NISSAN
FÓRUM
MOBILIDADE INTELIGENTE

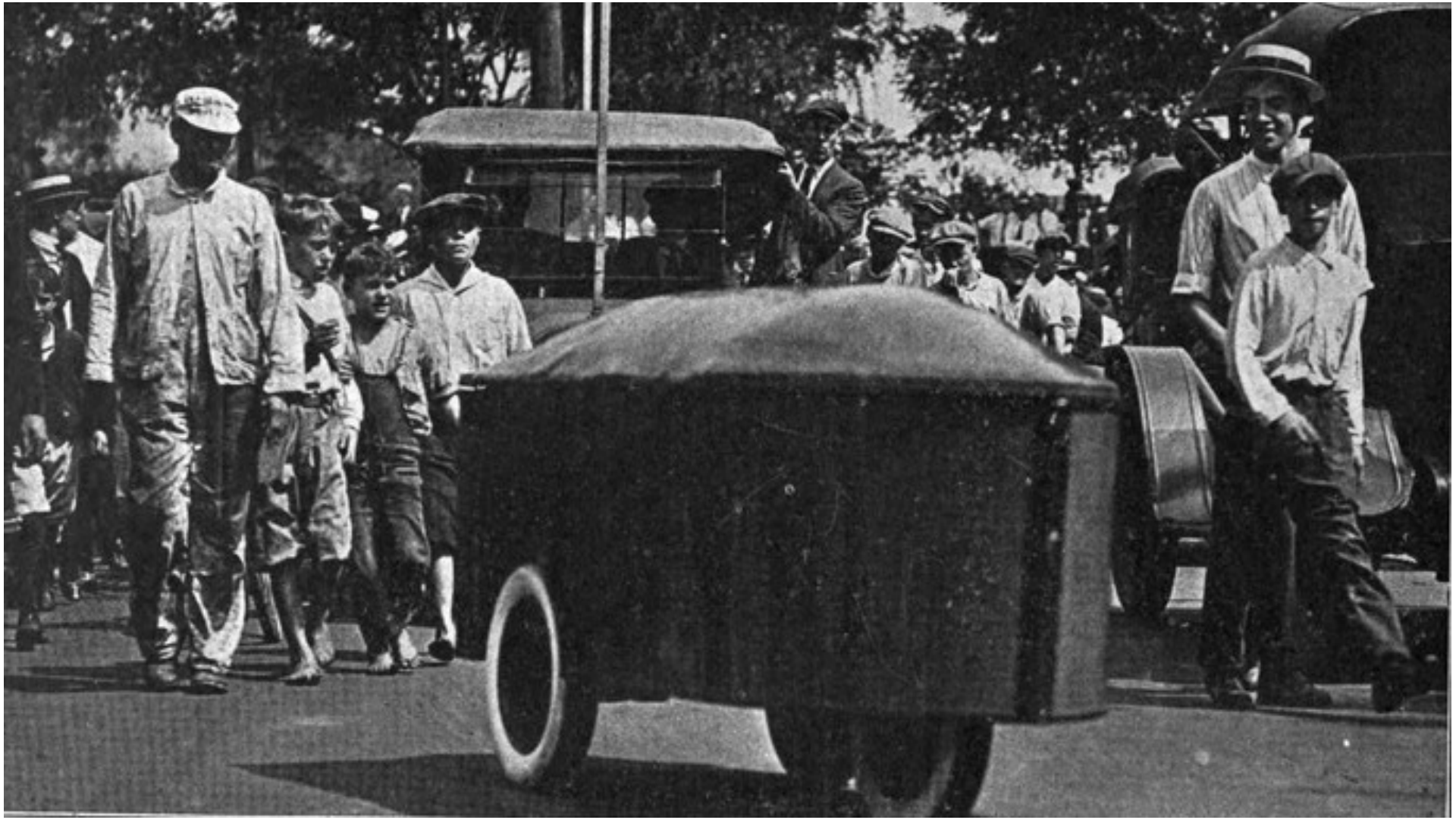
VENIAM

An Internet of Autonomous Vehicles

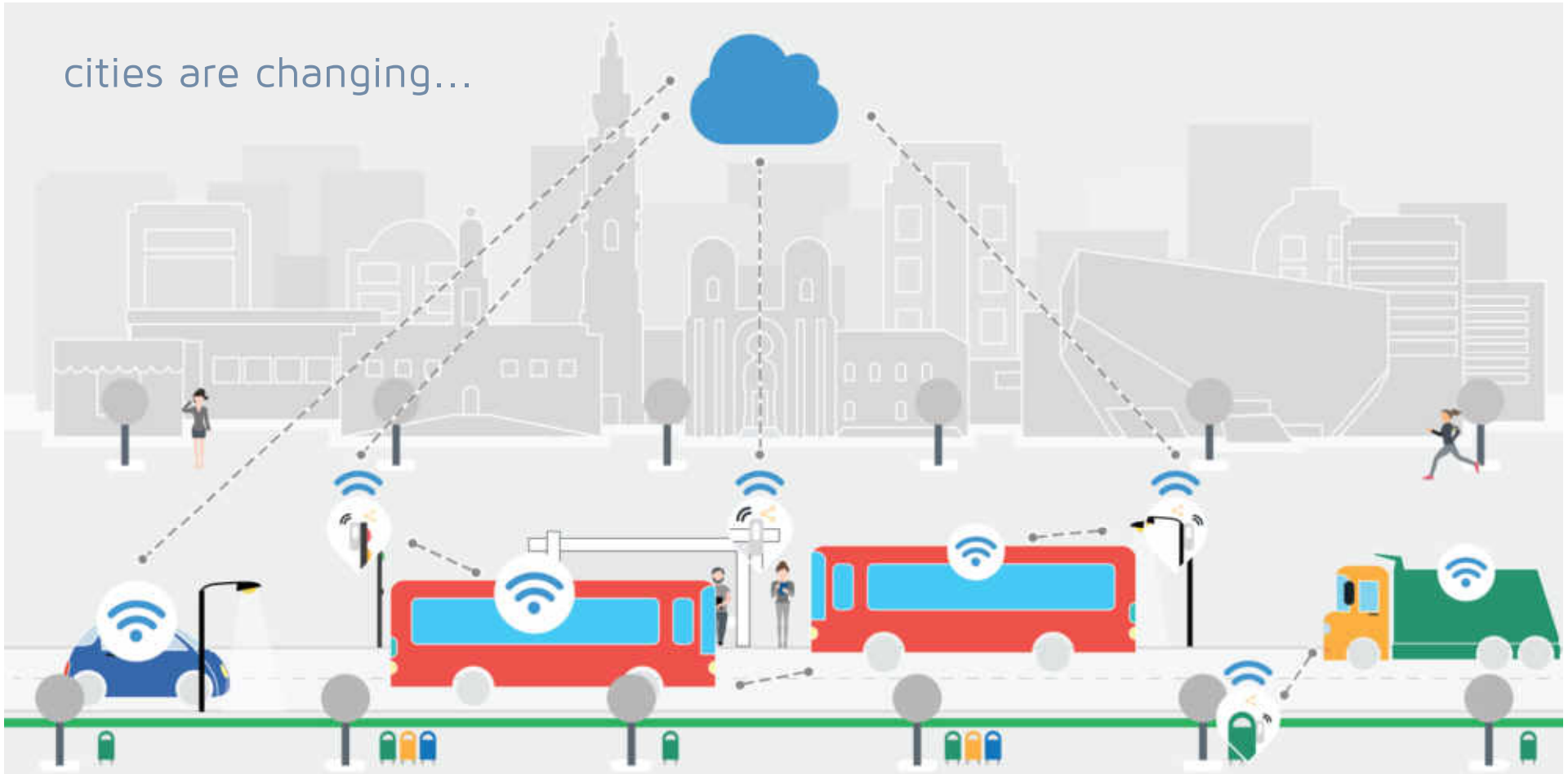
Moving terabytes of data between vehicles and the cloud

Rui Costa
CTO
rcosta@veniam.com

Lisbon, February 2018



cities are changing...



VENIAM

© 2016 Veniam, All rights reserved.

© 2018 VENIAM, ALL RIGHTS RESERVED

A FUTURE WHERE EVERYTHING IS CONNECTED

Pedestrian/Personal Mobility Device Counting

Emergency Button/Siren (on lamppost)

Navigation Beacons/Location Services

Shop Ad, Public Notification Service

Speed Detection and Warning for Pedestrians

Connected Cars for Safety, Convenience

Support Sidewalk Robots

Environmental Monitoring (Haze)

Intelligent Lighting at Junction

Open Data Sharing

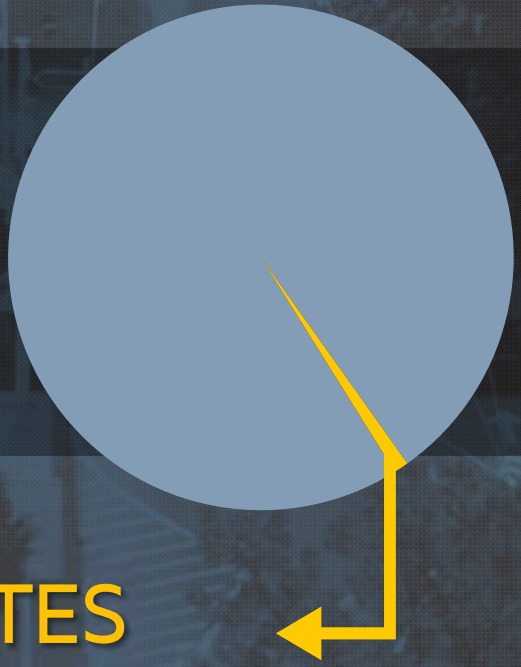
Automatic Car Park Fee Charges

© 2018 VENIAM, ALL RIGHTS RESERVED

by 2020...

26 Billion
Connected Devices

44
ZETTABYTES
digital information



100,000,000
connected Cars

1-10 EXABYTES
data / **month**

© 2018 VENIAM, ALL RIGHTS RESERVED

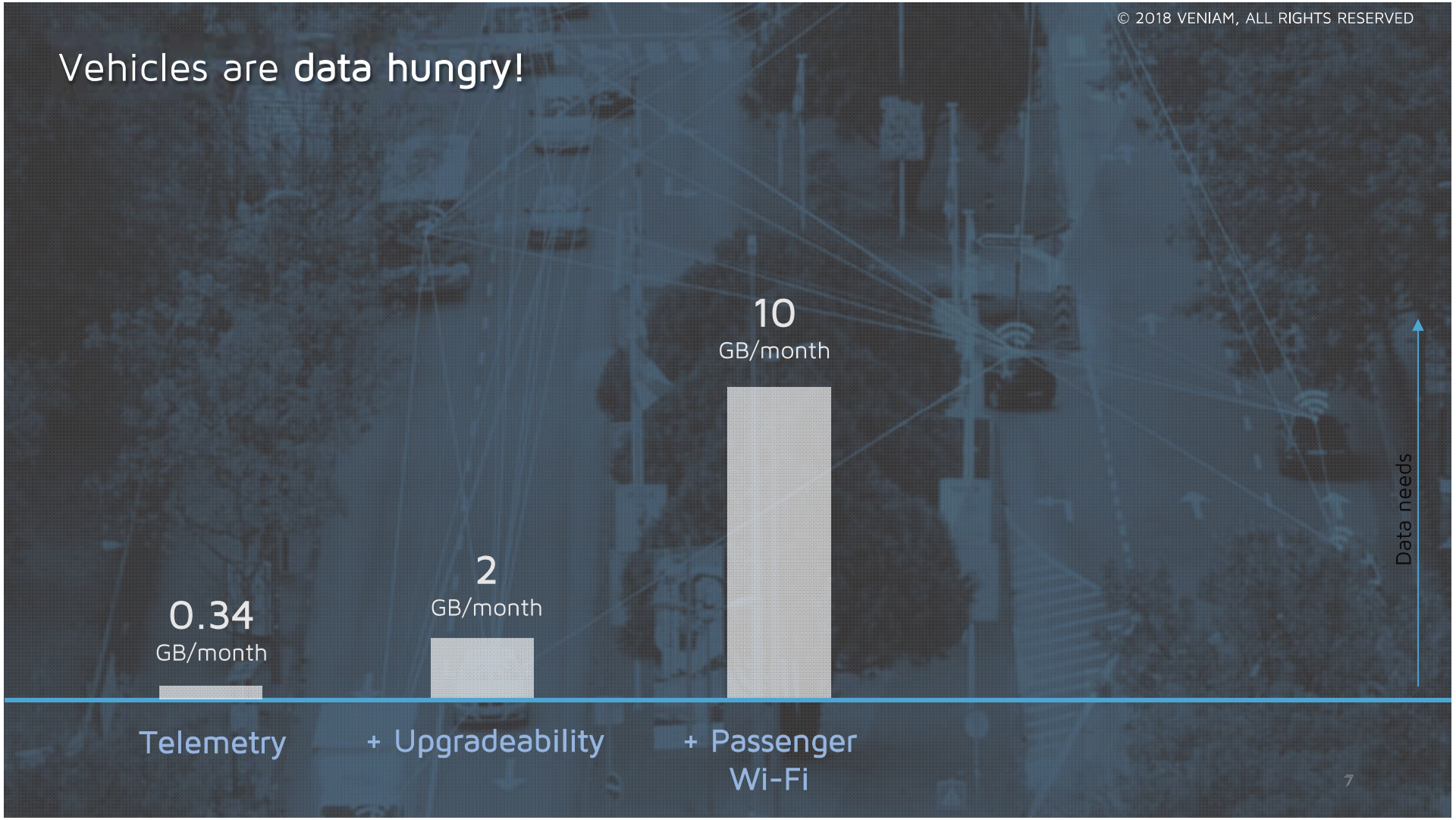
Vehicles are changing...

3.4 million
lines of code

100 million
lines of code

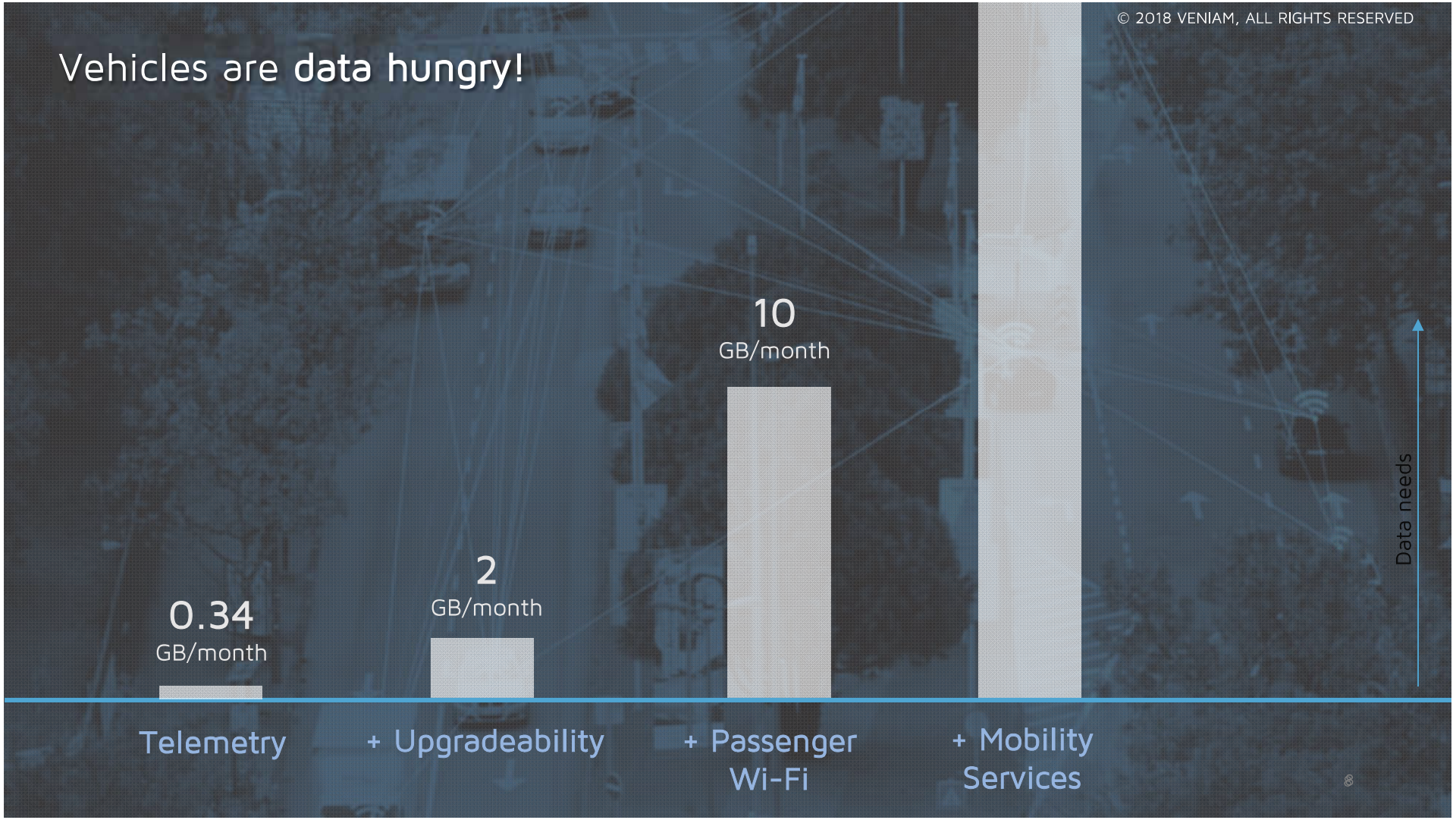
© 2018 VENIAM, ALL RIGHTS RESERVED

Vehicles are **data hungry!**



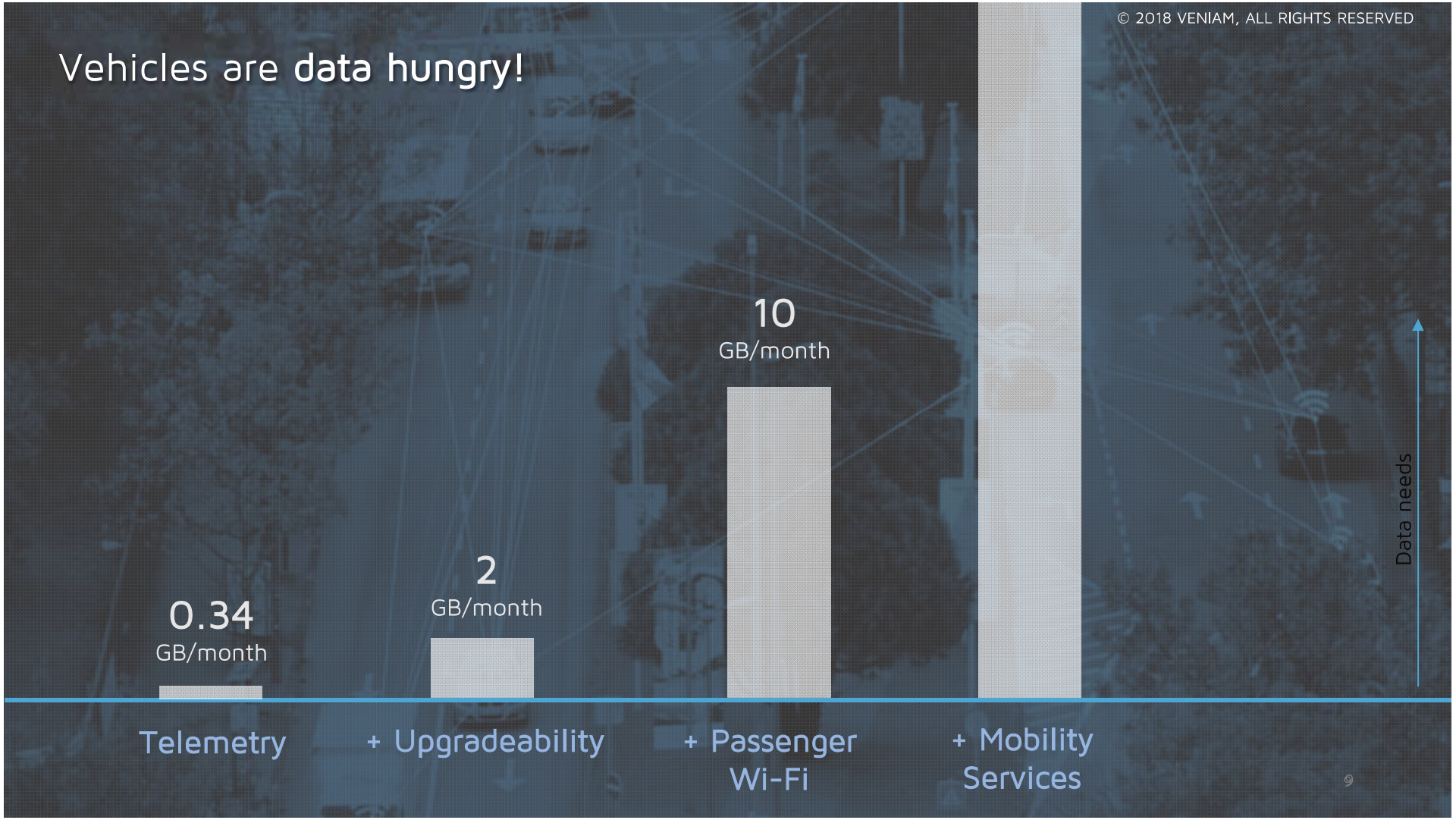
© 2018 VENIAM, ALL RIGHTS RESERVED

Vehicles are **data hungry!**



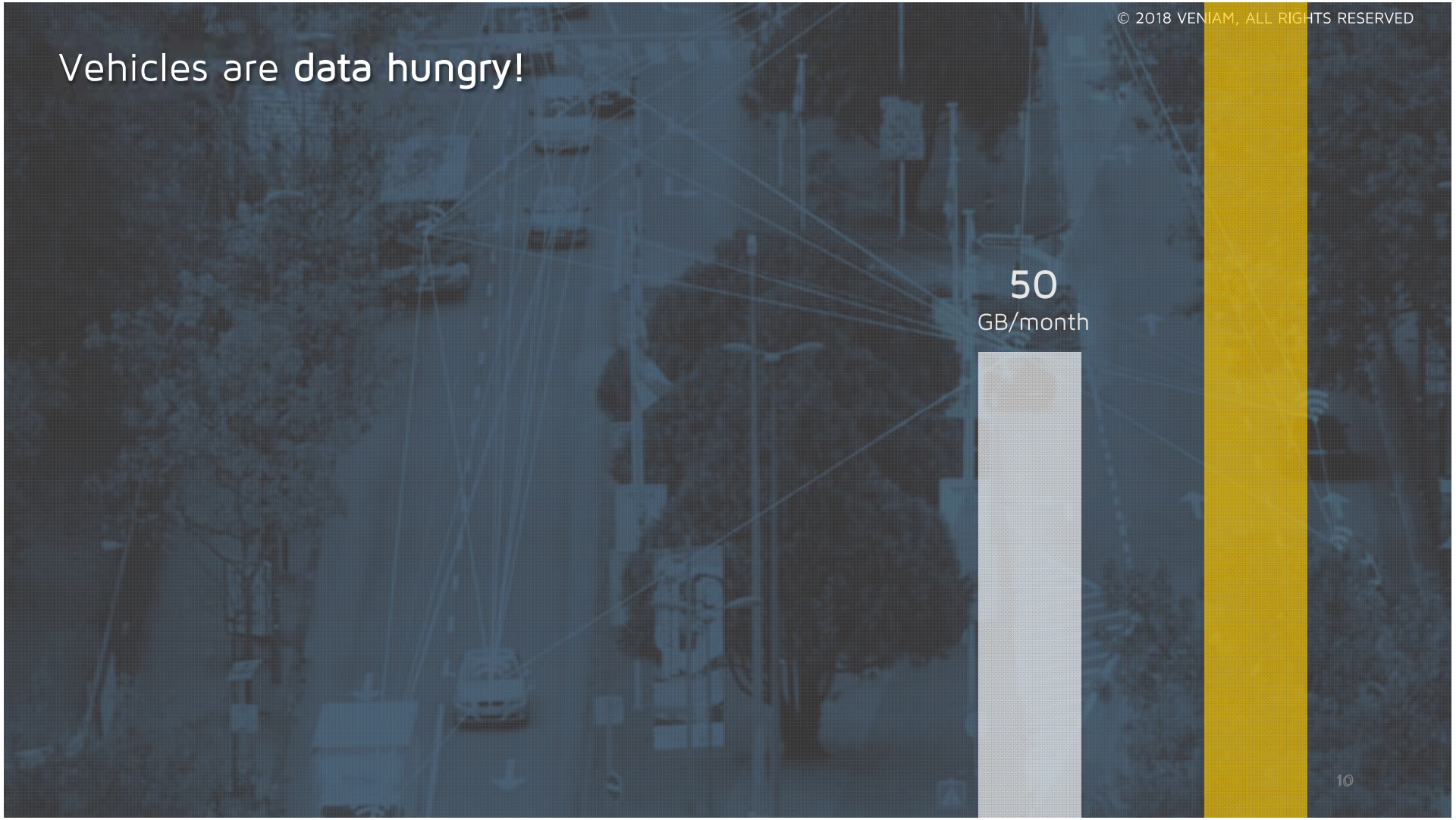
© 2018 VENIAM, ALL RIGHTS RESERVED

Vehicles are **data hungry!**



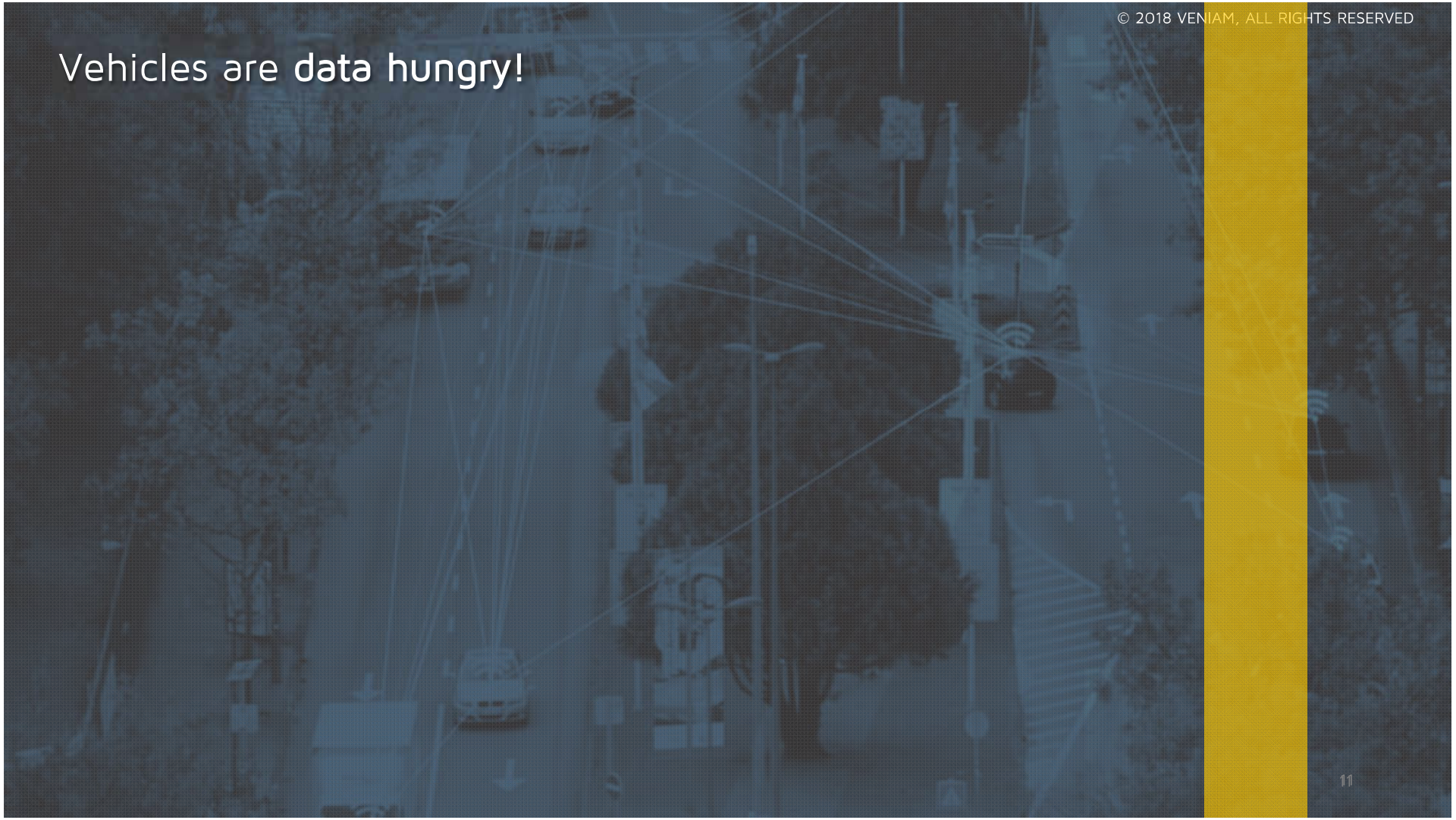
© 2018 VENIAM, ALL RIGHTS RESERVED

Vehicles are **data hungry!**



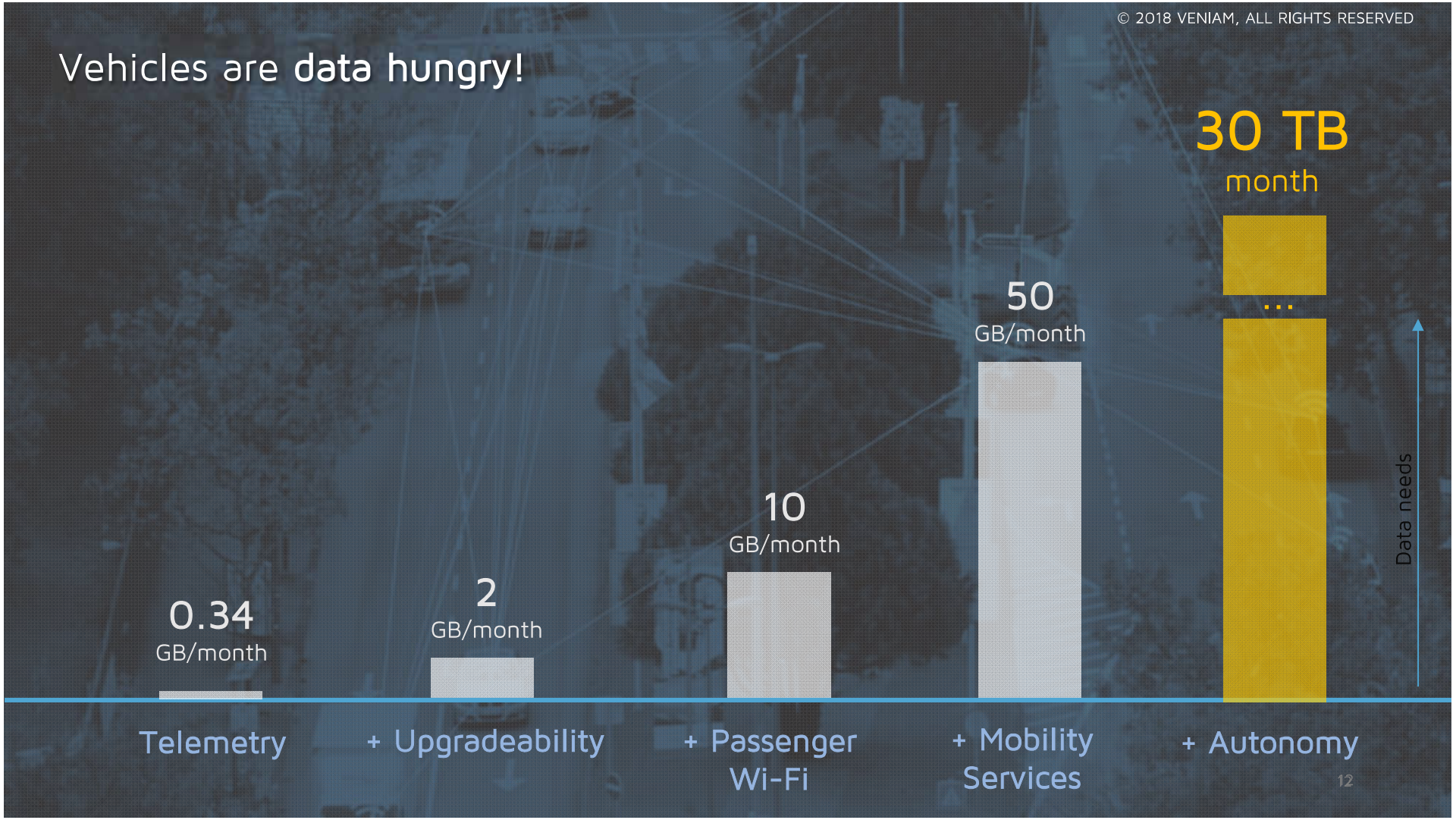
© 2018 VENIAM, ALL RIGHTS RESERVED

Vehicles are **data hungry!**



© 2018 VENIAM, ALL RIGHTS RESERVED

Vehicles are **data hungry!**



© 2018 VENIAM, ALL RIGHTS RESERVED

VENIAM

SAFETY DATA

HIGH RES MAPS

ROAD DATA

SECURITY VIDEOS

INFOTAINMENT

SOFTWARE UPDATES

VEHICLE TELEMETRY

PASSENGER INSIGHTS

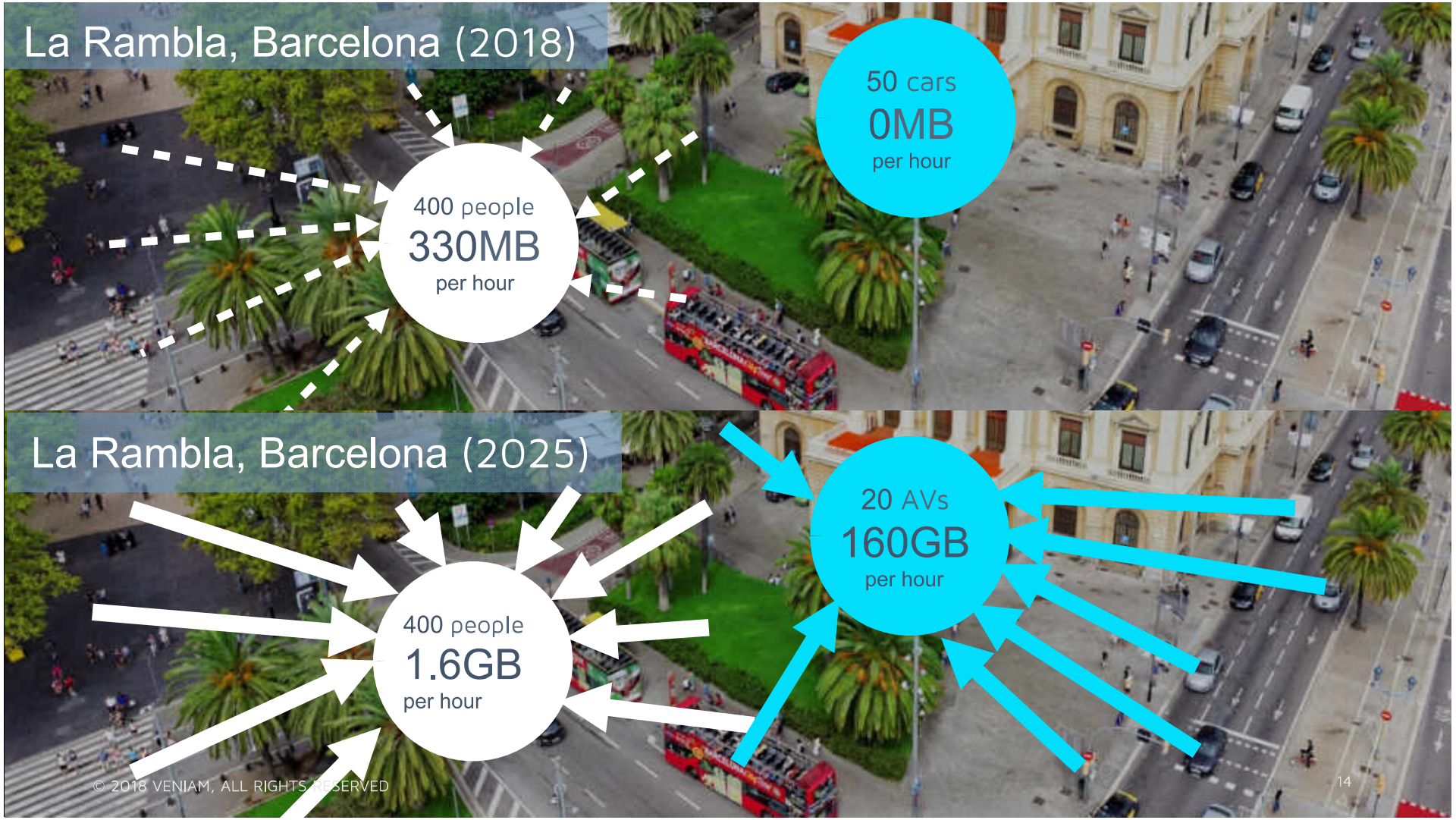
GPS
50 KB/S

CAMERAS
40 MB/S

1-4 TB
PER DAY

LIDAR
70 MB/S

RADAR
100 KB/S



© 2018 VENIAM, ALL RIGHTS RESERVED

© 2018 VENIAM, ALL RIGHTS RESERVED

4G/LTE ALONE
IS NOT ENOUGH

IMPERFECT COVERAGE

- Frequent dead zones
- Loss of data

EXPENSIVE

- High-cost data plans
- Must manage SIMs

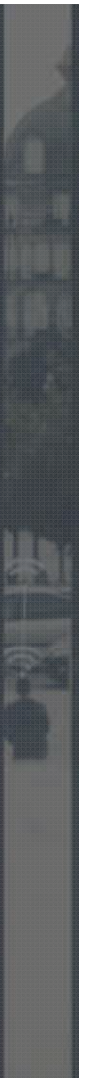
CONGESTED

- Exponential growth in traffic
- Licensed frequencies for mobile devices

VENIAM®

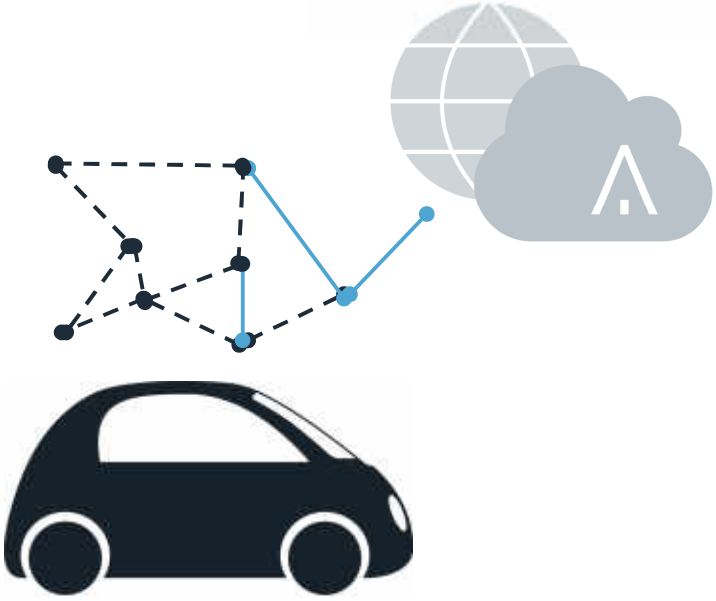
THE INTERNET OF MOVING THINGS

MOUNTAIN VIEW | NEW YORK | PORTO | SINGAPORE



© 2018 VENIAM, ALL RIGHTS RESERVED

VENIAM PLATFORM: Multi-network, Multi-purpose, Upgradeable



Agnostic Cloud

Network Orchestration	OTA Software and configs updates	Big Data Ingestion & B.I. Engine	Connector APIs & Cloud dashboards

Intelligent Networking

Multinetwork Connection Management	Mobility Control	Local Data Management	Mesh Networking & Multihop	Link aggregation

10 YEARS OF R&D | AWARD-WINNING TECHNOLOGY | 100+ PATENTS

Developed in partnership with MIT and Carnegie Mellon

© 2018 VENIAM, ALL RIGHTS RESERVED

VENIAM

in numbers

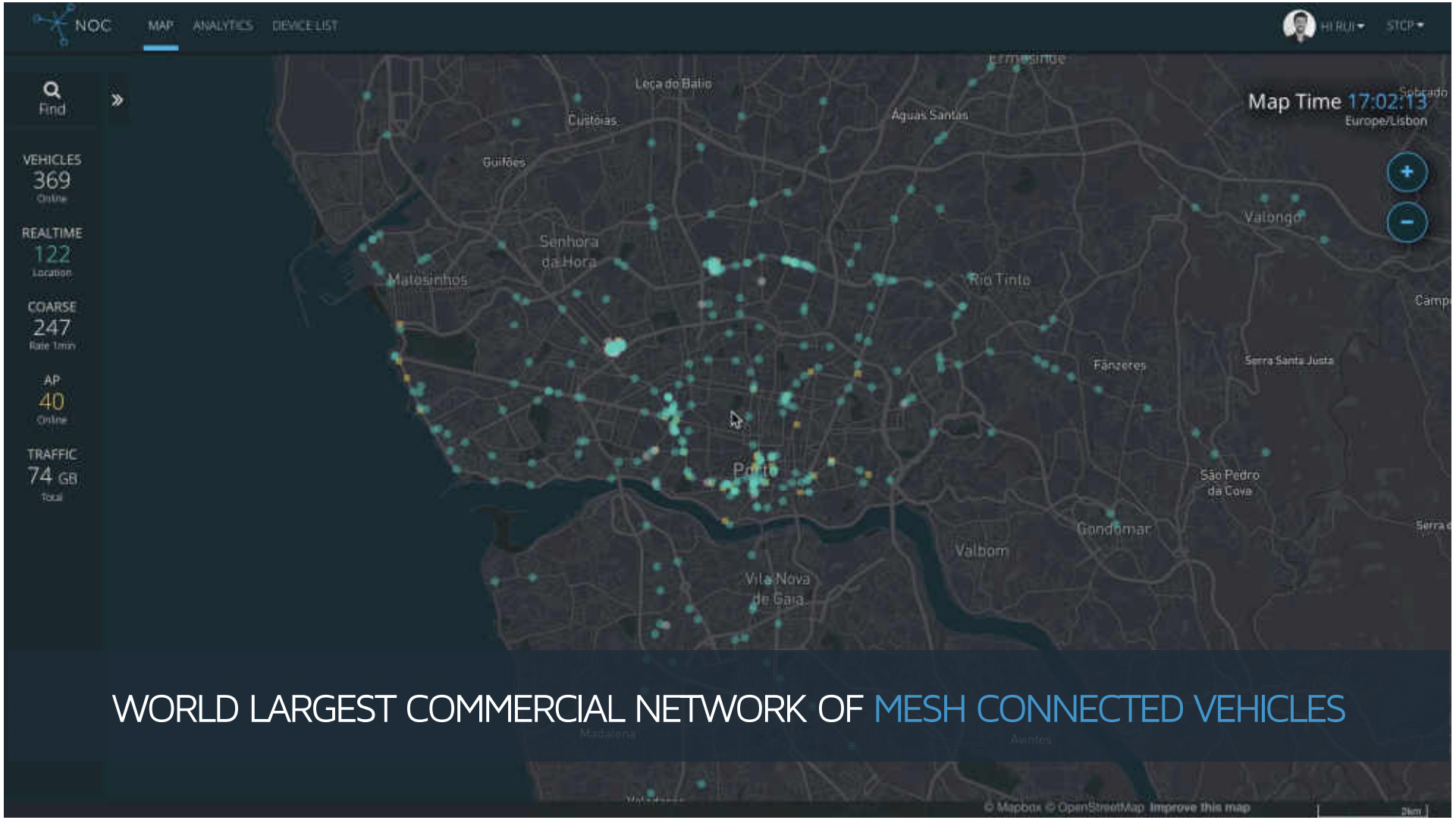
560+ vehicles
V2X mesh connected in US, Europe and Asia

14 makes of vehicles
in flat, high-rise, hills, foliage, and industrial spaces

64,500,000+ KMs
V2X connected vehicle data

13.7 TERABYTES
Vehicle-to-X traffic

40% TRAFFIC OFFLOAD
from traditional wireless networks


NOC
MAP
ANALYTICS
DEVICE LIST
HI RUI
STCP
Find
VEHICLES
369
Online
REALTIME
122
Location
COARSE
247
Rate 1min
AP
40
Online
TRAFFIC
74 GB
Total
Map Time 17:02:13
Europe/Lisbon
Leça do Balio
Custoias
Águas Santas
Gulfões
Senhora da Hora
Matosinhos
Rio Tinto
Valongo
Fânzeres
Serra Santa Justa
Porto
São Pedro da Cova
Gondomar
Valbom
Vila Nova de Gaia
WORLD LARGEST COMMERCIAL NETWORK OF MESH CONNECTED VEHICLES

VEHICLES ARE NOW BECOMING PART OF THE INTERNET

© 2018 VENIAM, ALL RIGHTS RESERVED

VENIAM

THE V2X DATA NETWORKING PLATFORM THAT MOVES MASSIVE AMOUNTS OF DATA BETWEEN VEHICLES AND THE CLOUD.

More info at
www.veniam.com | info@veniam.com

Follow us

NORTH AMERICA
Mountain View | New York
+1 415 470 33 49

EUROPE
Porto, Portugal
+351 220 731 344

ASIA
Singapore
+65 6384 2137

WHY MASSIVE AMOUNTS OF DATA BETWEEN VEHICLES AND THE CLOUD ?

VEHICLE AND FLEET ANALYTICS

Manage product life cycle, improve maintenance, maximize fleet ROI

HIGH-BANDWIDTH INTERNET TRAFFIC

Mobile Wi-FI for passenger, content for onboard screens

URBAN DATA FOR SMARTER CITIES

Urban sensing using vehicles, IoT sensors, data APIs

VIDEO CAMERAS

Increase security and safety, reduce risks, build maps

AUTONOMOUS VEHICLES

Accelerate product and time-to-market
Maps, software updates, Internet traffic

© 2018 VENIAM, ALL RIGHTS RESERVED