Continental 🐎
The Future in Motion

Feedbacks on AWS at CDSF
Lionel Franchini – November 16th 2021

www.continental-mobility-services.com

VNI CVS ITs

whoami
Lionel FRANCHINI

› Cloud Architect at since 2017

› I like

› I use also

› And … A long time ago in a galaxy far, far away....
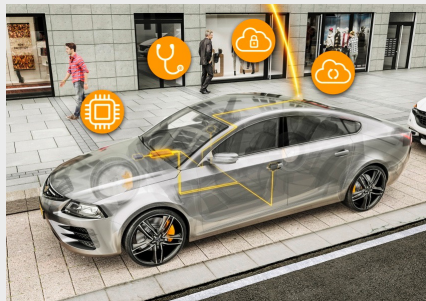
Continental

Continental Group
Leading the Way for Your Mobility

37.7 billion in **sales (2020)**

A leading player in **autonomous mobility**

First to market with **software-defined** vehicle architecture

Industry-benchmark operational efficiency in **Tires**

~235,000 **talented** and **dedicated employees**

561 **sites*** in 58 countries

Continental Group Structure

Continental Group	**Ⓒntinental☆**		
Group Sectors			
	Automotive Technologies		**Rubber** Technologies
	Vehicle Networking and Information	**Tires**	**ContiTech**

€7.9 billion in **sales**

47,789 employees

CDSF *(Continental Digital Services France)*
Diversity, our force...

We are 190 CDSFors **!**

36,5 years average age

3 years average seniority

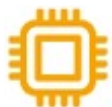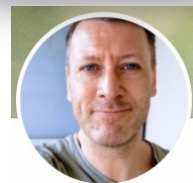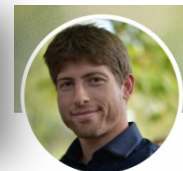**96%** of graduated employees from engineering schools & PhD

10-15 years average years of experience

30% of women & **70%** of men

52% of employees belong to **Y** Generation

17 Nationalities

IT (88%) & Automotive skills mix

77 newcomers in 2020 / **54** since beginning of 2021

Our vision

**We are Continental Innovation, Development and Operation Center for Connected services.**

Our mission

To enable the success of Continental BUs digital transformation, we:

- ✓ Aggregate and federate **Highly-skilled Digital Teams** (Cloud, Data, AI, Security…)

- ✓ Design and develop scalable **Cloud-based Solutions**

- ✓ Figure out how Cloud Services can **improve driving functions** (e.g. General Safety Regulations, efficiency related functions, HAD)

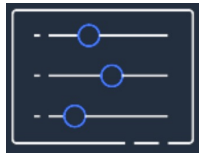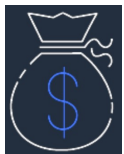- ✓ Provide best-in-class secured and highly available **Services Operation Platform**

Slippery road ahead

Feedbacks on AWS: Hype Cycle?
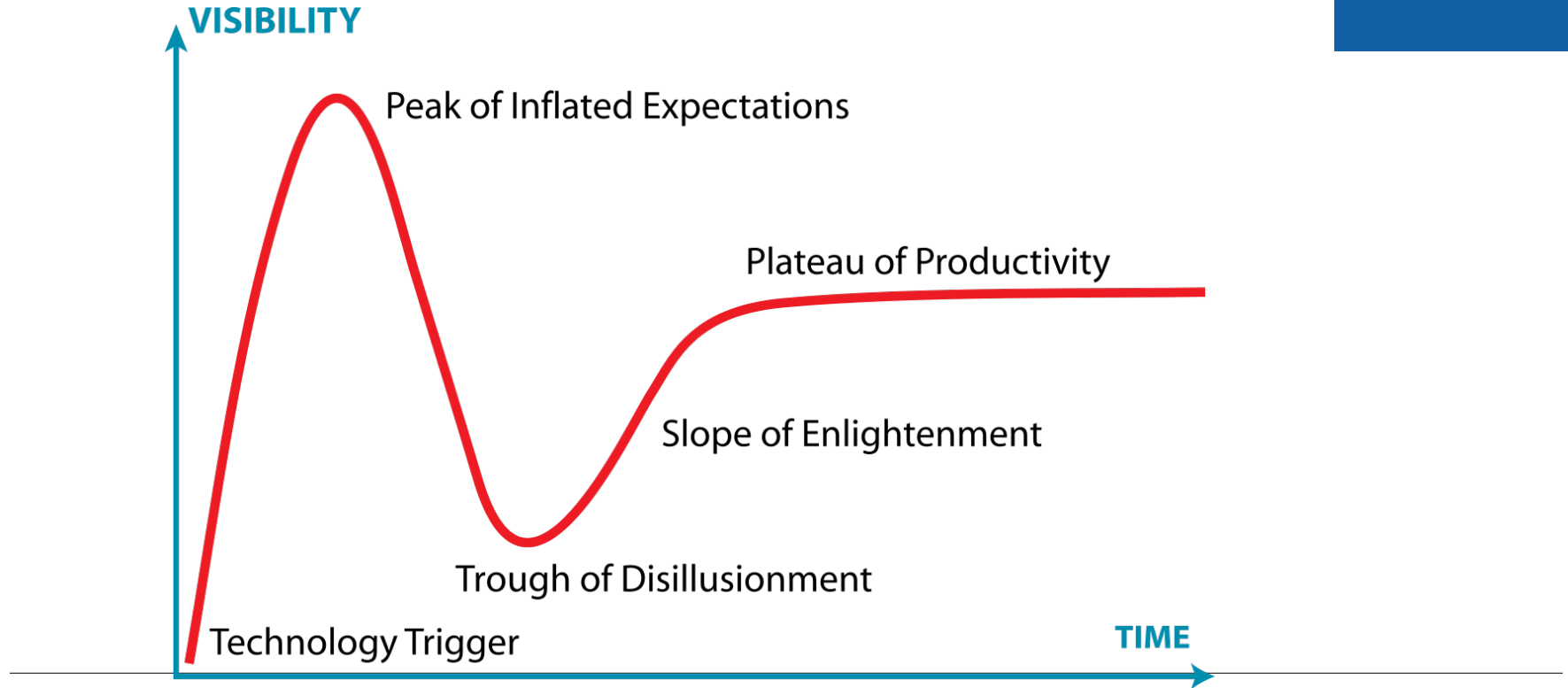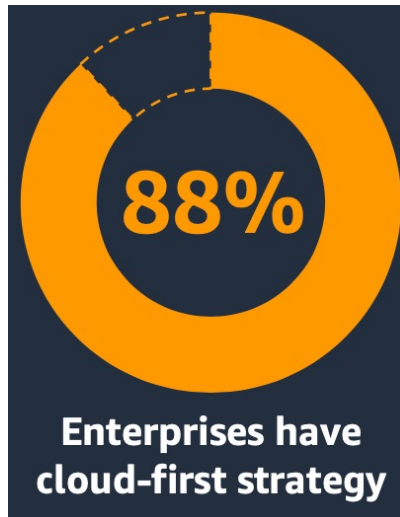
Why AWS?

Agility

Elasticity

Cost Savings

Deploy Globally

Staff Productivity

Operational Resilience

88%

Enterprises have cloud-first strategy

86%

Infra spend still on-premises

Gartner

Continental

Technology trigger
11 services, 11+ squads …

Road Signs · Road Quality · Speed Advisor · Car Monitoring · **Traffic Lights** · Immediate Danger Alerts · Parking Spaces · Traffic Speed & Density · Roadworks · Tolls · Driver Monitoring
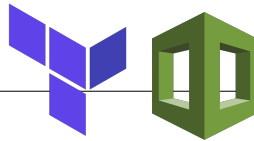
› 11 AWS accounts

› Test and use all needed AWS Services

› No costs monitoring

› No sharing (code and solutions)

› Only MVP, No operating requirements

› Infra-as-code but, no mandatory

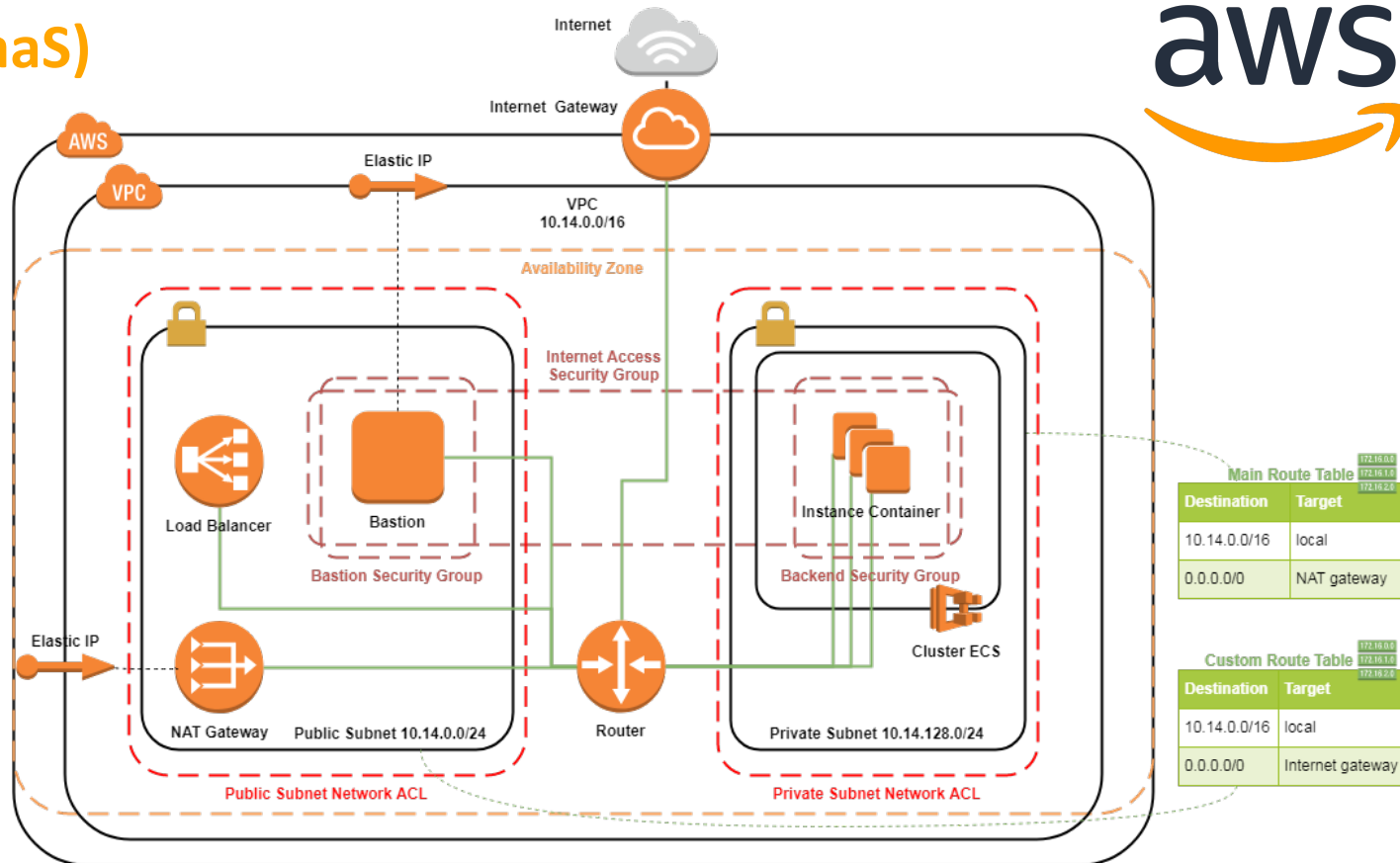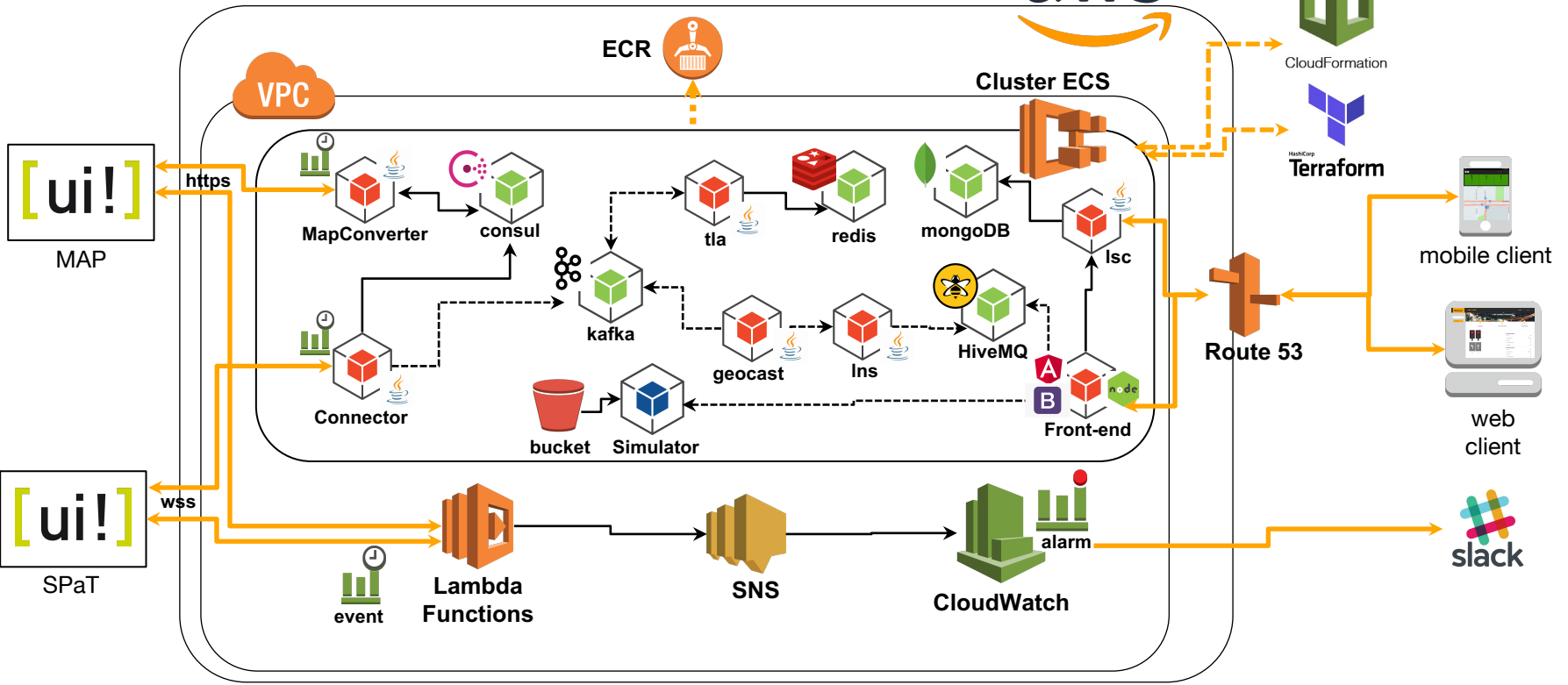# Traffic Lights (IaaS)

› Automatic deployment

  › Modular scripts

  › CloudFormation, Terraform

› Security-by-design

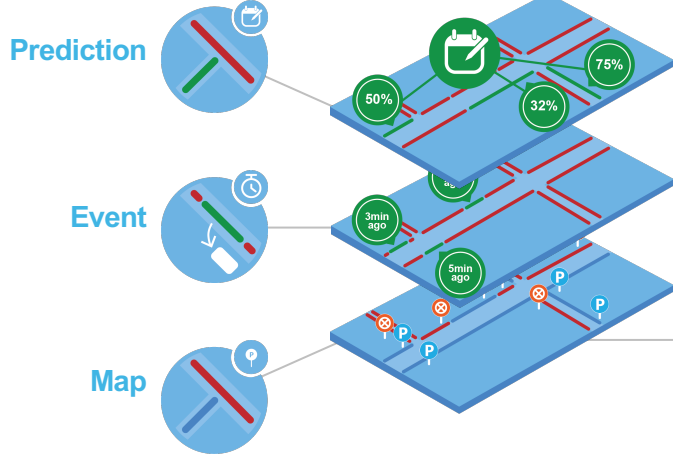 › Network ACL, Security groups

  › Bastion (SSH)

Internet

Internet Gateway

AWS

VPC

Elastic IP

VPC
10.14.0.0/16

Availability Zone

Internet Access Security Group

Load Balancer

Bastion

Bastion Security Group

Instance Container

Backend Security Group

Cluster ECS

Elastic IP

NAT Gateway   Public Subnet 10.14.0.0/24

Router

Private Subnet 10.14.128.0/24

Public Subnet Network ACL

Private Subnet Network ACL

Main Route Table

Destination	Target
10.14.0.0/16	local
0.0.0.0/0	NAT gateway

Custom Route Table

Destination	Target
10.14.0.0/16	local
0.0.0.0/0	Internet gateway

Traffic Lights (Containers)

Peak of Inflated Exceptations

Off-Street and On-Street parking

On - Street
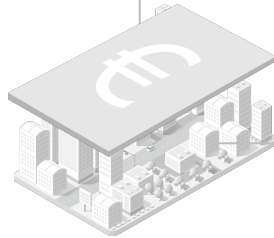
Off - Street

Prediction

Event

Map

More than **80%** **of drivers** are interested to use **connected parking solutions**[1]

Prediction

Event

Map
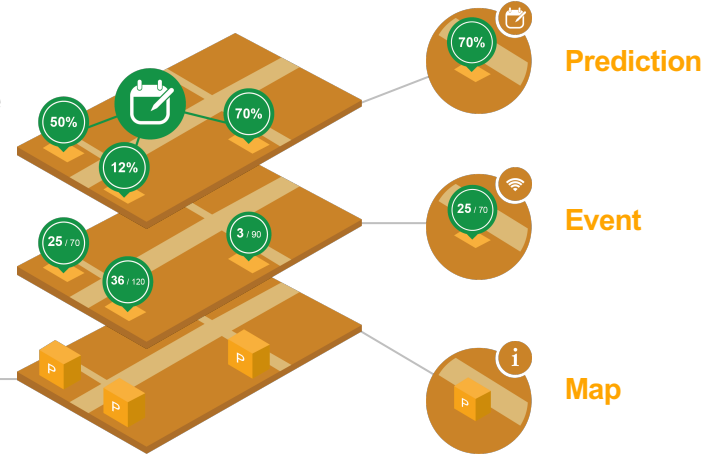
Networked Parking **ranks #1 in Germany** and **#2 for USA** and **China** amongst connected services use-cases with **highest willingness to pay**[2]
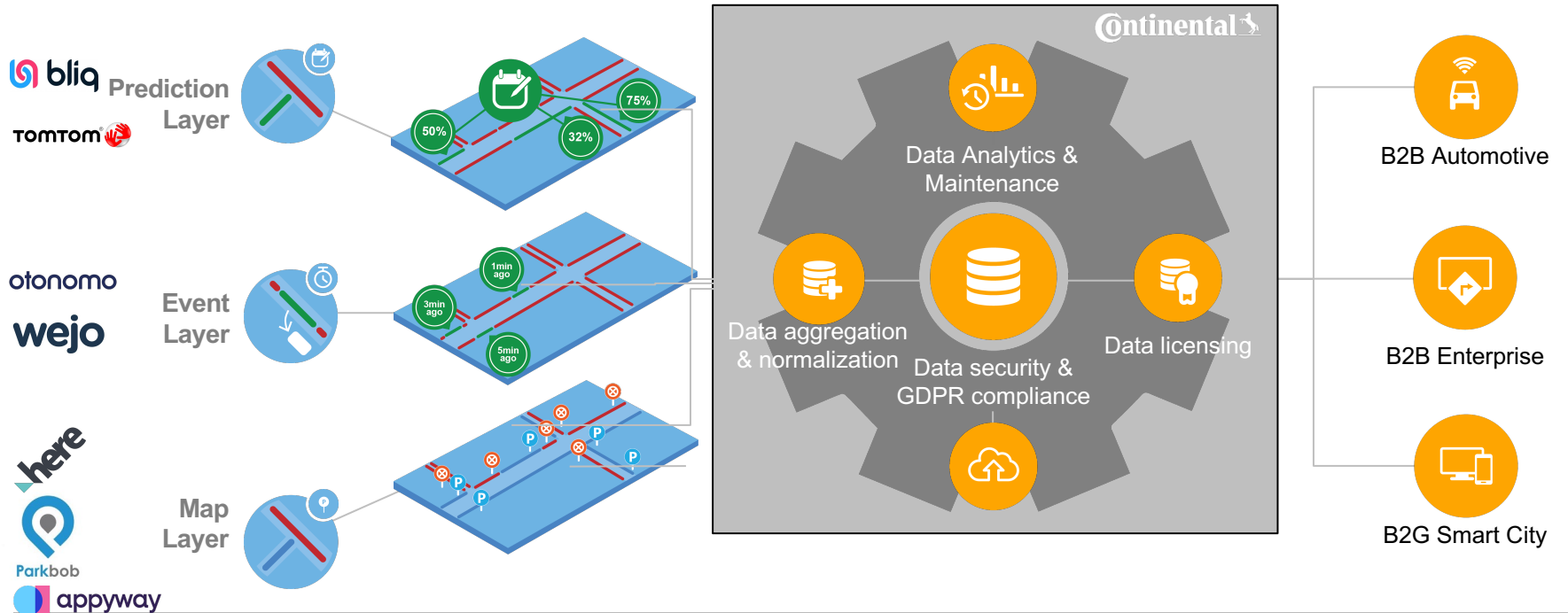
Map
Base map from e.g. Google, Apple, Here, OSP, …

Source: 1) C3 Digital Services Survey 2019, 2) McK Monetizing Car Data 2016, 4) CVAM ITS S2

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On-Street Parking
Supplier Network & Aggregation Platform

Peak of Inflated Exceptations

› A lot of microservices (~100)

› A lot of partners (costs)

› A lot of challenges

  › *Map*

    › *Manual / Auto*

  › *Predictions*

  › *Events*

  › **Aggregation**
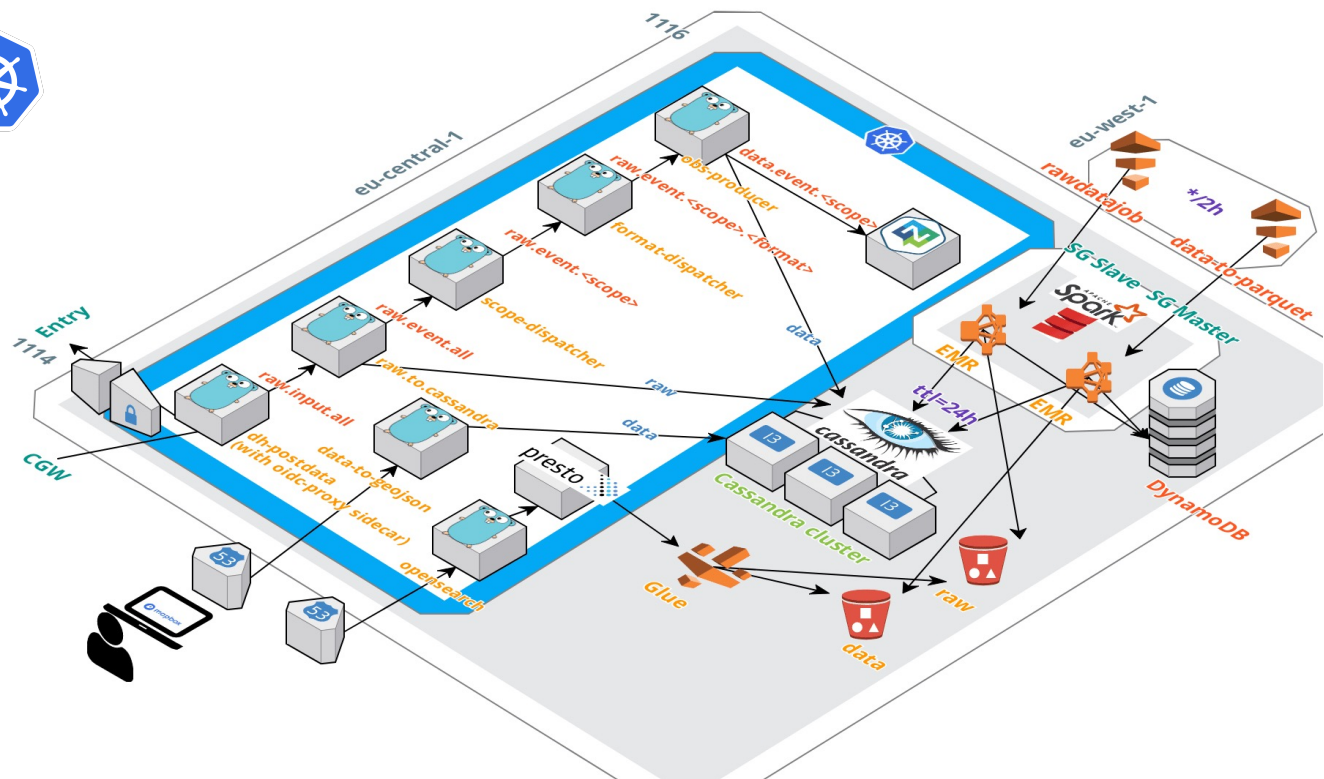
Trough of Disillusionment

› Adapt Products / (Short|Mid-term) Sales Opportunities

› Common Infrastructure for product / service delivery and operation

› Provides **scaling, resilience, security** and **measurement** capabilities

› Reduces **time and costs** by reuse and synergies

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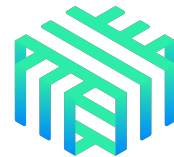
1 | Container / microservice architecture

2 | Continuous deployment pipeline

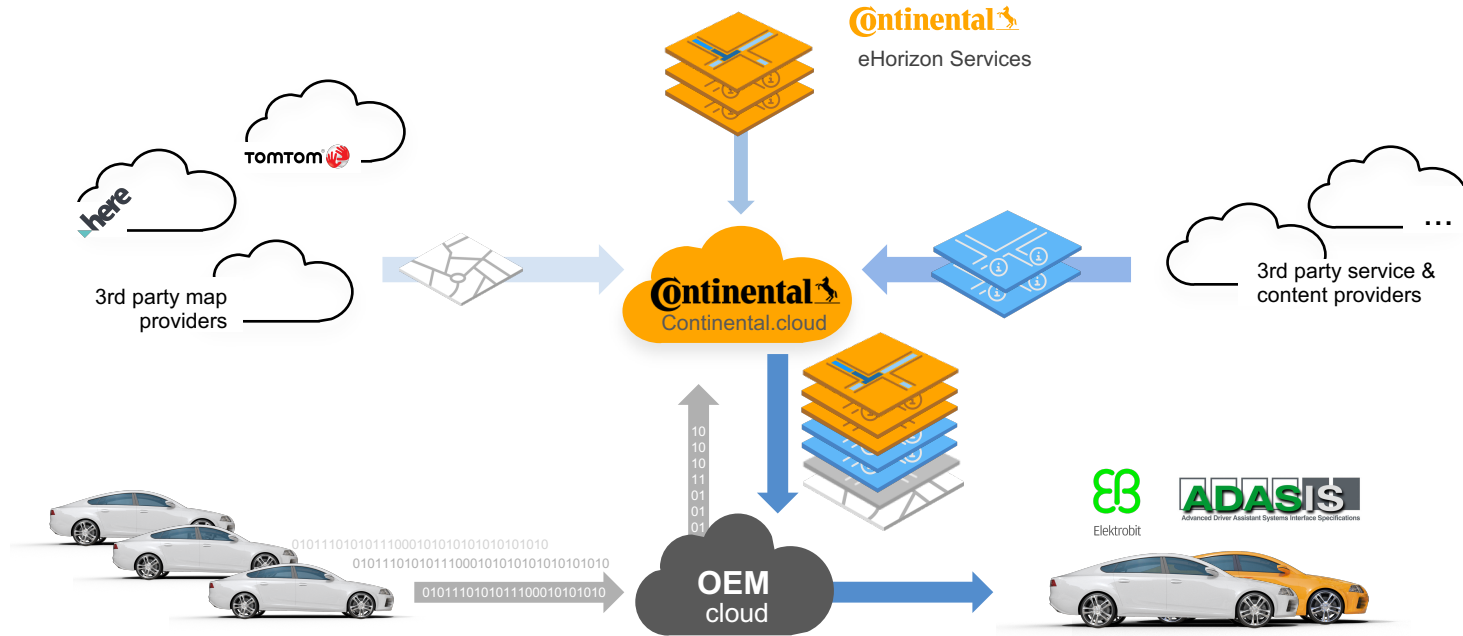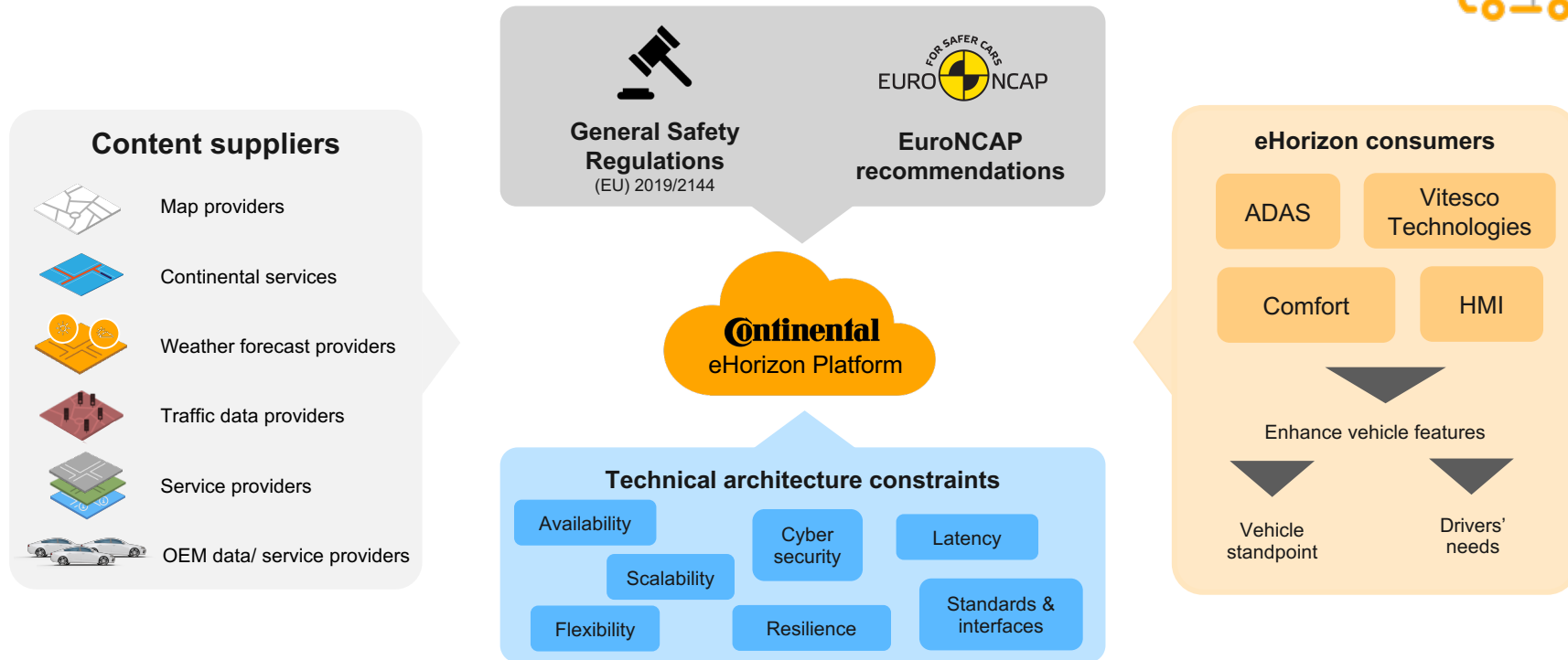**3** | Security by Design

open source ™
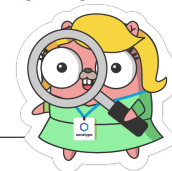
Slope of Enlightenment
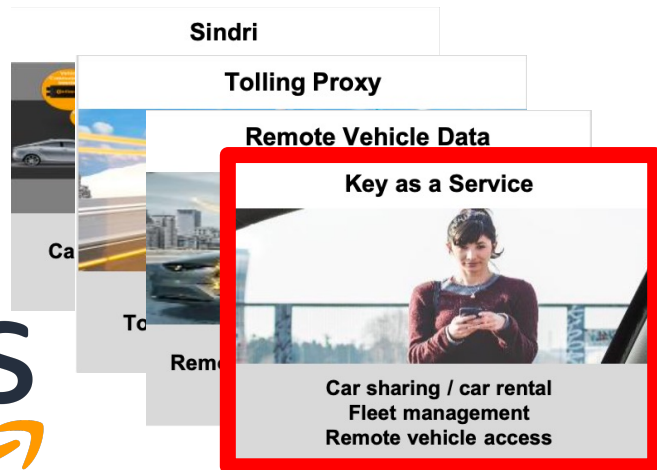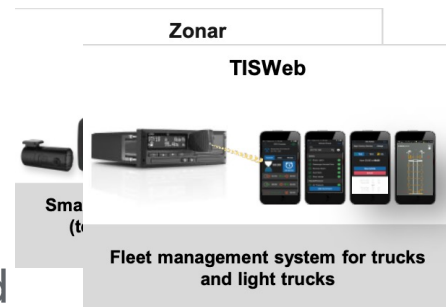
eHorizon system overview
Platform and services integration
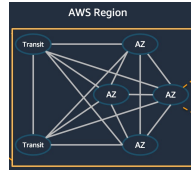
What are the drivers of the eHorizon solution?

Content suppliers

- Map providers
- Continental services
- Weather forecast providers
- Traffic data providers
- Service providers
- OEM data/ service providers

General Safety Regulations (EU) 2019/2144

EURO NCAP — FOR SAFER CARS

EuroNCAP recommendations

Continental eHorizon Platform

Technical architecture constraints

- Availability
- Cyber security
- Latency
- Scalability
- Flexibility
- Resilience
- Standards & interfaces

eHorizon consumers

- ADAS
- Vitesco Technologies
- Comfort
- HMI

Enhance vehicle features

- Vehicle standpoint
- Drivers' needs

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Plateau of Productivity

~ 20

Disaster Recovery

Observability

Multi-Region/AZs

US: N-Virgina

Europe: Frankfurt

China: Beijing

South Korea (planned): Seoul

Plateau of Productivity

Chaos Engineering is the discipline of experimenting on a system in order to build confidence in the system's capability to withstand turbulent conditions in production.
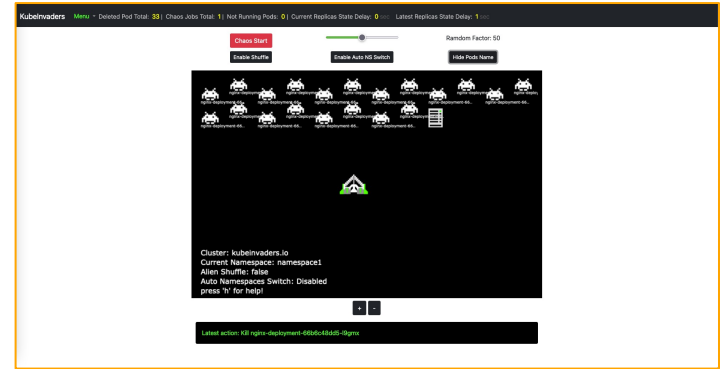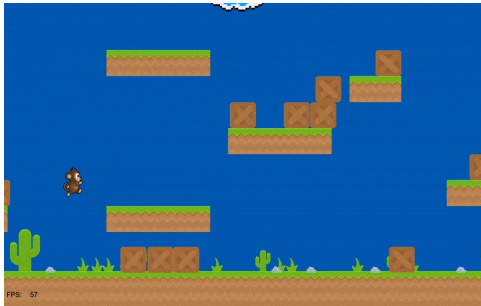
https://principlesofchaos.org/
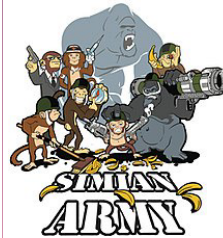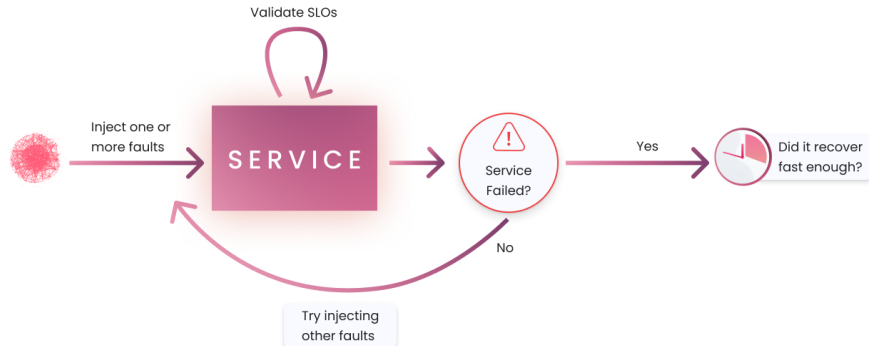
Chaos Engineering: Have fun!

THANK YOU FOR YOUR ATTENTION !

Q&A

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