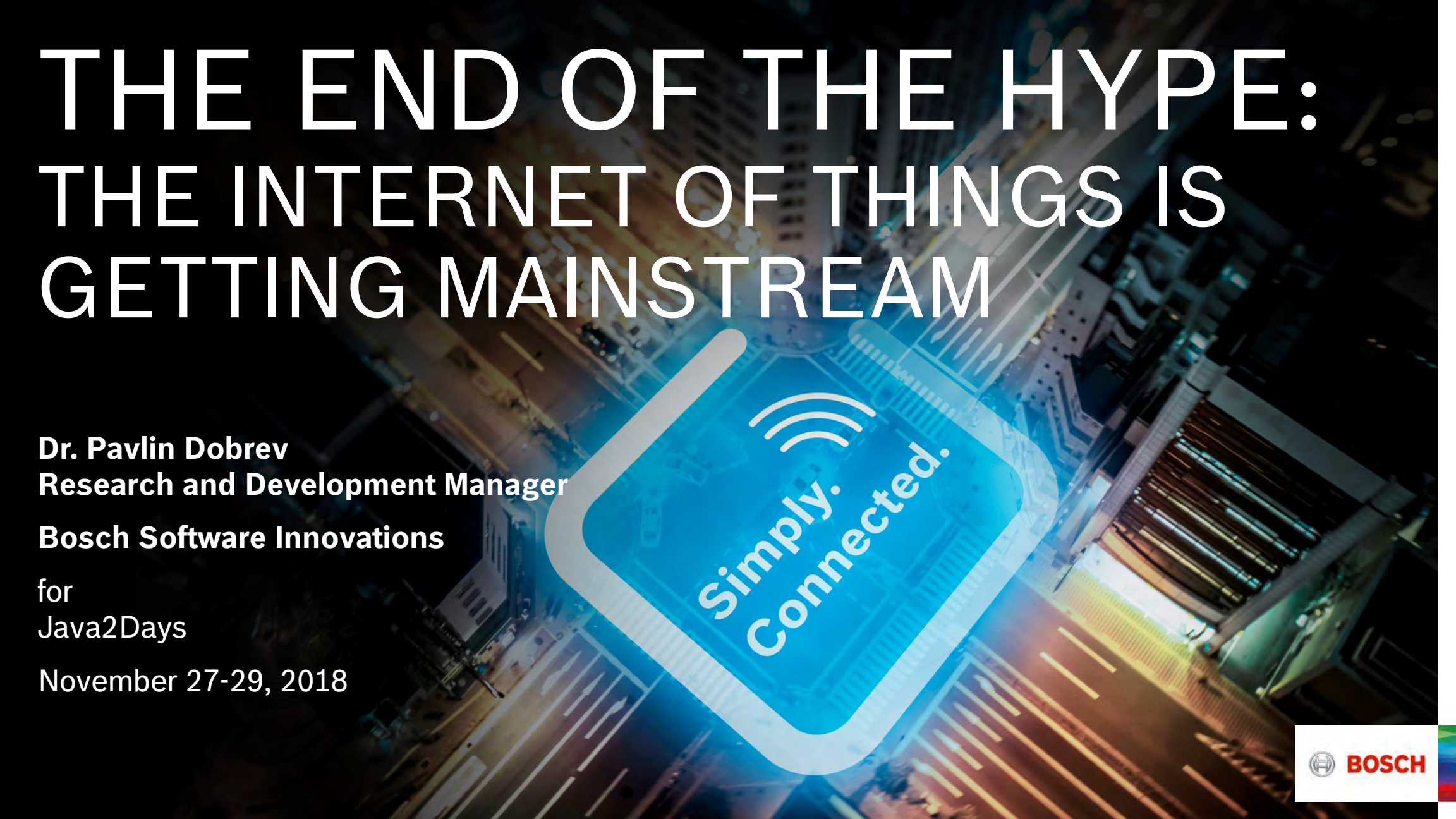
THE END OF THE HYPE: THE INTERNET OF THINGS IS GETTING MAINSTREAM



Dr. Pavlin Dobrev
Research and Development Manager

Bosch Software Innovations

for
Java2Days

November 27-29, 2018

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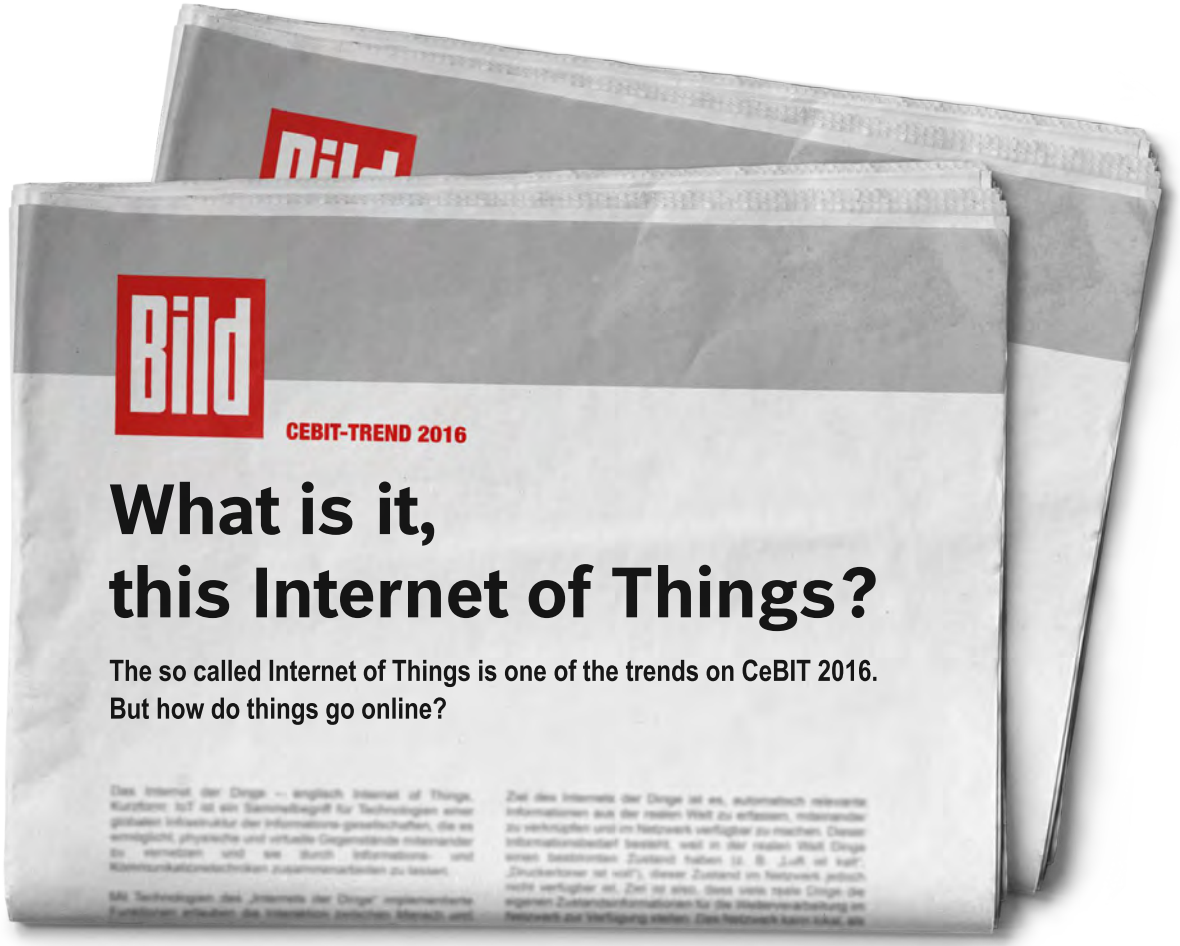
Approx. 20 million Germans read this on March 14, 2016

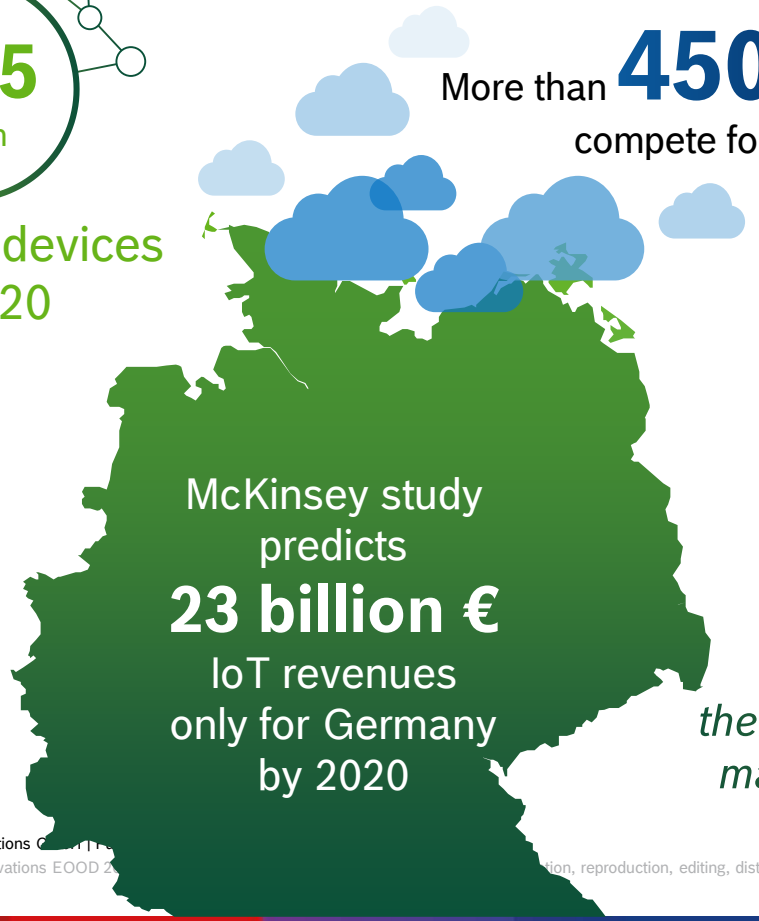


The hype around the Internet of Things

20,5 billion

connected devices by 2020

More than **450** IoT platforms compete for users



Developers are the new kingmakers!

No one so far has found the **killer app**

IoT acquisitions reaching billions

IoT business models – there is not just ONE, there are many many many many many many many

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How it all started
Early ProSyst days

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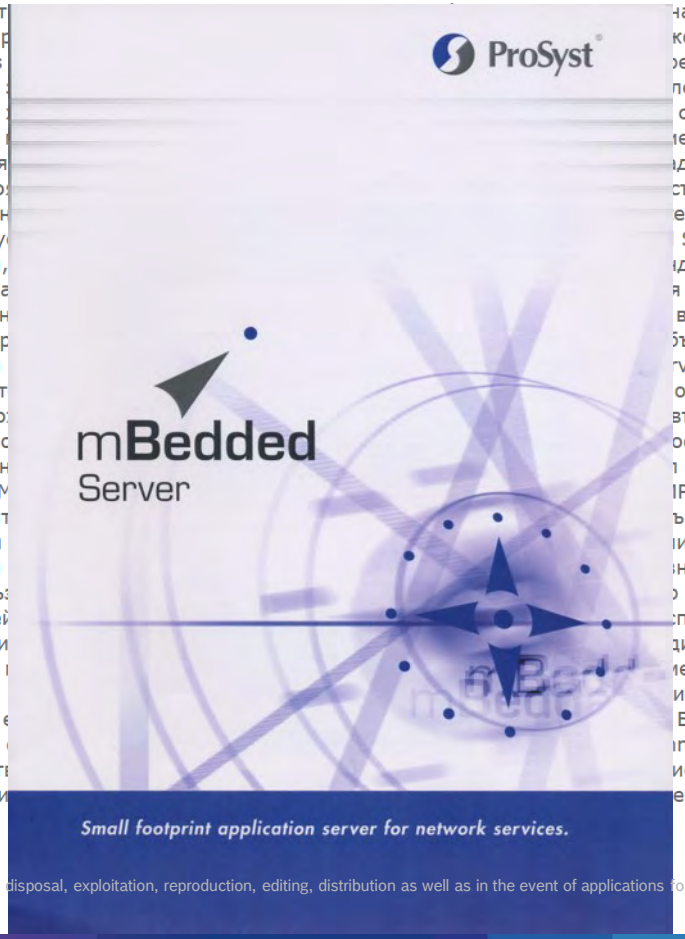
Early 200x
Products

COMPUTERWORLD

16.09.2000
http://computerworld.bg

Българските програмисти - спецове в Java-базираните разработки

Новият ProSyst mBedded Server следи и контролира състоянието на устройствата в мрежата Сървър за приложения за мрежови устройства е новата
разработ … режа помежду им
и с Интер … MP и работи под
Windows … а необходимия
софтуер … ата. Негови
основни … ства, например
модеми, … комуникация
между тя … ата платформа,
върху ко… erver със
софтуерн… на интеграция
спрямо у… овните софтуерни
единици, … приложения за
комуника… емни или
програмн… ндълът изисква
кооперир… се включват
бъндъли … и, чрез които
потребит… ползотворяването
на възмо… ширир. mBedded
Server мо… позволява
управлен… ървъра през
ProSyst M… актуват с
бъндълит… се използват
мобилни … създадените
бъндъли … тандартите на
OSGi; въ… се графичен
интерфей…) и софтуерни
продукти… точена изцяло в
нейното … и специалисти в
офисите … nterpriseBeans
Server - … а този продукт и
сега той … ързва
устройств… слуги Интернет
Доставчи…



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WHY WILL THERE BE MUCH MOVEMENT IN INTERNET OF THINGS IN 2018?

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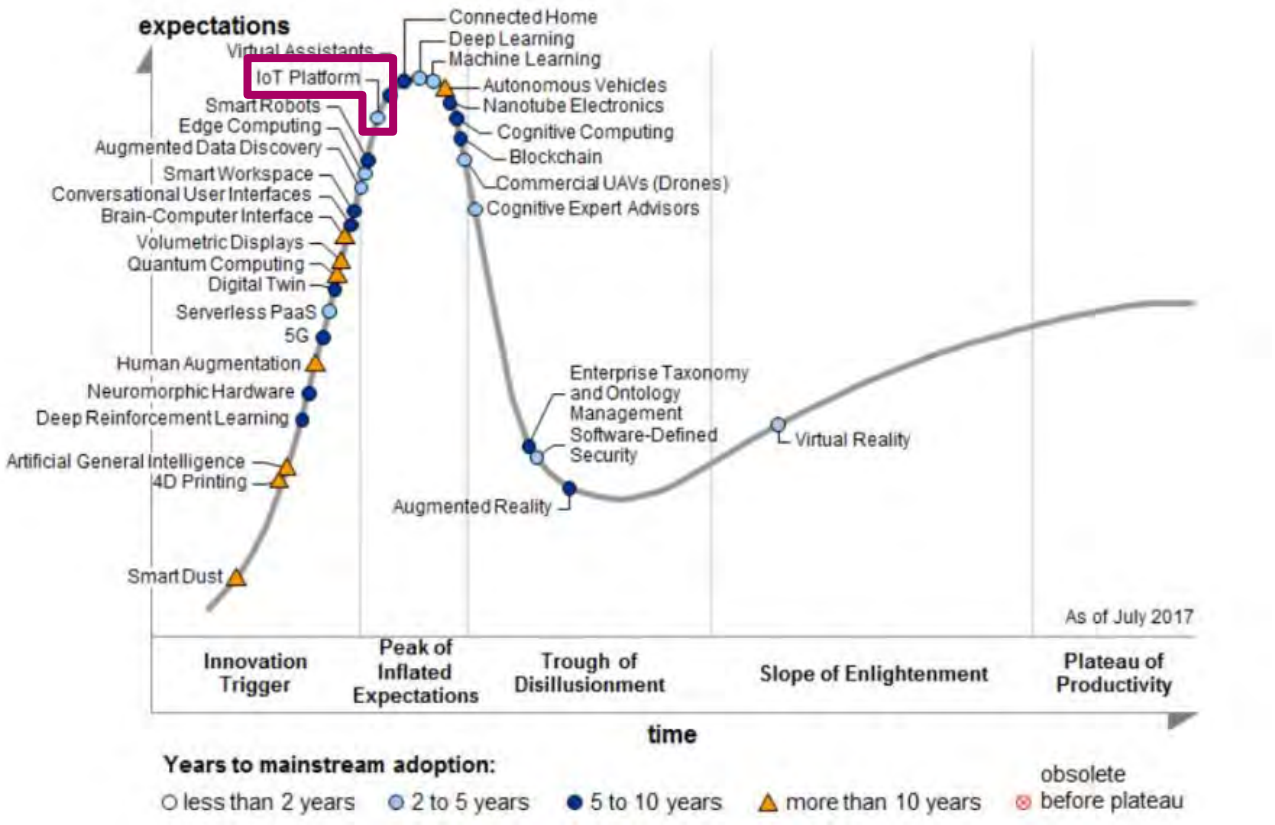
Gartner prediction in July 2017
IoT platforms are getting mainstream between 2019-2023

Hype Cycle for Emerging Technologies, 2017



PaaS = platform as a service
UAVs = unmanned aerial vehicles
Quelle: Gartner (Juli 2017)

The most important technology trends for IoT projects in 2018

IDC study focused on Germany

IoT platforms are already in place

2018 **20%**

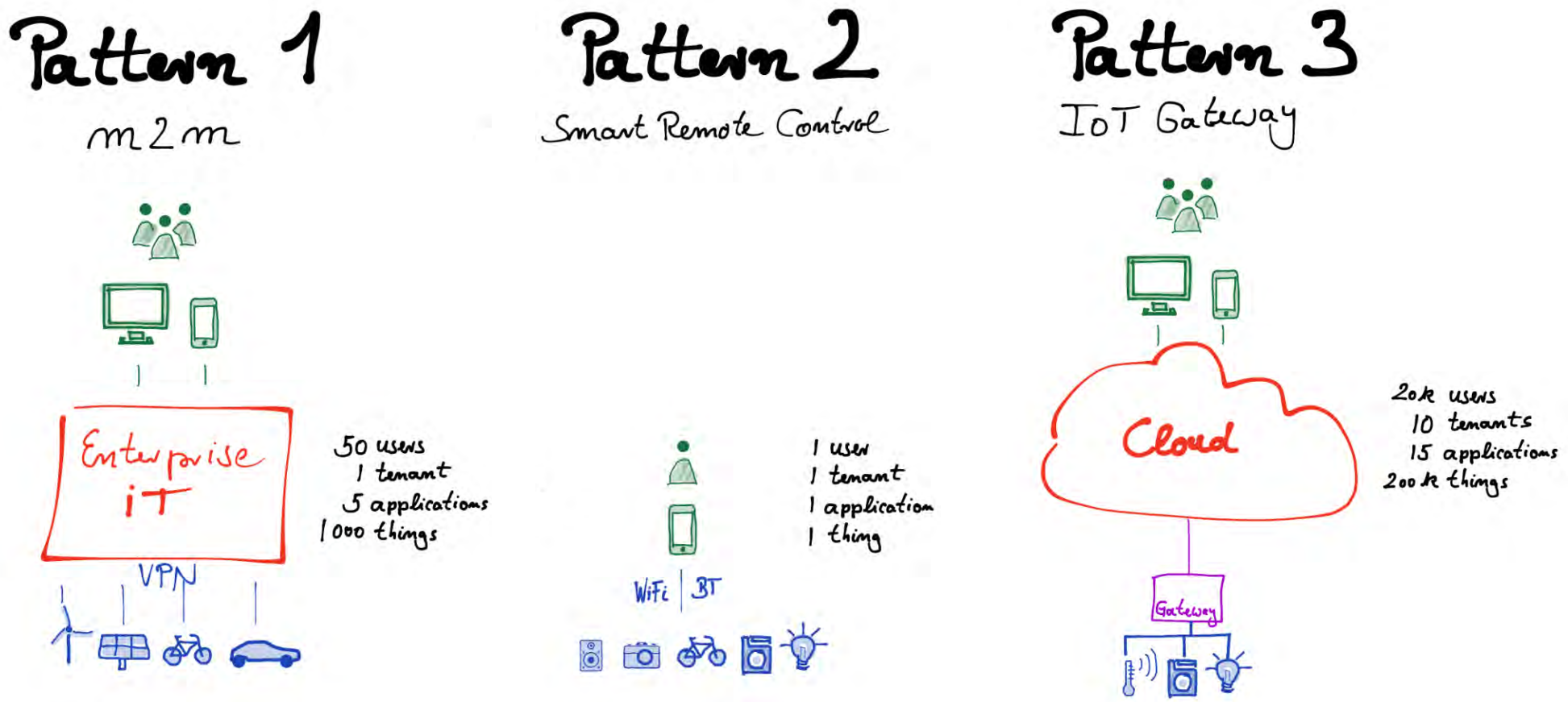
Plans to introduce IoT platform(s)

51%

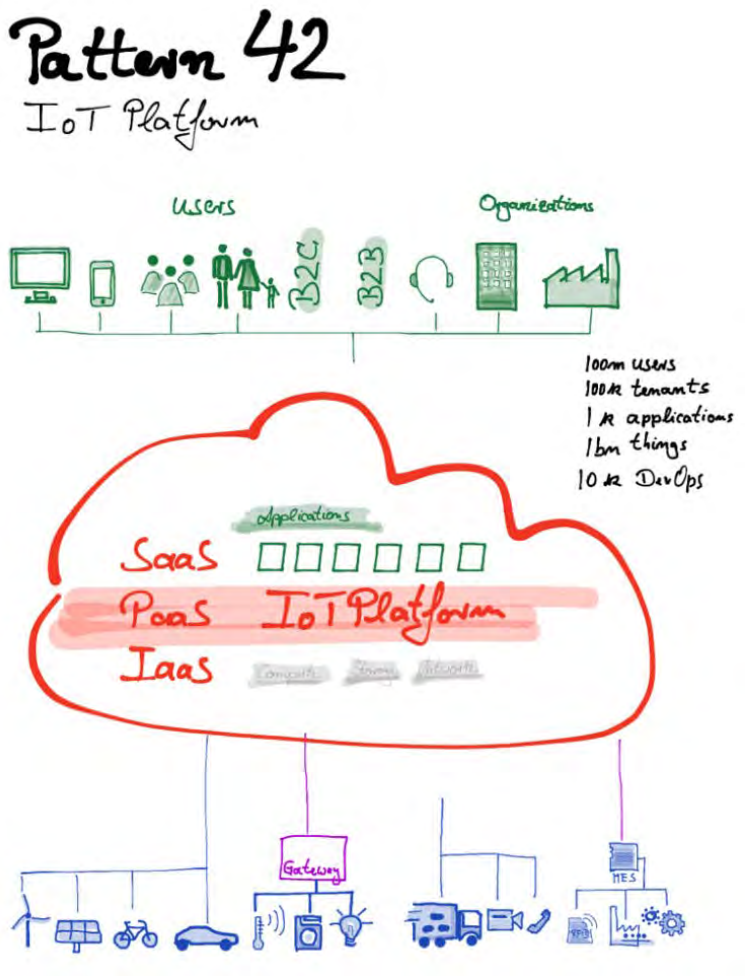
Plans to start first IoT project

72%

My learning based on many closed, proprietary systems



... is the lack of a horizontal platform



FACT CHECK – WHERE DO WE STAND TODAY?

By analyzing data and providing solutions for machine learning, we support **consumer products** from today to enter the IoT world of tomorrow.

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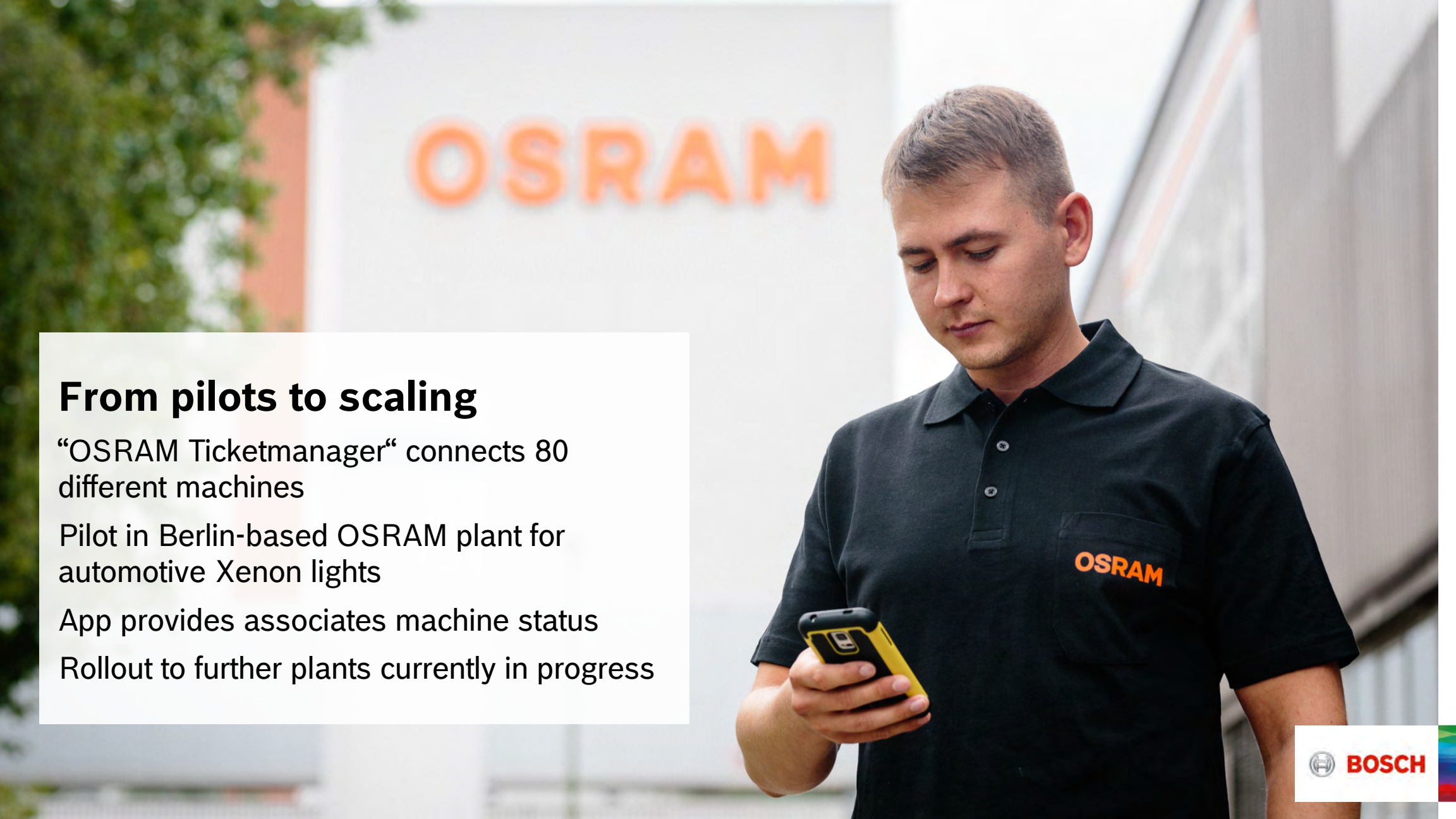

From pilots to scaling

“OSRAM Ticketmanager“ connects 80 different machines

Pilot in Berlin-based OSRAM plant for automotive Xenon lights

App provides associates machine status

Rollout to further plants currently in progress

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1 million Smart Homes
158 supported device types
only in one customer project
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No one can do I(o)T alone

German smart home platform QIVICON

Brings together wide range of smart home devices from different brands under one technical roof

Alliance of leading industrial enterprises to make smart homes a possibility for everyone

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“Internet of Oysters”: The Yield, an Australian AgTech business, helps oyster farmers reduce the risk of unnecessary harvest closures caused by weather.

Smart Oyster Harvesting

Conventional oyster harvesting

If harvested at the wrong time, oysters can be dangerous to eat

Regulators conservatively control harvesting via coarse rainfall data

BETTER DECISIONS BETTER HARVESTING BETTER YIELD

The Yield & Bosch innovation project

Measure Water Salinity

Bosch IoT Suite

Harvesting Regulator & Growers

BENEFITS

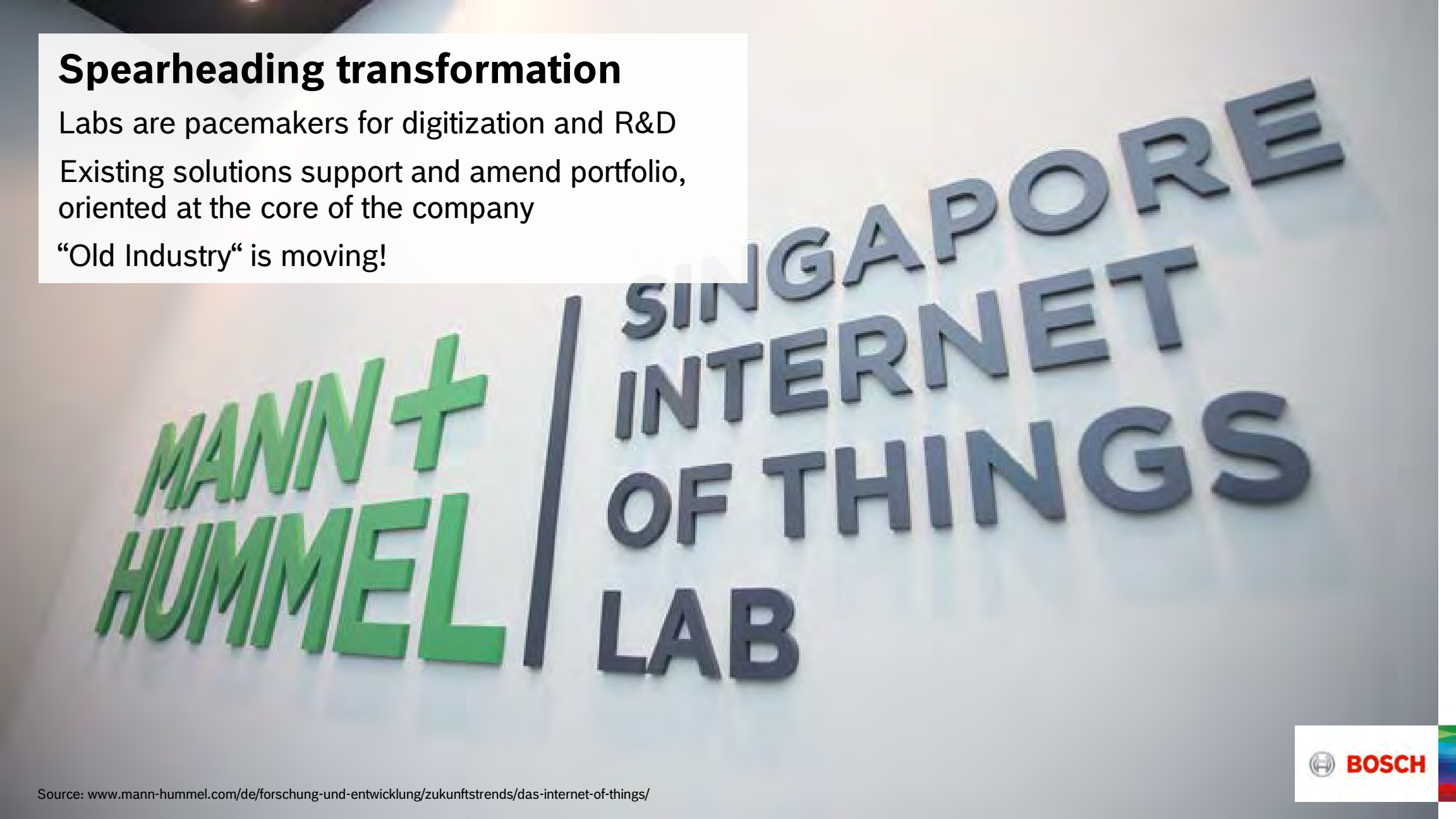
- Improve scheduling of harvesting operations by predicting closures
- Extended harvest periods so more oysters make it to the market

Spearheading transformation

Labs are pacemakers for digitization and R&D

Existing solutions support and amend portfolio, oriented at the core of the company

“Old Industry“ is moving!



Source: www.mann-hummel.com/de/forschung-und-entwicklung/zukunftstrends/das-internet-of-things/

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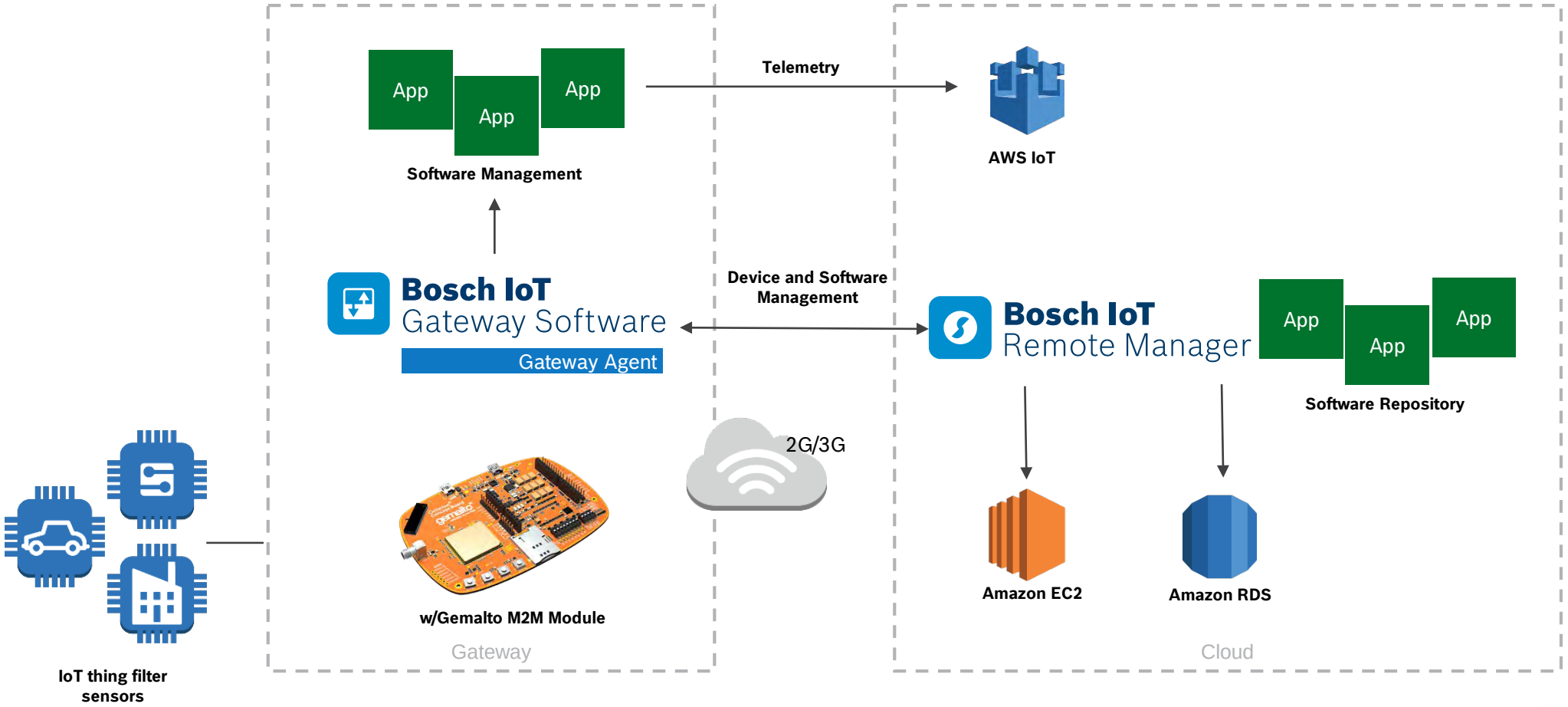
Customer case: Mann+Hummel

Managing 3G-enabled M2M devices



Reliably connecting vehicles

Already more than 4 million connected cars on the road

There are no role models for digital transformation. In order to prepare for a connected future, companies have to simultaneously reinvent themselves while staying true to their DNA and collective experience.


Digital
Transformer
of the Year
Digital
Transformer
of the Year 2018
WINNER
KATEGORIE
MASCHINEN- UND
ANLAGENBAU

The Bosch IoT Suite
Technology for the connected world

8.5 million

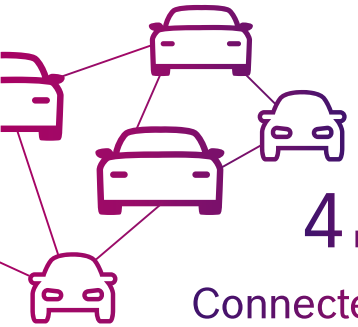
Connected products

26
Number of supported protocols

170

Intelligent cloud

Bosch projects currently use the Bosch IoT Cloud



4 million

Connected cars

+0.2 million per month

Enabling millions of homes to be connected.

158 supported device types in the largest customer project

5

Multi-cloud strategy

Cloud providers x regions already supported. 2 more in the pipeline.

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WHAT DOES BOSCH DO IN THE INTERNET OF THINGS?

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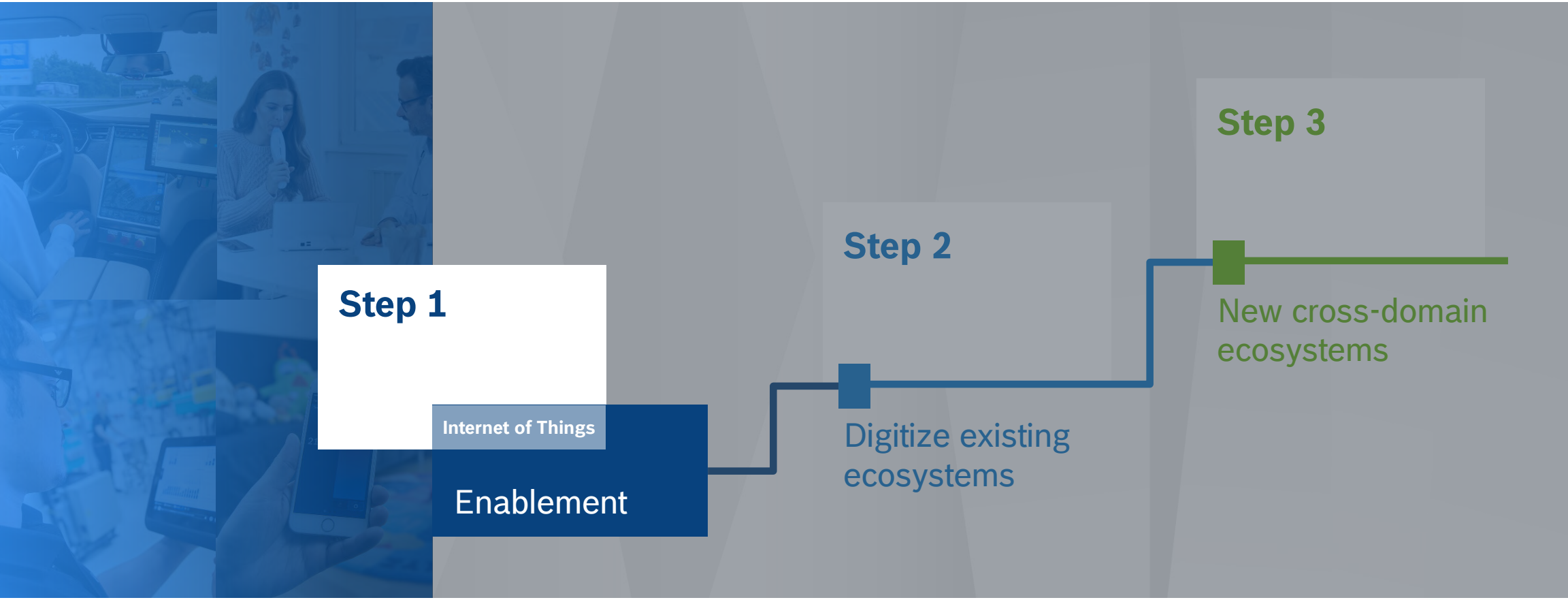
Bosch‘s way into the Internet of Things
Many players are on their way



Results of IoT Enablement @ Bosch

IP-enabled product classes at Bosch

2017 **60%**

2016 50%

IoT solutions powered by Bosch IoT Cloud

170

70

IP-enabled products sold

38 m

27 m

Own IoT platform, hybrid cloud strategy

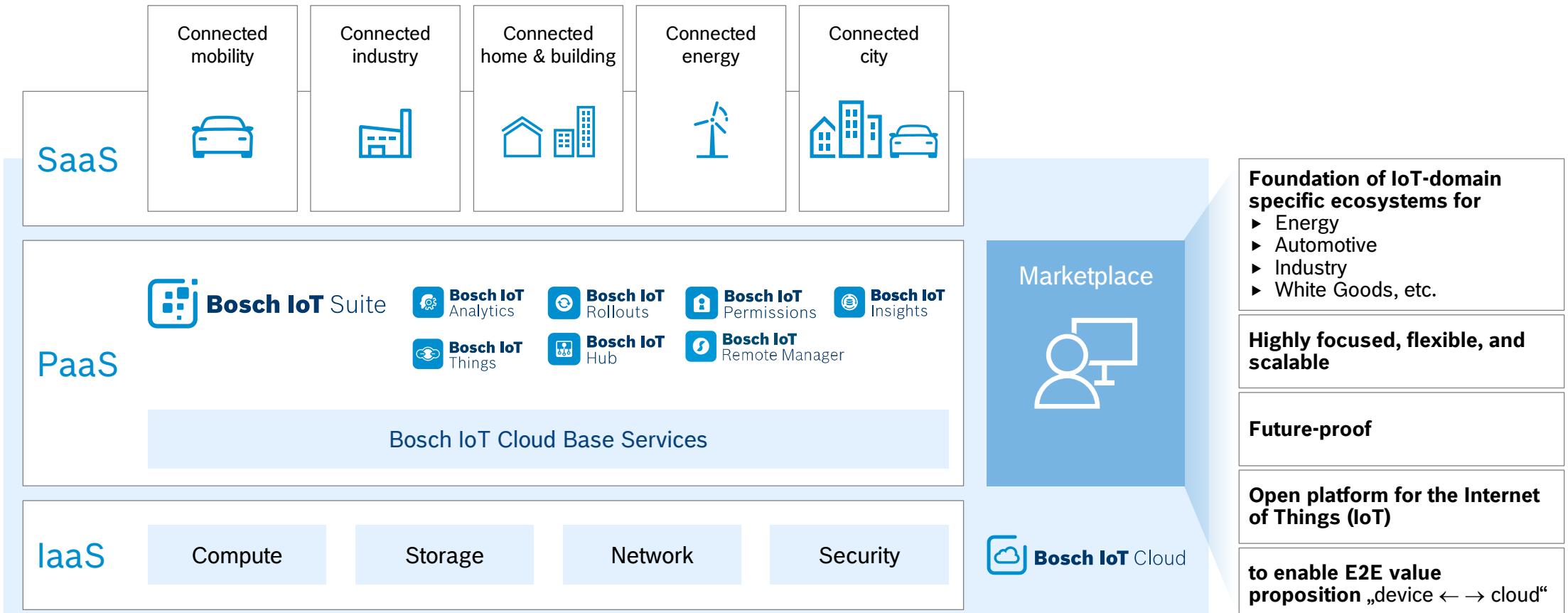
Services

Software

Sensors

The Bosch IoT Suite
Platform as a Service (PaaS)

Bosch IoT Suite



Foundation of IoT-domain specific ecosystems for
- Energy
- Automotive
- Industry
- White Goods, etc.

Highly focused, flexible, and scalable

Future-proof

Open platform for the Internet of Things (IoT)

to enable E2E value proposition „device ← → cloud“

We connect everyThing
Bosch IoT Suite in practice

Bosch IoT Suite

Device management for connected filters

Smart heating: intelligent networking of heating systems


IoT Gateway: easy connection to Industry 4.0 environments


'Plantect': monitoring and disease-prediction for greenhouse farming


TrackMyTools: a smart inventory management system


Indego Connect: intelligent device management


Connected asset intelligence system for rail freight


Firmware and software updates over the air

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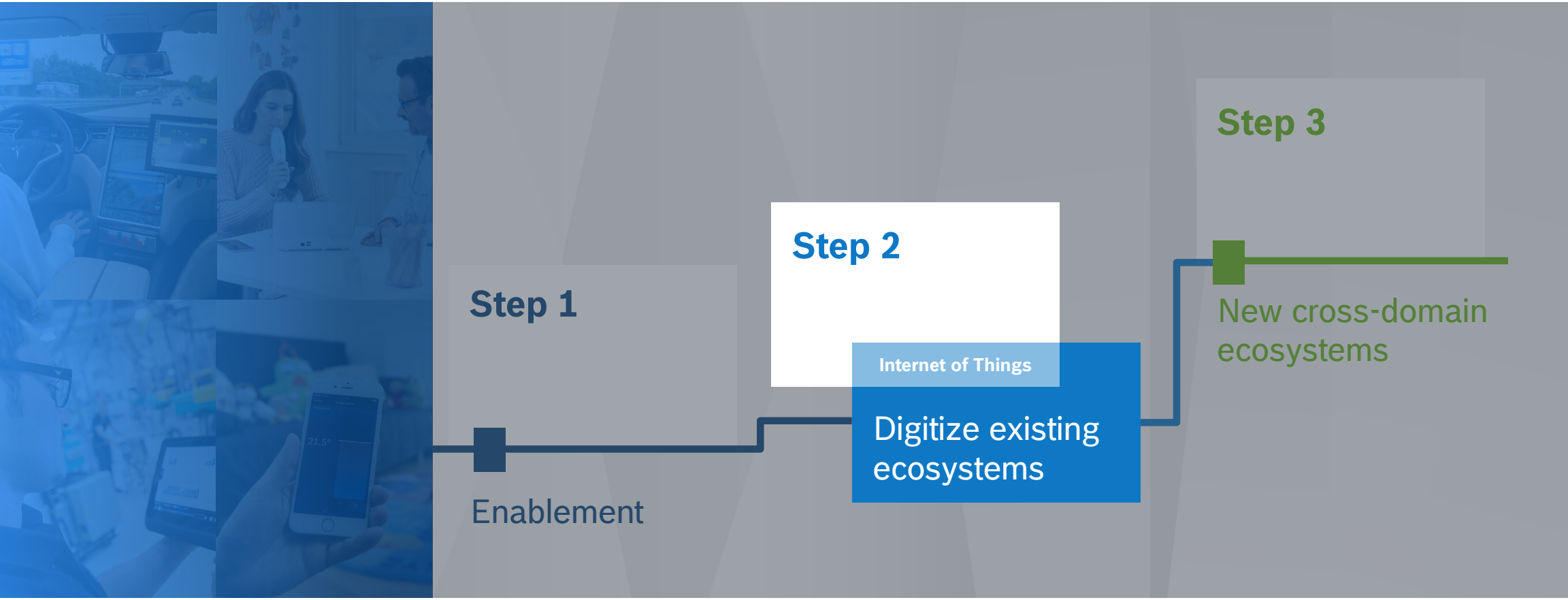
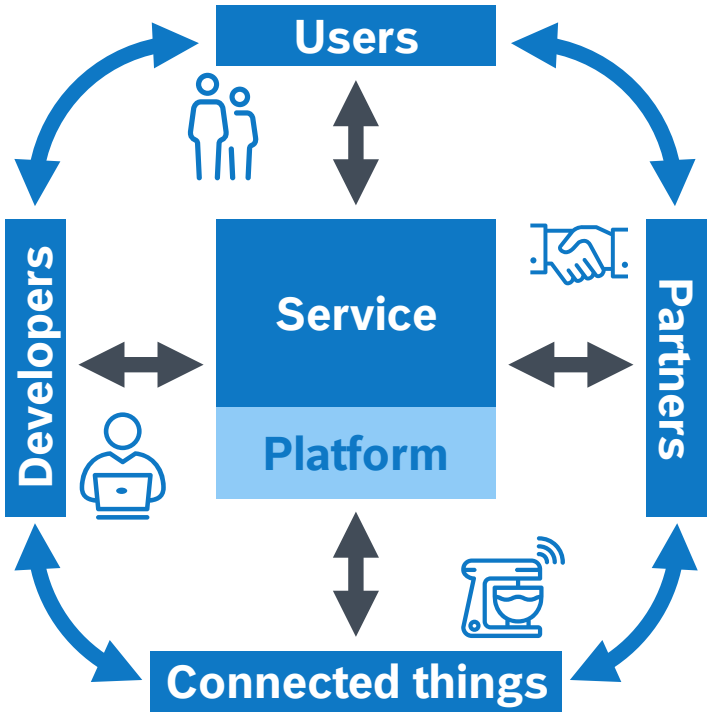
Bosch‘s way into the Internet of Things



Elements of an IoT ecosystem



Developers
Third party developers deliver innovative apps

Users
Use services and may contribute to enhancements via crowd-generated data

Connected things
Physical, "smart" things as base for new services

Partners
Participate and contribute to value-add of the entire ecosystem

Bosch‘s way into the Internet of Things

Step 1

Enablement

Step 2

Digitize existing ecosystems

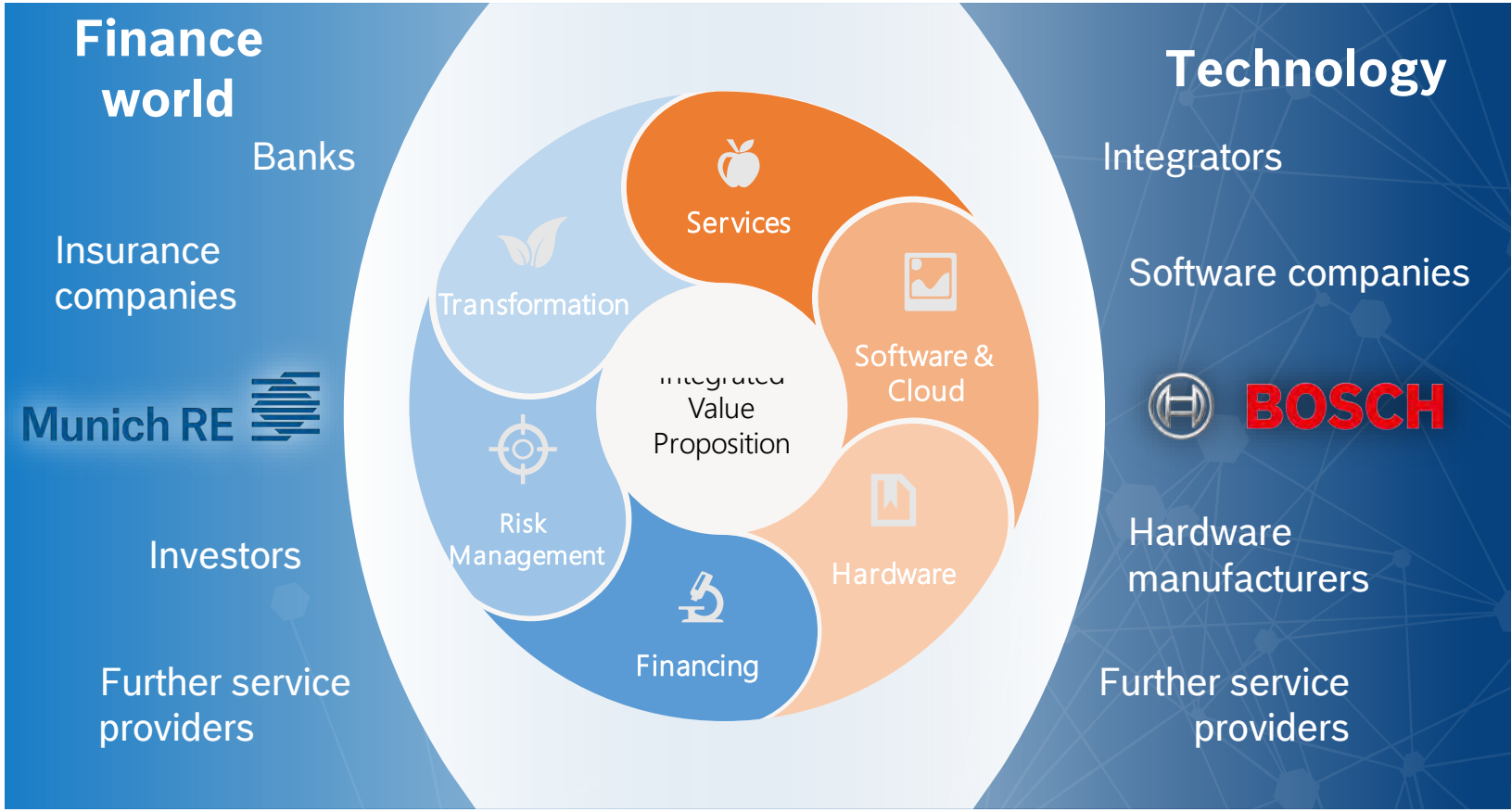
Step 3

Internet of Things

New cross-domain ecosystems

Collaboration Bosch & Munich RE

- Comprehensive solutions for the Internet of Things, starting with Industry 4.0
- Technological and economic optimization of production
- Munich RE's finance know-how complements connected offering



25 years: Software eating the world

As seen in https://twitter.com/jblefevre60/status/993889228072341504

MY LEARNINGS

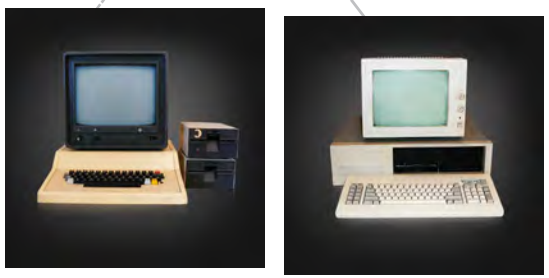
WHAT MY HEART BEATS FOR 

My software and IoT journey since 1984

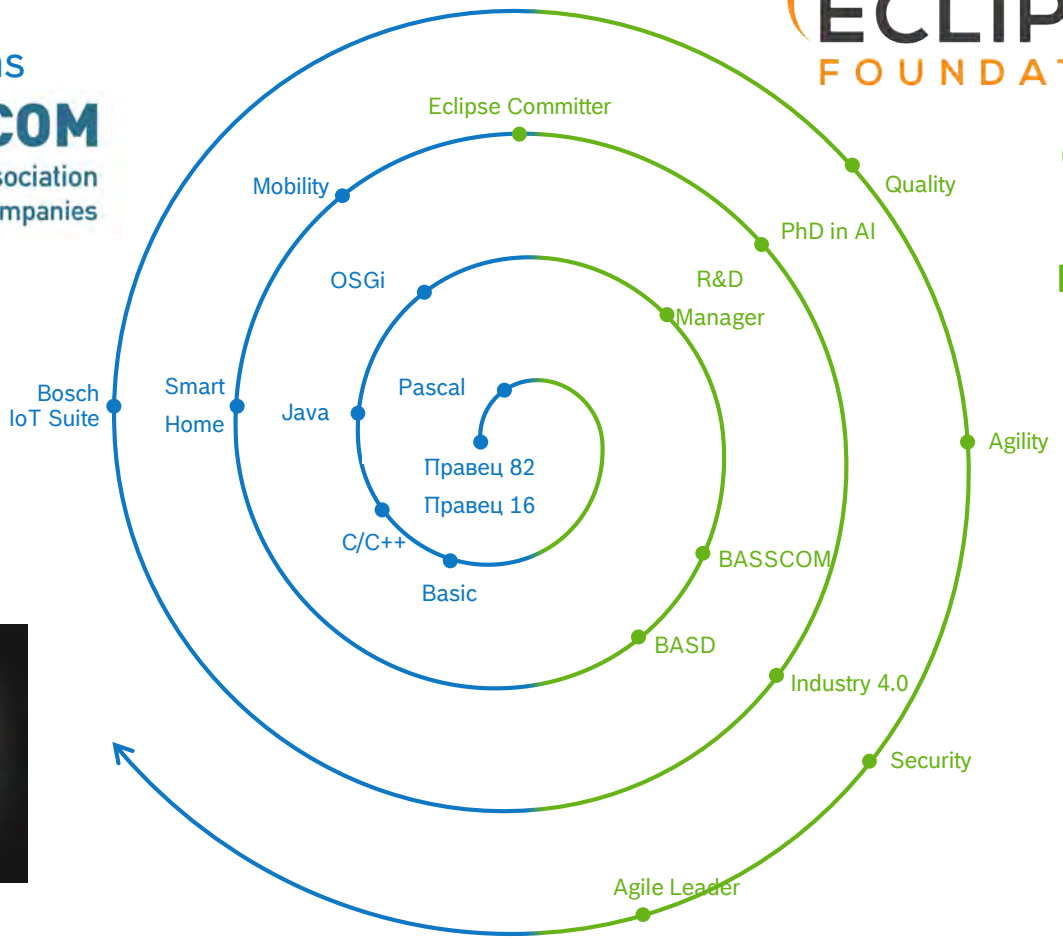
Technology

OSGi and Embedded systems

BASSCOM
Bulgarian Association of Software Companies



IT



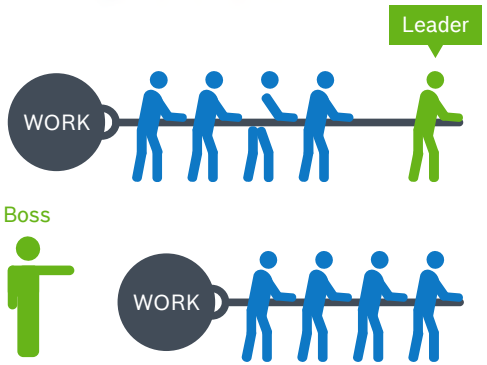
ECLIPSE FOUNDATION

Leadership

Industry development

OSGi Alliance

BASD
Bulgarian Association Of Software Developers



Openness external

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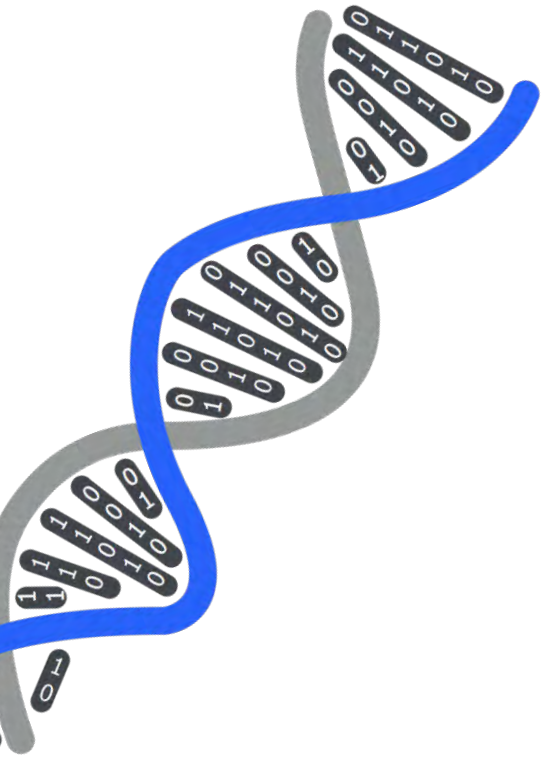
DNA valuable for Bosch's transformation
Bosch Software Innovations



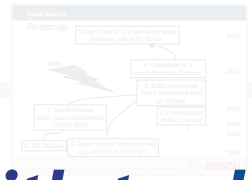
Incubation, enablement, change, agility

Internet of Things, services, software

"The extra mile"

Teaching old dogs new tricks

Bosch's way into Open Source
2004 to date




Start with tooling and not immediately with products



Embrace all disciplines

Win hearts first – this does not work with PowerPoint

Bosch Software Innovations

Actively engaged in the Eclipse IoT Working Group

Eclipse Ditto

... where IoT devices and their digital twins get together

Eclipse Leshan

A Java library for implementing Lightweight M2M servers and clients

Eclipse hawkBit

A domain-independent, back-end solution for managing software rollouts in IoT

Eclipse Vorto

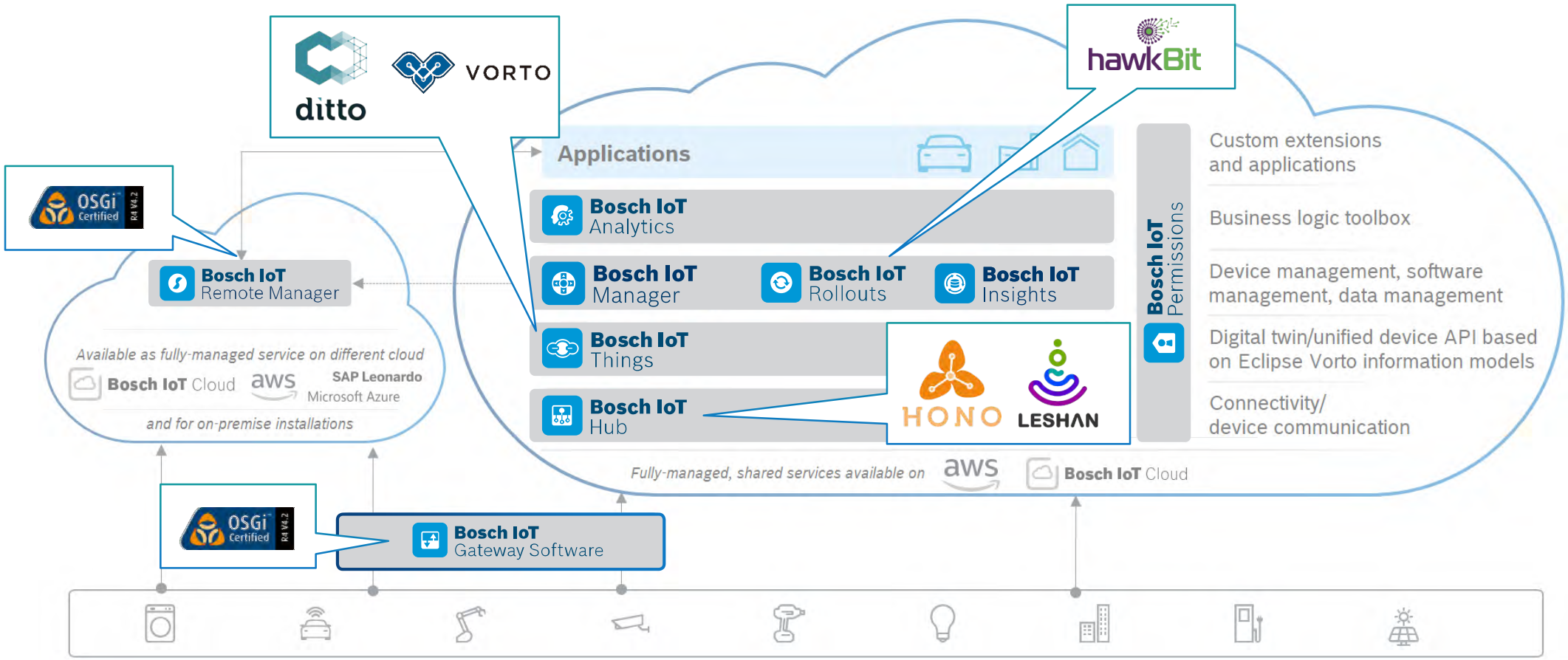
A smart, open approach to the interoperability of IoT products

Eclipse hono

Enabling device-related communication between connected devices and IoT applications in the cloud

The Bosch IoT Suite
Fully-based on Open Source and Open Standards

Bosch IoT Suite



20 YEARS IN THE INTERNET OF THINGS

...

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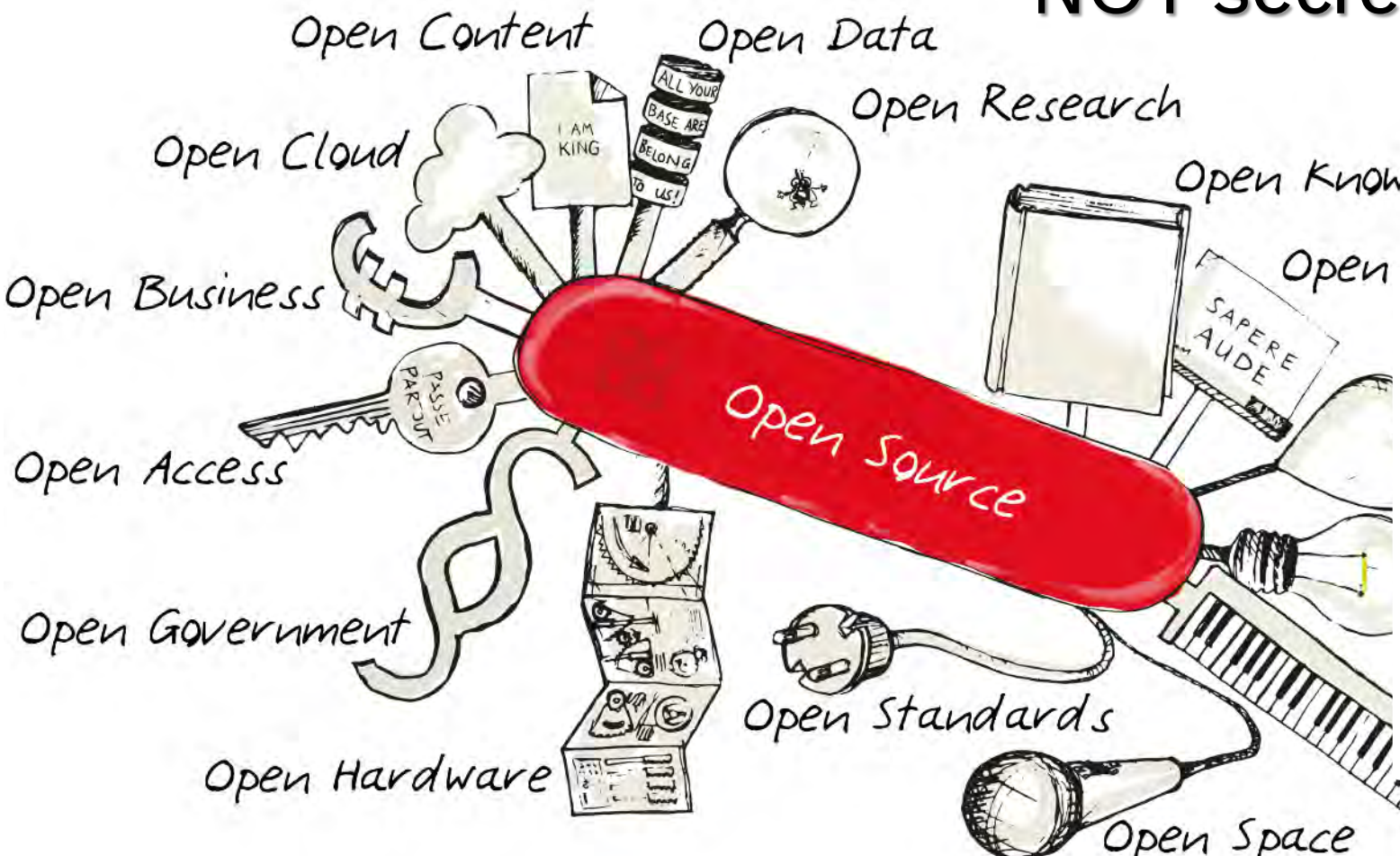
OPENNESS

NOT secrecy



BUSINESS PLATFORMS

NOT individual products

Co-Creation

NOT silos

NOT hierarchies

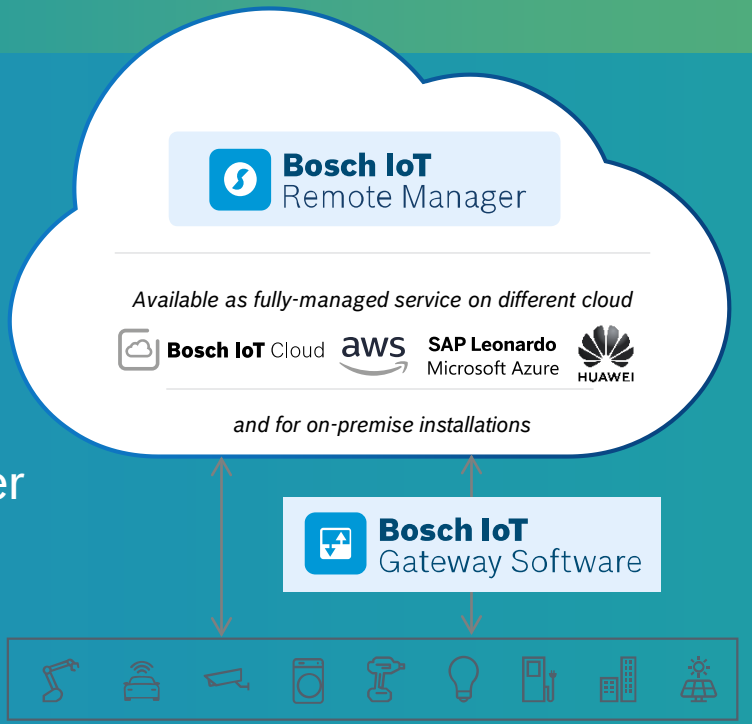
PARTNERSHIPS

NOT suppliers

NOT competitors

Bosch IoT Gateway Software & Remote Manager
OSGi-compliant implementation fully developed in Sofia

- Worldwide accepted open standard
- Enables the modular assembly of software built with Java technology
- Modularity reduces software complexity
- Software framework targeting all device classes
- Bosch IoT Gateway Software and Bosch IoT Remote Manager are built on OSGi technology
- Founding member of OSGi Alliance (1999)



Leading vendor: Bosch Software Innovations

PAC RADAR 2018 – IoT platforms for device management

Among the criteria that ranked significantly above average for Bosch Software Innovations, the report names

- ✓ Strategic focus on IoT platforms & strategic activities over the last 12 months
- ✓ Strategic cooperation with other top IoT providers
- ✓ IoT device management capabilities
- ✓ IoT ecosystem of developers & systems integrators in Europe
- ✓ Go-to-market via third-party IoT platforms and developer communities
- ✓ Client references and market perception in Europe
- ✓ Financial strength

Sofia Office

“Space is the body language of an organization”

BOSCH

Get started into IoT
Hackathon @ Bosch SI Office in Sofia

What can you achieve with a hackathon?

- Understand where Bosch's IoT platform might help you with future use cases.
- Gain hands-on experience and learn how to implement an IoT case.
- Last but not least – have lots of fun on the way.

The Bosch IoT Suite cloud services
Availability

Self-service subscription via
www.bosch-iot-suite.com

Self-service subscription via
https://aws.amazon.com/marketplace

In China:

HUAWEI

On demand:

Microsoft Azure **SAP Leonardo**

Bosch IoT Remote Manager running on other clouds

We connect everyThing.

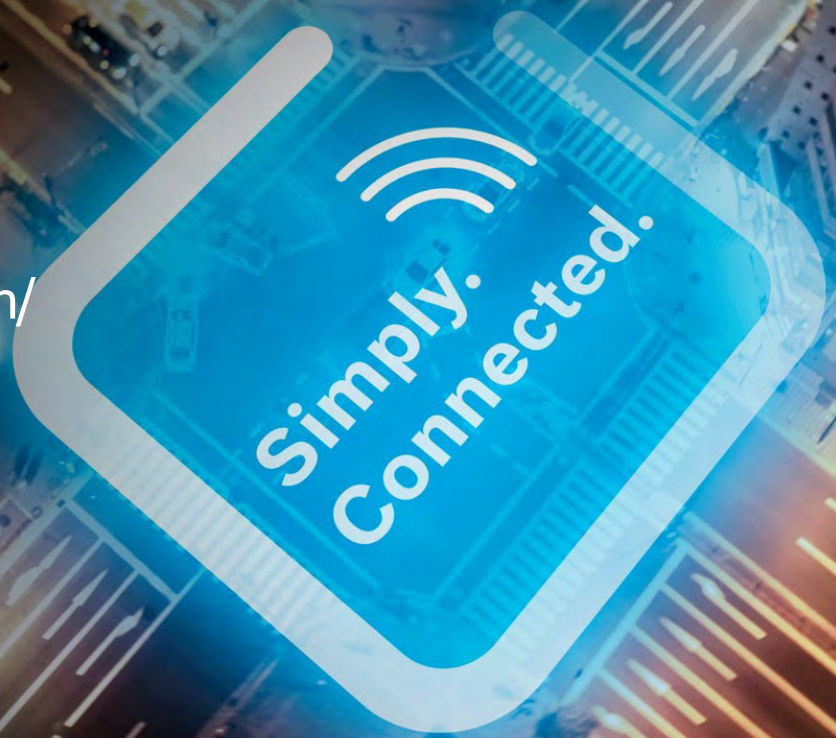
Bosch IoT Suite

Get an overview: www.bosch-si.com/iot-platform
and explore our services: www.bosch-iot-suite.com

BOSCH

What we can expect after years?
Internet of Everything

THANK YOU
QUESTIONS?



Dr. Pavlin Dobrev

Pavlin.Dobrev@bosch-si.com

https://www.linkedin.com/in/pavlin/

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