## Azure IoT: Industria del Ferrocarril

### Pepe Lamas, Data & Al Junio, 2019





# Microsoft will invest \$5 billion in IoT. Here's why.



Microsoft will invest \$5 billion in the Internet of Things over the next four years. The reason we are doing this is simple: Our goal is to give every customer the ability to transform their businesses, and the world at large, with connected solutions – April 4, 2018 Build and secure next-generation IoT and edge solutions at scale





THE POWER OF THE ECOSYSTEM



# Microsoft is the first hyperscale cloud solution provider to deliver

IoT solution accelerators | SaaS and PaaS for IoT | AA/AI at the edge

Solve device provisioning at scale | Support OPC UA for manufacturing











Microsoft is a leader in the Forrester Wave for IoT Software Platforms



Microsoft is a Leader in the IDC MarketScape for IoT platforms across various use cases



Microsoft is a leader in the Research Leaderboard assessment of strategy and execution for 15 IoT platform providers



Azure IoT is the only cloud platform that was determined as best in class in every category

# Future of Railways – 2050 Vision

Rail's power to stimulate and drive economic growth continues to be of outmost importance



The growing pace of technological change will be one of the major drivers of change for the transport sector.

# **Microsoft Solution Areas**

- Travelers Experience: competitive, agile, clientcentric
- **Optimized operations:** including punctuality, increased safety, optimalassets and network exploitation, employee productivity
- Profitability and Competitivity; • New revenue streams, better efficiency & cost reduction



**Customer Experience** 



Rail station of the Future





Infrastructure as a Service

Empowered Employees





# Azure IoT Solution Pitch Deck





# Technology innovations facilitating the Rails Transformation





### **Digital Twins**

Examples:

- Self-Service to enable end-to-end journey
- Optimized routes and predicting behaviors
- Journey assistants and Use of holographic / AR in engaging with customers
- Innovative visualization of large data sets via VR
- New biz models such as sharing economy
- 3D Soundscape for inclusive solutions

### Internet of Things & Big Data

Examples:

- IoT for improved safety
- Identify stress points in travelers journey enabled by ML
- Predict and prevent maintenance
- Enable frictionless travel using Multimodal transport, Intelligent traffic management
- Blockchain for Intelligent Procurement
- Intelligent Management of assets including drones
- Enable service excellence and recovery

### Advanced Analytics & Al

Examples:

- Targeted travel services (citizen segmenting
- Forecasting needs for infrastructure expansions
- Accident prevention models enabled by ML
- Transportation network planning
- Improve marketing targeting

### New models

Examples:

- 3D printing is expected to revolutionize the supply chain, reducing the need for mass-produced manufacturing, transportation and storage.
- Drones delivery are taking over short distances delivery

# Azure IoT Platform





# Azure IoT Platform





# Azure IoT Platform





#### Arquitectura referencia Azure IoT

# A large and growing ecosystem



# **Digital Twins: Fusing Physical and Digital**



## **Azure Maps**

### Leveraged in Azure IoT Central & Azure IoT Solution Accelerators





#### Maps

The ability to fetch a visual rendition of map data



#### Map Control

A web control mechanism for developers to more easily integrate mapping capabilities into their applications



#### Routing

The ability to calculate a route from point A to B or n points, and receive step by step directions

#### Search & Geocoding

The ability to find places, addresses, businesses, POIs etc.



Traffic

The ability to show

dynamic traffic and

incident information

### 

#### Time Zones

The ability to query for a time zone

*Note:* Additional services will be added to the offering in the future



### **Customer Stories**









Microsoft MCS will provide the expertise and the support for the migration from IBM Watson to Azure

SNCF IoT managers and architects chose Azure vs AWS and IBM for their new IoT platform. In addition to their 50+ existing use cases, SNCF is developing a business program that will be hosted in Azure for the transformation of rail network monitoring and supervision in order to achieve a high level of performance.

They also plan predictive maintenance in the near future. The scope is to connect 100.000 devices growing to over 1 million in the next 3 years.

France



Products and Services Microsoft IoT platform

Microsoft Consulting Services

Organization Size

n Size Industry

Industry Transportation Country

Business Need

Partner

MCS

Transformation of rail network monitoring and supervision in order to achieve a high level of performance





Improving public transit with timely insights about traffic flow

#### Developers use IoT Hub to provide free Wi-Fi

"We rapidly built an end-to-end proof of concept that brings a variety of data into Azure via IoT Hub."

-Oliver Keyworth, Development Manager

Emirates Air Line cable car, owned by Transport for London, runs 1.5-kilometers across the Thames River in London, England. The developers at Microsoft partner TBS Services figured out a way to provide free Wi-Fi service to passengers, building a solution that combines Microsoft Azure, TV White Spaces, and other technologies. As a value added, the developers combined Azure IoT Hub with CCTV to gather accurate and timely insights about traffic flow in order to improve operations and perform predictive maintenance on the cable car equipment.



Microsoft IoT solutions Microsoft TV White Spaces

**Products and Services** 

Organization Size

**Industry** Transportation

**Country** United Kingdom Partner

**TBS Mobility** 

Business Need

Dynamic Spectrum Predictive Analytics





« This innovative project has permitted us to explore the Hololens technology for industrial usage. It is the first step in the adoption of Mixed and Augmented Reality » *Carles Coca Mascorda, Digital Collaborative Innovation Mgr Alstom*  Alstom

Project is focused on 3 important use cases: **customer engagement** (commercial information sharing), **design support** (choose placement and colour of train seats materials) and **assisted maintenance** (cartography of cables network)

Video <u>link</u>



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