



Built Serverless First

How Workgrid Software transformed from a Liberty Mutual internal project to global startup

Gillian McCann

Head of Cloud Engineering & Artificial Intelligence, Workgrid Software



Hello!



Gillian McCann

Head of Cloud Engineering &
Artificial Intelligence

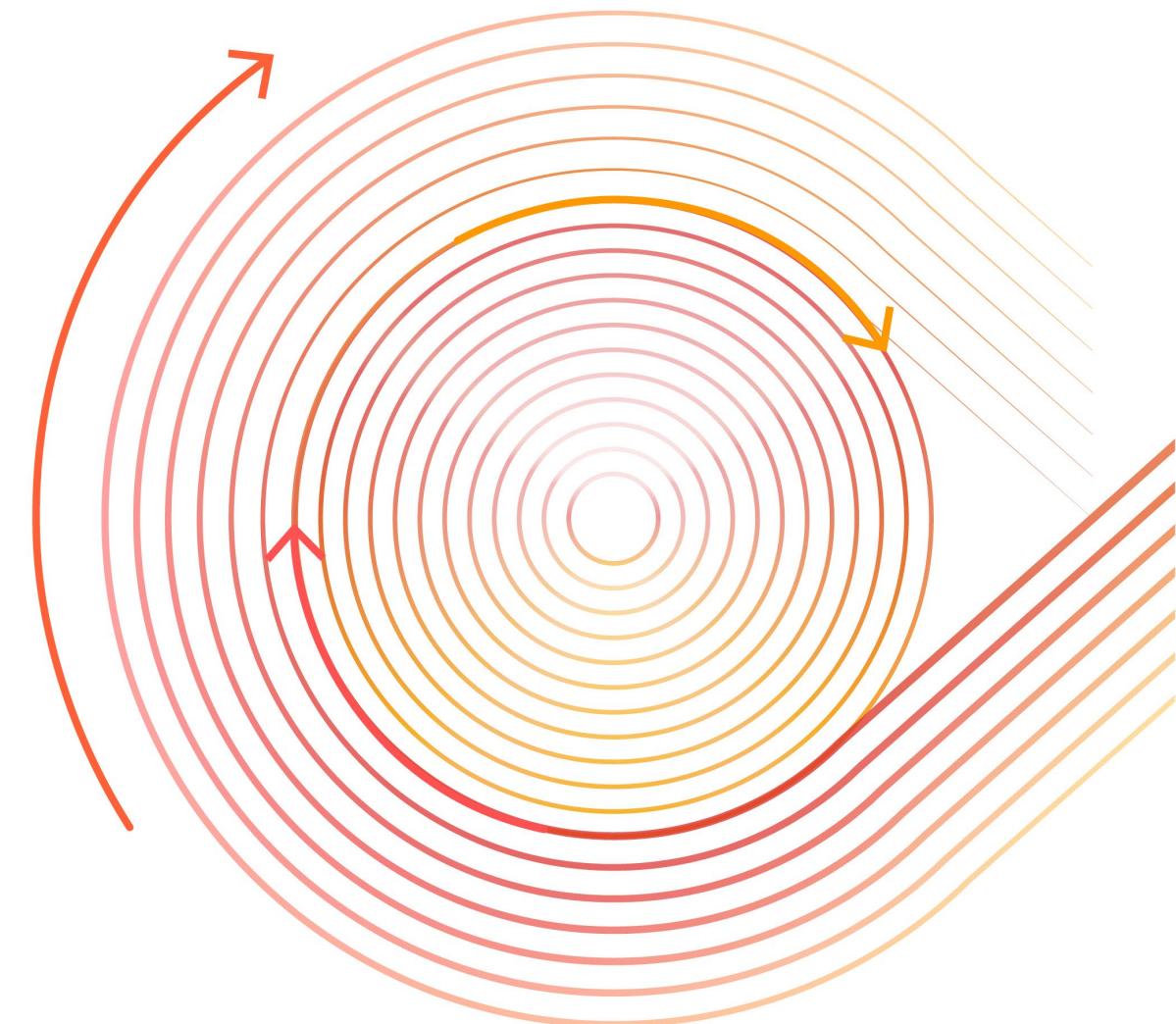


 @othergill

 gillianmccann

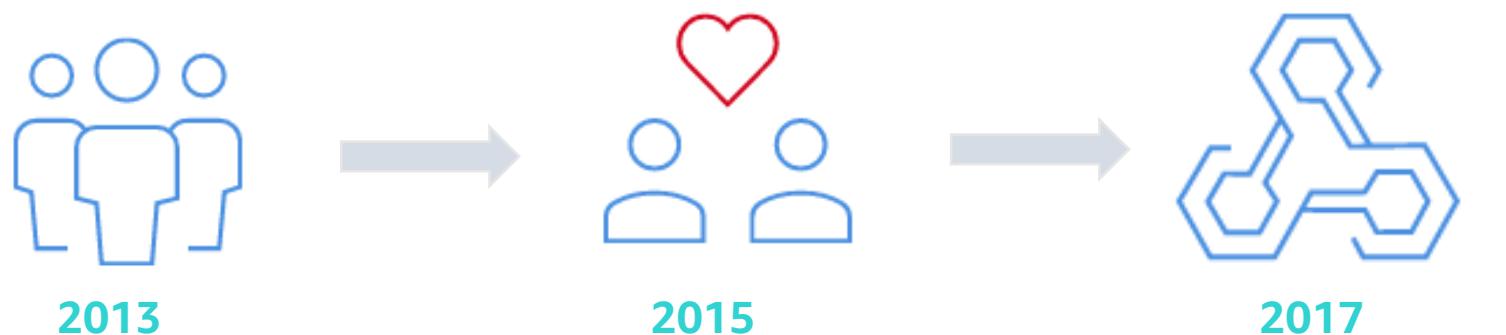
Product, People, and Passion

A journey of many paths



Born out of Liberty Mutual...

Liberty Mutual Intelligent Digital Workplace



Liberty Mutual seeks to improve digital employee experience for 50k employees.

Workgrid platform released internally - transforming the employee experience.

Workgrid launched externally—software built for the enterprise, by an enterprise



The Complexity of Today's Workplace

Digitizing processes and transactions has led to enormous complexity



slack

ORACLE®



Today's Workplace

bmc Remedy

serviceNow

Aon Hewitt

CHROMERIVER

ORACLE®
E-BUSINESS SUITE



And From this Complexity

We Heard From Employees...



Missing Important Communications

Employees were frequently missing important announcements and time-sensitive reminders.



Delayed Approvals

Managers were losing approvals amongst other emails, blocking important work or requests from being completed.



Cognitive Overload

With too many systems for employees to use, key information and tasks were spread across multiple systems wasting valuable employee time and increasing frustration.



Too Many Login Screens

Many systems do not support Single Sign-On, requiring employees to manually type their username and password over and over.



Too Many Steps

If often took 10-15 clicks for employees to complete simple transactions like approving an expense report or timesheet.



Time Wasted Context Switching

Employees would lose valuable time jumping from one system to another to complete tasks or lookup common information.



Poor Perception of IT / Corporate Departments

With each corporate department buying their own best-in-class SaaS and vendor systems, it left a siloed impression of these groups.



Ignored Intranet Content and Communications

Information on the company intranet and other communications weren't personalized enough for employees to actually stop and read.



Difficulty Finding Information

Employees didn't have a single tool to ask basic employee questions like "what is the time off policy?", "what's on the café menu?", or "how do I report a system outage?"



Complex Employee Experience

With no system to bring it all together, each vendor or SaaS product had a completely different user experience from the other.



The Workplace is Moving into a New Era

The technology powering the workplace is undergoing a fundamental shift

Foundation



Early Internet

2000s

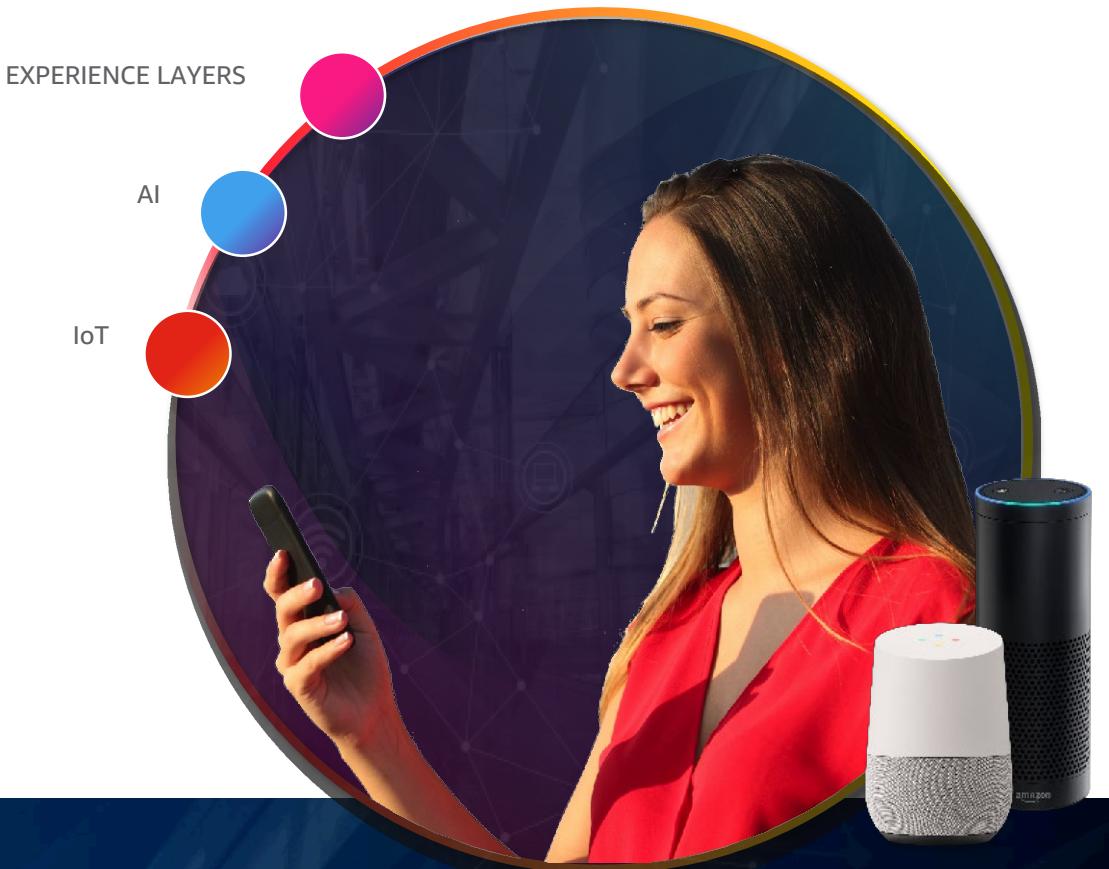
Digitized



Digital Workplace

2010s

Employee Experience



Intelligent Workplace

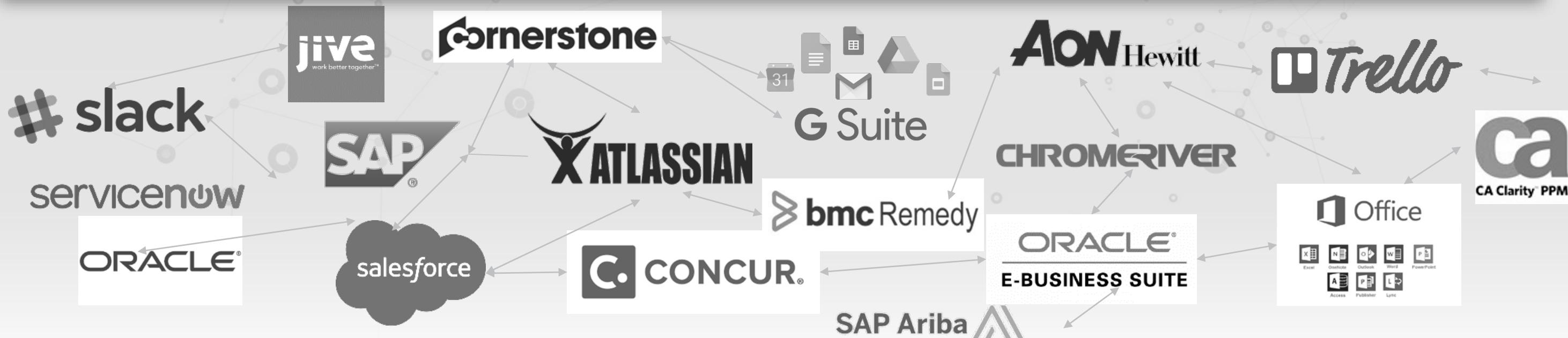
2020s

Experience Layer

Managing complexity so employees don't have to



Digital Experience Layer

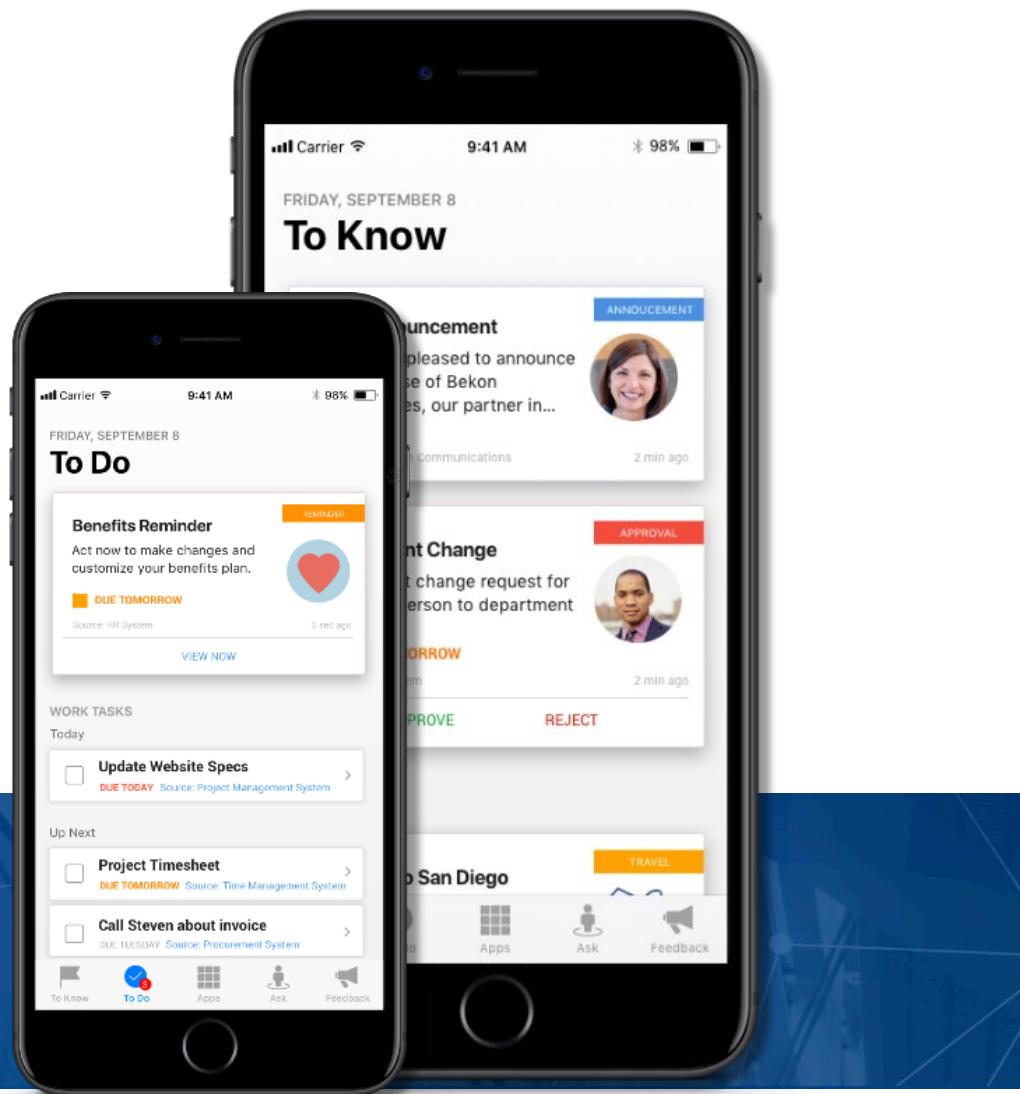


Key Features



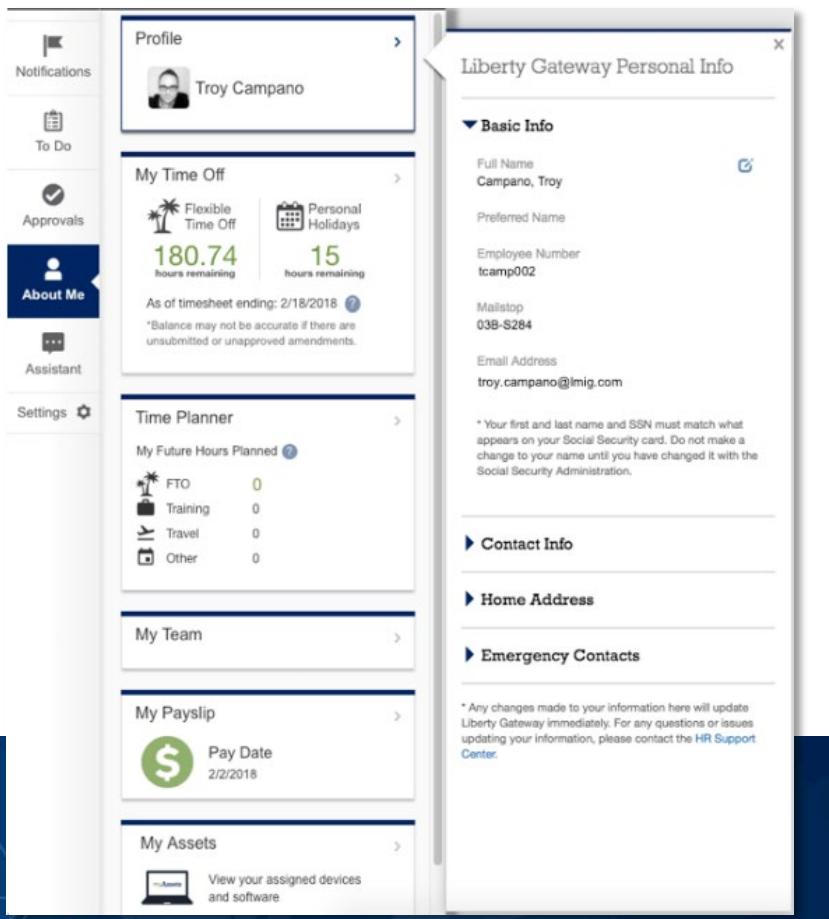
Smart Notifications

Aggregating approvals, tasks, and contextual notifications



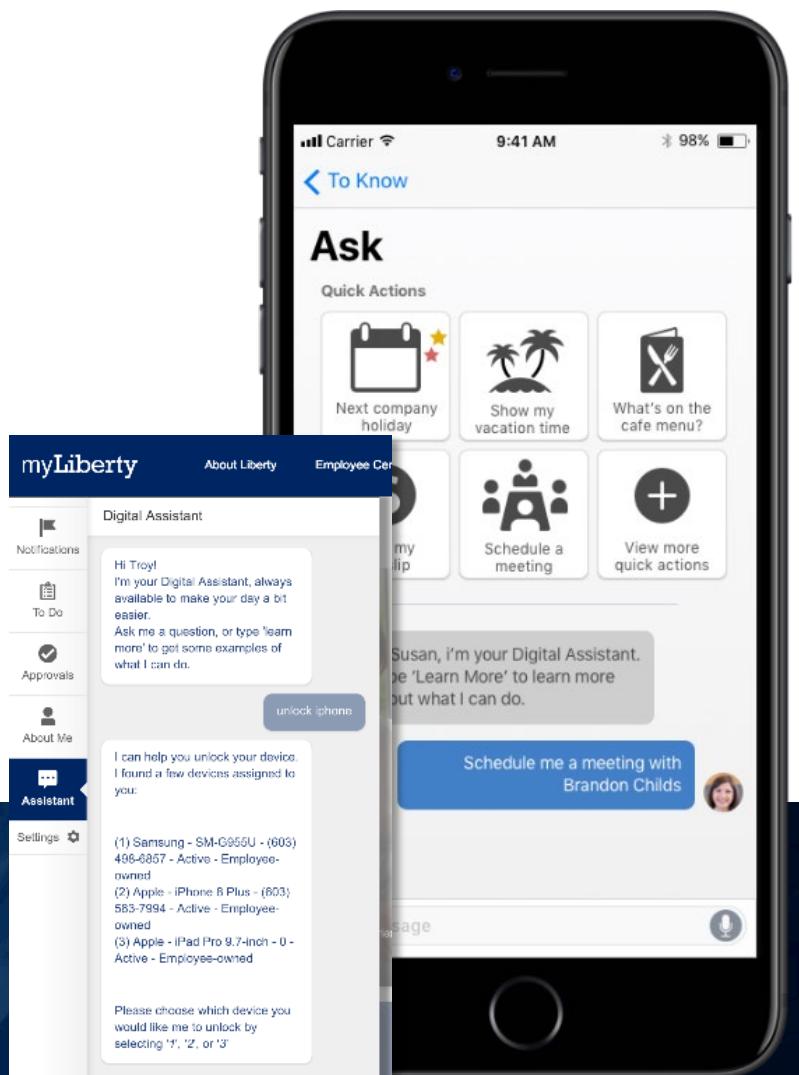
Microapps

Aggregating forms and transactions into a single experience for employees



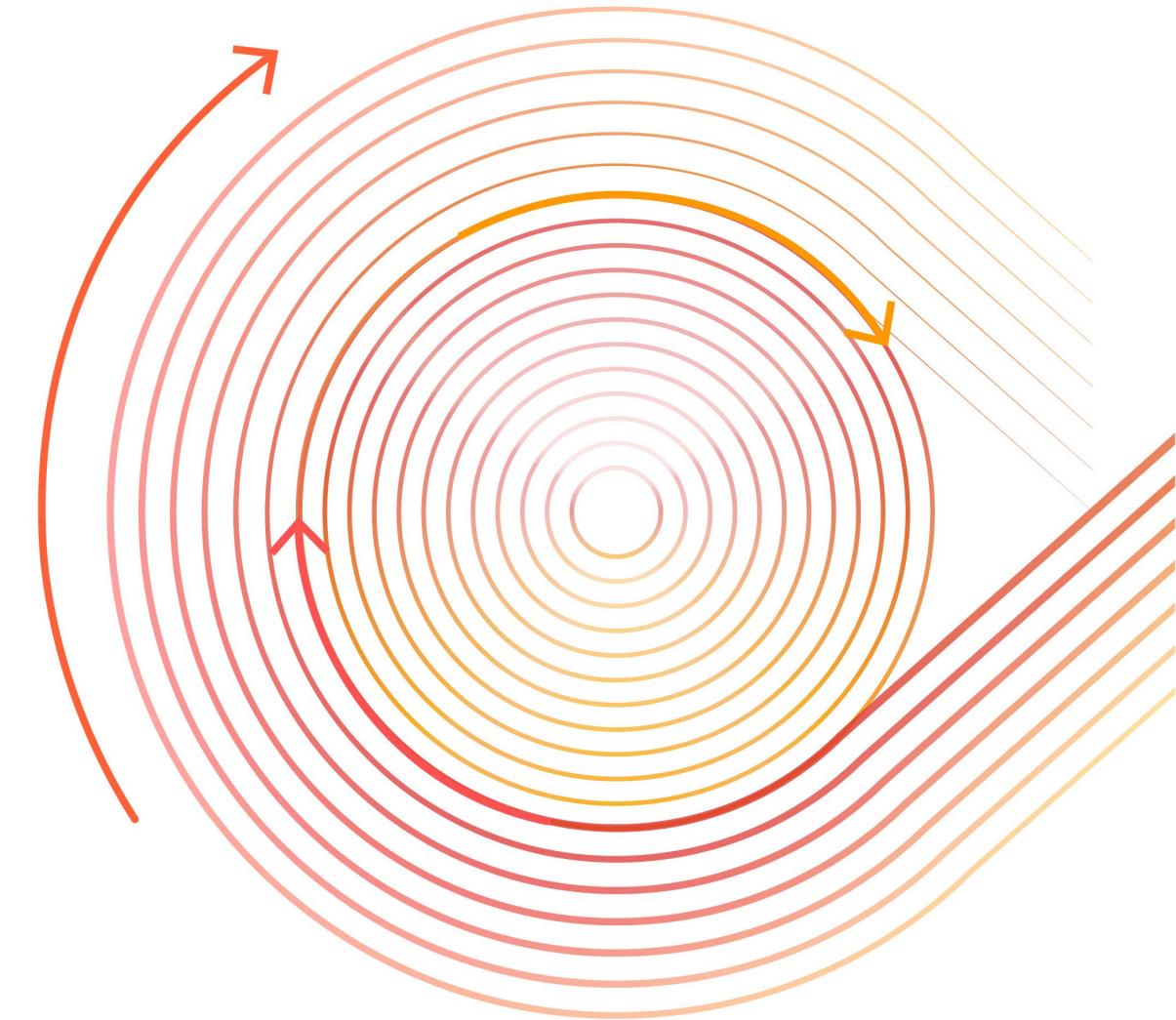
Workplace Chatbot

Quick access to information, help desk answers, and transactions for your digital workplace.



Pragmatic Architecture

Day One to Year One – Why Serverless?

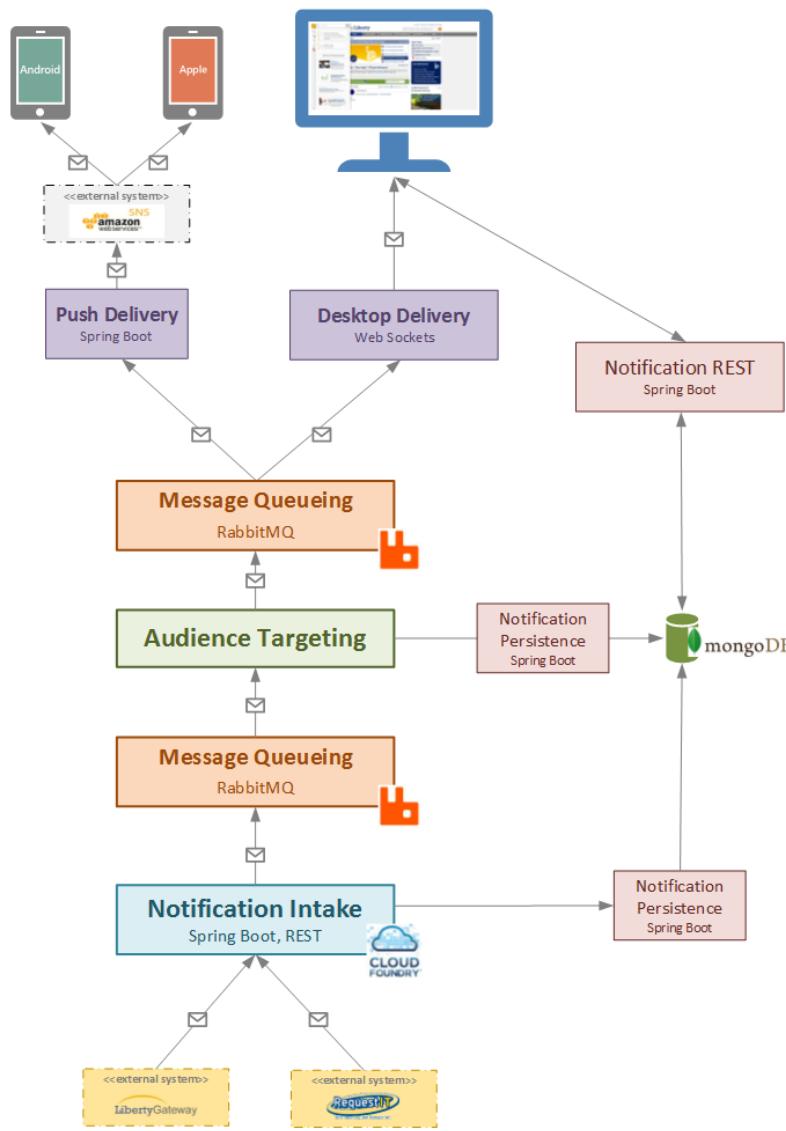


Day 1 : August 5, 2017

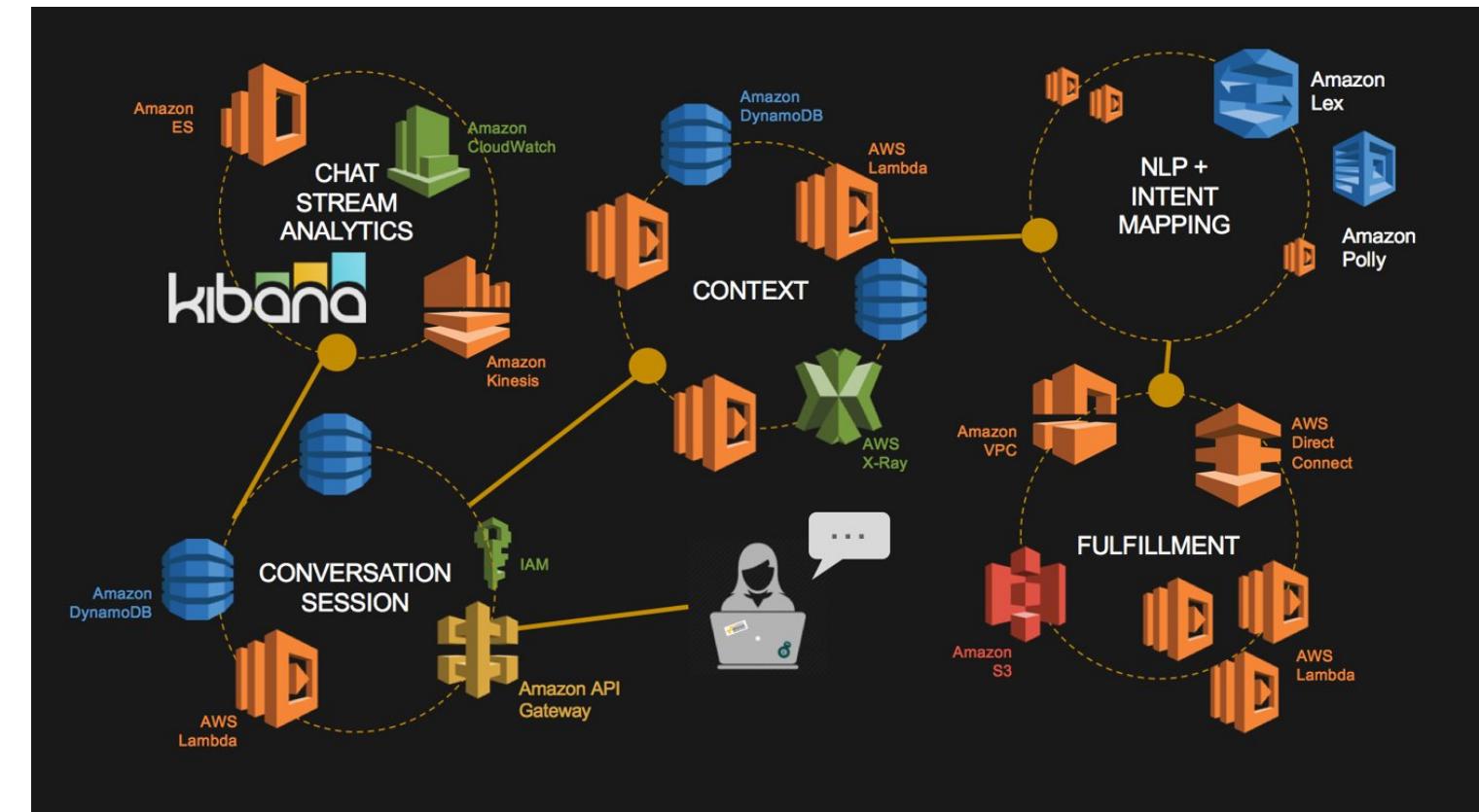


A Tale of Two Architectures

2014 – Microservices On Prem



2017 – AWS Serverless Chat



Key Drivers



Speed



Keep



Scalability



Autonomy



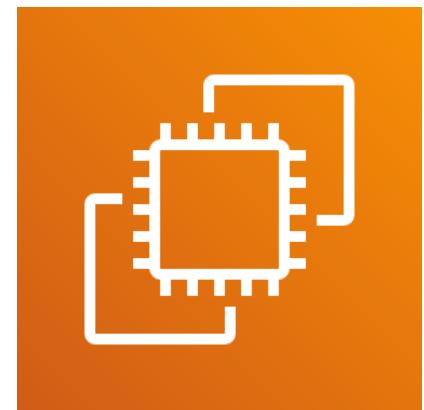
Burden

The Compute Experiment



AWS Lambda

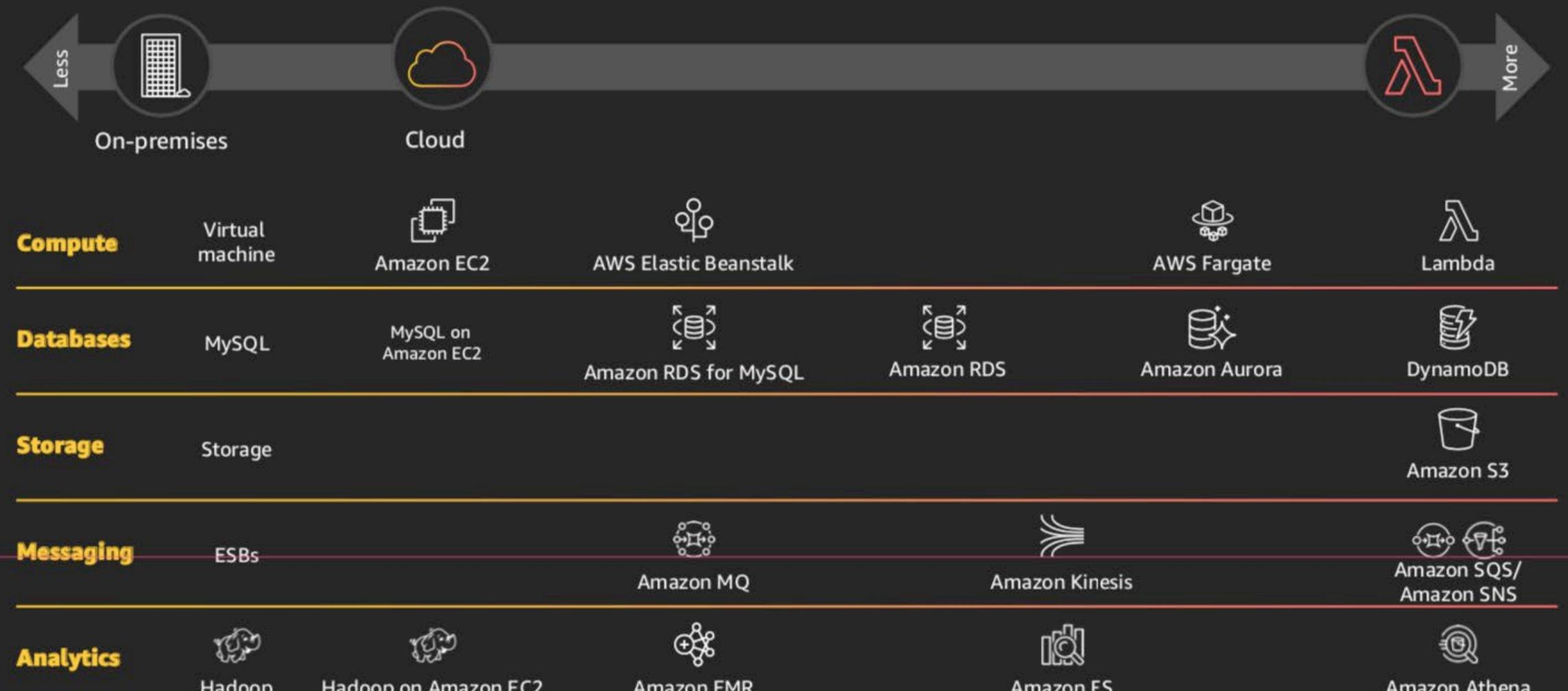
v



Amazon EC2

It's More Than Functions

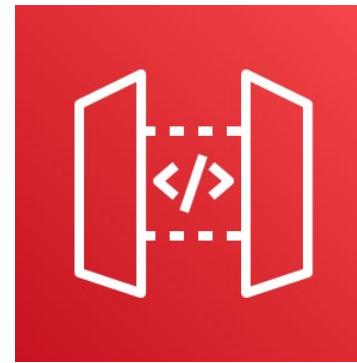
AWS operational responsibility models



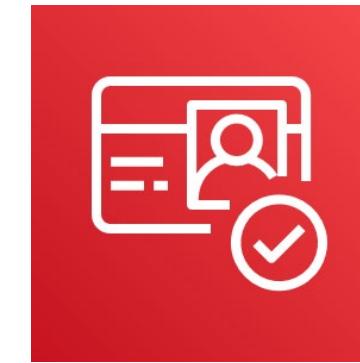
First Application Deploy



Amazon Simple Storage
Service (S3)



Amazon API Gateway



Amazon Cognito



AWS Lambda



Amazon Aurora

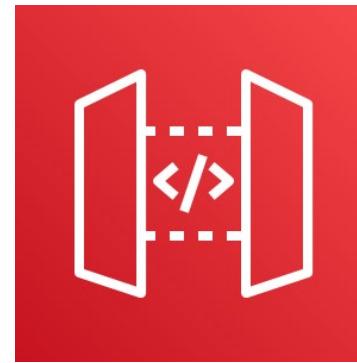
Start Simple and Evolve



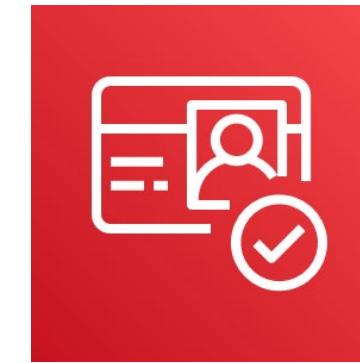
First Application Deploy



Amazon Simple Storage
Service (S3)



Amazon API Gateway



Amazon Cognito



AWS Lambda



Amazon Aurora

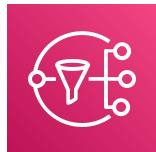
Our Architecture Philosophy

- **Serverless First**
- **Managed Services over Managed Infrastructure**
- **Pragmatic Architecture** - Architect what is **right for right now**
- **Evolving Architecture** – Doing the ***next right thing***
- **Modular / Lego Design**
- **Security is Everyone's Job**
- **Operations is Everyone's Job**
- **Be Cost Aware**
- **Be Industry Aware**

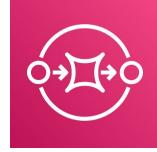
Services in Production Today



AWS AppSync



Amazon Simple Notification Service



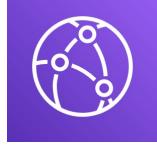
Amazon Simple Queue Service



Amazon Kinesis Data Streams



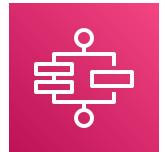
Amazon Kinesis Data Analytics



Amazon CloudFront



AWS Amplify



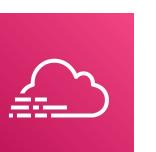
AWS Step Functions



AWS X-Ray



Amazon CloudWatch



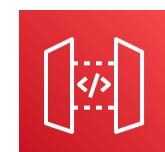
AWS CloudTrail



AWS Key Management Service



Amazon GuardDuty



Amazon API Gateway



Amazon Lex



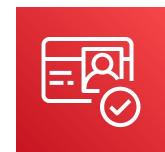
AWS Lambda



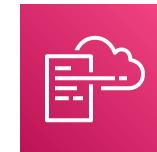
AWS WAF



AWS Secrets Manager



Amazon Cognito



AWS CloudFormation



Amazon Aurora



Amazon Elasticsearch Service



AWS Shield



Amazon VPC



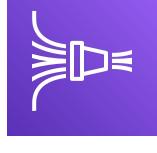
Amazon Simple Storage Service



AWS Trusted Advisor



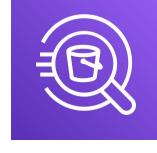
Amazon DynamoDB



Amazon Kinesis Data Firehose



AWS Identity and Access Management



Amazon Athena

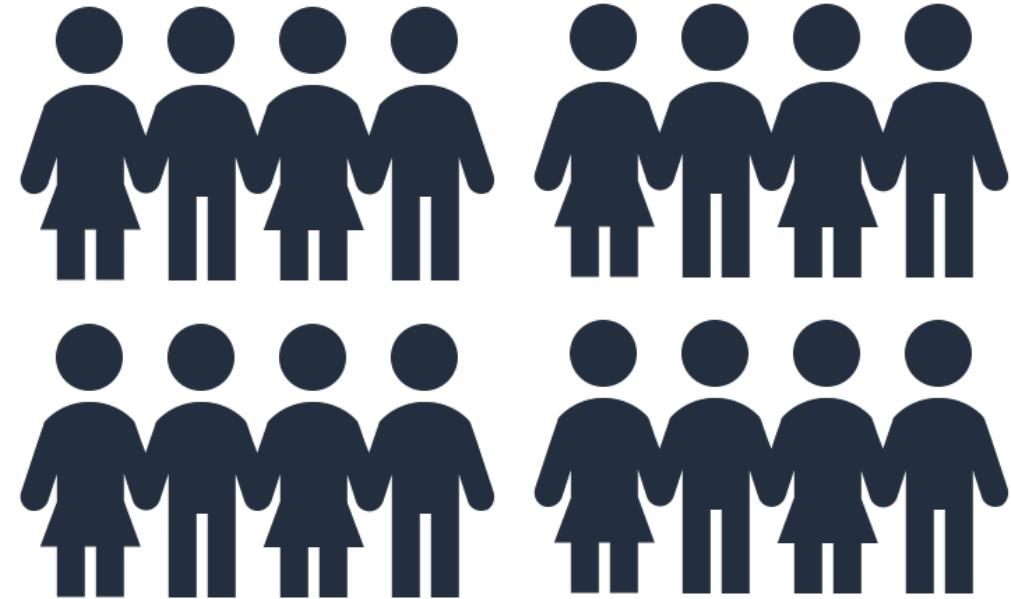


AWS Well-Architected Tool

Our Architecture Philosophy

- **Serverless First**
- **Managed Services over Managed Infrastructure**
- **Pragmatic Architecture** - Architect what is right for *right now*
- **Evolving Architecture** – Doing the *next right thing*
- **Modular / Lego Design**
- **Security is Everyone's Job**
- **Operations is Everyone's Job**
- **Be Cost Aware**
- **Be Industry Aware**

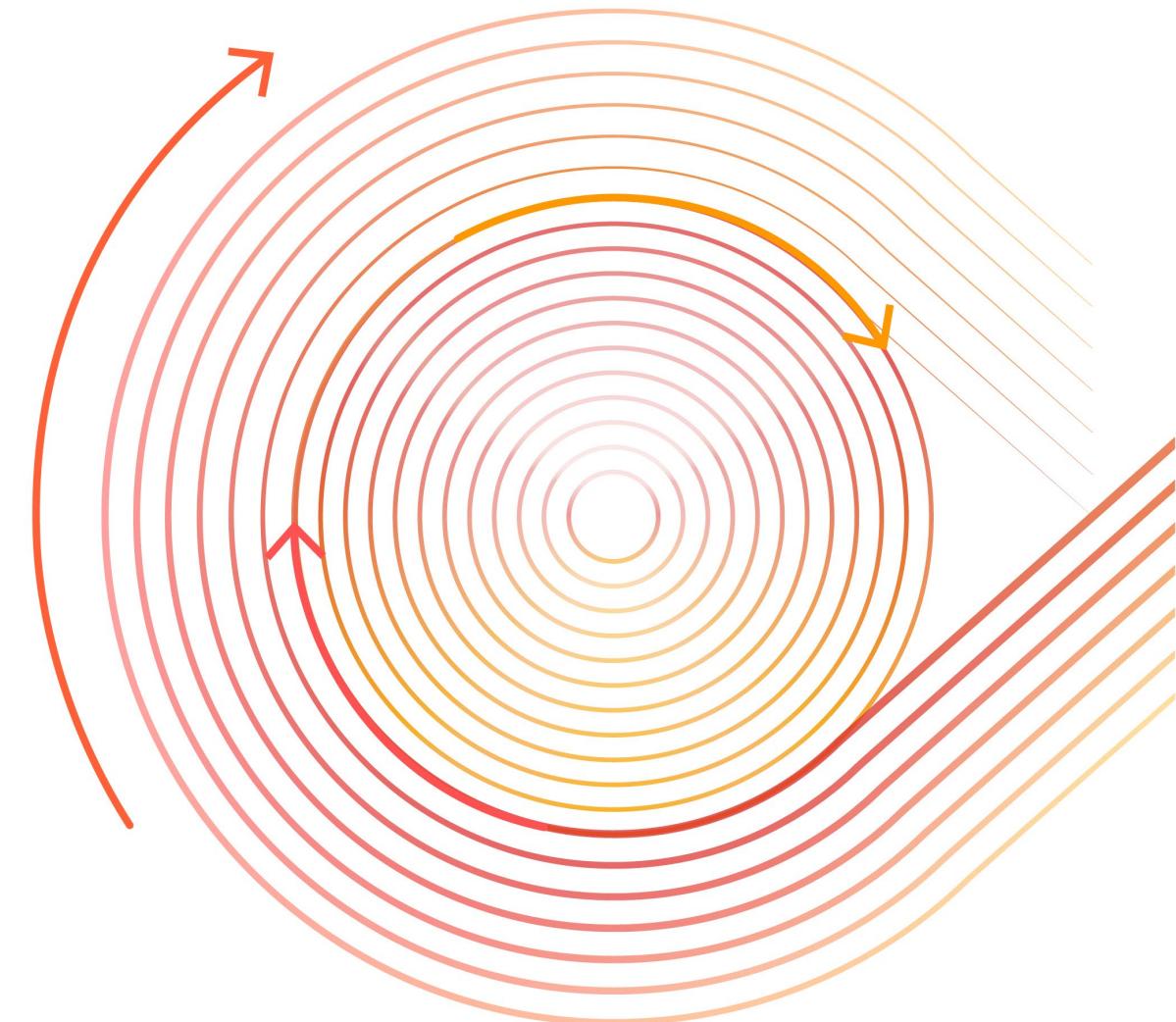
Year 1 : Growing Pains





Serverless SaaS

Enabling a global company



Serverless Tools for a Serverless SaaS: Mission Control

The screenshot shows the Mission Control interface, which is a central hub for managing a serverless SaaS application. On the left, there's a sidebar with a navigation menu:

- Home
- User Management
- Organization Management (selected)
- Overview
- Provisioning
- Deployments
- Deprovisioning
- WAF Management
- Alarm Configuration
- Backup & Restore
- DynamoDB
- RDS
- Elasticsearch
- DynamoDB Data Replication
- Connector Rotation
- Sentinel

The main area is titled "Mission Control" and contains several management sections:

- User Management
- Organization Management
- WAF Management
- Alarm Configuration
- Backup & Restore
- DynamoDB Data Replication
- Connector Rotation
- Sentinel

Below these sections, there are icons for various AWS services:

- AWS AppSync
- AWS Amplify
- Amazon CloudFront
- Amazon CloudWatch
- AWS Lambda
- AWS Step Functions
- Amazon Cognito
- AWS WAF
- AWS Certificate Manager

Serverless Guardrails : Workgrid Sentinel

Sentinel: A soldier or guard whose job is to stand and keep watch.

Sentinel provides automatic enablement of new features & best practices.

- **Automatic Alarm Configuration across multiple services**
- **Automatic Subscription to Centralized Operational Log Solution**
- **Automatic Enablement Cross Region Envelope Encryption**



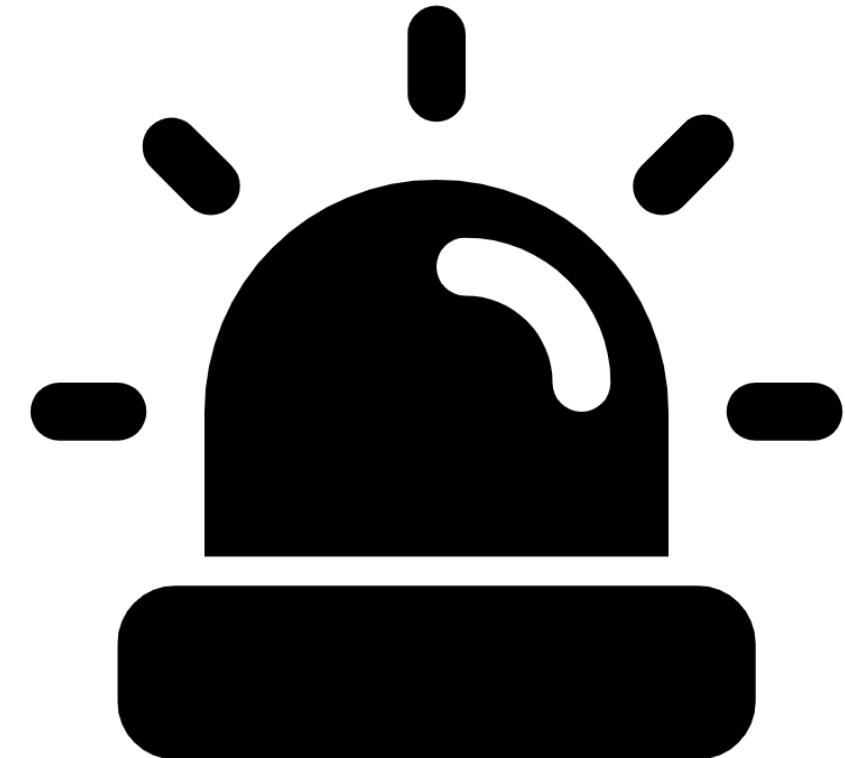
Serverless Security Alerting: Workgrid Tripwire

**Tripwire: a wire stretched close to the ground,
working an alarm when disturbed.**

Builds upon shared responsibility model between AWS, Liberty Mutual, and Workgrid.

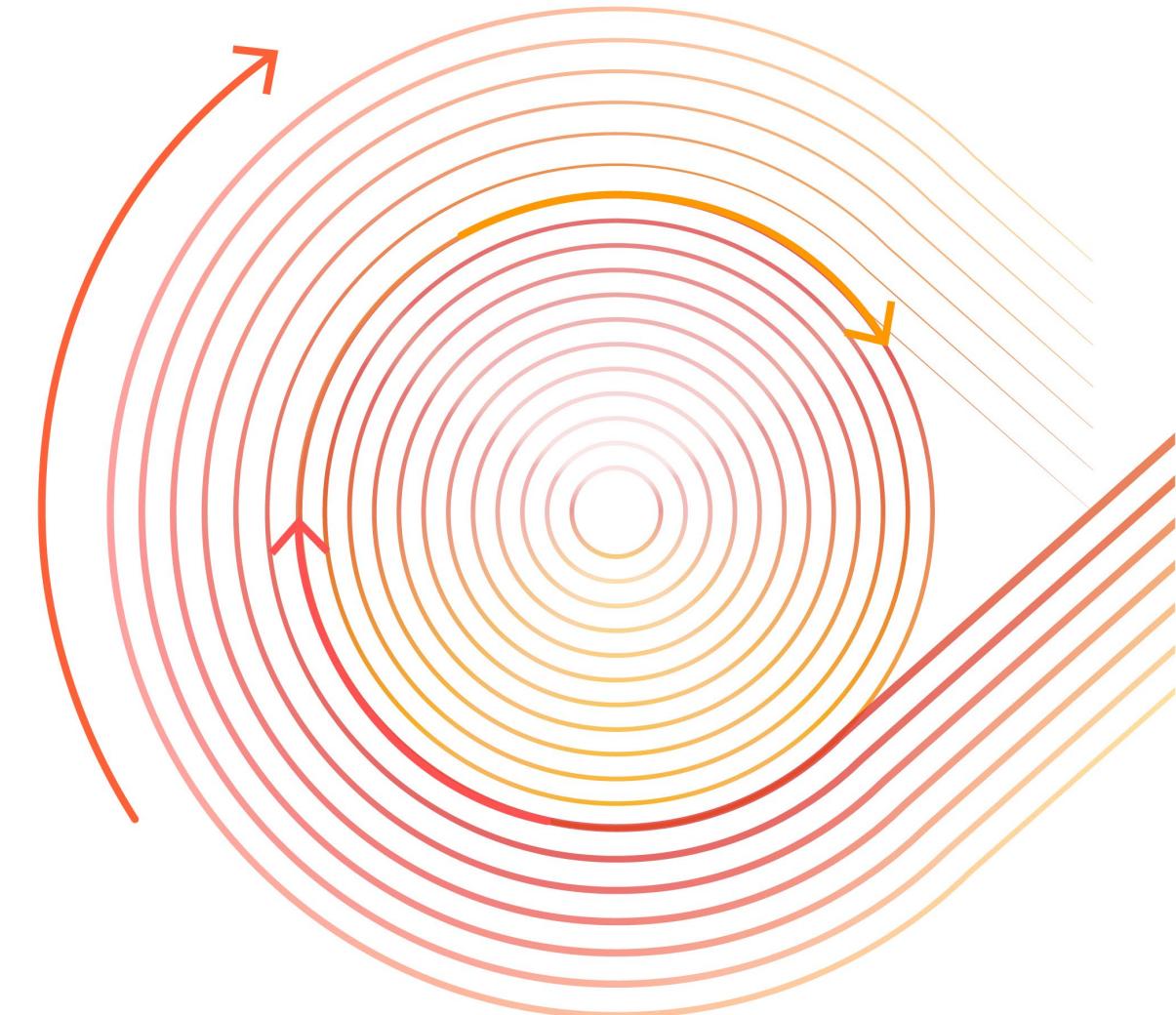
Tripwire monitors activity across Accounts to identify and alert on a multitude of pre-defined security events that follow AWS Well Architected Security Pillar.

We even alarm for creation of EC2 instances!



Scaling Serverless Teams

Our Learning Journey



Scaling Serverless Engineering



Engineering Evolution

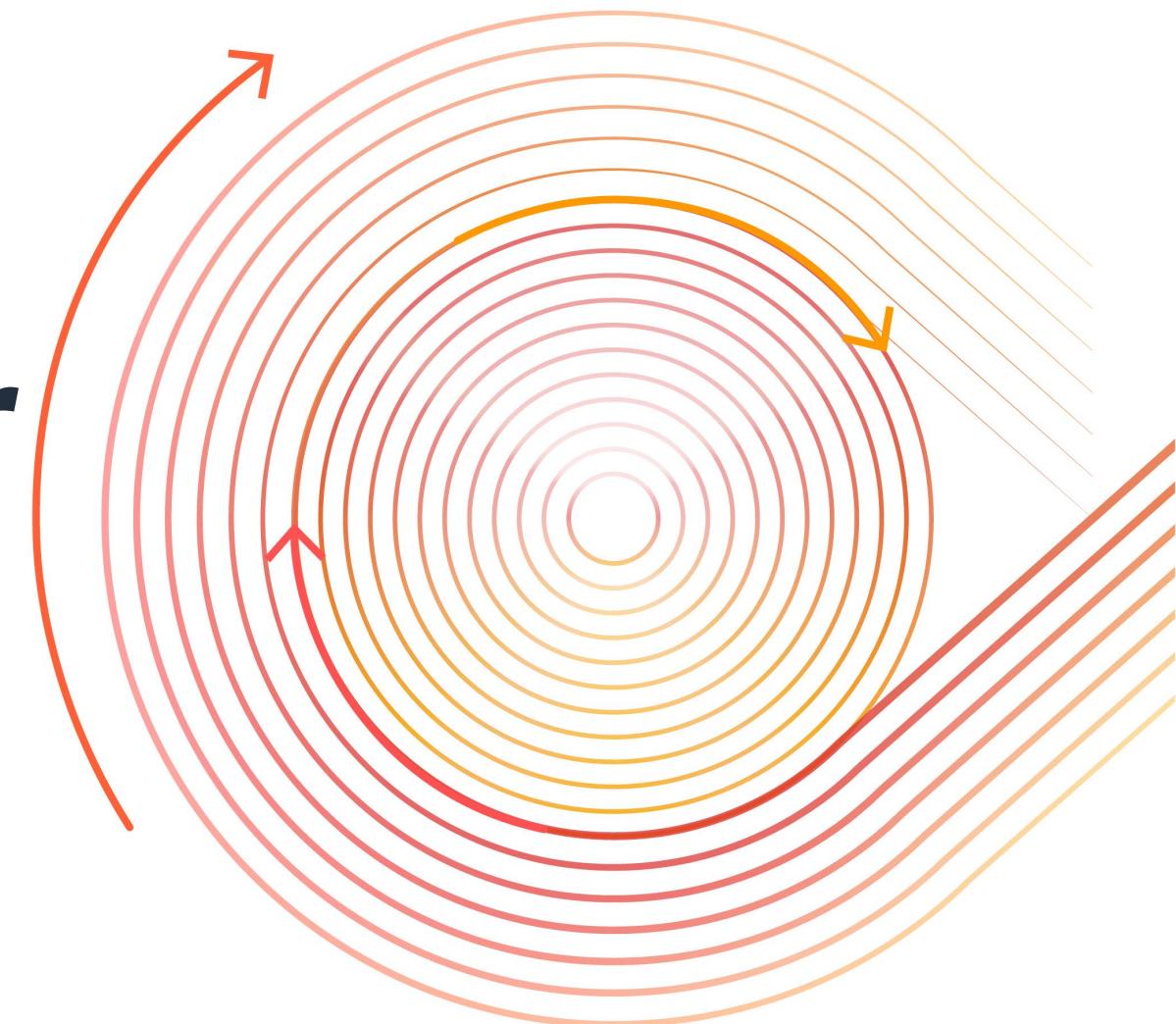
- Embed teams with a combination of more experienced cloud engineers.
- Promote a learning culture and mindset.
- Encourage autonomy to make decisions.
- Provide supportive and collaborative environment.
- Encourage experimentation and new ideas.

Educate yourself

- AWS Whitepapers
- AWS Certifications
- AWS Meetups
- AWS Well Architected Framework
- AWS Conferences
- AWS Partnerships
- AWS Online learning
- AWS Blogs

Not Easier, But *Better*

Production Evolution & Developer Empowerment



Product Evolution: The next right thing.

If our engineers are not focusing on servers, scaling, and infrastructure...

What are they doing???

Last say from the Workgrid Engineers: What stands out about serverless?

"Having an inherently scalable architecture by default by using serverless services. Our ability to scale is pretty low on our list of concerns, that's a huge thing"

"Speed of prototyping - we "learn fast" (as opposed to fail fast) by standing up services and quickly evaluating them. No procurement or engaging with other infrastructure teams to assist"

"Improved engineering - using Lambda encourages a mindset of designing something to do one thing"





Thank you!

