



Building a Smart, Resilient City with Cloud technology

Innovation for Life

Julian Lau

Head of ASEAN Emerging Market
Worldwide Public Sector
Amazon Web Services



Agenda

- Smart and Inclusive Cities
- Cloud to Edge Innovation
- Use Cases
- Workforce Development and Cloud-Skilling

SMART CITIES: IT'S ALL ABOUT THE DATA



**Internal
Data Sources**



Citizen Data



Open Data



**External
Datafeeds**



Sensors / Devices



Capture • Compute • Analyze • Store



Smart Solutions

Secure, Scalable and Cost Effective

Smart City impact verticals



**Transportation &
Urban Mobility**



**Public
Safety**



Healthcare



Utilities & Environment



**Economic Development
& Housing**



**Culture &
Community**

TECHNOLOGIES

Technology driving Smart City transformation



Internet of things



Deep learning: artificial intelligence and machine learning



Data lakes

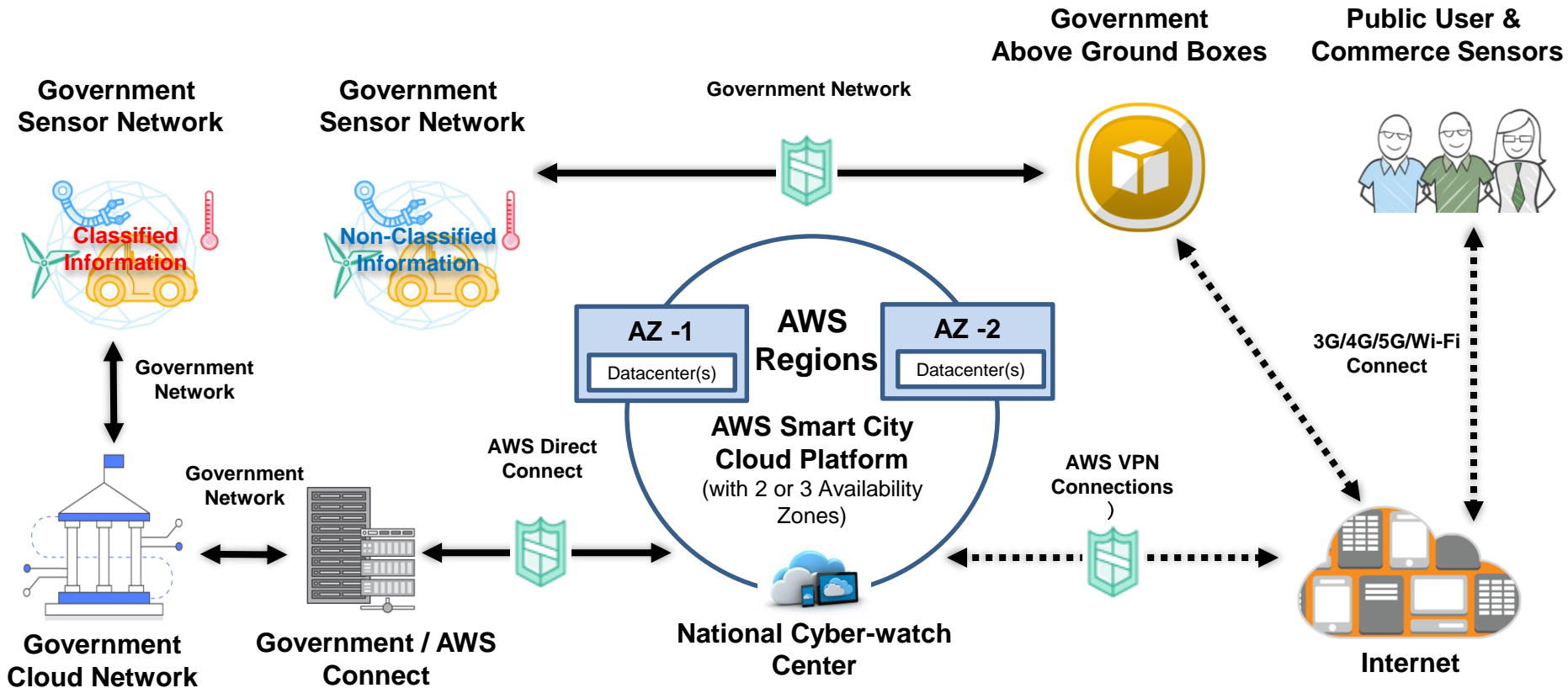


Voice



Augmented reality

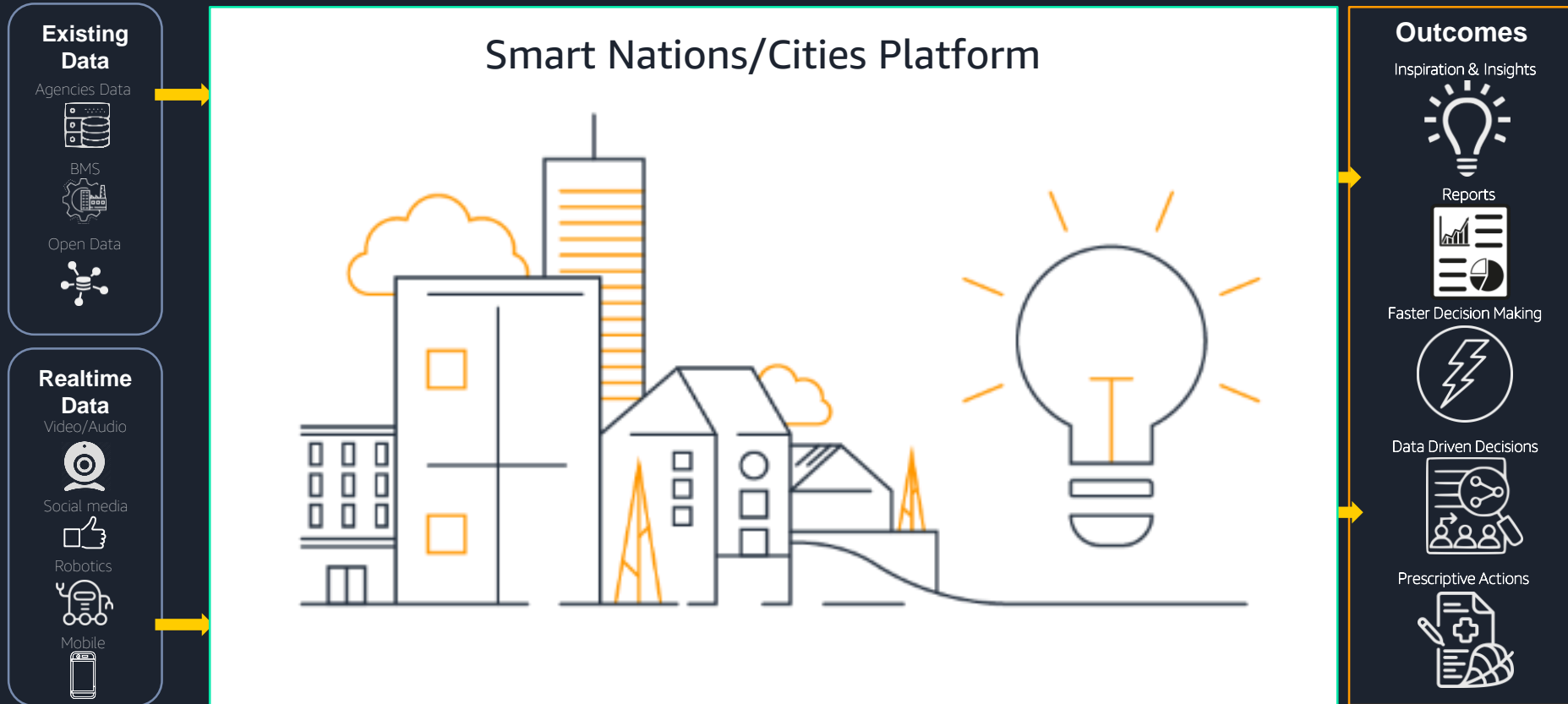
Smart City Cloud Platform Overview



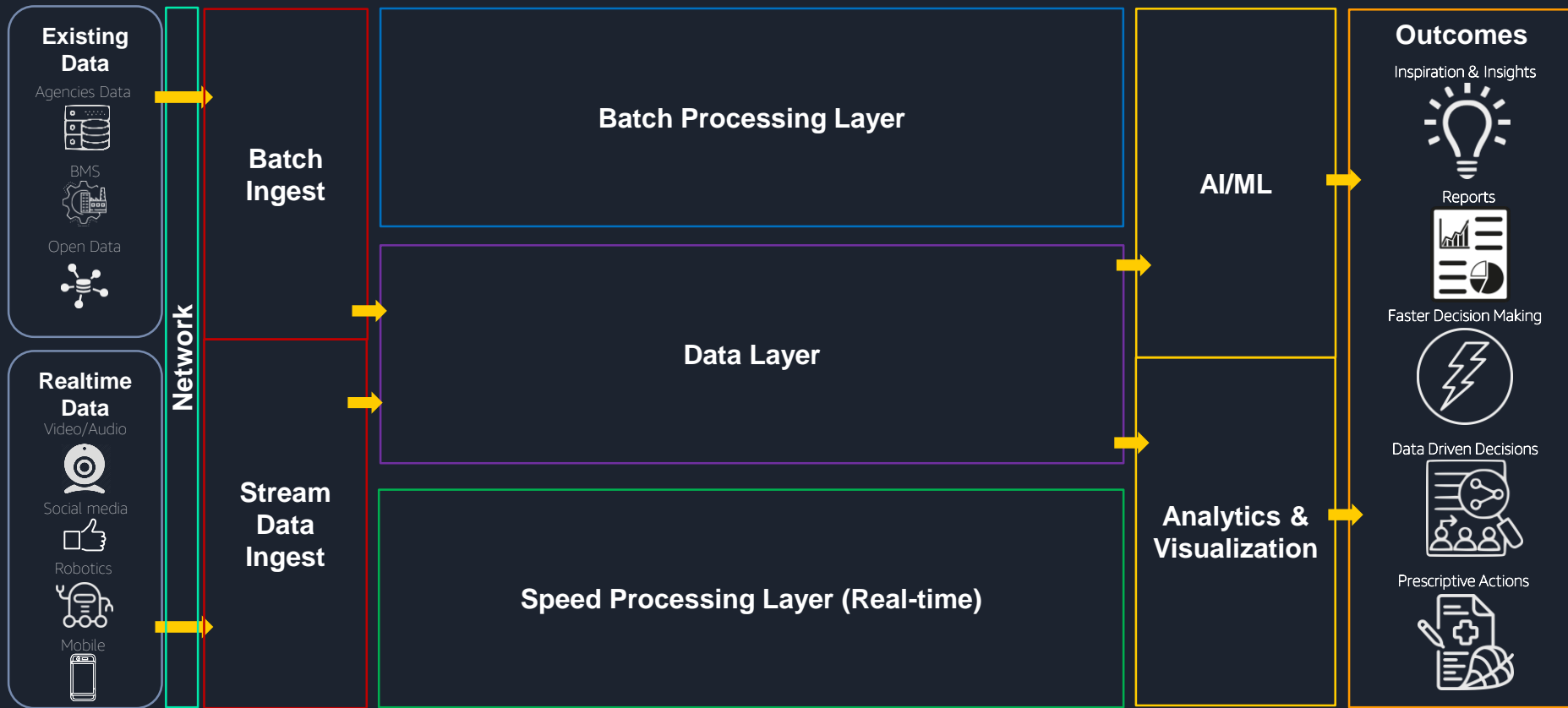
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AWS connects the dots between Cloud to Edge and Outcomes



AWS connects the dots from Edge Cloud to Outcomes



Cloud to Edge Use cases

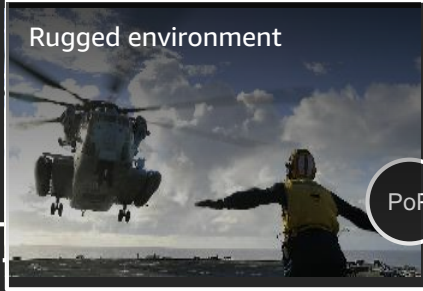
IoT devices



5G devices



Rugged environment



PoP

Industrial devices



PoP

On-premises facility

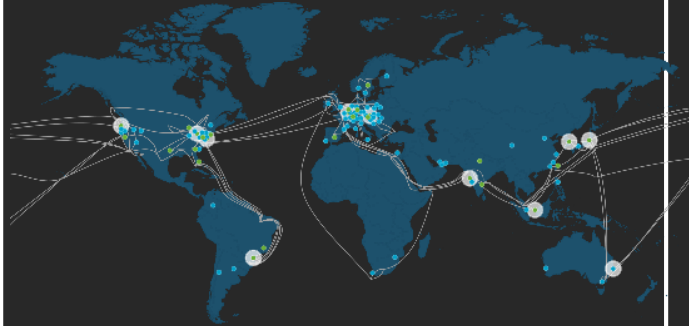


PoP

PoP



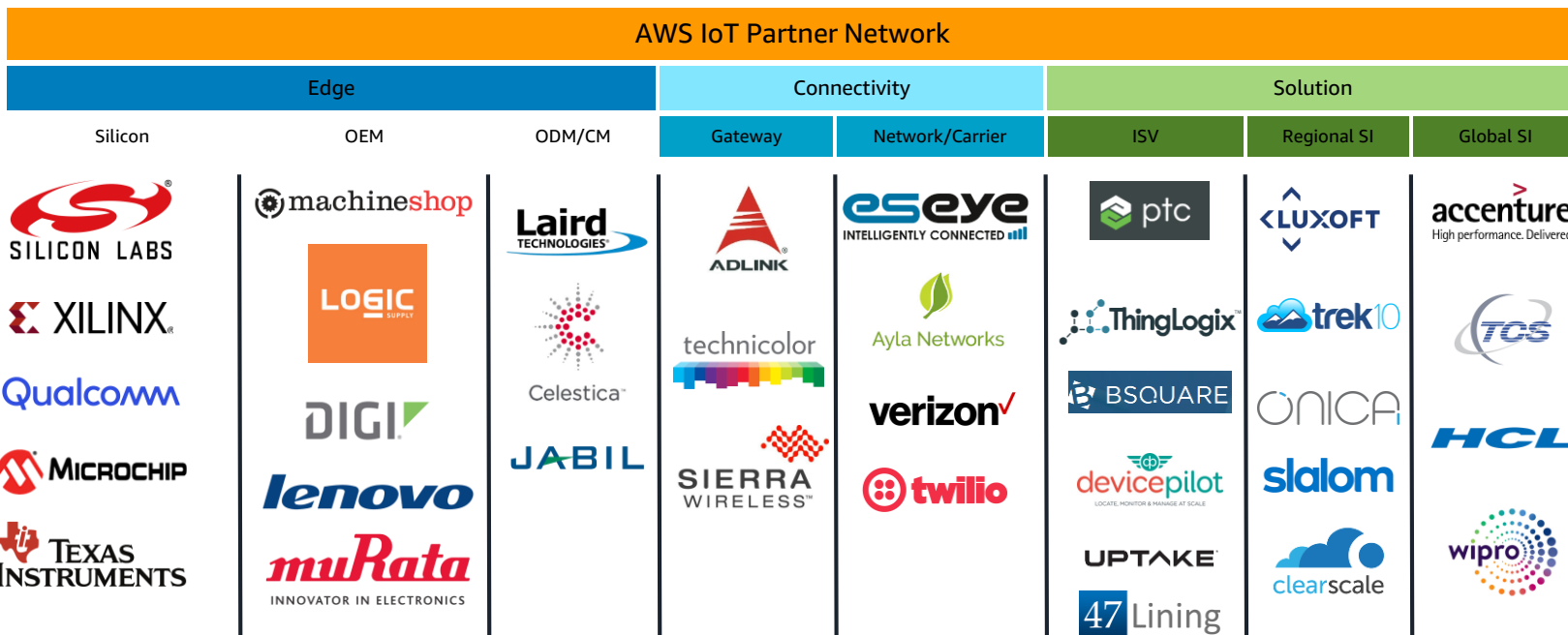
AWS Cloud



24 Regions
77 AZs

220+ PoPs
210+ Edge locations

Building solutions through a strong partner eco-system



Collaboration as a core principle



Run workloads on-premises connected and disconnected



**Global
Telcos**

IoT Devices + Network

Private Networks

4G/5G Networks + Edge

VPN, SD-WAN offerings

Existing customer Base
(Consumer, Govt., C&SB; Mid-market / Enterprise)

Managed Services



Run workloads with scalability on demand



Deliver value to customers



Adequacy of skills and resources

Globally Scalable Infrastructure

Global ISV & Developer Community across verticals

Breadth and depth of platform capabilities and services

Intentional approach to Edge

Common programming model (Edge to Region)

Skills Guild; training & upskilling



Telcos + AWS = Delivering greater value for customers

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- **Use Cases**
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Smart Tourism: Smart Parking Solution



- 1 Current Location
- 2 Quick Destination search and Proposed Destination
- 3 Select Preferred Car Park
- 4 Car Park Info: Rates, Opening hours
- 5 Travel Route to Destination
- 6 SMS Notification

Smart Car Park Platform is a cloud-based solution that leverages Automatic Number Plate Recognition (ANPR), smart video analytics and mobile payment technologies to provide efficient and convenient car park services for motorists, as well as significant cost savings for car park operators.

Leveraging ANPR technology and smart video analytics, the Smart Car Park Platform automatically reads the motorists' vehicle license plates for easy payment and car park access control.

Leveraging mobile app technology, motorists can make seamless payment through multiple electronic payment modes, including payment through a pre-registered account and preferred payment mode, mobile app, payment kiosk and contactless store value cards

The cloud-based Smart Car Park Platform centralizes all car park operations and maintenance management in one platform, and provides an overview of the car park's status and occupancy.

Smart Safety: Smart CCTV/Lamp Post



Smart Lamp Post

The Smart Lamp Posts are designed to enable innovative IoT solutions and applications by transforming them into an interconnected network of various sensors.

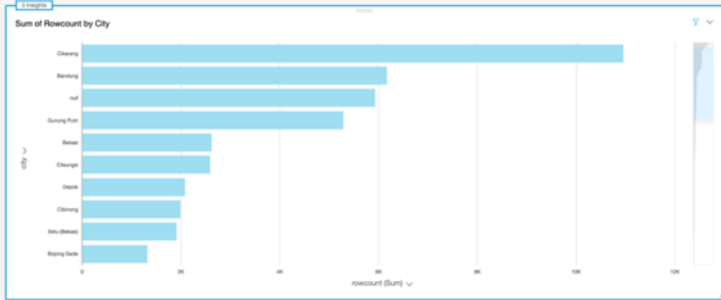
They can be fitted with various IoT sensors and cameras to collect a wide range of citizen surveillance data to provide insights that can be used for enhanced city and operational planning, prompt response to incidents, as well as preventive and predictive maintenance.

Utilizing intelligent video analytics algorithm, the Smart Lamp Posts enable municipalities and agencies to perform multiple video analytics such as facial recognition, vehicle detection and human attribute search

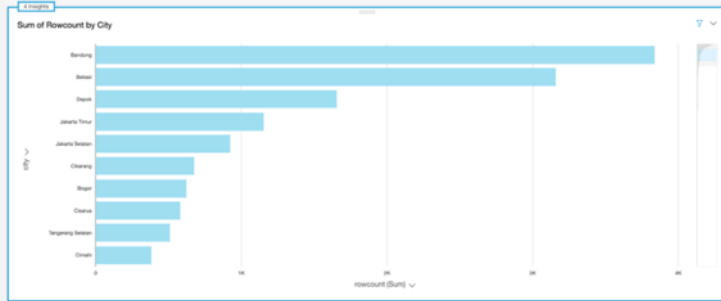
This solution can be used for Smart Pura, Smart Puri, Smart Protection, Smart Infrastructure

Smart Traffic: Traffic & Road Monitoring

Road Pot Hole Analysis



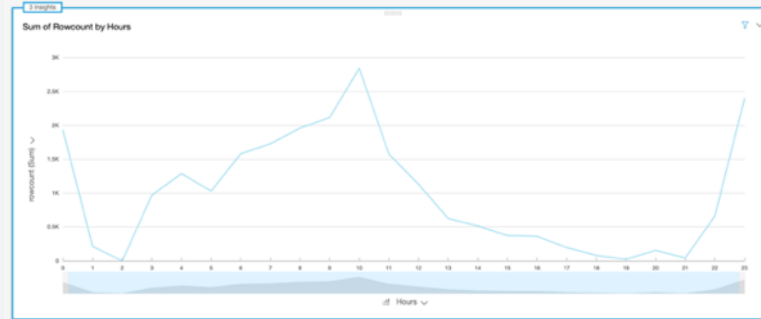
Worst Traffic Jams by City



Subtype Composition by City



Peak Hours (UTC)



Smart Bureaucracy: Document Analysis

Document analysis helps customer to extract and analyze content of scanned or digital documents. This will help customer to replace manual process of data entry from scanned documents. Other capability includes tables and form identification, sentiment analysis and automated text insertion to Database.

[Amazon Textract](#) > Analyze document

Analyze document [info](#)

[Download results](#)

[Upload document](#)

Drag or upload a document to see its text, form data (key-value pairs and selection elements), and table data.

Sample document

Employment Application

Applicant Information

Full Name: Jane Doe

Phone Number: 555-0100

Home Address: 123 Any Street, Any Town, USA

Mailing Address: same as home address

Previous Employment History

Start Date	End Date	Employer Name	Position Held	Reason for leaving
1/15/2009	6/30/2013	Any Company	Head Baker	Family relocated
8/15/2013	present	Example Corp.	Baker	N/A, current employer

AWS Text Extraction Result

Below is the text extraction result based on AWS Textract:

Key	Value
Nama Direktur	R. AHMAD RAMALI, SH
Bidang Usaha	NOTARIS / PEJABAT PEMBUAT AKTA TANAH
Tujuan Surat	AKTA PENDIRIANYAYASAN HISHBAHUL HIUNIR PRAGAAN
Submit	Submit

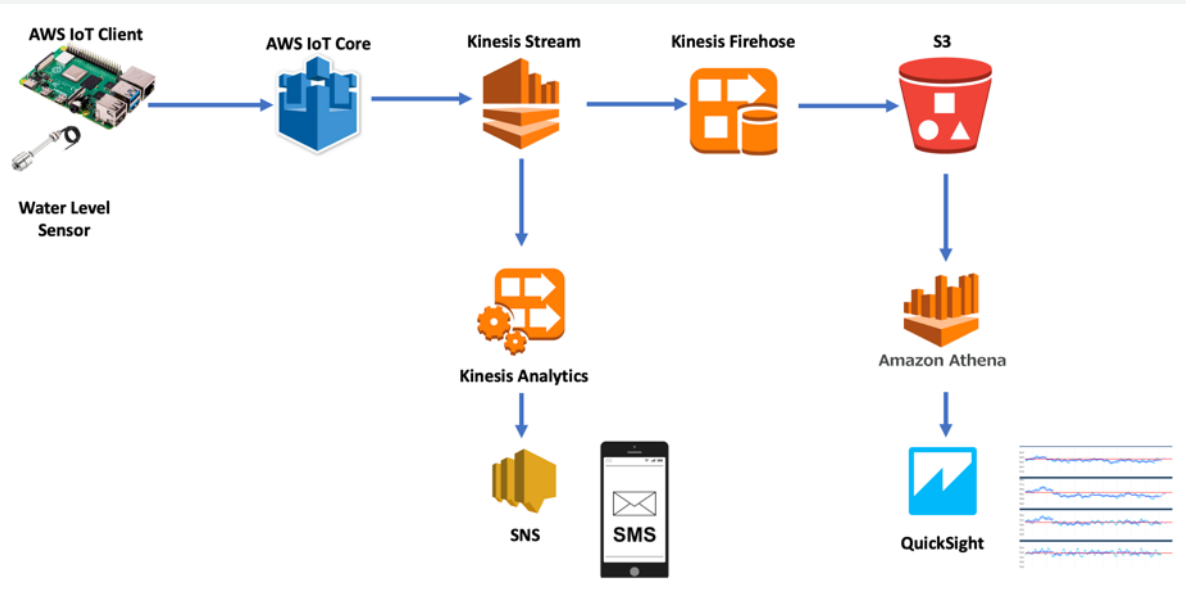
[Back to Upload Page](#)

File uploaded to S3: <https://uploadgambar.s3.ap-southeast-1.amazonaws.com/100002329126.jpg>



Smart Meter: Flood Monitoring

This architecture can also be used to estimate smart waste and smart energy, with different sensor (ex: ultrasonic sensor for smart waste)



River IoT Monitoring

- Provide real time monitoring to monitor all water facility/river
- Work with any water level sensor
- Provide secure and reliable IoT messaging
- Realtime time-window analysis
- Flood alert via SMS or Email
- Historical data are stored in object storage
- Use can view historical and trend data in QuickSight Dashboard

PetaBencana.id uses IOT to detect floods and other disasters in Indonesia

CHALLENGE

- Jakarta needs immediate access to accurate, time-critical flood information anytime, anywhere.
- The solution must be able to scale in order to meet peak demand during emergency situations.

SOLUTION

- PetaBencana uses AWS IoT services to manage sensor devices and collect data from deployments in the field in Jakarta.
- It also Uses [AWS Elastic Beanstalk](#), [Amazon Relational Database Service](#) (Amazon RDS), and [Amazon Elastic Compute Cloud](#) (Amazon EC2) instances to collect social media and flood-gauge data.

BENEFITS

- automated failover capabilities and scalability provide continuity of service during traffic peaks in the midst of flood events
- PetaJakarta's can scale to handle high volumes of traffic during disaster situations without requiring expensive servers that sit idle during off-peak times.



Company: Yayasan Peta Bencana

Industry: Government

Country: Indonesia

Councilors: 9

Website: <https://petabencana.id/>

About Peta Bencana

Petabencana.id uses media social and cloud technology such as IOT to collect, filter and display real time information about floods in Indonesia.

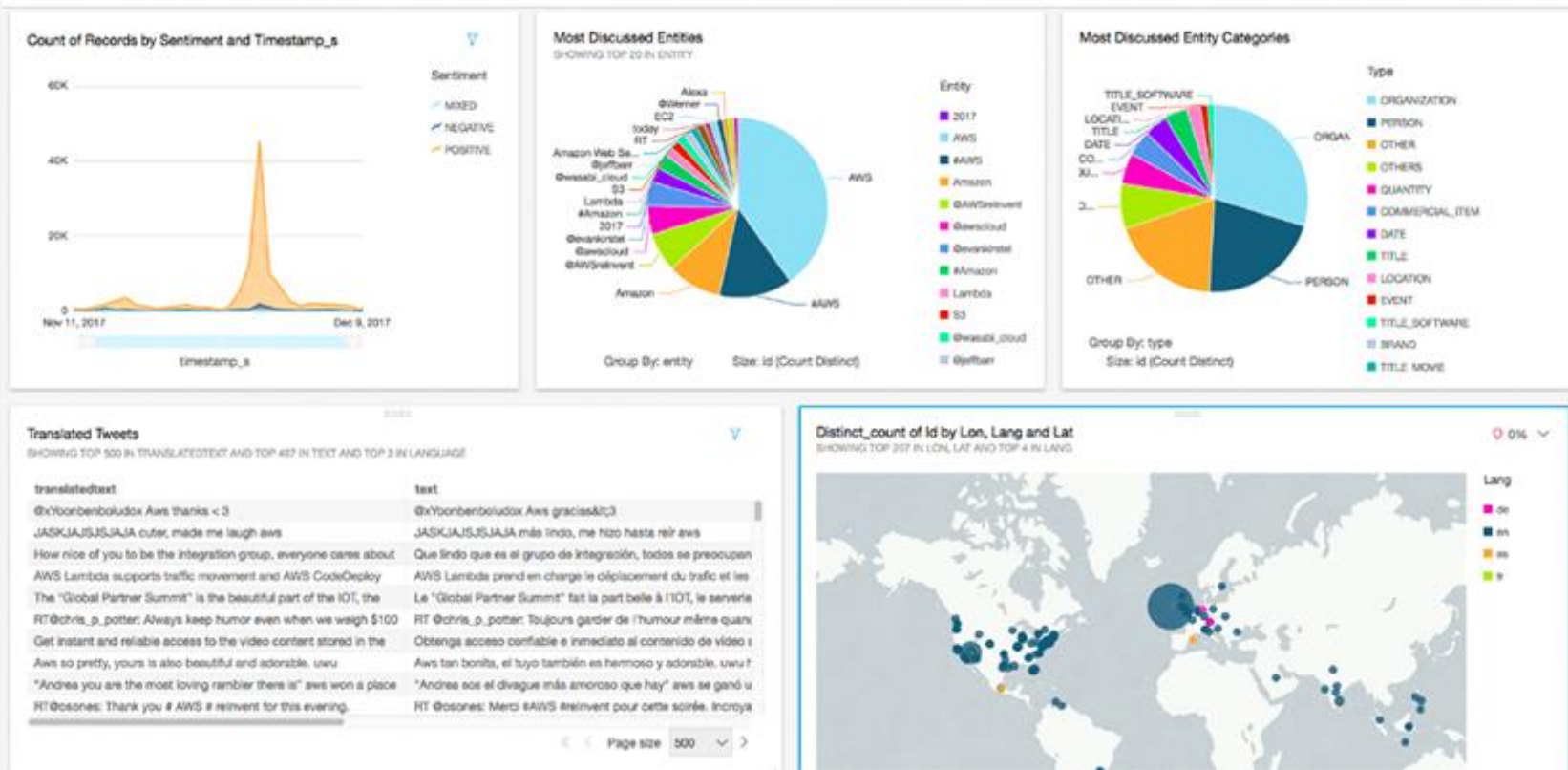


In order to provide a **reliable service** with the **flexibility** and **reliability** required of our citizen and government end users, we selected **Amazon Web Services**.

Matthew Berryman, SMART Infrastructure Facility
University of Wollongong



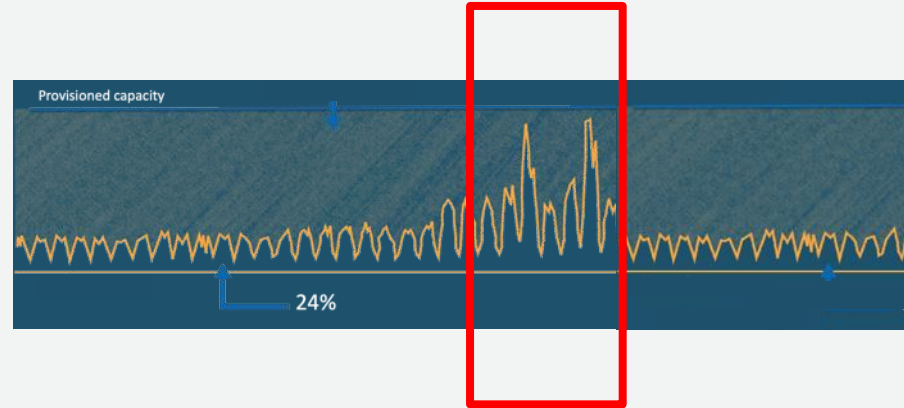
Citizen Voice: Social Media Sentiment Analysis



Smart Education: Learning Management System on AWS

Most institution has to cope to handle short, yet very high load during registration and online testing. This has lead to downtime or degraded experience during the most critical event in the institution. Another issue is the high cost of HW they need to spend just to handle the short period of peak time.

Many already moved their Learning Management System (LMS) to AWS because it provides elasticity to handle that short, very high load. With elasticity, institution can also reduce its cost by paying only what they used based on current load.



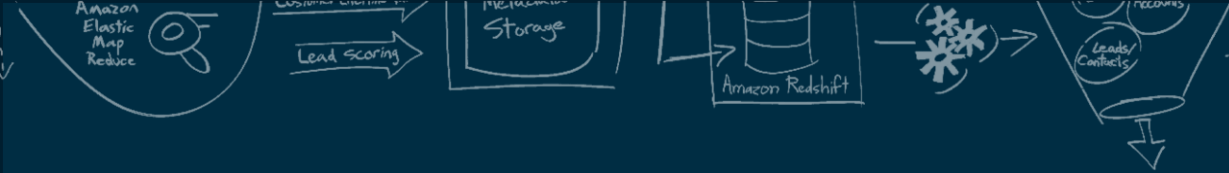
Short, very high load during registration and online testing

ASEAN Case References



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12 Online Courses, 11 Cloud Badges,
>14 year old
Curriculum Support + Job Board
Online + Offline

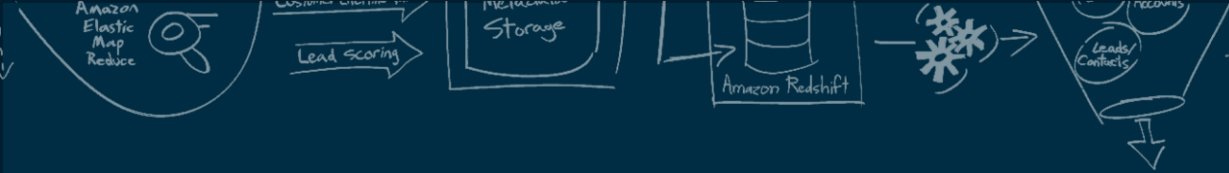
4 Cloud Curriculums , >18 years old
Cloud Foundation, Associate – SA, SysOps Admin,
Developer **Online + Offline**



AWS
EdStart

AWS Promotional Credits, Office Hours with AWS
experts, Community Engagements and Marketing
Ops for EdTech Startups.
Online + Offline





aws training and certification

11 Certs; Industry recognized training and certification learning paths: Professional, Associate and Foundational level
Online + Offline

AWS Promotional Credits, Tech/Biz Support, Marketing Opportunities for Startups to help startups build, launch, and scale.

Online + Offline

aws activate

aws Registry of Open Data on AWS

aws Cloud Credits for Research

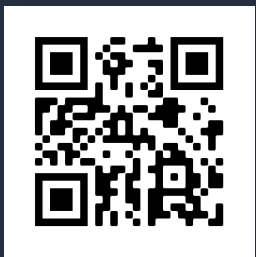




Thank you!

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Amazon Web Services



Download AWS ASEAN Smart City eBook
<http://bit.ly/AWS-Innovation>

