It also explains dependency types: a solid line for dependency and a dashed line for dependency (trigger). The bottom right corner shows the CLI version: **cli: v5.4.1**.

Challenge SLO

- measuring point

```
516 - ((count_over_time(probe_success{job="blackbox_api", module="module API"}[1y]) -  
sum_over_time(probe_success{job="blackbox_api", module="module API"}[1y]))*5)  
sum(probe_duration_seconds{job="blackbox_api", module="module API"}) by (instance) *  
1000SLOs / error budget:API
```

- Smaller than current SLIs

- Latency
- Error-rate
- Fallback-rate

Proof

$$\lim_{c \rightarrow f} SRE(c) = SRE(f) = 100\%$$

- The strongest man in the universe

Special Thanks to

- 플랫폼서비스혁신그룹(전자서비스혁신)/삼성SDS
 - Tools Cluster : 원대일님, 김인규님
 - RPA : 문지현님
 - SRE : 전장식님, 심정은님

- 모바일실행그룹(실행)/삼성SDS
 - Containerize : 이기탁님, 최진영님

- MC실행그룹(MC기술)/삼성SDS
 - Automation : 강경원님, 홍차연님

3

Demo

Demo 시나리오

PostgreSQL DB 자동 구성을 위해 Pipeline 관리(Concourse), 인프라 생성(Terraform), S/W설치(Ansible)툴을 활용

- 1 기존 구성 확인
- 2 소스 코드 변경
- 3 인프라 생성
- 4 S/W 설치
- 5 최종 구성 확인

Pipelines 확인 (Concourse)

- 인프라 생성
- S/W 설치

모니터링 확인 (Grafana)

- PostgreSQL 2EA
- pg-01, pg-02

신규 VM 정보추가

- Terraform 코드 추가
- pg-03, pg-04
- Ansible role 추가
- master/slave

변경코드를 저장소에 Commit

VM 생성 (Terraform)

- Terraform Plan/Apply
- pg-03, pg-04 VM 생성

Slack 확인

공통 SW설치 (Ansible)

- Ansible 공통 SW설치
- Monitoring, Alert

PostgreSQL설치 (Ansible)

- Ansible pg-03,pg-04 설치

모니터링 확인

- PostgreSQL 4EA
- pg-03, pg-04 추가



Thank You



The graphic features the text 'Q & A' in a clean, sans-serif font. The 'Q' and 'A' are white, while the ampersand is a vibrant lime green. To the right of the text, two orange triangles point towards a large, dark blue circle on the far right. The background is a dark blue gradient with a pattern of lighter blue circles on the left side.

Q & A

Partner Disrupt Foresee