

AWS  
re:Invent

# The Startup's Guide to re:Invent

**NOV. 26 – 30, 2018**

LAS VEGAS, NV



## About re:Invent

re:Invent offers four days (give or take) to rub backpacks with about 70,000 of your fellow developers, builders, entrepreneurs, and the generally cloud-obsessed. Converted to joules, that's enough nerd heat to power Las Vegas for at least a month. It would take another several months just to take in all the technical sessions, hackathons, labs, pub crawls, and wing-eating contests on offer at re:Invent. And you have only a few days. Point is, use your time (and joules) wisely.

# That Is Where This Guides Comes In.

This year at re:Invent we've designed a set of technical sessions, speed networking activities, mentorship opportunities, and straight-up fun for the startup entrepreneurs (and would-be startup entrepreneurs) attending re:Invent. Most of it happens at The Quad in the Aria, within a space called Startup Central. Think of it as a sort of startup VIP area. We do.

So, what do you get? re:Invent is a technical conference, and these are mostly technical sessions that describe how some of the smartest startups out there are building what they build. They'll dive deep into what works, and where they went wrong. Do you have to be a startup jockey to get something out of these sessions? No. You just need to want to operate at the speed and scale that the fastest growing startups do. And who doesn't want that?

# Welcome to the Show.

When we asked Amazon CTO Werner Vogels his top three tips for startup entrepreneurs at re:Invent, his answer was, “One: Prepare. Two: Prepare. Three: Prepare.” You get the idea.

What follows are some of the key moments from the overall re:Invent schedule, and the startup-specific sessions. We’ve asked some re:Invent veterans (and newbies) to offer their game plan for the days they will be in Vegas for the conference. Finally, we’ve identified some re:Invent sessions, picked from the main catalogue, and grouped them based on a particular need, or type of startup product and focus.

The final curation is up to you, but this guide should help. We look forward to seeing you at re:Invent and at Startup Central, our Aria-based hub for all things startup at re:Invent.

# First Things First:

Sign Up Here ([reinvent-startups.splashthat.com](https://reinvent-startups.splashthat.com)) for:

**Mentorship Opportunities:** You'll get paired with a technical or business expert to offer guidance on your most pressing problems, or just something you've always wanted to know.

**Speed Networking:** You're at re:Invent, they're at re:Invent... you should meet. Connect with your fellow startup entrepreneurs, through these networking activities.

**Technical Office Hours:** This is your opportunity to get fixes or guidance on anything AWS related, whether it is new services, your architecture, or any other technical questions you may have. Book your technical team for a 1:1 session with your own AWS expert.

# Pre-Gaming re:Invent

**SUNDAY, NOV. 25**

Mostly a day for the earliest attendees to arrive, get settled in, and start on their hydration/lip balm regime.

*NOON – 5:30 PM*

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**Harley Ride.** You like riding in a rolling thunder formation? And most importantly, have a motorcycle license? This is your hog heaven.

*9:30 PM – Midnight*

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**Tatanka Challenge.** The wing-eating competition you have been training all year for. Takes place at the Venetian at the start of Midnight Madness. Need to have reserved a spot, but you can always watch the carnage from the sidelines.

*10:30 PM – 1 AM*

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**Midnight Madness.** Startups have been known to launch here. Enough said. At the Venetian.

**Swag.** Get yours at registration, and leave room on your lapels for pins, lots of pins.

## MONDAY, NOV. 26

Check out the labs and bootcamps running all day, and bring your coding skills.

*4:00 PM – 7:00 PM*

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**Welcome Reception.** Here's where you'll get a feel for the power of 70,000 people all thinking about containers, AWS Lambda, and machine learning at the same time. Startup Central and the Expo Hall in the Aria opens. Come meet your fellow startup entrepreneurs and kickoff re:Invent in earnest.

*6:00 PM – 8:00 PM*

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**We Power Tech.** Also at the Aria, come together at this gathering and show your support for inclusion and diversity of all stripes in the tech world.

**MONDAY, NOV. 26**

# Sessions Begin

***Time:** 1:45 PM - 2:45 PM*

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***Location:** MGM, Level 3, Premier Ballroom 319*

***Title:** Machine Learning Your 8-Year-Old Would Be Proud Of*

Come see examples of how Bebo uses Amazon SageMaker to power massive Fortnite tournaments every week. Traditional sports require referees, scorekeepers, field staff, and broadcast crews for every match. But eSports are digital by nature. In this session, learn how machine learning and computer vision are enabling esports to occur at a massive scale.



**TUESDAY, NOV. 27**

# Sessions Begin

***Time:*** 9:15 AM - 10:15 AM

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***Location:*** Bellagio Ballroom 6

***Title:*** ANT309. Build and Govern Your Data Lakes with AWS Glue

***Speakers:*** Prajakta Damle, Principal Product Manager; Arpan Shah, Engineering Manager, Data Engineers, Robinhood

As data volumes grow and customers store more data on AWS, they often have valuable data that is not easily discoverable and available for analytics. Learn how AWS Glue makes it easy to build and manage enterprise-grade data lakes on Amazon S3 and how you can set appropriate security policies in the Data Catalog and make data available for a variety of use cases, run queries across your data warehouse and data lake with Amazon Redshift Spectrum, run big data analysis in Amazon EMR, and build machine learning models with Amazon SageMaker and AWS Glue.

Explore the new re:Invent campus!



**STARTUP CENTRAL  
@ THE ARIA OPENS**





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**Time:** 11:00 AM - 12:00 PM, Startup Central @ the Aria

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**Title:** Data Team: The Moral Compass of AI

**Speaker:** Harry Glaser, Co-Founder & CEO, Periscope Data

Do we have a moral role as data scientists? How do you balance your responsibility to do what's best for the company with your moral responsibility as a member of society? As data becomes more accessible to everyone, and as AI and ML technologies become part of our everyday life, the data team takes on an important moral role as the conscience of the corporation. Glaser will explore examples in which using ML and AI for classification, prediction, ranking, and more runs a strong risk of delivering immoral outcomes if left unchallenged.



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**Time:** 12:00 PM - 1:00 PM, Startup Central @ the Aria

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**Title:** Application Release Management at Deliveroo

**Speaker:** Ben Cordero, Senior Software Engineer, Deliveroo

From PR to production, the Deliveroo Application Platform needs to get developers' code into running containers as quickly and as safely as possible. This talk introduces Hopper, Deliveroo's Release Manager, and their process to safely ship software with support for automatic rollbacks, service scaling and configuration management.



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**Time:** 1:00 PM - 2:00 PM, Startup Central @ the Aria

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**Title:** Leveraging AWS SageMaker to Drive Rapid Innovation

**Speaker:** David Tsai, Data Science Director, Convoy

Too often, data scientists build potentially high-impact models that never see the light of day due to deployment obstacles. At Convoy, data science is at the core of their trucking network product, so building a robust, frictionless platform to deploy models is critical to their success. To minimize the code needed to transition from training a model locally to deploying the same model in production, they adopted Amazon SageMaker to push various models to production-ready endpoints. Tsai will review Convoy's SageMaker architecture and how it drives meaningful impact.



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**Time:** 2:00 PM - 3:00 PM, Startup Central @ the Aria

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**Title:** Aetion's Migration Journey to AWS CodePipeline, CloudFormation & ECS

**Speaker:** Junaid Kapadia, Systems/DevOps Manager & Staff Software Engineer, Aetion

Kapadia takes you through Aetion's journey from a Chef, Jenkins, and EC2-based architecture to a fault-tolerant, highly-available, continuously-provisioned, and deployed architecture via AWS CodePipeline, AWS Codebuild, AWS CloudFormation, AWS Parameter Store, and AWS ECS. You'll get the history of Aetion's original architecture, and how it transitioned its movement to the new architecture, and where Aetion is taking its architecture next.



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*Time: 3:00 PM - 4:00 PM, Startup Central @ the Aria*

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**Title:** #BUIDLing the Decentralized Future on Ethereum

**Speakers:** Nick Kritikos, Global Business Development at Consensys and Steve Cerveny, Founder & CEO of Kaleido

Over the past few years, the number of companies exploring blockchain solutions has skyrocketed, but for most, it is unclear where to start and what the right use cases are for their business. ConsenSys is building all layers of the Web 3.0 stack from protocol to application, and is working with companies across all industries to create new business models based on blockchain. In this session, Nick Kritikos and Steve Cerveny will dive into blockchain, Ethereum, smart contracts, and where real-world examples tell us the space is heading next.



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*Time: 4:00 PM - 5:00 PM, Startup Central @ the Aria*

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**Title:** Data Engineering the Startup Way

**Speaker:** Dan Collins, Senior Principal Software Engineer, UpTake

Get the insider view of Uptake's evolution as a startup, and how to build data systems that scale for data science and industrial IoT. Along the way you'll learn about the challenges of building systems for data science on industrial data and how Uptake has overcome difficult data engineering problems in this space. Uptake's lessons apply to almost any startup learning to build and grow in the cloud.



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*Time: 5:00 PM - 6:00 PM, Startup Central @ the Aria*

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*Title:* Kabbage's Long Strange Trip to Data Democratization

*Speakers:* Clint Hill, Head of Architecture and Platform Solutions, and David McGowan, VP Engineering, Kabbage

In 2016, small business financing company Kabbage began forging a path to migrating their aging data warehouse infrastructure to something new. In this talk you'll hear how the Atlanta-based company moved away from a static relational table; muddled through a project with incomplete vision, little to no design, and a bespoke data management system; and ultimately found their way to a solution comprised of several Amazon Managed Services. In the end, what was created is a method that provides end user flexibility and solves real business issues.

# Pub Crawl

**TUESDAY,  
NOVEMBER 27**  
6PM-8PM

Wear comfortable pants for crawling in.



## MY GUIDE TO RE:INVENT

# Calvin French-Owen, Co-Founder & CTO, Segment

**No. of years attending:** 3

**Favorite Vegas pastime:** Hands down, seeing live music. It's incredible to see so many world-class acts in one place.

**My goals:** No. 1: Survive without getting sick. ;). No. 2: Learn about all the new AWS products, and how people are using them in production.

**The attack plan:** I've flagged a few sessions that I can't miss, but overall, I'm planning on pacing myself.

**Wildcard:** On a few occasions, I've managed to sneak out of Vegas to visit Red Rock Canyon National Park. It's about a 45-minute drive, and the views and rocks there are absolutely stunning.

**Pro-tip:** No. 1: Take a daily dose of your favorite cold prevention concoction. No. 2: Be sure to hit Tacos El Gordo, but do it mid-afternoon and avoid the lines.

# Sessions I won't miss:

There are a handful of companies and speakers who I think are doing this really well—particularly ones that start with “N” and end in “etflix”.

I think any of these talks would be good for the fairly technical SREs, infrastructure engineers, and engineering leaders at mid-sized startups (particularly ones with a heavy infrastructure bent).

ANY **Brendan Gregg** talk. Every talk he gives has the highest density of new information of pretty much any speaker.

**DAT406: Netflix: Iterating on Stateful Services in the Cloud.** For anyone who is trying to more reliably run stateful applications on AWS (aka 90% of the people at re:Invent). Netflix will have an incredibly nuanced take.

**CON310: Breaking Containers: Chaos Engineering for Modern Applications on AWS.** Adrian is a living legend, and we're just starting to experiment with Chaos Engineering here at Segment.

**NET312: Another Day in the Life of a Cloud Network Engineer at Netflix.** This series is so good.

**NET320: Workshop: VPC Design Scenarios for Real-Life Use Cases.** I won't miss this one because I'm speaking on it! :) It should be a good talk from one of our leading retail customers. I'm hoping to dig deep into a bunch of areas, everything from business model, to tech, to competitive ecosystem.



## MY GUIDE TO RE:INVENT

### Erica Windisch, CTO, IOpipe

**No. of years attending:** 2

**Favorite Vegas pastime:** I enjoy finding the local hidden gems and dive bars to escape the hectic experience of the big casinos.

**My goals:** I attend re:Invent for the sessions and connecting with AWS staff, but it's also an opportunity to meet with customers, prospects, and business partners.

**The attack plan:** It's impossible to do everything. I have a handful of sessions selected below that I intend to make, as well as my own session. Otherwise, I will be supporting my team at the IOpipe booth.

**Wildcard:** I love a good pinball game, but it's so hard to find the good and rare games in good condition. This year I plan to make time to visit the Pinball Hall of Fame, 150 well-maintained games in 10,000 square feet.

[www.pinballmuseum.org](http://www.pinballmuseum.org)

**Pro-tip:** It's faster to sneak over from the Venetian to Harrah's to grab Lyft/Uber than it is to get one from the Venetian parking garage!

# Sessions I won't miss:

**ADT301: Create a Serverless Web Event Pipeline.** This advanced session touches upon a number of key technologies for building scalable serverless applications and observability pipelines.

**MOB401: Ten Tips And Tricks for Improving Your GraphQL API with AWS AppSync.** While this session is mobile-focused, it dives into important technologies around AppSync and AWS Lambda that are applicable for all applications.

**SEC405: Scalable, Automated Anomaly Detection with GuardDuty, CloudTrail, & Amazon SageMaker.** Security of your AWS Infrastructure is critical, but challenging. This workshop promises to introduce you to practical solutions using serverless technologies to detect potential threats.

**SRV420: Build Machine Learning Applications with AWS Lambda & Amazon SageMaker.** Lambda delivers massive scale and real-time inference at a low-cost. This session will serve as an introduction to these concepts and how to integrate AWS Lambda with SageMaker. Ideal for developers building already machine-learning applications with Sagemaker, or applications on AWS Lambda.

**SRV215: Beyond DevOps: Accelerating Organizational Agility with Serverless. Bonus!** I'm giving my own Chalk Talk session about leveraging serverless for business agility and success.

WEDNESDAY, NOV. 28

# Sessions Begin

*Time: 8:00 AM - 10:30 AM*

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**Location:** The Venetian

**Title:** Keynote

**Speaker:** AWS CEO Andy Jassy

A parade of launches, updates, and people. Get there early to get a seat and experience it live.

*Time: 4:45 PM - 5:45 PM*

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**Location:** Aria West, Level 3, Juniper 4

**Title:** How Nubank Automates Fine-Grained Security with IAM, AWS Lambda, and CI/CD

Nubank CTO Edward Wible discusses how the company mixes engineering culture, security philosophy and structure, automation, and integration with AWS security services. Learn how to leverage the day-to-day software development workflow for extensive security and maximum engineering throughput while minimizing the operational pain of running a large infrastructure.



**STARTUP CENTRAL  
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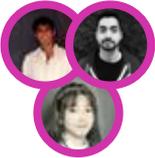
**Time: 11:00 AM - 12:00 PM, Startup Central @ The Aria**

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**Title:** Managing 1,000 Servers Without a Driver's License

**Speakers:** Furqan Rydan, CTO and Johnny Dallas, DevOps Engineer, Bebo

eSports streaming platform Bebo has thousands of servers in 15 AWS regions and a fully dynamic auto scaling stack with a good uptime. Its servers are also managed by a teenager who can't yet get a driver's license. In this talk, hear how 16-year-old Dallas, who graduated from San Francisco's Drew School two years early, built Bebo's fully-automated infrastructure in two months flat and still somehow found the time to balance coding with studying for the SATs.



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**Time: 12:00 PM - 1:00 PM, Startup Central @ The Aria**

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**Title:** How Robinhood Used AWS to Make a Self-Service Data Platform

**Speakers:** Arpan Shah, Engineering Manager, Data; Grace Lu, and Sanyam Satia, Data Engineers, Robinhood

Data and data-based decisions are at the core of everything online brokerage Robinhood does. In this talk, Robinhood will dive deep into how it moved from a world where multiple systems grew to create an unwieldy data architecture, and how the company used AWS tools like S3, Athena, EMR, Glue, and Redshift to build a robust data lake that is able to operate on Petabyte scale.



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**Time:** 1:00 PM - 2:00 PM, Startup Central @ The Aria

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**Title:** How iflix Uses AWS Elemental Services to Redefine the Future of TV

**Speaker:** Emmanuel Frenehard, CTO, iflix

How do you rebuild the television industry for the 3 billion people who may not have a credit card, let alone a television? That's the problem and opportunity iflix has taken on. How iflix has built products to serve most of the world's population leveraging AWS services like Elemental, a healthy disregard for what's come before, and an eye always on the future.



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**Time:** 2:00 PM - 3:00 PM, Startup Central @ The Aria

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**Title:** Testing your AWS Code with Moto

**Speaker:** Jack Danger, Infrastructure Lead, Gusto

Using AWS and testing your code against the APIs means spending money. What if you could use AWS for free? The Moto project from online HR services company Gusto is a complete mock that emulates Amazon EC2, S3, and other popular AWS services. It faithfully replicates the implementation of AWS down to the last detail, even sending the right error messages when your code misbehaves. Gusto's Canty will show you how to develop and test your code against AWS and ensure you find any bugs on your laptop before your code reaches your customers.





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**Time: 3:00 PM - 4:00 PM, Startup Central @ The Aria**

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**Title:** Scaling a Fantasy Sports Platform with Amazon ElastiCache and Aurora

**Speaker:** Amit Charma, CTO, Dream11

Dream11 is India's leading sports-tech startup. It has a growing base of 40 million+ users playing multiple sports, including fantasy cricket, football, and basketball, and currently serves one million concurrent users, who spawn three million requests per minute under a 50-millisecond response time. Charma will explain how the company uses Amazon Aurora and ElastiCache to handle flash traffic, which can triple within a 30-second response window. Charma will also talk about scaling transactions without locking and share recipes for handling flash traffic, and thereby serving five million daily active users.



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**Time: 4:00 PM - 5:00 PM, Startup Central @ The Aria**

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**Title:** Crypto 101/201

**Speakers:** Kristen Stone, Product Manager, Jake Craige, Technical Lead, Coinbase Cryptocurrency Payment

Blockchain technology has the potential to dramatically change the financial landscape. Stone, and Craige will discuss the evolution of the blockchain industry and its impact on our day-to-day lives. They'll deep-dive into some of the inner-workings of the tech, and talk about different types of blockchain models, smart contracts, consensus protocols, and what's on the horizon.



# Crypto Happy Hour with Coinbase

**WEDNESDAY, NOVEMBER 26 | 5PM**



## MY GUIDE TO RE:INVENT

# Karthik Rau, Co-Founder and CEO, SignalFx

**No. of years attending:** 6

**Favorite Vegas pastime:** Obviously attending AWS re:Invent ; ) and enjoying the culinary scene.

**My goals:** Spending time with SignalFx customers to hear firsthand how they're using our solution. Getting a sense of the emerging trends in our ecosystem, and what AWS is launching this year. Supporting my team's activities at the event and getting out the message re: who we are and what we do (we've got a few special announcements that we're saving for re:Invent).

**The attack plan:** I work backwards from my goals and ensure at least 80% of my day is allocated to these priorities. The remaining time is more fluid, and I use it to catch up on email, have impromptu conversations, etc. Having unallocated time each day is key to not burning out. Remember, it's a marathon, not a sprint.

**Wildcard:** I'm not a big gambler, but nothing beats the camaraderie of a hot craps table. If I hear a lot of energy and see a lot of high-fives at a craps table, I can't resist joining in for the fun. :)

**Pro-tip:** Bring your most comfortable shoes.

## Sessions I won't miss:

**RET301-S: Nike's Direct-to-Consumer Transformation.** We quite often say that every company is becoming a software company, and Nike is no exception to this. If your startup is looking to solve a problem in retail or consumer goods, or if you want to understand how even traditional enterprises are looking to move faster by evolving how they build and operate applications, this session should be valuable.

**DEV312-S: Fully Realizing the Microservices Vision with Service Mesh.** In our space, I think the most fascinating new set of technology is around service mesh. As more of the world embraces containerization and microservices, service mesh is a really interesting way to automatically get visibility into how all these services interact, with a control plane to programmatically operate them.

**CON306-R: Observability for Modern Applications.** Scalability may not be your first priority when you're in the early stages of your startup, but investing in monitoring and observability is an investment that can pay off handsomely. The right combination of techniques and tools in this area will help you keep your early customers happy, while also enabling your team to move fast without breaking things.

**CON301-R: Mastering Kubernetes on AWS.** Kubernetes is a powerful tool for managing containerized infrastructure, but it can be challenging to manage your own Kubernetes cluster.



## MY GUIDE TO RE:INVENT

# Len Shneyder, VP of Industry Relations, SendGrid

**No. of years attending:** 1

**Favorite Vegas pastime:** The ridiculous number of amazing restaurants both on and off the strip.

**My goals:** re:Invent is a deep, wide, fast moving current of people, information and possibilities. A successful immersion into the waters of re:Invent means making new connections and committing to follow through. That's the trick really—you can meet scores of people over the course of the week. However, all the meetings in the world won't be worth the breath it took to say hello unless you are committed to following through.

**The attack plan:** I approach re:Invent the same way my wife and I go on holiday—the first order of business is to accept the fact you can't see it all. Once you make peace with that, you're left with the reality that you have to choose sessions and content, and make sure it all aligns with a purpose.

Even the purpose has to be specific and intentional: Maybe its topics that are personally enriching, or perhaps you spend your time with a laser focus on your company's business soaking up new technology, meeting customers and partners, and creating those new connective tissues. Whatever direction you want to go, it has to be intentional, and you need to hold the direction all the way through the event.

**Wildcard:** Every now and then the only way to do Vegas is to get out of Vegas. That can mean just getting off the strip for a meal, a stroll around the old downtown, or the 45-minute drive out to Red Rock National Park. I'm willing to bet most people never really think of the world beyond the strip. Try and resist for at least an afternoon or evening meal.

**Pro-tip:** Book your dinners ahead of time! Some of the best food I've had in Vegas isn't inside the mega hotels dotting Las Vegas Boulevard, but tucked into strip malls attracting as many locals as visitors.

## Sessions I won't miss:

**ANT206: Under the Hood/ How Amazon Uses AWS Services for Analytics at a Massive Scale.**

**AIM206-R1: Robocar Rally 2018.**

**CTD203: Amazon Prime Video. Delivering the Amazing Video Experience.**

**DVC201: Making AWS User Communities More Inclusive.**

**AIM304: Transform the Modern Contact Center Using Machine Learning and Analytics.**

**THURSDAY, NOV. 29**

# Sessions Begin

***Time:*** 8:30 AM - 10:30 AM

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***Location:*** The Venetian

***Title:*** Keynote

***Speaker:*** Amazon CTO Werner Vogels

Again, get there early to get a seat. And if you need a reason to attend other than all the deep-dive tech discussion you'll get (and this is coming from Werner himself) it's so you'll hear first-hand from Werner who the DJ for the closing re:PLAY party will be.



**STARTUP CENTRAL  
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**Time:** 11:00 AM - 12:00 PM, Startup Central @ The Aria

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**Title:** How Coinbase Builds Out Its Blockchain Infrastructure

**Speaker:** Jack Kearney, Software Infrastructure Engineer, Coinbase

Coinbase, the deploy process for most applications is fairly straightforward: 12-factor apps are blue/green deployed behind a load balancer. Blockchain nodes, however, present a difficult problem: how do you blue/green deploy a server with 1TB on disk? This session will cover how Coinbase solved this problem in a Blockchain-agnostic fashion using a new project called Snapchain.



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**Time:** 12:00 PM - 1:00 PM, Startup Central @ The Aria

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**Title:** How the Cloud Helps Nubank Support Millions of Daily Customers

**Speakers:** Alexandre Cisneiros and Diogo Beato, Lead Engineers, Nubank

Born in the cloud, Nubank enables its engineering teams to create scalable software that can quickly adapt to the changing needs of its customers, and by fostering a culture of micro-services, container-based applications, observability, and immutability. Cisneiros and Beato will discuss why they treat infrastructure as a software engineering problem, and address how AWS services like CloudFormation, EC2, and IAM allow them to support millions of customers, transacting millions of daily purchases without a dedicated infrastructure team.



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**Time:** 1:00 PM - 2:00 PM, Startup Central @ The Aria

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**Title:** Securing Microservices on AWS ECS at BuzzFeed

**Speaker:** Shraya Ramani, Software Engineer, BuzzFeed

As BuzzFeed transitioned to a microservices platform built on ECS, it needed to secure a growing number of independent internal apps. The first solution was an open source OAuth proxy service deployed in front of each app, but this approach had a number of issues. Ramani will discuss BuzzFeed's experience, and introduce SSO, a centralized auth solution, which elegantly solved the problems faced by the company.



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**Time:** 2:00 PM - 3:00 PM, Startup Central @ The Aria

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**Title:** Lending Powered by Machine Learning and EMR

**Speakers:** Eli Bingham, Senior Director of Software Engineering and Alex Favaro, Senior Staff Software Engineer, Affirm

Affirm lends billions of dollars to millions of customers using data-driven machine learning models. Feature extraction and validation in a risk management context presents unique challenges, so Affirm built a pipeline to eliminate training/serving skew in both development and production systems, and to run extensive regression testing on proposed PRs. Running Spark on Amazon EMR clusters provides an economic means to speed up this process. In this talk, Affirm will review its signal extraction and decisioning systems architecture and discuss their use of AWS to scale their compute.



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*Time: 3:00 PM - 4:00 PM, Startup Central @ The Aria*

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**Title:** How Reddit Scales to 1B+ Video Views A Month

**Speaker:** Anand Mariappan, Senior Director of Engineering, Reddit

Reddit is one of the world's most trafficked websites with over 330 million monthly active users. They've built the vast majority of the infrastructure on AWS to support the increasing growth. As the world shifts to video-first, Reddit has redesigned their site and launched a new video platform. In this talk, Mariappan will go over design paradigms, tradeoffs made, and lessons learned from re-architecting one of the internet's top sites. See how this infrastructure operates at scale and how the team leverages ETS, serverless, and compute to serve over one billion videos a month.



# re:PLAY Party

**THURSDAY,  
NOVEMBER 29**  
8PM-12 MIDNIGHT

This is the massive hoohah that Werner is touting. If you have been to it before, you know the drill. Games, food, drink, DJ, and the whole re:Invent community together one more time in one place. As always, have fun and hydrate.



## MY GUIDE TO RE:INVENT

# Mackenzie Kosut, Global Startup Evangelist @ AWS

**No. of years attending:** 4

**Favorite Vegas pastime:** There's no shortage of odd ball attractions in Vegas, whether it's Zak Bagan's Haunted Museum, ziplining over Fulton Street, or the Neon Museum. I find doing some of these activities before re:Invent starts a good way to mentally prepare for a week of learning.

**My goals:** Two things. 1. Learning about services that are going to help me tackle a potential challenge. 2. Networking and meeting others from the startup community.

**The attack plan:** The number of services launched at re:Invent every year continues to grow. My approach would be to figure out what current challenges you're looking to solve in your organization and schedule accordingly. For example, if you're working on rebuilding how we do data analytics, then you should spend a good portion of your time attending talks around SageMaker, Glue, Athena, and Kinesis. And to help pre-game my networking, prior to re:Invent, I usually ask

around on various Slack channels, Twitter, forums, r/aws and others to see who is attending and plan for quick hallway meetups.

**Wildcard:** Vegas is home to some of the best restaurants in the world. I try to take advantage of this and try out at least one new spot each visit. It's a great opportunity to grab a few new friends from Startup Central and explore some culinary dishes while sharing notes from the day of sessions.

**Pro-tip:** Pace yourself. It's okay if you miss a session you were really looking forward to seeing. These sessions are recorded and put online. If you miss something, take the opportunity to pop into a completely different category and learn about AR/VR w/ Sumerian, building voice & chat bots with Lex, or if you don't want to sit in a session, swing by the Startup Central and let's chat!

## Sessions I won't miss:

**Deliveroo Startup Central Stage, Tuesday 12 PM -1 PM:** Last year Deliveroo won my heart when I learned who their delivery ML system "Frank" was named after. This year I'm interested in seeing the same level of careful engineering thought in how they do application release management. Safely pushing and rolling back code is essential for any organization.

**UpTake Startup Central Stage, Tuesday 4 PM - 5 PM:** Data is the heart of any business, and if you have messy data, you have a messy company. This talk is really a cheat sheet on how to go from 0-100 and build out a data team that keeps pace with the rest of the organization.

**Reddit, Startup Central Stage, Thursday 3 PM - 4PM:** I'm biased slightly because I've been a reddit user for well over a decade. I'm always fascinated by the scale at which some companies operate. Reddit's talk on serving over a billion native video views a month is inspiring. There's a misconception that at a certain scale people outgrow cloud but stories like this emphasize how that's simply not true.

# Last Day

**FRIDAY, NOV. 30**

Take stock of everything you've learned, and the people you've met.

*6:30 AM – 8:30 AM*

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Last chance for an early group breakfast. Go home, get some sleep, and start building something amazing to show off at next year's re:Invent.



Some More  
Guidance. A curated  
list to consider

# Using SageMaker, and What's Next in Machine Learning

**AIM341: Build a Visual Search Engine Using Amazon SageMaker and AWS Fargate.** Visual search engines have a growing importance at companies like Pinterest as well as at e-commerce companies like Amazon.com and Gilt. In this chalk talk, we show you how to build a visual search engine using Amazon SageMaker and AWS Fargate.

**ADT303: ML for Real-Time Self-Service Trend Detection & Root Cause Analysis—a Hands-On Lab.** Business intelligence (BI) has been a manual, static process. Analysts and engineers must anticipate the right questions, monitor the right metrics, create dashboards, apply calculations, verify and validate results, and repeat the process—which means slow, reactive insights and dangerous blind spots across business operations. In this session, get hands-on with a range of datasets across use cases like product and customer experience analytics from ecommerce, web analytics, telco, ad tech, gaming, ride sharing, and IoT manufacturing.

**AIM411: Uber on Using Horovod for Distributed Deep Learning.** One of the main challenges customers face is running efficient deep learning training over multiple nodes. In this chalk talk, Uber discusses how to use Horovod, a distributed training framework, to speed up deep learning training on TensorFlow and PyTorch.

**AIM315-R: Deep Learning for Edge to Cloud.** In this workshop, you step into the role of a startup that has assumed the challenge of providing a new type of EDM music festival experience. Your goal is to use machine learning (ML) and IoT to develop a connected fan experience that enhances the festival. Get hands-on experience with Amazon SageMaker with Intel C5 instances, AWS DeepLens, AWS Greengrass, Amazon Rekognition, and AWS Lambda as you build and deploy a ML model.

**AIM302: Machine Learning at the Edge.** Video-based tools have enabled advancements in computer vision, such as in-vehicle use cases for AI. However, it is not always possible to send this data to the cloud to be processed. In this session, learn how to train machine learning models using Amazon SageMaker and deploy them to an edge device using AWS Greengrass, enabling you process data quickly at the edge, even when there is no connectivity.

**AIM325-R: Amazon SageMaker—Prebuilt Algorithms.** In this session, learn how to use the range of built-in, high-performance machine learning algorithms that come with Amazon SageMaker.

## The Way To Massive Scale

**ARC407: A Chronicle of Airbnb Architecture Evolution.** Airbnb is going through tremendous growth internationally, evolving from a home sharing company to a global travel community with many

product offerings. The growth driven by the business, increase in traffic, and aggressive hiring created a new challenge for the Production Infrastructure Team. The team has grown from a small team of 10 to a production platform organization with 100 engineers that builds foundational services that support homes, experiences, luxury, and China. We shifted our priority and focus to move away from putting out fires to building a platform that can grow with the company.

**ARC205-R: Scaling Up to Your First 10 Million Users.** If you have a new web application and want to use cloud computing, you might be asking yourself, “Where do I start?” Join us in this session for best practices on scaling your resources from one to millions of users. We show you how to best combine different AWS services, how to make smarter decisions for architecting your application, and how to scale your infrastructure in the cloud.

**STG330: Scale CI/CD & Configuration Management Pipelines with Git, Amazon EFS, & SQS.** Git serves repositories well under nominal loads when implemented on reference architectures with appropriate settings. But when request volume increases to hundreds of thousands per day across thousands of hosts, thinking outside the reference architecture box can yield an amazingly scalable and high throughput system. In this chalk talk, we discuss Airbnb’s journey, scaling their read-only Git mirror by 4X while reducing cost and operational load with Amazon EFS and Amazon

SQS. We describe Airbnb's CI/CD usage patterns, the bottlenecks that grew from them, and how Amazon EFS and Amazon SQS were used to scale past them. Learn from Airbnb's experiences scaling their source-control infrastructure.

**MOB304: Game On! Building Hulu's Real-Time Notification**

**Platform for Live TV with Pinpoint.** At Hulu, notifying our viewers when their favorite teams are playing helps us drive growth and improve viewer engagement. However, building this feature was a complex process. Managing our live TV metadata, while generating audiences in real time in high-scalability scenarios, posed unique challenges for the engineering team. In this session, we discuss the challenges in building our real-time notification platform, how Amazon Pinpoint helped us with our goals, and how we architected the solution for global scale and deliverability.

**DEV315-S: Building SRE from Scratch at Coinbase during**

**Hypergrowth.** Coinbase is a secure online platform for buying, selling, transferring, and storing digital currency. This talk covers its journey from a small band of engineers working on reliability to a centralized SRE organization, and the lessons learned along the way. We dive into the processes that we created—both technical and organizational—that enabled us to quickly build a world-class reliability engineering group. We also cover what reliability really means, and more importantly, how we measure it.

# Security is Job One (and Also Happens to Be Your Job)

**ANT335-S: How to Automate Security Learning at Scale.** The mountain of data generated by your deployment can be a valuable source of insight for your security practice IF you take advantage of some key tools on the AWS Cloud. In this session, learn how to build an analytics process that uses security tools, whether from AWS or the community, to create a continuous feedback loop to maintain and improve the security of your deployments.

**ANT346: Lock It Down—Configure End-to-End Security and Access Control on Amazon EMR.** Amazon EMR helps you process all your data for analytics, but with great scale comes great responsibility—you need to make sure that data is secured by design. In this builders session, we walk through how to configure your environment to take full advantage of comprehensive security controls: including identifying sensitive data, encrypting your data and managing keys, authenticating and authorizing users, utilizing fine-grained access controls, and using audit logs to demonstrate compliance.

**SEC321: How Zocdoc Achieves Automatic Threat Detection & Remediation with Security as Code.** In less than 12 months, Zocdoc - an online healthcare scheduling service that receives more than 6 million patient visits a month - became a cloud-first organization to meet their business goals. This digital transformation allowed

for rapid innovation and the ability to deliver products that align with demands of the 21st-century patient. In this session, Brian Lozada, CISO at Zocdoc, and Jay Ball, Head of Application Security, explain how Zocdoc uses AWS security services to seamlessly and automatically monitor, audit, and enforce their security policies within all their AWS environments.

**API317- Securing Data in Serverless Applications and Messaging Services.** This chalk talk walks you through the process of designing a serverless application that secures customer data sent to the cloud. The design uses features recently introduced by Amazon SNS and Amazon SQS, including AWS KMS keys for encrypting messages at rest, and Amazon VPC endpoints powered by AWS PrivateLink for sending messages without traversing the public internet. These techniques are security best practices for systems that deal with private data, such as e-commerce orders, candidate resumes, and employee information.

## Real Blockchain Applications

**GPSTEC317: Building Blockchain Platforms Beyond a Proof of Concept.** Blockchain is a distributed ledger-based technology that enables you to uniquely solve inefficiencies in business networks. However, like any exchange of value, it makes sense only when used by multiple parties. With the myriad of existing protocols and proposed applications, it can be difficult to decide on the right approach to implement a blockchain solution that best fits

a given use case. In this talk, we dissect use cases and blockchain architectures built for multi-party consortiums in energy and financial services sectors.

### **MAE315: Blockchain for Media and Entertainment - Buzz or**

**Real?** Blockchain tech made big news last year due to the surge and interest in cryptocurrencies. However, real applications are yet to be seen in industry verticals such as Media & Entertainment, despite the interest. Possible use cases include secure content transactions in the preproduction/review and distribution of prereleased content, rights management for studio transactions and applications towards royalty payments, and authenticity verification of social media and other online videos and data. We are also seeing some innovative ideas around watermarking tech using blockchain tied to a specific actor within the media workflow to using bitcoin blockchain as a bounty mechanism to protect digital media from online piracy. In this session, we discuss the introduction towards blockchain, the applicability of this new tech in some of these M&E use cases, and dispel or discuss the anti-patterns for blockchain in some of these use cases.

**RET217: Blockchain in Retail.** In this chalk talk, we review a number of practical uses of blockchain within retail, from supply chain to inventory management, and from customer service conflict resolution to a customer maintaining virtual, transferable warranty wallets. The AWS Retail team presents some of the standard applications of blockchain with AWS in this interactive session. Bring your use cases to the whiteboard!

# If Saving Cash is Your Thing (and It Better Be)

**ARC202-R1: Running Lean Architectures: How to Optimize for Cost Efficiency.** This session focuses on the practical ways our customers achieve cost-efficient architectures through service selection and configuration. We start by discussing the building block services. We cover the main trends, such as containers and serverless, and we explore some of the specific services and configurations customers have used. We also take you through real-life examples that can be implemented to minimize costs while driving innovation and business output.

**CMP201-R: Better, Faster, Cheaper – Cost Optimizing Compute with Amazon EC2 Fleet #savinglikeaboss.** Learn how to use the power of EC2 Fleet with AWS services such as Auto Scaling, ECS, EKS, EMR, Batch, Thinkbox Deadline and Opsworks to programmatically optimize costs while maintaining high performance and availability – all without breaking a sweat.

**ANT347: Use Auto Scaling, Spot Pricing, and More Expert Strategies.** Amazon EMR is a powerful service, enabling you to process and analyze big data at any scale. In this builders session, we share proven strategies to maximize your utilization while minimizing your costs for long-running clusters.

## **API307-R2: Deploy a Resilient and Cost-Effective App with**

**Auto Scaling and CI/CD.** Continuous integration and continuous deployment (CI/CD) with Auto Scaling can accelerate feature delivery, ensure the highest availability, and lower costs. In this session, we provide a hands-on experience in deploying your web app in an Amazon EC2 Auto Scaling group and setting up a CI/CD pipeline with AWS CodeDeploy and AWS CodePipeline.

# AWS re:Invent

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