



IoT Platform for GROHE

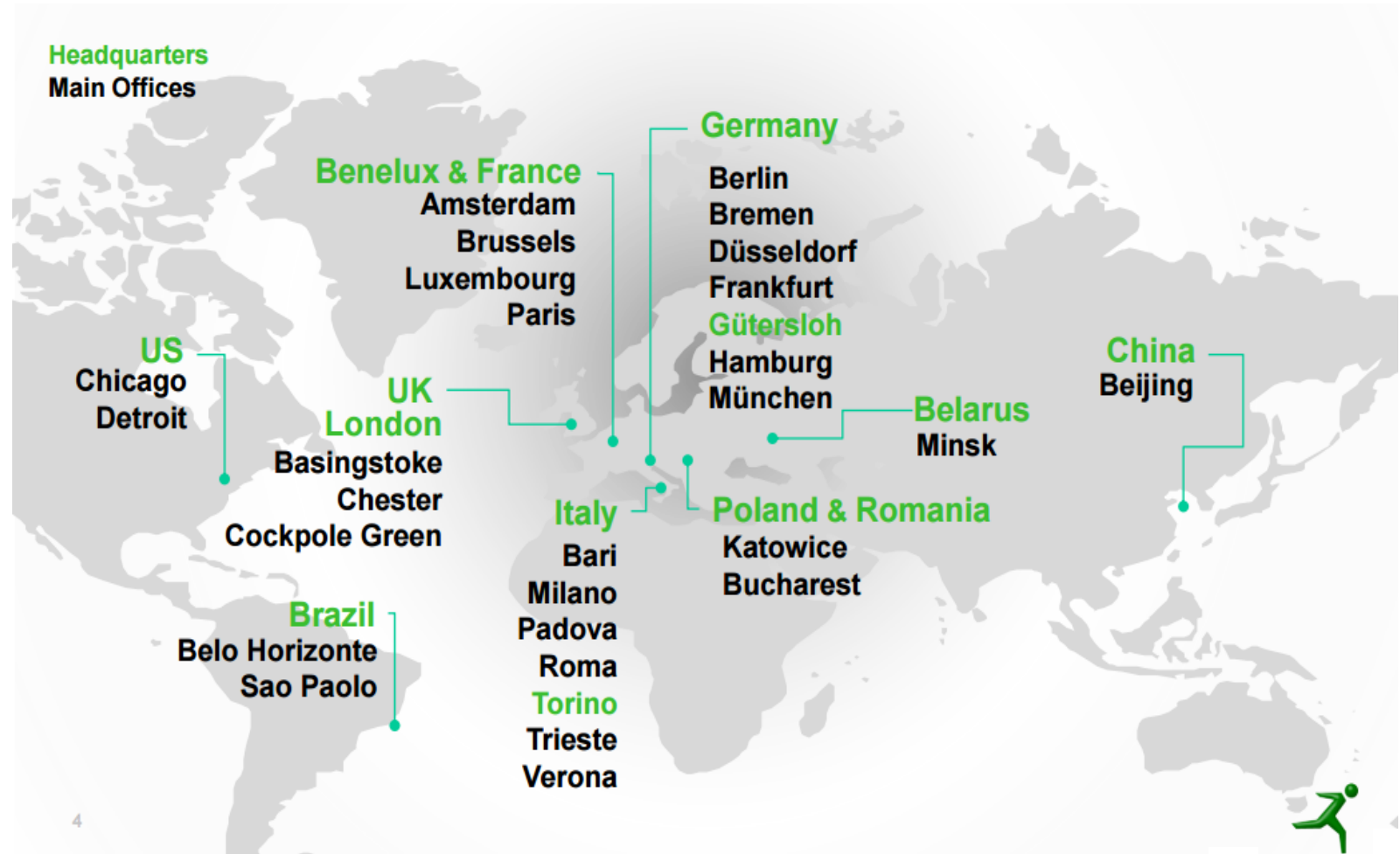
Sidrit Cela / Storm Reply



Reply – Key facts

Reply is made up of a network of highly specialized companies (**Living Network**).

- Founded in Italy in 1996
- Listed at Milano Stock exchange, STAR segment
- Mkt Capitalization: 1,3B€ (03/2017); Rev: 780,7 M€, EBIT: 99,6 M€ (12/2017)
- Employees: 6.000+, Brands: 60+, Units: 70+



Storm Reply: the offering

Storm Reply is an **AWS Premier Consulting Partners in EMEA** and part of the **Reply Network**

We supports business organizations on their journey to and in the cloud across the full cloud life cycle



ideate & architect

value based planning

- Strategy
- Business case
- Governance
- Blueprint



implement

iterative development

- Deployment
- Prototyping
- Migration
- Customization
- Automation



integrate

seamless integration

- Hybrid infrastructures
- Interfaces
- Orchestration
- Security
- Privacy



operate

automated operation

- AppOps
- SysOps
- DevOps
- SecOps
- FinOps



WATER.
INTELLIGENCE.
ENJOYMENT.

*Pure Freude
an Wasser*

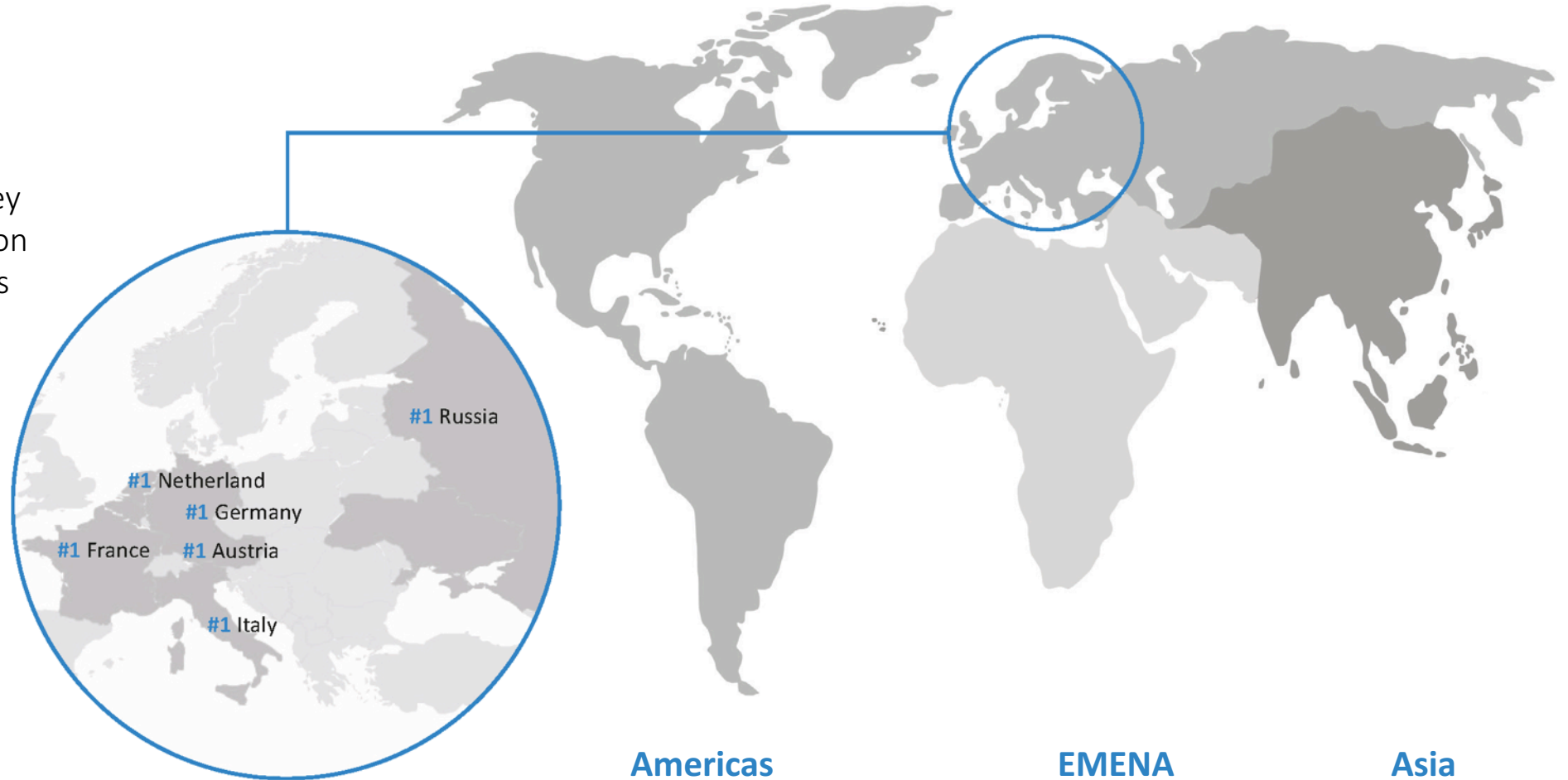


Bert Depiere
Director Digital Innovations

GROHE:

THE WORLD'S LEADING PROVIDER OF SANITARY FITTINGS

- No. 1 global brand in 150 countries
- 6% global market share
- Strong positions in all key markets; clear #1 position in key European markets



PURE FREUDE AN WASSER OUR BRAND VALUES



QUALITY

GERMAN PERFECTIONISM
INSPIRES ULTIMATE CUSTOMER
CONFIDENCE



TECHNOLOGY

MASTERING WATER
THROUGH TECHNOLOGY



DESIGN

SIGNATURE ELEMENTS STYLED
TO PERFECTION



SUSTAINABILITY

ENSURING WATER ENJOYMENT
FOR GENERATIONS TO COME



Aquatower



Eurosmart



Grotherm 3000



Essence



Relaxa

>10 YEARS AGO



Europlus



Costa



Eurodisc



Freehander



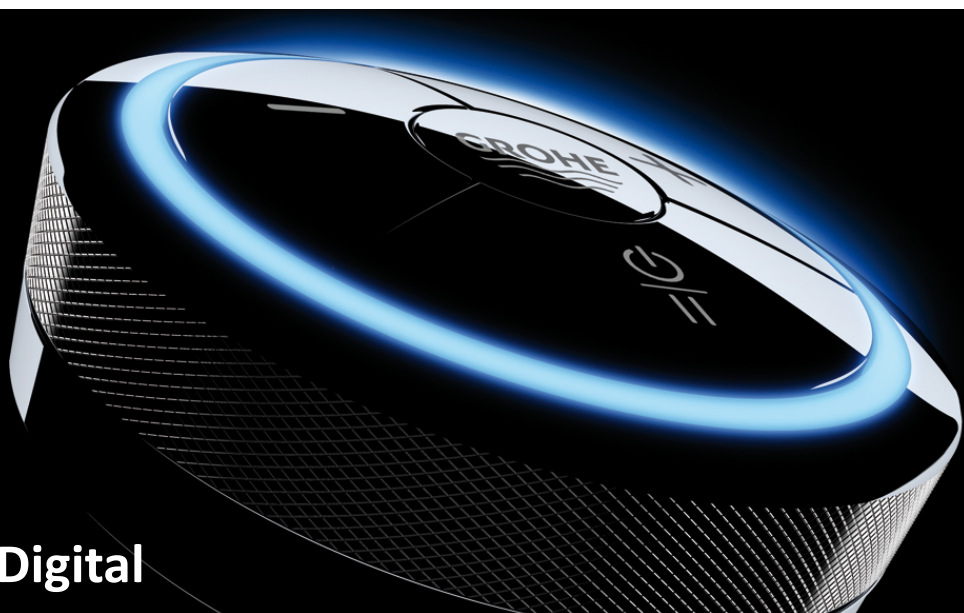
Grohtherm Smartcontrol



F-Digital Deluxe



Sensia Arena



F-Digital



GROHE Blue Home





People touch
a GROHE product
more than **20 times** a day ...

... **1 digital profile**
will improve the **experience.**

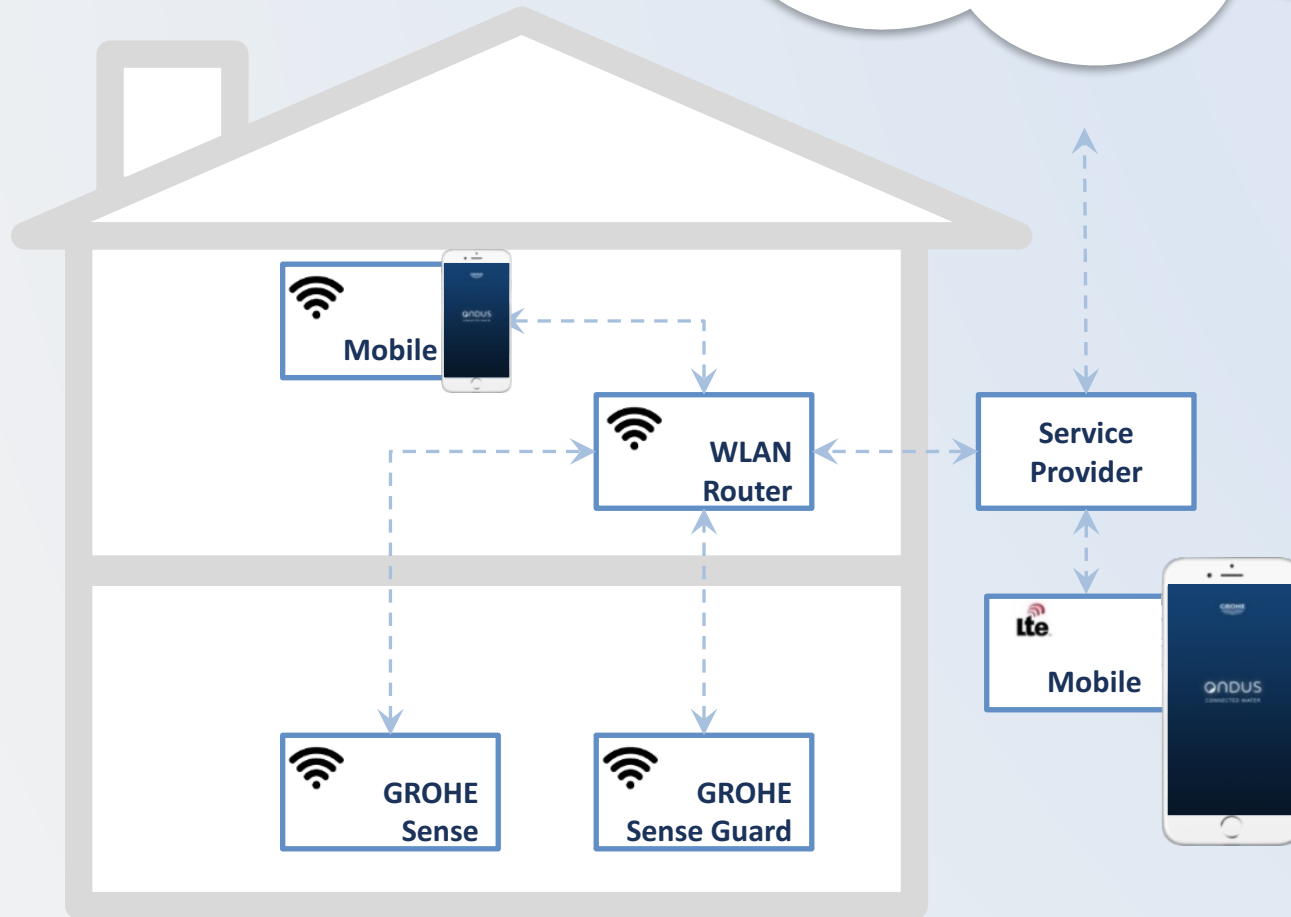
GROHE'S DIGITAL JOURNEY & PROFILE STARTED 10 YEARS AGO ...

... WITH GROHE ONDUS



GROHE ONDUS

GROHE



THE GROHE CLOUD
INDIVIDUALIZED
EXPERIENCE & SERVICES
FOR OUR CUSTOMERS

The GROHE logo is located in the top right corner. It consists of the word "GROHE" in a white, bold, sans-serif font, positioned above three white wavy lines that represent water. The logo is set against a dark blue square background.

GROHE

The central text is overlaid on a background of three pairs of black rubber boots standing on a wet, reflective surface. The boots are arranged in a row, with their reflections clearly visible on the ground. The overall color palette is a monochromatic blue-grey.

54%
EXPERIENCED
A WATER DAMAGE

BEFORE A DRIP
BECOMES A FLOOD

*Pure Freude
an Wasser*



GROHE Sense & GROHE Sense Guard

GROHE SENSE DETECTS FLOODING & INSTANTLY SENDS AN ALARM



GROHE SENSE GUARD DETECTS A PIPE BREAK, SHUTS OFF THE WATER & INSTANTLY SENDS AN ALARM



GROHE IoT – The Challenge

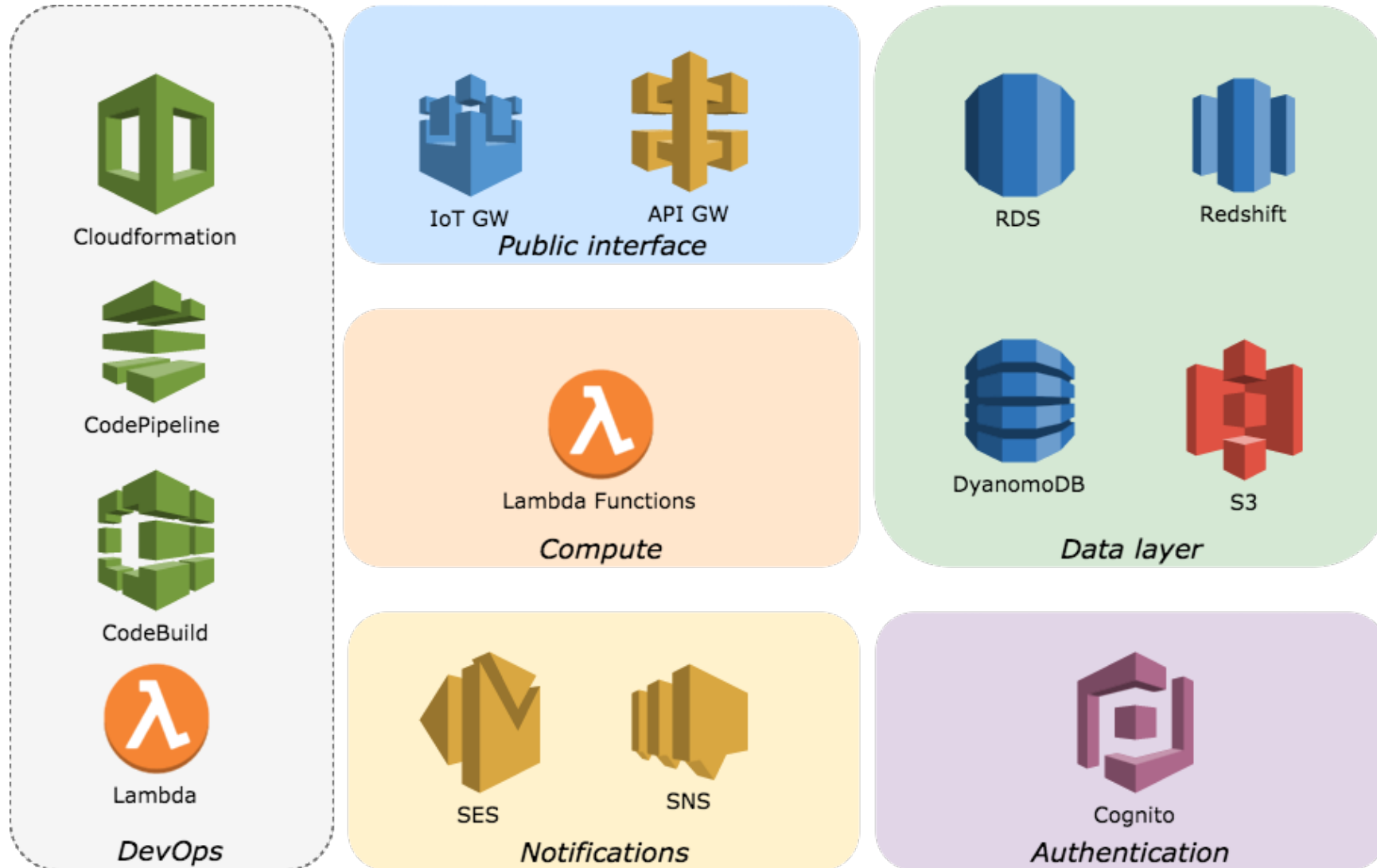
- From 0 to potentially millions of devices connected
 - Business critical
 - High restrictions of device's hardware and different types:
 - *Rarely connected sensors*
 - *Almost-realtime sensors*
 - *Actuators*
 - Agile specifications
 - Compatible with most end-users, from companies' network to households
 - Secure mobile app interface and device's interface – security by design
 - Worldwide users
- *Scalable*
 - *Reliable and highly available*
 - *Flexible and elastic*

 - *Widely used protocols*
 - *Public secure interface*
 - *Global presence*



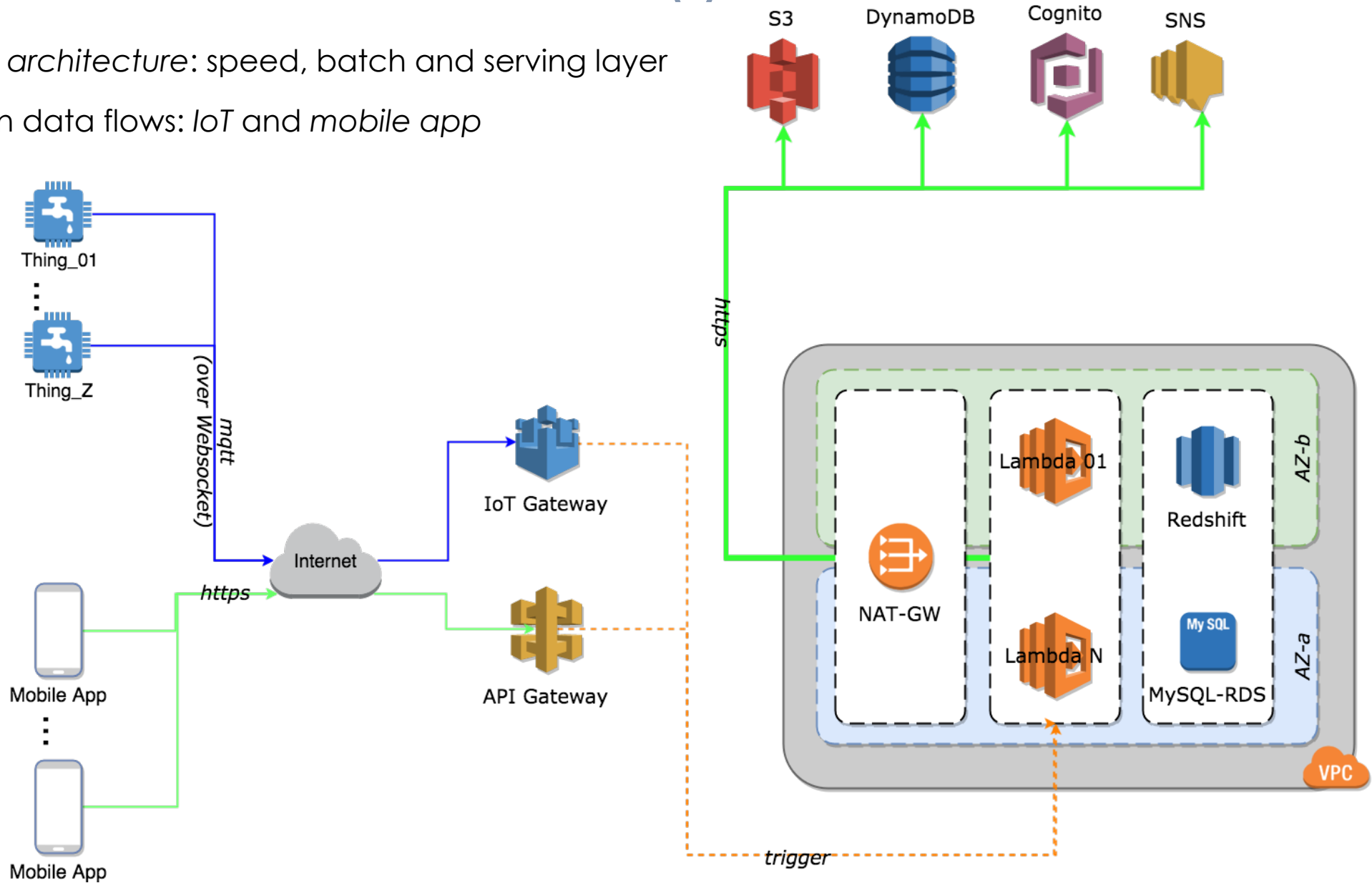
Solution

Reply has implemented a *serverless architecture* based on AWS cloud services



GROHE IoT - Environment (I)

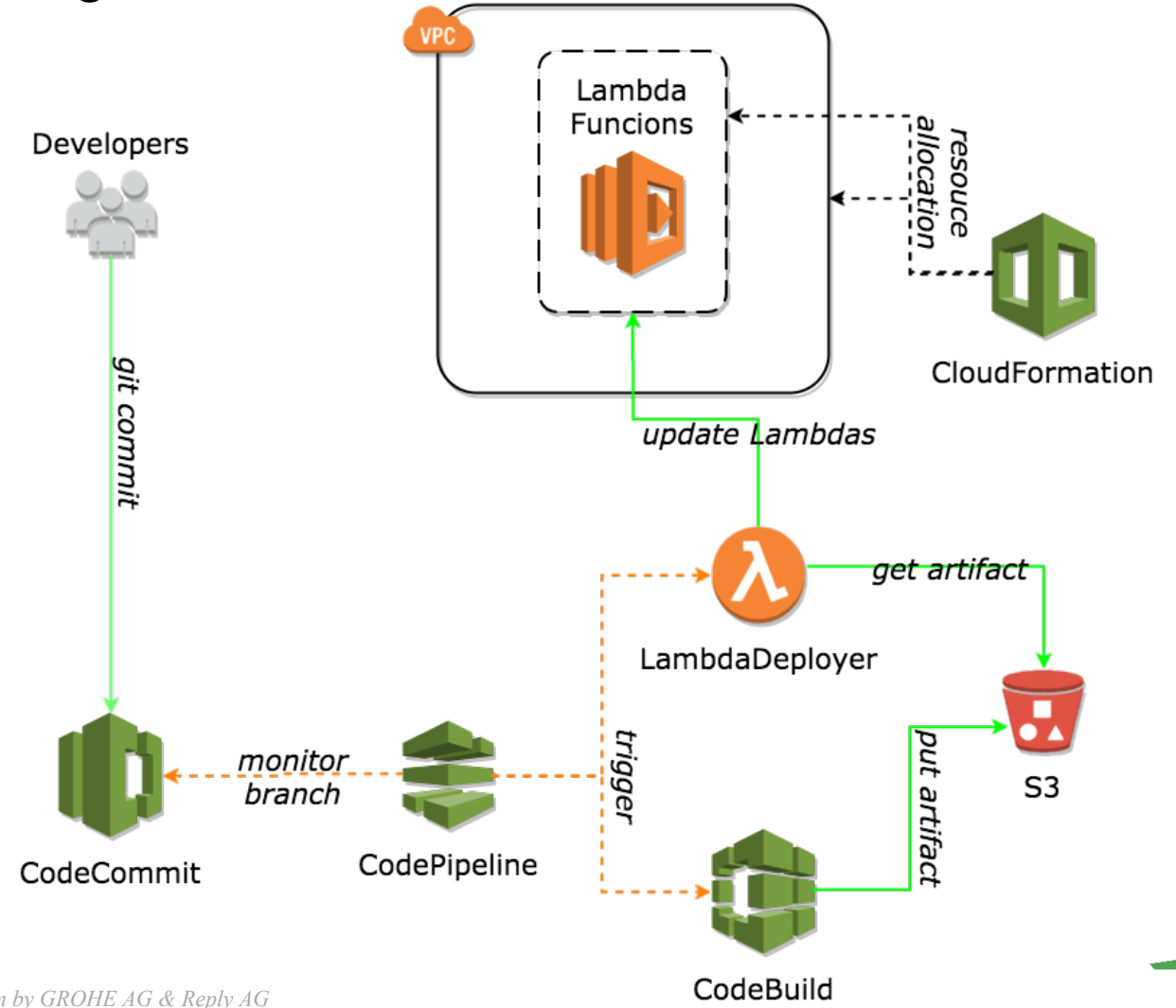
- *Lambda architecture*: speed, batch and serving layer
- Two main data flows: *IoT* and *mobile app*



GROHE IoT - Environment (II)

A DevOps approach for infrastructure management

- Continuous Integration (CI)
- Continuous Deployment (CD) for non-Prod
- Automated deployment for production
- CloudFormation templates



GROHE IoT - Environment (III)

Serverless architecture is state of the art paradigm offering great advantages:

- No servers; **Low maintenance** and administration effort
- No single point of failure - **HA and Reliability**
- **Highly scalable** and elastic
- No fixed costs; **Pay-per-use resources**
- No lock-in; **Standard protocols** used
- Security based on standard AWS services
- DevOps approach with **CI, CD & AD**
- Easily replicable to AWS regions
- Ready to support future device types



GROHE IoT - Lessons learned

- **Reduce the task** of a single Lambda function
 - *More Lambda functions*
 - *More Lambda running in parallel*
- **API Gateway**, integration timeout is 30 seconds
- **Use DynamoDB** for speed layer & Redshift for *batch* layer
- **Sending “commands”** from both Mobile-App and IoT devices
- **Republish device state**, after reconnection
 - *\$aws/events/presence/connected/ VS \$aws/events/presence/disconnected/*
 - *\$aws/events/subscriptions/subscribed/ VS \$aws/events/subscriptions/unsubscribed/*



Evolution - Next steps

Improve the **existing architecture**:

- DynamoDB Accelerator,
- Implementing automated tests
- Improve device status monitoring
- Create backend overview
- ...

Not only give a service to end-users but also take advantage of the **stored information**:

- **Big Data** – is a matter of extracting useful information from the huge amount of data. It is a way for GROHE “*to get to know their users*”.
- **Business intelligence** – once you know your user’s behaviour, this knowledge can shape business strategies: e.g. business approach, open opportunities.



Thanks for your interest!

Storm Reply (BOOTH 6)

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Cloud Computing: Storm Reply

Storm Reply has been founded in 2010 to provide professional cloud computing services.

Our goal is to *exploit the full potential of the cloud for our clients* to support them achieving their strategic targets. It is currently operating in Germany and Italy, with a base of over 70 expert resources like cloud consultants, solution architects, developers, help-desk operators.

Storm covers the complete cloud life cycle: strategic consultation and idea generation, development of applications and infrastructures, integration into hybrid IT landscapes and fully managed services around the clock.

- Partnerships with Amazon Web Services (one of the few **Premier Consulting Partners** in EMEA), Google (Google Cloud Platform and Google for Work Partner) and leading technology, security, data center, software & hardware providers



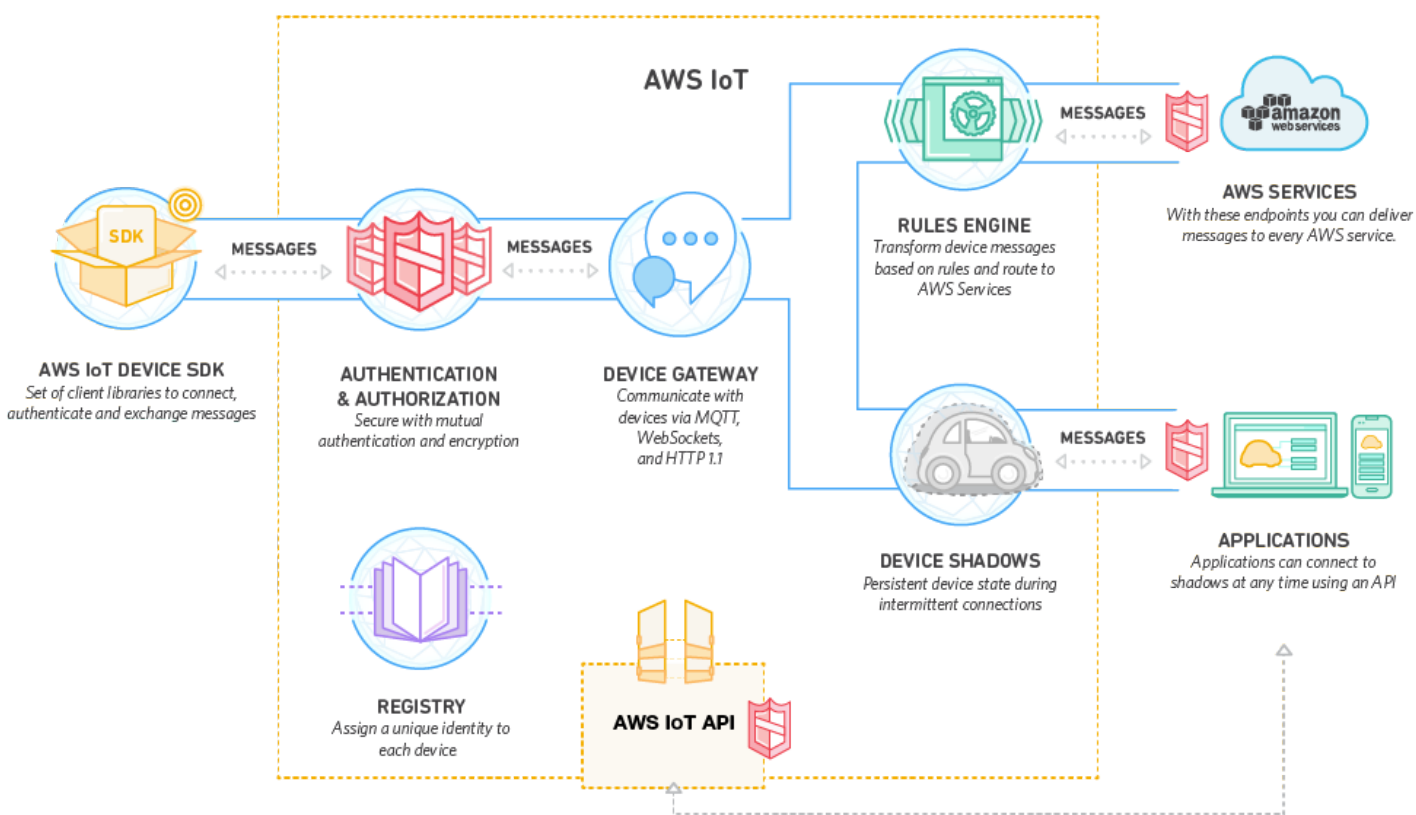
2013
2014
2015
2016
2017

- Member of the **Reply Network** combining Reply's industry insights, digital capability and technology expertise with deep cloud know how
 - ✓ More than **50** top-brand customers in Europe
 - ✓ Over **500** projects successfully concluded
 - ✓ Main offices in Italy and Germany



IoT by AWS

“AWS IoT provides secure, bi-directional communication between Internet-connected things (such as sensors, actuators, embedded devices, or smart appliances) and the AWS cloud”



Some of its features include:

- Device gateway
- Secure, bi-directional communication, publish/subscribe model - via MQTT, WebSockets or HTTP 1.1
- Mutual Authentication and encryption - SigV4, X.509 certificate
- Device Shadows - virtual and persistent device's state
- Rules Engine - SQL-like rules
- Easily integrated with other AWS services – e.g. S3, DynamoDB, Kinesis, Lambda, SQS, SNS, etc

